Report on in-depth analysis of pilot studies in 16 Member States on diagnosis-specific morbidity statistics

Annex 1

In-depth analysis of pilot studies in 16 Member States: an Assessment of quality and comparability of the provided information across Member States

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1 Introduction

Annex 1 provides an in-depth analysis of the data and results that Member States delivered in line with two sets of grant agreements in the years 2004 and 2009, respectively. The technical descriptions of the call for proposals are attached in Annex 9. The list of estimates delivered by country is reported in Annex 7.

In view of the data as delivered by DE the TF met a specific challenge. The German NSI allowed the group to analyse the data, but refused permission to publish the data sources due to confidentiality obligations and intellectual property rights. That is why in the end German data could neither be referenced nor shown in this publication. Only some mentions of the work done by Germany are reported in the text.

In the second wave countries could chose to deliver results for just a selected group of diseases as listed in the shortlist. This applies in particular to Belgium who produced estimates on a selected set of diseases.

As the reader will notice by looking at the graphs in this annex, some estimates are missing for selected pilot countries and/or diseases. This may be due to the following reasons:

- In some cases estimates for some diseases were not provided or were calculated following a methodology that diverged too much from the one adopted in accordance with the MSDG recommendations, thus hampering effective comparability across pilot countries.
- In some other cases only crude rates were provided, and this is shown in the graphs included in this annex.
- Finally, in some cases the pilot country did calculate the estimates from different sources, but did not provide a unique best national estimate as requested.

In those cases the TF was not in the position to analyse or choose and include the requested estimates in the results. The TF would like to acknowledge the efforts made by the pilot countries as a first attempt to provide such estimates.

The estimates provided by pilot countries are also presented in two sets of graphs, one for crude rates and one for standardized rates. The indicators in each graph have been grouped according to the identified sources in order to make the effective comparisons of estimates easier for the reader.

Complementary documentation on the analysis of sources and available estimates have been developed in electronic format (excel tables) by Eurostat.
2 Sources

Main questions addressed in this paragraph:

- The purpose of the reported source – is it to produce health statistics? If no: Which other purpose?
- Is the source reimbursement-driven?
- Was one unique source (or the result of a combination of sources) chosen as the best one by country and by disease? If yes: was a reason given? Could that reason be accepted?

Chapter I. Certain infectious and parasitic diseases

- Diseases 1. Tuberculosis (A15-A19, B90) – Incidence by episode and period prevalence
- Diseases 2. Sexually transmitted diseases (STD) (A50-A64) – Incidence by episode and period prevalence
- Diseases 3. Viral hepatitis (incl. hepatitis B) (B15-B19) – Incidence by episode and period prevalence
- Diseases 4. Human immunodeficiency virus disease (HIV/AIDS) (B20-B24, Z21) – Incidence by episode, period prevalence and point prevalence

Data on infectious diseases are collected by all member states nationally and by WHO Regional Office for Europe and DG Health and Consumers at the European Commission internationally. The Eurostat Morbidity Shortlist includes four diseases in this group: Tuberculosis, Sexually transmitted diseases (STD) – which should be renamed as sexually transmitted infections (STI) – Viral hepatitis (incl. hepatitis B) and Human immunodeficiency virus disease (HIV/AIDS). The European Centre for Disease Prevention and Control (ECDC) collects information on tuberculosis (ResInf), sexually transmitted infections, viral hepatitis and HIV/AIDS (HASH) as a part of the European Surveillance System (TESSy).

All EU Member States are nominated a competent body for cooperation with ECDC, in particular in surveillance¹. Infectious diseases are collected at national level either as compulsory notifications in a register or through sentinel networks of a sample of health care actors. The data collection is based on national legislation on infectious diseases, and it may be exempted from the strict data protection regulations. In some cases, only infectious diseases confirmed in laboratory are included. No other data sources should be used for gathering the data. If the data collection at national level seems to be underreported, data from other information systems should be used to increase the quality of mandatory reporting on infectious diseases.

Chapter II. Neoplasms

- Diseases 5. All malignant neoplasms (C00-C97) – Incidence by person and period prevalence
- Diseases 6. Malignant neoplasm of oesophagus (C15) – Incidence by person and period prevalence
- Diseases 7. Malignant neoplasm of stomach (C16) – Incidence by person and period prevalence
- Diseases 8. Malignant neoplasm of colon, rectum and anus (C18-C21) – Incidence by person and period prevalence
- Diseases 9. Malignant neoplasm of trachea, bronchus and lung (C33, C34) – Incidence by person and period prevalence
- Diseases 10. Malignant melanoma of skin (C43) – Incidence by person and period prevalence
- Diseases 11. Mesothelioma (C45) – Incidence by person and period prevalence
- Diseases 12. Malignant neoplasm of breast (C50) – Incidence by person and period prevalence
- Diseases 13. Malignant neoplasm of cervix uteri (C53) – Incidence by person and period prevalence
- Diseases 14. Malignant neoplasm of uterus other than cervix (C54, C55) – Incidence by person and period prevalence
- Diseases 15. Malignant neoplasm of ovary (C56) – Incidence by person and period prevalence
- Diseases 16. Malignant neoplasm of prostate (C61) – Incidence by person and period prevalence
- Diseases 17. Malignant neoplasm of bladder (C67) – Incidence by person and period prevalence
- Diseases 18. Leukaemia and other malignant neoplasms of lymphoid and haematopoietic tissue (C81-C96) – Incidence by person and period prevalence

Cancer registers are the main data source of cancer statistics in all countries. They are maintained for cancer surveillance purposes, as well as for research, statistics, planning of resources, and health care management. Overall, the cancer registers are not reimbursement driven. Although only five countries (CZ, EE, LT, LV, RO) clearly state that the cancer register is the best and the most reliable source, an absent debate on alternative data sources leads to assumption that the registers have been considered the most appropriate source in all countries.

Nearly all countries have estimated cancer incidence by person using cancer register data only.

Exception is DE, where in addition to the Cancer Registries of the Federal States and the German Childhood Cancer Register, private health insurance data were evaluated as well (three data sources altogether). The private health insurance data bases belong to private insurance companies and are reimbursement driven. Estimates of cancer incidence data were calculated from all three data sources; the best data source is not indicated.

For period prevalence the majority of countries (AT, CZ, FI, HU, LT, LV, NL, PL, RO, SI) have also used the cancer register data. NL register data are based on one region only (3 million population), but still extrapolation of the register data to the whole population were preferred instead of data from the Health Interview Survey (HIS).

EE has chosen the health insurance data bases; although a reason for not using the cancer register is not clearly stated, it might be inability to link the Cancer register with the Death Register. Health insurance data are reimbursement driven and are not designed for official statistical purposes. Some weak points have been mentioned.

DE presents four possible data sources. Two of them cover only out-patient care: statutory health insurance and private health insurance data; both are reimbursement driven. And other two sources cover only in-patient care: DRG-data and Hospital Diagnostic data. The DRG-data are reimbursement driven. Reliability of all four data sources is questioned. Prevalence estimates were calculated from all four sources, however the method of combining the data has not been described neither the best data source is indicated.

CY has not used the cancer register data because of the short history of the register (since 1998). Therefore, they preferred HIS to obtain prevalence of disease N 5 "All malignant neoplasms”. The purpose of health surveys is to collect data suitable for statistics and research. Survey data are not influenced by reimbursement or other financial issues of health care provisions, however they are based on self-reporting from a sample of the total population.

BE also considers HIS to be the most appropriate source of cancer prevalence because their cancer register does not publish prevalence data, but only incidence.

MT does not use the cancer register data, because individuals in the register are not followed-up over time. So, MT does not have a data source suitable for calculation of period prevalence of cancers.

Remark regarding site-specific cancers:

Since in HIS there are usually no questions about site specific cancers, therefore it cannot be used to estimate prevalence of such cancers, thus, overall, three countries (BE, CY, MT) do not have data on site-specific cancer prevalence and have not contributed related estimates.

Chapter IV. Endocrine, nutritional and metabolic diseases

- Diseases 19. Diabetes mellitus (E10-E14) – Incidence by person, period prevalence and point prevalence

Chapter IV is presented by only one diseases diabetes mellitus with 3 indicators: incidence by person, period prevalence and point prevalence.

The reported data sources could be grouped into 3 groups: Health interview survey (HIS) data, health statistics data (special registries, annual reports, hospital discharge or GP’s data), health insurance data. For different indicators the reported sources differ slightly.

For incidence by person of diabetes mellitus 5 countries (AT, CY, HU, RO, SI) reported no data source available. Six countries (CZ, LV, MT, NL, PL, SK) used sources which purpose is health statistics, although in NL the source is party used for financial purposes. Five countries (BE, DE, EE, FI, LT) used health insurance data.
For period prevalence only 2 counties (CZ, SK) reported no data source available. 3 counties (AT, CY, MT) used health interview surveys. 6 countries (HU, LV, NL, PL, SI, RO) used sources which purpose is health statistics, although in NL the source is partly used for financial purposes. 5 countries (BE, DE, EE, FI, LT) used health insurance data. Slovenia has chosen hospital data.

For point prevalence 11 countries (AT, BE, CY, DE, EE, FI, HU, MT, PL, RO, SI) did not indicate any source available. Four countries (CZ, LV, NL, SK) used sources which purpose is health statistics, although in NL the source is partly used for financial purposes. 1 country (LT) used health insurance data.

Countries where HIS (MT, CY, AT) was the only data source for diabetes presented only data for period prevalence.

At least one source for at least one of the indicators requested by the SL was reported by every country for diabetes.

**Chapter V. Mental and behavioural disorders**

- **Disease 20. Dementia (incl. Alzheimer's disease) (F00-F03, G30)** – Period prevalence
- **Disease 21. Mental and behavioural disorders due to use of alcohol (incl. alcohol dependence) (F10)** – Period prevalence
- **Disease 22. Mental and behavioural disorders due to use of psychoactive substances other than alcohol and tobacco (including drug dependence) (F11-F16, F18, F19)** – Period prevalence
- **Disease 23. Schizophrenia (F20-F29)** – Period prevalence
- **Disease 24. Depression and other affective disorders (F30-F39)** – Period prevalence
- **Disease 25. Anxiety disorders (F40, F41)** – Period prevalence
- **Disease 26. Eating disorders (F50)** – Period prevalence

For diagnosis-specific morbidity statistics for chapter V only period prevalence is required. Eleven countries (AT, CZ, DE, EE, FI, HU, LT, LV, RO, SI, SK) have chosen the same or almost the same data sources for diseases 20-26.

- **Disease 20. Dementia (incl. Alzheimer's disease) (F00-F03, G30)**

For dementia (incl. Alzheimer's disease) only two countries (BE, CY) have no data. BE had identified the sources but did not calculate data. 8 countries (CZ, DE, EE, FI, HU, LT, PL, RO) used health insurance data, of which PL and FI used combination of insurance and hospital data. 5 countries (AT, LV, NL, SI, SK) used sources which purpose is health statistics. MT has used data from a special study on dementia.

- **Disease 21. Mental and behavioural disorders due to use of alcohol (incl. alcohol dependence) (F10)**
- **Disease 22. Mental and behavioural disorders due to use of psychoactive substances other than alcohol and tobacco (incl. drug dependence) (F11-F16, F18, F19)**

For mental and behavioural disorders either due to use of alcohol (incl. alcohol dependence) or to use of psychoactive substances other than alcohol and tobacco (incl. drug dependence) the same data sources were used for all countries.

Only 3 countries (BE, CY, MT) have no data. BE had identified the sources (HIS) but did not calculate data. 7 countries (CZ, DE, EE, FI, HU, LT, RO) used health insurance data, of which FI used combination of insurance and hospital data. 5 countries (AT, LV, PL, SI, SK) used sources which purpose is health statistics. NL has used HIS data.
• Disease 23. Schizophrenia (F20-F29)

Only 3 countries (BE, CY, MT) have no data for schizophrenia. 8 countries (CZ, DE, EE, FI, HU, LT, PL, RO) used health insurance data of which PL and FI used combination of insurance and hospitals data. 5 countries (AT, LV, NL, SI, SK) used sources which purpose is health statistics.

• Disease 24. Depression and other affective disorders (F30-F39)

Only BE has no data for depression and other affective disorders. 2 countries (CY, MT) used data from HIS. 8 countries (CZ, DE, EE, FI, HU, LT, PL, RO) used health insurance data, of which PL and FI used combination of insurance and hospitals data. 5 countries (AT, LV, NL, SI, SK) used sources which purpose is health statistics.

• Disease 25. Anxiety disorders (F40, F41)

Only 2 countries (BE, CY) did not provide data for anxiety disorders. MT used data from HIS while 8 countries (CZ, DE, EE, FI, HU, LT, PL, RO) used health insurance data, of which PL and FI used combination of insurance and hospitals data. Five countries (AT, LV, NL, SI, SK) used sources which purpose is health statistics.

• Disease 26. Eating disorders (F50)

Only 2 countries (BE, CY) have no data for eating disorders. MT used data from HIS. 8 countries (CZ, DE, EE, FI, HU, LT, PL, RO) used health insurance data, of which FI used combination of insurance and hospitals data. 5 countries (AT, LV, NL, SI, SK) used sources which purpose is health statistics.

Chapter VI. Diseases of the nervous system

• Diseases 27. Parkinson's disease (G20) – Period prevalence
• Diseases 28. Multiple sclerosis (G35) – Period prevalence
• Diseases 29. Epilepsy (G40, G41) – Period prevalence
• Diseases 30. Migraine and other headache syndromes (G43, G44) – Period prevalence

For diagnosis-specific morbidity statistics for chapter VI only period prevalence is required.

• Disease 27. Parkinson's disease (G20)

Only 3 countries (CY, LV, MT) have no data for Parkinson's disease. 9 countries (BE, CZ, DE, EE, FI, HU, LT, PL, RO) used health insurance data. 4 countries (AT, NL, SI, SK) used sources which purpose is health statistics, of which AT and SI have used hospital data.

• Diseases 28. Multiple sclerosis (G35)

Only 3 countries (BE, CY, MT) have no data for multiple sclerosis. 7 countries (CZ, DE, EE, FI, LT, PL, RO) used health insurance data. 5 countries (AT, LV, NL, SI, SK) used sources which purpose is health statistics, of which AT and SI have used hospital data. HU have combined data of health insurance and GP’s.
• Diseases 29. Epilepsy (G40, G41)

Only 4 countries (BE, CY, LV, MT) have no data for epilepsy. 8 countries (CZ, DE, EE, FI, HU, LT, PL, RO) used health insurance data. 4 countries (AT, NL, SI, SK) used sources which purpose is health statistics, of which AT and SI have used hospital data.

• Disease 30. Migraine and other headache syndromes (G43, G44)

Only 2 countries (BE, LV) have no data for Migraine and other headache syndromes. 6 countries (CZ, DE, EE, HU, LT, RO) used health insurance data. 4 countries (FI, NL, SI, SK) used sources which purpose is health statistics, of which FI and SI have used hospital data. 4 countries (AT, CY, MT, PL) used HIS data.

Chapter VII. Diseases of the eye and adnexa

• Diseases 31. Cataract (H25-H28) – Period prevalence

• Diseases 32. Glaucoma (H40, H42) – Period prevalence

For diagnosis-specific morbidity statistics for chapter VII only period prevalence is required. For cataract LV and for glaucoma CY and MT did not present any useable data source.

The purpose of the preferred data source was mainly to organize the reimbursement of health (social) care services. Half of countries used health insurance database for data computing. For some countries like HU, LT and LV one purpose of the health insurance database is to produce health statistics.

Secondly information systems for different health care services – sources which produce regular health statistics – hospital, general practitioners and surgery data were used.

Usually HIS was used for comparison only, but for cataract CY and MT and for glaucoma BE named HIS as the most suitable source.

Two countries did not choose for cataract the preferred source and presented two sources in the data sources table (AT - HIS and hospital data; BE - HIS and insurance data).

Chapter VIII. Diseases of the ear and mastoid process

• Diseases 33. Hearing loss (H90, H91) – Period prevalence

For diagnosis-specific morbidity statistics for chapter VIII only period prevalence is required.

• Diseases 33. Hearing loss (H90, H91)

Two countries (CY, LV) did not find the useable data source.

The purpose of the preferred data source was mainly to organize the reimbursement of health care services. Seven countries used for hearing loss estimation the health insurance data. For HU and LT one purpose of the health insurance database is to produce health statistics.

Information systems for different health care services – sources which produce the regular health statistics were used by AT and SK (hospital data), NL (general practitioners data) and SI (outpatient specialist care).

HIS was the best source for BE, CZ and MT. In future CZ sees instead HIS possibility and feasibility of collaboration with general practitioners or using electronic health record from different providers.
Chapter IX. Diseases of the circulatory system

- Diseases 34. Hypertensive diseases (I10-I13, I15) – Period prevalence
- Diseases 35. Ischaemic heart diseases (I20-I25) – Period prevalence
- Diseases 36. Acute myocardial infarction (I21, I22) – Incidence by person and period prevalence
- Diseases 37. Heart failure (I50) – Period prevalence
- Diseases 38. Cerebrovascular diseases (I60-I69) – Incidence by person and period prevalence

For diagnosis-specific morbidity statistics for chapter IX, incidence by person and period prevalence were required.

- Diseases 36. Acute Myocardial Infarction (I21, I22) – Incidence by person
- Diseases 38. Cerebrovascular disease (I60-I69) – Incidence by person

Incidence by person has to be provided for acute myocardial infarction (AMI) and cerebrovascular accidents (CVA). Eight of the pilot countries (AT, CY, CZ, HU, LV, MT, RO, SL) could not provide data on incidence of AMI. Nine of the pilot countries (AT, BE, CY, CZ, DE, HU, LV, MT, RO, SL) could not provide data on incidence of CVA.

However, sources or potential ones have been mentioned by some of the countries that did not provide the data and therefore data may become available in the future. The main kind of sources on incidence for these diseases were reimbursement-driven sources. These included insurance information systems, reimbursement of health care services & benefits (including inpatients, outpatients, and primary care services), and Diagnosis Related Groups (DRG) Payment systems. Causes of death register was also mentioned as a source for these diseases, with evident limitations because only the fatal episodes are reported, therefore this cannot be considered a suitable stand-alone source for incidence by person.

A combination of sources was used in few cases where a linkage was possible, as in the case of Finland (combination of three sources), and Poland and Slovenia (between hospital and CoD data; or when the merging of two DBs (Hospital and CoD registers) was done (BE).

According to privacy regulations only aggregated data are provided by Belgium, but individual data are accessible to the civil servants compiling the data and to avoid double counting AMI- incidence figures are obtained by combination of non-fatal cases, based on MCD and fatal cases, based on CoD data. In Belgium hospital discharges records are episode based and hospitals are required to use the same patient-id during a year (which nowadays has been extended to the whole life-span). Although transferred patients can theoretically be identified, the mentioning variable is not well filled out\(^2\). This problem is vanishing because patients are now immediately directed to centers providing Percutaneous Coronary intervention or CABG. Therefore it is unlikely that incidence-figures will be considerably overestimated due to doubling counting. Double counting may occur in two ways: (1) a person is transferred from a hospital to another during the same episode, or (2) a person has more than one AMI episode during that period for which we want to obtain an incidence estimate.

Both problems are being solved: (1) by directing people with an acute coronary syndrome to specialized cardiac centers able to provide PCI/bypass, and (2) by imposing on the hospitals the use of a personal, lifelong patient-identifier to be used in each admission of that patient.

The Netherlands used the "best available" source from the GP network, whereas the combination of HDR and COD was considered the "best possible" source for AMI incidence per persons, but was not available because of the incomplete HDR registration in recent years.

Romania and Slovak Republic mentioned the possibility of identifying sources on incidence by episode.

The principal types of sources used in the calculation of period prevalence were reimbursement-driven sources. These included insurance information systems, reimbursement of health care services & benefits (including inpatients, outpatients, and primary care/GP services), and Diagnosis Related Groups (DRG) Payment systems.

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HIS was identified as a source for prevalence estimates by five countries (AT, BE, CY, MT, PL), but other sources were preferred when available such as in the cases of Austria which provided data from hospital discharges databases or Poland which provided data from the specialist care National Health fund (both for inpatient and ambulatory cares). Belgium chose not to present estimates when HIS was the only available source.

The Netherlands used sentinel data derived from a General Practitioner (GP) electronic information system.

Regarding Germany, four possible sources were presented from the two pilots done. In addition one of the four possible data sources consisted of a voluntary pilot project on a GP information system with restricted coverage (about 11%). However this source has no guarantee of sustainability.

For some acute and often fatal diseases, especially Acute myocardial infarction and Cerebrovascular diseases, combined sources (Hospital discharge data, Cause of death, insurance data) were used.

Specific information on sources used by diseases are reported below.

- **Diseases 34. Hypertension (I10-I13, I15) - Period prevalence**

  All the pilot countries stated to have a source for estimating hypertension prevalence, however crude rates estimates were not presented by four countries (CY, BE FI, SL) and standardized rates by seven countries (AT, BE, CZ, DE, FI, SL, SK). No sources were combined by any country.

  Three countries (CY, MT, PL) provided self-reported data sourced from Health Interview Surveys.

- **Diseases 35. Ischemic Heart disease (I20-I25) - Period prevalence**

  Only Cyprus stated that no source could be identified; however three additional countries (BE, FI, SL) did not provide estimates for crude rates and 8 (AT, BE, CY, CZ DE, FI, SL, SK) for standardized rates.

  Malta provided self-reported data sourced from Health Interview Surveys.

- **Diseases 36. Acute Myocardial Infarction (I21, I22) - Period prevalence**

  Four countries (AT, FI, SL, NL) have combined sources and provided crude rates estimates for AMI prevalence; however only 2 of these (FI, SL) gave estimates for the standardized rates. AT made use of hosp. discharges and HIS without linking them and provided crude rates and total numbers. SI delivered data extracted from the Hospital In-Patient Health Care Database and the Out-Patient Specialist Services Database without the possibility to link them and came up with complete data. In both cases it remains unclear how these rates and numbers were obtained.

  Two countries (BE, NL) combined data from hospital discharges with CoD registers, however Belgium did not provide estimates thereafter, because the project-contractors estimated that “Prevalent cases could then be defined as patients who ever suffered from AMI. It is however extremely difficult to obtain such type of information as it requires longitudinal morbidity data in which people are followed over time. Such databases are not available in Belgium, surely not at national level”.

  Two countries (CY, MT) provided self-reported data sourced from Health Interview Surveys.

  All the pilot countries stated to have at least one source identified for this indicator on AMI; however crude rates estimates were not provided by three countries (BE, CY, LV) and standardized rates were not provided by six countries (AT, BE, CZ, DE, LV, NL). The case of Cyprus is unclear: in fact standardized rates were provided, but not crude ones.
Diseases 37. Heart failure (I50) - Period prevalence

Malta and Cyprus stated not have available sources on heart failure period prevalence while Belgium mentioned HIS as the available source for Heart failure. However some inconsistencies can be noted with the provided data: in fact five countries (BE, CY, FI, MT, SL) did not present estimates for crude rates and nine countries (AT, BE, CZ, DE, FI, LV, MT, SL, SK) did not present estimates for standardized rates.

Most of the sources are reimbursement-driven: insurance, hospital discharges or GP.

Diseases 38. Cerebrovascular disease (I60-I69) - Period prevalence

Finland and Poland estimated prevalence by combining different sources.

Belgium reported two possible sources: hospital discharges and CoD registers. As agreed on with Eurostat, Belgium delivered indicators only for a limited number of indicators: diabetes mellitus, AMI, Parkinson, fracture of femur, cancer and HIV/AIDS. Therefore no estimates of CVD were given although it might be possible to come up with estimates. This remark applies to other pathologies as well. Three countries (AT, CY, MT) mentioned HIS as a potential source for CVA prevalence, however only Malta provided estimates based on this source.

Three countries (BE, CY, SL) did not present crude rates estimates, and eight countries (AT, BE, CY, CZ, DE, LV, SL, SK) standardized rates.

Chapter X. Diseases of the respiratory system

Diseases 39. Influenza (J09-J11) – Incidence by episode

Diseases 40. Pneumonia (J12-J18) – Incidence by episode and period prevalence

Diseases 41. Asthma (J45, J46) – Incidence by person and period prevalence

Diseases 42. Chronic lower respiratory disease (J40-J44, J47) – Incidence by person and period prevalence

For diagnosis-specific morbidity statistics for chapter X incidence by episode, incidence by person and period prevalence were required.

Influenza and pneumonia are interesting diseases for preforming a specific comparison among countries due to the fact that the sources identified by pilot countries cover two main different purposes: 1. Surveillance/sentinel events reporting, 2. Data collected for other purposes.

Incidence by episode

Incidence by episode was requested for influenza and pneumonia.

Five countries (CZ, MT, AT, CY, HU) declared not to have suitable sources for calculating this indicator for influenza and seven (MT, SI, AT, CY, POL, HU, LV) for pneumonia. However nine countries did not choose one source among those tested (DE) or, due to other reasons, did not provide crude rates for estimates on incidence by episode for influenza (SI, AT, BE, CY, CZ, DE, HU, LV, MT) and for pneumonia (SI, AT, BE, CY, DE, HU, LV, MT, PL).

For influenza the sources identified were mainly derived from notification systems operating in the framework of surveillance and sentinel networks, either compulsory or on a voluntary basis SI, EE, PL, BE, LV, NL, DE), while fewer countries provided estimates based on health insurances reimbursement, hospital data or GP data (FI, DE, LT, RO, SK). As for pneumonia the countries identified the main sources into health insurances reimbursement, hospital data or GP data (CZ, FI, EE, BE, NL, DE, LT, RO, SK). The integration of hospital discharges plus the CoD register data was identified as a potential source for pneumonia by Belgium. An analysis of multiple causes of death could contribute to improve the accuracy of estimates, if used in combination with other sources.
Incidence by person

Incidence by person was requested for asthma and chronic lower respiratory disease.

Only five countries (CZ, EE, FI, LT, NL) could provide estimates on the two diseases for incidence by person. It seems evident that identifying a suitable source posed difficulties shared by the majority of pilot countries. This is generally due to the difficulty of distinguishing the first occurrence of these chronic diseases in a person; as a consequence the risk of double counting may be as relevant as the risk of underreporting, depending on the source considered. The identified sources were reimbursement-driven with the exception of The Netherlands one, based on GP combined networks.

Period prevalence

Period prevalence was requested for pneumonia, asthma and chronic lower respiratory disease.

For pneumonia sources could be identified in all but three countries (MT, CY, PL) however also Belgium did not provide crude rates estimates for the period prevalence. Seven countries provided estimates for pneumonia standardized rates (FI, SK, EE, HU, LT, RO, NL).

For asthma, all the pilot countries could identify sources, however these turned out to be HIS in five cases (MT, AT, CY, PL, BE). Austria used a combination of HIS and hospital data for calculating the estimates. Estimates for crude rates were then produced by all the pilot countries except Belgium and Slovenia. Standardized rates for asthma were made available by nine countries (CY, MT, PL, EE, FI, HU, LT, RO, NL).

Sources for the chronic lower respiratory diseases were identified by all pilot countries with the exception of Cyprus. The sources were the HIS in three cases (AT, MT, BE). Austria used a combination of HIS and hospital data for calculating the estimates. Estimates for crude rates were then produced by all the pilot countries except BE, CY, SI. Standardized rates for chronic lower respiratory diseases were made available by eight countries (MT, PL, EE, FI, HU, LT, RO, NL).

Chapter XI. Diseases of the digestive system

- Diseases 43. Gastric and duodenal ulcer (peptic ulcer) (K25-K28) – Period prevalence
- Diseases 44. Alcoholic liver disease (K70) – Period prevalence
- Diseases 45. Diseases of liver other than alcoholic (K71-K77) – Period prevalence
- Diseases 46. Cholelithiasis (K80) – Incidence by person and period prevalence

Incidence per person was required for cholelithiasis. Eight pilot countries (AT, BE, CZ, CY, HU, LV, PL, SI) did not identify a suitable data source, confirming as it occurred for other diseases, that the identification of a useful source for estimating incidence by person was quite difficult.

All countries mentioned the best data source for gastric and duodenal ulcer period prevalence. For liver diseases the best data source was not found by BE, CY and MT and for cholelithiasis by CY and MT.

Countries used health insurance data mainly for data computing. From sources producing regular health statistics were used hospital and general practitioners data. In some cases insurance data were combined with health care data.

Gastric and duodenal ulcer was the only diagnosis when HIS was used (BE, CY, MT). For AT the best data source for gastric and duodenal ulcer period prevalence. For liver diseases the best data source was not found by BE, CY and MT and for cholelithiasis by CY and MT.

Countries used health insurance data mainly for data computing. From sources producing regular health statistics were used hospital and general practitioners data. In some cases insurance data were combined with health care data.

Gastric and duodenal ulcer was the only diagnosis when HIS was used (BE, CY, MT). For AT both HIS and hospital data were presented as the best data source.

Chapter XII. Diseases of the skin and subcutaneous tissue

- Diseases 47. Dermatitis and eczema (L20-L30) – Period prevalence
- Disease 48. Psoriasis (L40) – Period prevalence

3 AT decided to present both HIS and HDB data, and subsequently only hospital data were included in the tables by Eurostat.
BE, CY and MT did not find the useable data source for diseases of skin and subcutaneous tissue.

The purpose of the preferred data source was mainly to organize the reimbursement of health care services. For HU, LT and LV one purpose of the health insurance database is to produce health statistics.

FI combined hospital discharges and reimbursements.

From health statistics hospital, general practitioners data or information on skin diseases & other sexually transmitted diseases were used.

NL calculated data for psoriasis from HIS.

**Chapter XIII. Diseases of the Musculoskeletal System**

- Diseases 49. Rheumatoid arthritis (M05, M06) – Period prevalence
- Diseases 50. Arthrosis (M15-M19) – Period prevalence
- Diseases 51. Systemic connective tissue disorders (M30-M36) – Period prevalence
- Diseases 52. Spondylopathies and other dorsopathies (incl. low back pain) (M45-M54) – Period prevalence
- Diseases 53. Osteoporosis (M80-M82) – Period prevalence

The principal types of sources used in the calculation of these indicators were reimbursement-driven sources. These included insurance information systems, reimbursement of health care services & benefits (including inpatients, outpatients, and primary care services), and Diagnosis Related Groups (DRG) Payment systems.

Austria and Slovenia provided data from hospital discharges databases, and the Netherlands used data derived from a General Practitioner (GP) electronic information system. Finland linked data from different sources (hospital discharges register, reimbursement of medication register and disability allowances register).

In addition, Cyprus, Malta and Poland provided data sourced from Health Interview Surveys for some of the indicators.

Germany provided data from additional sources including a voluntary pilot project.

**Chapter XIV. Diseases of the Genitourinary System**

- Diseases 54. Glomerular and renal tubulo-interstitial diseases (N00-N08, N10-N16) – Period prevalence
- Diseases 55. Renal Failure (N17-N19) – Period prevalence
- Diseases 56. Urolithiasis (N20-N23) – Incidence by person and period prevalence

The principal types of sources used in the calculation of these indicators were reimbursement-driven sources. These included insurance information systems, reimbursement of health care services & benefits (including inpatients, outpatients, and primary care services), and Diagnosis Related Groups (DRG) Payment systems.

Austria and Slovenia provided data from hospital discharges databases, and the Netherlands used data derived from a General Practitioner (GP) electronic information system.

Data from Slovakia for some of the indicators were based on a register of outpatients requiring kidney substitution treatment.

Finland linked data from different sources (hospital discharges register, reimbursement of medication register and disability allowances register).

In addition, Malta provided data sourced from Health Interview Surveys for one of the indicators.

**Chapter XIX. Injury, poisoning and certain other consequences of external causes**

- Diseases 57. All morbidity due to injury, poisoning and certain other consequences of external causes (S00-T98) – Incidence by episode and period prevalence
- Diseases 58. Intracranial injury (S06) – Incidence by episode and period prevalence
- Diseases 59. Fracture of femur (S72) – Incidence by episode and period prevalence
• Diseases 60. Poisoning by drugs, medicaments and biological substances and toxic effects of substances chiefly nonmedicinal as to source (T36-T65) – Incidence by episode and period prevalence

For all morbidity data due to injury, poisoning and certain other consequences of external causes, CZ, AT, CY, PL, HU have no available data regarding incidence by episode.

BE and NL could not calculate a useful estimate for the whole chapter neither for incidence by episode nor for period prevalence. The NL calculated an estimate but did not use it, because “it covers a limited part of the cases of morbidity due to external causes as there are no data available of the emergency departments and general practitioners”. Considering that other countries chose best estimates although morbidity data covered only hospitalization or only out-patient cases (underreporting), it will be useful a further discussion on this issue, in order to accomplish a better comparability.

Among the countries that did not provided estimates for S00-T98, some did provide one for the specific diseases in this chapter. Thus, PL, BE and NL provided estimates for incidence by episode for “intracranial injury”, BE and NL for “fracture of femur” and NL for “poisoning by drugs, medicaments and biological substances and toxic effects of substances chiefly non-medical as to source”.

MT, SI, CY had no available data for estimating period prevalence for S00-T98, S06, S72 and T36-T65.

In the case of period prevalence CZ, AT, PL, HU provided estimates for “intracranial injury”, “fracture of femur” and “poisoning by drugs, medicaments and biological substances and toxic effects of substances chiefly non-medical as to source”.

• Diseases 57. All morbidity due to injury, poisoning and certain other consequences of external causes (S00-T98) - Incidence by person

Most countries that provided best estimates for this group of diseases have used data collected for reimbursement of health care services. At the same time, the comparability is hampered by the coverage of these data. Thus, EE and LT data covers inpatient and outpatient, LV covers inpatient cases and RO covers only cases reported by family doctors. Also, the NL opted not to choose best estimates because the data only covered discharges from hospital, but other countries opted to present this type of data (only hospital cases) as best estimate. A point of discussion can be to reach a consensus as to what coverage can be accepted for the results to be comparable.

SI used hospital inpatient health care database and FI used hospital discharge register for health institutions. This signifies also coverage only for hospitalization and refers to different moments of care, inpatient and discharges.

MT is the only country with a database on injury but, although it provided best estimates for this group, the coverage refers only to a small number of hospitals from Gozo Island.

EE used two sources: Health Insurance Fund and Causes of Death registry and its estimates exclude injuries caused by traffic accidents.

From the estimates calculated by the countries, a clear difference can be seen comparing the countries that produced estimates based on inpatient and outpatient data with the countries that provided data based only on hospital morbidity or only on outpatient morbidity. EE and LT incidence rates, covering both inpatient and outpatient cases, are the highest. Also, EE used the causes of death registry to estimate incidence, the rates produced being much higher comparing with other countries.

Regarding the purpose of data collecting, it differs from one source to another: either the source is using the data for statistical purpose (e.g. hospital inpatient database or hospital discharge register) or for reimbursement of health care services (health insurance fund database) or both, in the case of some insurance health funds (LT, RO).
- Diseases 57. All morbidity due to injury, poisoning and certain other consequences of external causes (S00-T98) - Period prevalence

For estimating the period prevalence for this group of diseases, some countries used the same data sources as for calculating incidence by episode (FI, EE, LV, LT).

In one case (RO) period prevalence was calculated using the DRG information system for discharges from hospital, while the incidence was calculated using the number of new cases recorded by family doctors in outpatient care.

Four countries (CZ, AT, PL, HU) that did not provide any data on incidence by episode, calculated best estimates for period prevalence and two countries (MT, SI), that produced incidence by episode estimates, do not have any data for period prevalence.

The new sources used for calculating the prevalence rate are similar to the ones used by other countries: health care insurance data (CZ, PL, HU) for reimbursement purposes and hospital discharges database (AT) used for documentation of hospital inpatient stays.

The prevalence rates were lower than the incidence rates in all the countries that also produced incidence estimates (EE, FI, LT, RO). Except for RO, the other three countries used the same data source for both indicators.

- Disease 58. Intracranial injury (S06) – Incidence by episode
- Disease 59. Fracture of femur (S72) – Incidence by episode
- Disease 60. Poisoning by drugs, medicaments and biological substances (T36-T65) – Incidence by episode

For “intracranial injury”, sources include those presented for the whole group of diseases with the adding of Poland’s general hospital morbidity study and Netherland’s information network of general practice. In the case of PL, data collected is used for statistical purpose and covers only hospitalized cases. The Netherland best source for morbidity estimates refer to GP, of which only a selection can provide data on incidence and this system is also partially used for financial declaration purposes.

As above, the issue regarding the source coverage (inpatient, outpatient cases) could be of importance in the data comparability. Estimates for “intracranial injury” are more comparable than those for the extended group. The inconsistency is visible for the Romanian data, which can be explained by the inclusion of only outpatient cases from family doctor offices.

For “Fracture of femur” and “Poisoning by drugs, medicaments and biological substances” the same sources indicated for “intracranial injury” are kept, except for the NL which chose as source for best estimate the Hospital Discharge Register who collects data regarding diagnosis, procedures, date of birth, type of hospital and date of admission and discharges. PL did not produce estimates for this indicator due to lack of appropriate sources. Given the severity of fracture of femur hospital data can be considered a viable and comparable source. SI used two data sources, the hospital in-patient health care database and the mortality database, to calculate incidence for this disease.

- Disease 58. Intracranial injury (S06) – Period prevalence
- Disease 59. Fracture of femur S72 – Period prevalence
- Disease 60. Poisoning by drugs, medicaments and biological substances T36-T65 – Period prevalence

For “intracranial injury” – period prevalence, the sources used are the same as the ones used for S00-T98, except NL which did not provided an estimate for this group of diseases.

Compared to the sources used for incidence by episode for this disease, AT, CZ, DE, HU choose new sources for calculating period prevalence such as health insurance data (CZ, DE, HU) and hospital discharges data (AT). MT
and SI did not provide any data on period prevalence. SI provided data for incidence by episode, but could not choose best estimates for period prevalence as it was considered period prevalence was not a relevant indicator for diseases in Chapter XIX.

PL used for calculating period prevalence for S06 a new source which referred to healthcare benefits from public insurance fund. The source covered, as in other cases, only cases treated in institutions under contract with the Health Insurance Fund.

As the sources were in majority, the same as the ones used for previous calculations, the purposes for collecting data remained: reimbursement of health care services and statistical purpose. As the Health Insurance covers only insured population, it would be useful to know the percentage covered for every country.

Period prevalence for “fracture of femur” and “Poisoning by drugs, medicaments and biological substances” has a higher country response rate than the incidence by episode for the same group. For prevalence some countries used new or different sources for compiling the data. Thus, CZ, PL, HU and RO all used new sources reimbursement-driven, while AT used hospital discharges database whose purpose is the documentation of hospital inpatient stays. BE used an additional source, mortality register, for calculating prevalence for this group of diseases, linked with hospital discharges database.

Chapter XX. External causes of morbidity

- Shortlist group A. All morbidity due to external causes (injuries, poisonings, etc.) (V01-Y89) – Incidence by episode and period prevalence
- Shortlist group B. Land transport accidents (V01-V89) – Incidence by episode and period prevalence
- Shortlist group C. Accidental falls (W00-W19) – Incidence by episode and period prevalence
- Shortlist group D. Accidental poisoning (X40-X49) – Incidence by episode and period prevalence
- Shortlist group E. Intentional self-harm (incl. suicidal attempt) (X60-X84) – Incidence by episode and period prevalence
- Shortlist group F. Assault (X85-Y09) – Incidence by episode and period prevalence
- Shortlist group G. Complications of medical and surgical care (Y40-Y66, Y69-Y84) – Incidence by episode and period prevalence

The main data sources used for compiling estimates on morbidity due to external causes were hospital patient databases (in-patient database, discharges registers) or health insurance databases. One country, LV, used morbidity data from Trauma and Injury register, but they specified that this source will be more useful in the future as more hospital will be reporting data. The comparability of the incidence data for this group of diseases based on the source coverage is somewhat uncertain as two countries covered only hospital data, two used both in-patient and out-patient data, and one used out-patient (primary care) data. Only five out of 16 countries provided incidence estimates for all diseases in this chapter (EE, FI, LV, RO, SI). The reasons other countries did not provide data on morbidity were the severe underestimation by inclusion only of severe cases, the omission of external causes codes from sources database, the different databases available did not allow any linkage. There are signs that some countries, that did not find a best data source for this chapter, can envisage a possibility of collecting these data in the future.

The same issues are present when estimating prevalence for this group, adding three more countries that provided data (CZ, AT and HU), two of them (CZ and AT) not providing data by sex. Slovenia did not provide data for prevalence for this chapter considering the indicator as not being relevant for diseases in this group.

The data sources used by the reporting countries are either reimbursement driven or monitoring databases.

For the specific codes in this chapter (land transport accidents, accidental falls, accidental poisoning, intentional self-harm, assault, complication of medical and surgical care) more countries provided estimates. Thus, incidence data for land transport accidents is produced by 7 countries (EE, FI, HU, LV, PL, RO and SI), adding two countries (HU, PL) to the ones that provided estimates for all morbidity due to external causes. The new data sources are road accident database (PL) and collection of Statistical Central Office (HU). The reports analysed the need for linking different data sources such as causes of death registers, hospital databases, traffic accidents databases etc., but issues such as different coding or no coding prevented a better coverage of the estimates. Few countries produced incidence estimates for accident falls and assault (EE, FI, LV, RO, SI) using the same data sources; SK joined the countries that previously reported incidence rate estimates for this chapter with data for
accidental poisoning and intentional self-harm, using hospital database and mandatory reporting of self-inflicted injuries register respectively.

Most countries kept the prevalence data sources the same as for incidence estimates. In addition, the NL provided estimates for prevalence for the selected diseases in this chapter using a linkage between hospital discharge register and causes of death database and RO used a different data source for calculating prevalence rates in this chapter, the DRG system that collects information on discharged patients from hospitals for reimbursement of health care services.

The purpose of the data sources did not seem to influence the estimates or the reporting, but all countries experienced problems regarding the lack of/or poor codification of the external causes.
3 Accessibility

Main questions addressed in this paragraph:

- Which are the most accessible sources?
- What do the pilot countries have in common from this standpoint?
- Main point of strength and weakness on accessing data by the NSI
- Is accessibility a major problem for receiving best quality data?

Chapter I. Certain infectious and parasitic diseases

- Diseases 1. Tuberculosis (A15-A19, B90) – Incidence by episode and period prevalence
- Diseases 2. Sexually transmitted diseases (STD) (A50-A64) – Incidence by episode and period prevalence
- Diseases 3. Viral hepatitis (incl. hepatitis B) (B15-B19) – Incidence by episode and period prevalence
- Diseases 4. Human immunodeficiency virus disease (HIV/AIDS) (B20-B24, Z21) – Incidence by episode, period prevalence and point prevalence

Mandatory registration systems on infectious diseases exist in all EU member states. In most cases, the data is easy to access, even though strict data protection legislation and practices may reduce the accessibility. DE and NL used multiple data sources to calculate the national incidence and prevalence estimates for all infectious diseases. Their use in routine statistical reporting seems not to be feasible to use.

The registration systems cover tuberculosis, viral hepatitis and Human immunodeficiency virus disease (HIV/AIDS) better than sexually transmitted infections. Especially the registration of Chlamydia is poor in most of EU countries. The primary aim should be that the national registration systems would be mandatory and complete, i.e. including notifications from both private and public health care sector.

Chapter II. Neoplasms

- Diseases 5. All malignant neoplasms (C00-C97) – Incidence by person and period prevalence
- Diseases 6. Malignant neoplasm of oesophagus (C15) – Incidence by person and period prevalence
- Diseases 7. Malignant neoplasm of stomach (C16) – Incidence by person and period prevalence
- Diseases 8. Malignant neoplasm of colon, rectum and anus (C18-C21) – Incidence by person and period prevalence
- Diseases 9. Malignant neoplasm of trachea, bronchus and lung (C33, C34) – Incidence by person and period prevalence
- Diseases 10. Malignant melanoma of skin (C43) – Incidence by person and period prevalence
- Diseases 11. Mesothelioma (C45) – Incidence by person and period prevalence
- Diseases 12. Malignant neoplasm of breast (C50) – Incidence by person and period prevalence
- Diseases 13. Malignant neoplasm of cervix uteri (C53) – Incidence by person and period prevalence
- Diseases 14. Malignant neoplasm of uterus other than cervix (C54, C55) – Incidence by person and period prevalence
- Diseases 15. Malignant neoplasm of ovary (C56) – Incidence by person and period prevalence
- Diseases 16. Malignant neoplasm of prostate (C61) – Incidence by person and period prevalence
- Diseases 17. Malignant neoplasm of bladder (C67) – Incidence by person and period prevalence
- Diseases 18. Leukaemia and other malignant neoplasms of lymphoid and haematopoietic tissue (C81-C96) – Incidence by person and period prevalence

Cancer Registers

In general, the cancer registers are easily accessible data source in majority of countries (AT, CY, CZ, DE, EE, FI, HU, LV, NL, PL, RO, SI, SK). Access to the register data is restricted in two countries only (BE, LT), although they were accessed for the MORB Statistics project. Two countries (LT, HU) have noted that linkage to the death register could improve estimates, but was not possible or was restricted because of data protection laws.
Other sources

Access to the health insurance data (both private and public), used for prevalence estimation in EE, DE, is considered to be restricted. Contrary to that, access to the both types of hospital data, which were used for prevalence estimation in DE, is easy. In BE and CY, which preferred HIS data, information obtained through the HIS is easily accessible as well.

Chapter IV. Endocrine, nutritional and metabolic diseases

- Diseases 19. Diabetes mellitus (E10-E14) – Incidence by person, period prevalence and point prevalence

For most of NSI health statistics data is easily available with no restriction. Access to some specific registries or databases could be more complicated (BE, RO). Access to insurance data is more restricted: data belong to non-statistical institution (EE, DE); data could be costly (BE); confidentiality reasons (SI), complicated linkage of databases (FI, SI). Other countries did not mention any problems with data accessibility.

Accessibility does not seem to be the major problem for receiving best quality data, although problems with data confidentiality and cost of receiving data could arise in the future with development of new databases and wider use of personal ID.

Chapter V. Mental and behavioural disorders

- Diseases 20. Dementia (incl. Alzheimer's disease) (F00-F03, G30) – Period prevalence
- Diseases 21. Mental and behavioural disorders due to use of alcohol (incl. alcohol dependence) (F10) – Period prevalence
- Diseases 22. Mental and behavioural disorders due to use of psychoactive substances other than alcohol and tobacco (including drug dependence) (F11-F16, F18, F19) – Period prevalence
- Diseases 23. Schizophrenia (F20-F29) – Period prevalence
- Diseases 24. Depression and other affective disorders (F30-F39) – Period prevalence
- Diseases 25. Anxiety disorders (F40, F41) – Period prevalence
- Diseases 26. Eating disorders (F50) – Period prevalence

For most of NSI health statistics data is easily available with no restriction. Access to insurance data is more restricted: data belong to non-statistical institution (EE, DE, HU, BE, RO), confidentiality reasons (SI, LT), complicated linkage of databases (FI, SI). For mental and behavioural disorders due to use of alcohol (incl. alcohol dependence) and psychoactive substances other than alcohol and tobacco (incl. drug dependence) LV stated that special database is available but without personal ID. Other countries did not mention any problems with data accessibility.

Chapter VI. Diseases of the nervous system

- Diseases 27. Parkinson's disease (G20) – Period prevalence
- Diseases 28. Multiple sclerosis (G35) – Period prevalence
- Diseases 29. Epilepsy (G40, G41) – Period prevalence
- Diseases 30. Migraine and other headache syndromes (G43, G44) – Period prevalence

For most of NSI health statistics data is easily available with no restriction. Access to insurance data is more restricted: data belong to non-statistical institution (EE, DE, HU, BE, PL, RO), confidentiality reasons (SI, LT), complicated linkage of databases (FI, SI). Other countries did not mention any problems with data accessibility.
Chapter VII. Diseases of the eye and adnexa

- Diseases 31. Cataract (H25-H28) – Period prevalence
- Diseases 32. Glaucoma (H40, H42) – Period prevalence

Accessibility could be a problem. Approximately half of the countries expressed concerns about restricted access to data (BE, DE, EE, FI, HU, RO, SL, SK).

HIS and health care data, without the need to link the database with other data sources are more accessible data sources.

The advantage of health insurance database is usually covering different health care sectors and it’s disadvantage is often the complicated access (BE, DE, EE, HU, RO).

Combining morbidity data from different databases could be complicated (FI, SI), even if the accessibility of primary data sources is good.

Chapter VIII. Diseases of the ear and mastoid process

- Diseases 33. Hearing loss (H90, H91) – Period prevalence

Approximately half of countries (DE, EE, FI, HU, RO, SI, SK) have noted about restricted access to data. HIS and health care data, without the need to link the database with other data sources were more accessible.

The access to the health insurance data (DE, EE, HU, RO) was more complicated.

Ad hoc combining morbidity data (FI) was complicated because of data confidentiality.

Chapter IX. Diseases of the circulatory system

- Diseases 34. Hypertensive diseases (I10-I13, I15) – Period prevalence
- Diseases 35. Ischaemic heart diseases (I20-I25) – Period prevalence
- Diseases 36. Acute myocardial infarction (I21, I22) – Incidence by person and period prevalence
- Diseases 37. Heart failure (I50) – Period prevalence
- Diseases 38. Cerebrovascular diseases (I60-I69) – Incidence by person and period prevalence

Some countries indicated an often difficult or restricted accessibility to the data sources, particularly for the reimbursement driven sources. Access to health interview survey data is usually easier. Some countries also identified problems with data usage and linkage due to patient confidentiality concerns.

There were no indications of accessibility being prohibitively costly, with the exception of Belgium reporting that access to the health interview survey data can be costly for external users.

Chapter X. Diseases of the respiratory system

- Diseases 39. Influenza (J09-J11) – Incidence by episode
- Diseases 40. Pneumonia (J12-J18) – Incidence by episode and period prevalence
- Diseases 41. Asthma (J45, J46) – Incidence by person and period prevalence
- Diseases 42. Chronic lower respiratory disease (J40-J44, J47) – Incidence by person and period prevalence

Some countries indicated an often difficult or restricted accessibility to the data sources, particularly for the reimbursement driven sources. Access to health interview survey data is usually easier. Some countries also identified problems with data usage and linkage due to patient confidentiality concerns.

There were no indications of accessibility being prohibitively costly, with the exception of Belgium reporting that access to the health interview survey data can be costly for external users.
Chapter XI. Diseases of the digestive system

- Diseases 43. Gastric and duodenal ulcer (peptic ulcer) (K25-K28) – Period prevalence
- Diseases 44. Alcoholic liver disease (K70) – Period prevalence
- Diseases 45. Diseases of liver other than alcoholic (K71-K77) – Period prevalence
- Diseases 46. Cholelithiasis (K80) – Incidence by person and period prevalence

Accessibility could be a problem in computing data for diseases of digestive system. More accessible were health care data without the need to link the database with other data sources, and HIS. The access to the health insurance data was more complicated (DE, EE, RO) and ad hoc linkage of different databases (FI) either.

Chapter XII. Diseases of the skin and subcutaneous tissue

- Diseases 47. Dermatitis and eczema (L20-L30) – Period prevalence
- Disease 48. Psoriasis (L40) – Period prevalence

Approximately half of the countries expressed concerns about restricted access to data (DE, FI, EE, HU, RO, SI, SK). More accessible were health care data without the need to link the database with other data sources and HIS. The access to the health insurance data was more complicated (DE, EE, HU, RO). Ad hoc combining morbidity data from different databases was complicated (FI).

Chapter XIII. Diseases of the Musculoskeletal System

- Diseases 49. Rheumatoid arthritis (M05, M06) – Period prevalence
- Diseases 50. Arthrosis (M15-M19) – Period prevalence
- Diseases 51. Systemic connective tissue disorders (M30-M36) – Period prevalence
- Diseases 52. Spondylopathies and other dorsopathies (incl. low back pain) (M45-M54) – Period prevalence
- Diseases 53. Osteoporosis (M80-M82) – Period prevalence

Some countries indicated that accessibility to the data sources can often be difficult or restricted, particularly for the reimbursement driven sources. Access to health interview survey data is usually easier. Some countries also identified problems with data usage and linkage due to patient confidentiality concerns. There were no indications of accessibility being prohibitively costly, with the exception of Belgium who reported that access to the health interview survey data can be costly for external users.

Chapter XIV. Diseases of the Genitourinary System

- Diseases 54. Glomerular and renal tubulo-interstitial diseases (N00-N08, N10-N16) – Period prevalence
- Diseases 55. Renal Failure (N17-N19) – Period prevalence
- Diseases 56. Urolithiasis (N20-N23) – Incidence by person and period prevalence

Some countries indicated that accessibility to the data sources can often be difficult or restricted, particularly for the reimbursement driven sources. Access to health interview survey data is usually easier. Some countries also identified problems with data usage and linkage due to patient confidentiality concerns. There were no indications of accessibility being prohibitively costly.
Chapter XIX. Injury, poisoning and certain other consequences of external causes

- Diseases 57. All morbidity due to injury, poisoning and certain other consequences of external causes (S00-T98) – Incidence by episode and period prevalence
- Diseases 58. Intracranial injury (S06) – Incidence by episode and period prevalence
- Diseases 59. Fracture of femur (S72) – Incidence by episode and period prevalence
- Diseases 60. Poisoning by drugs, medicaments and biological substances and toxic effects of substances chiefly nonmedicinal as to source (T36-T65) – Incidence by episode and period prevalence

Most countries that indicated best estimate for this chapter reported that access to morbidity data on injuries is easy. The most accessible sources seem to be the compulsory Health Insurance Funds and data collected from hospital information systems.

Difficulties reported concerned accessibility, as the private insurance companies policies prevent the compilation of the information on the morbidity structure of the insured parties (DE), other cite copyright restrictions when using the data (countries reporting in the second wave, when this issue was raised). The copyright restriction can be accepted, as it implies mostly to mention the source when data are published.

As the issue of using mortality databases can be raised in order to obtain comprehensive results, it should be noted that the majority of countries that took this source in consideration were not able to link it successfully to other sources. One of the reason was related to accessibility, BE mentioning that individual data are not provided and only five observation per cell were available.

Chapter XX. External causes of morbidity

- Shortlist group A. All morbidity due to external causes (injuries, poisonings, etc.) (V01-Y89) – Incidence by episode and period prevalence
- Shortlist group B. Land transport accidents (V01-V89) – Incidence by episode and period prevalence
- Shortlist group C. Accidental falls (W00-W19) – Incidence by episode and period prevalence
- Shortlist group D. Accidental poisoning (X40-X49) – Incidence by episode and period prevalence
- Shortlist group E. Intentional self-harm (incl. suicidal attempt) (X60-X84) – Incidence by episode and period prevalence
- Shortlist group F. Assault (X85-Y09) – Incidence by episode and period prevalence
- Shortlist group G. Complications of medical and surgical care (Y40-Y66, Y69-Y84) – Incidence by episode and period prevalence

The data sources used for compiling estimations for incidence and prevalence of the diseases in this chapter are hospital information systems, health insurance databases, causes of death registers etc. which collect data on a legal and mandatory basis. These databases are in most cases managed by public institutions, thus the availability of the data is facilitated. Information regarding private health care institutions (private health insurance data) are missing for most countries, data sources being hard to reach. For example, in many countries private institutions do not conclude contracts with the statutory health insurance company, which makes it difficult to obtain quality data from these providers. Private health insurance companies also have strict regulations regarding personal information access, which prevents linkage with the statutory health insurance data. One of the main limits identified for the external causes of morbidity is that the selected sources are usually not covering the whole population, being primary care-treated cases excluded in most of the cases where only hospital data were provided.
4 Sustainability at large

Main questions addressed in this paragraph:

- Will the three elements taken into consideration (sustainability, mandatory vs voluntary data collection, and updating frequency) ensure that a suitable source has been identified by the pilots?
- Have any cost-related issues been reported that can hamper the sustainability of a new data collection on MORB?
- Is the sustainability issue more relevant for incidence or prevalence indicators? Which will be the most and which the least sustainable ones having in mind the establishment of a regular data collection?

Chapter I. Certain infectious and parasitic diseases

- Diseases 1. Tuberculosis (A15-A19, B90) – Incidence by episode and period prevalence
- Diseases 2. Sexually transmitted diseases (STD) (A50-A64) – Incidence by episode and period prevalence
- Diseases 3. Viral hepatitis (incl. hepatitis B) (B15-B19) – Incidence by episode and period prevalence
- Diseases 4. Human immunodeficiency virus disease (HIV/AIDS) (B20-B24, Z21) – Incidence by episode, period prevalence and point prevalence

The collection of data on infectious diseases is obligatory, and the data collection will be expanded and the quality of national data should be improved in the future thought extended data collection through ECDC. Data on incidence is more relevant than data on prevalence for other diseases than tuberculoses and Human immunodeficiency virus disease (HIV/AIDS).

Chapter II. Neoplasms

- Diseases 5. All malignant neoplasms (C00-C97) – Incidence by person and period prevalence
- Diseases 6. Malignant neoplasm of oesophagus (C15) – Incidence by person and period prevalence
- Diseases 7. Malignant neoplasm of stomach (C16) – Incidence by person and period prevalence
- Diseases 8. Malignant neoplasm of colon, rectum and anus (C18-C21) – Incidence by person and period prevalence
- Diseases 9. Malignant neoplasm of trachea, bronchus and lung (C33, C34) – Incidence by person and period prevalence
- Diseases 10. Malignant melanoma of skin (C43) – Incidence by person and period prevalence
- Diseases 11. Mesothelioma (C45) – Incidence by person and period prevalence
- Diseases 12. Malignant neoplasm of breast (C50) – Incidence by person and period prevalence
- Diseases 13. Malignant neoplasm of cervix uteri (C53) – Incidence by person and period prevalence
- Diseases 14. Malignant neoplasm of uterus other than cervix (C54, C55) – Incidence by person and period prevalence
- Diseases 15. Malignant neoplasm of ovary (C56) – Incidence by person and period prevalence
- Diseases 16. Malignant neoplasm of prostate (C61) – Incidence by person and period prevalence
- Diseases 17. Malignant neoplasm of bladder (C67) – Incidence by person and period prevalence
- Diseases 18. Leukaemia and other malignant neoplasms of lymphoid and haematopoietic tissue (C81-C96) – Incidence by person and period prevalence

Cancer Registers

Reporting of the new cancer cases to the cancer registers, overall, is both regular and mandatory. Reporting is voluntary only in NL (despite of that, reporting is supposed to be complete).

There are some insignificant differences in updating frequency among countries. In many cancer registers, the new cancer cases are reported continuously (CZ, DE, FI, LT, LV, MT, SI); in others – annually (AT, BE, HU, NL, PL, SK). There are countries where incident cases are reported continuously, whereas the cases from the death registers are updated only annually (CY, EE, RO), therefore final estimate is available annually.
No threats to sustainability of this type of data source are seen by any country, except LT, which faced problems with registration of the cancer register, and SK. As cost-related issues have not been emphasized, it leads to assumption that data generation for MORB Statistics will not cause substantial extra costs.

Other data sources

Regarding health insurance data, there are no specific problems with sustainability mentioned in EE and, for statutory health insurance data, in DE (apart from concerns about access), reporting is both mandatory and regular. Contrary to that, the private health insurance data (DE) is not considered to be a sustainable data source.

Health Interview Surveys, the preferred data source by BE and CY for prevalence estimates, are also considered to be sustainable, however they have periodicity (five years in BE), therefore annual data are not available. Using the survey data for MORB Statistics might be related to additional costs (BE “costly for external users”).

Overall, collection of cancer prevalence rather than incidence data might face more difficulties, because for prevalence calculations some countries have used other sources than cancer registers, e.g., health insurance data.

Chapter IV. Endocrine, nutritional and metabolic diseases

- Diseases 19. Diabetes mellitus (E10-E14) – Incidence by person, period prevalence and point prevalence

Health statistics and insurance data in most of the cases are mandatory, regular and continuous. Only some countries for some data sources have voluntary data collection (BE - Diabetes registry and GP’s database, NL - GP’s database, DE - invoicing data of private insurance physicians). Usually sustainability of such sources has no guarantee. Sustainability and mandatory versus voluntary data collection mostly could affect rate of incidence per person (NL, DE). Linkage of different data sources usually was done ad hoc (FI). Participation in HIS is voluntary with at least of 5 years intervals (MT, CY, AT).

Generally, the countries have chosen quite sustainable data sources for diabetes data.

Chapter V. Mental and behavioural disorders

- Diseases 20. Dementia (incl. Alzheimer's disease) (F00-F03, G30) – Period prevalence
- Diseases 21. Mental and behavioural disorders due to use of alcohol (incl. alcohol dependence) (F10) – Period prevalence
- Diseases 22. Mental and behavioural disorders due to use of psychoactive substances other than alcohol and tobacco (including drug dependence) (F11-F16, F18, F19) – Period prevalence
- Diseases 23. Schizophrenia (F20-F29) – Period prevalence
- Diseases 24. Depression and other affective disorders (F30-F39) – Period prevalence
- Diseases 25. Anxiety disorders (F40, F41) – Period prevalence
- Diseases 26. Eating disorders (F50) – Period prevalence

Health statistics and insurance data in most of the cases are mandatory, regular and continuous. Only some countries for some data sources have voluntary data collection (NL GP’s database, DE invoicing data of private insurance physicians) what could influence sustainability of source. The study chosen by MT for dementia was one off study and probably has no future. Data of HIS (CY, MT) could be not regular.

Generally, the countries have chosen quite sustainable data sources for dementia (incl. Alzheimer's disease) data.

Chapter VI. Diseases of the nervous system

- Diseases 27. Parkinson's disease (G20) – Period prevalence
- Diseases 28. Multiple sclerosis (G35) – Period prevalence
- Diseases 29. Epilepsy (G40, G41) – Period prevalence
- Diseases 30. Migraine and other headache syndromes (G43, G44) – Period prevalence
Health statistics and insurance data in most of the cases are mandatory, regular and continuous. Only some countries for some data sources have voluntary data collection (NL GP’s database, DE invoicing data of private insurance physicians) what could influence sustainability of source.

Generally, the countries have chosen quite sustainable data sources.

**Chapter VII. Diseases of the eye and adnexa**
- Diseases 31. Cataract (H25-H28) – Period prevalence
- Diseases 32. Glaucoma (H40, H42) – Period prevalence

Almost all primary data sources were regular and mandatory for health care providers, just linking different data sources was not regular.

An exception is NL’s general practitioners database, where data submission is voluntary and data analysis is carried out every 4 years.

HIS is voluntary and usually with 5 years’ interval.

**Chapter VIII. Diseases of the ear and mastoid process**
- Diseases 33. Hearing loss (H90, H91) – Period prevalence

Almost all primary data sources used for hearing loss estimation were regular and mandatory for health care providers.

An exception was NL’s general practitioners database, where data submission was voluntary. Data collecting was regular, but analysis was done once in 4 years.

HIS is voluntary, and regular, but with 5 years’ interval.

**Chapter IX. Diseases of the circulatory system**
- Diseases 34. Hypertensive diseases (I10-I13, I15) – Period prevalence
- Diseases 35. Ischaemic heart diseases (I20-I25) – Period prevalence
- Diseases 36. Acute myocardial infarction (I21, I22) – Incidence by person and period prevalence
- Diseases 37. Heart failure (I50) – Period prevalence
- Diseases 38. Cerebrovascular diseases (I60-I69) – Incidence by person and period prevalence

Almost all of the reimbursement driven sources were reported as being sustainable (regular and / or official source with frequent updating). The Netherlands indicated that data analysis of the GP information system is only carried out every 4 years.

Most sources were also mandatory, rather than voluntary. The health interview surveys are generally voluntary, as is the data from the Netherlands based on a GP information system.

**Chapter X. Diseases of the respiratory system**
- Diseases 39. Influenza (J09-J11) – Incidence by episode
- Diseases 40. Pneumonia (J12-J18) – Incidence by episode and period prevalence
- Diseases 41. Asthma (J45, J46) – Incidence by person and period prevalence
- Diseases 42. Chronic lower respiratory disease (J40-J44, J47) – Incidence by person and period prevalence

Almost all of the reimbursement driven sources were reported as being sustainable (regular and/or official source with frequent updating). The Netherlands indicated that data analysis of the GP information system is only carried out every 4 years.
Most sources were also mandatory, rather than voluntary. The health interview surveys are generally voluntary, as is the data from the Netherlands based on a GP information system.

**Chapter XI. Diseases of the digestive system**

- Diseases 43. Gastric and duodenal ulcer (peptic ulcer) (K25-K28) – Period prevalence
- Diseases 44. Alcoholic liver disease (K70) – Period prevalence
- Diseases 45. Diseases of liver other than alcoholic (K71-K77) – Period prevalence
- Diseases 46. Cholelithiasis (K80) – Incidence by person and period prevalence

Almost all primary data sources used for data estimation were regular and mandatory for health care providers.

An exception was HIS where data submission was voluntary and conducting mainly with 5 years interval.

Data collecting for NL (general practitioners or hospital database) was voluntary on practice level. GP data were collected regularly but analyse was performed once in 4 years.

**Chapter XII. Diseases of the skin and subcutaneous tissue**

- Diseases 47. Dermatitis and eczema (L20-L30) – Period prevalence
- Disease 48. Psoriasis (L40) – Period prevalence

Almost all primary data sources used for data estimation were regular and mandatory for health care providers, just linking different data sources was not regular.

An exception was NL’s general practitioners database and HIS where data submission was voluntary.

**Chapter XIII. Diseases of the Musculoskeletal System**

- Diseases 49. Rheumatoid arthritis (M05, M06) – Period prevalence
- Diseases 50. Arthrosis (M15-M19) – Period prevalence
- Diseases 51. Systemic connective tissue disorders (M30-M36) – Period prevalence
- Diseases 52. Spondylopathies and other dorsopathies (incl. low back pain) (M45-M54) – Period prevalence
- Diseases 53. Osteoporosis (M80-M82) – Period prevalence

Almost all of the reimbursement driven sources were reported as being sustainable (regular and / or official source with frequent updating). The Netherlands indicated that data analysis of the GP information system is only carried out every 4 years.

Most sources were also mandatory, rather than voluntary. The health interview surveys are generally voluntary, as is the data from the Netherlands based on a GP information system.

**Chapter XIV. Diseases of the Genitourinary System**

- Diseases 54. Glomerular and renal tubulo-interstitial diseases (N00-N08, N10-N16) – Period prevalence
- Diseases 55. Renal Failure (N17-N19) – Period prevalence
- Diseases 56. Urolithiasis (N20-N23) – Incidence by person and period prevalence

Almost all of the reimbursement driven sources were reported as being sustainable (regular and/or official source with frequent updating). The Netherlands indicated that data analysis of the GP information system is only carried out every 4 years.

Most sources were also mandatory, rather than voluntary. The health interview surveys are generally voluntary, as is the data from the Netherlands based on a GP information system.
There is no guarantee of sustainability for the data from Slovakia based on patients requiring kidney substitution treatment.

**Chapter XIX. Injury, poisoning and certain other consequences of external causes**

- Diseases 57. All morbidity due to injury, poisoning and certain other consequences of external causes (S00-T98) – Incidence by episode and period prevalence
- Diseases 58. Intracranial injury (S06) – Incidence by episode and period prevalence
- Diseases 59. Fracture of femur (S72) – Incidence by episode and period prevalence
- Diseases 60. Poisoning by drugs, medicaments and biological substances and toxic effects of substances chiefly nonmedicinal as to source (T36-T65) – Incidence by episode and period prevalence

The main sources used for estimating morbidity data for this chapter are health insurance funds and hospital patient databases, which officially collect data for reimbursement or health statistics purpose. The two main sources, used for calculating both incidence and prevalence by most countries, are established as regular and mandatory collections managed by the government institutions. Also, no issues were raised regarding payment, thus new collections can be considered to have sustainability. Although some differences are present regarding the updating frequency – continuously, monthly, biannual or yearly – it is clear that data can be available to these countries for regular data collection.

Other sources chosen for calculating morbidity estimates for this chapter were causes of death registry (EE, SI), general hospital morbidity study (PL), report on human poisoning cases (HU – disease 60), reports on synoptic table for morbidity data of the family doctors (RO – for incidence by episode).

Other sources taken into consideration concern: private insurance companies (DE) whose data collection was part of a pilot project on a voluntary basis and has no sustainability guarantee and a pilot data collection (MT) for an database on injury, carried out in 2006 and expected to be repeated in 2009 in more hospitals.

Analysing the relevance of sustainability for incidence versus prevalence it is obvious that this element does not change the relevance of data, as long as the source is the same for incidence and for prevalence, as in most cases. Another observation is that sources managed by government and public administration are more likely to have a better sustainability. There are underreporting issues regarding the exclusion of some health care institutions, mostly private, that do not concluded contracts with these health insurance companies.

**Chapter XX. External causes of morbidity**

- Shortlist group A. All morbidity due to external causes (injuries, poisonings, etc.) (V01-Y89) – Incidence by episode and period prevalence
- Shortlist group B. Land transport accidents (V01-V89) – Incidence by episode and period prevalence
- Shortlist group C. Accidental falls (W00-W19) – Incidence by episode and period prevalence
- Shortlist group D. Accidental poisoning (X40-X49) – Incidence by episode and period prevalence
- Shortlist group E. Intentional self-harm (incl. suicidal attempt) (X60-X84) – Incidence by episode and period prevalence
- Shortlist group F. Assault (X85-Y09) – Incidence by episode and period prevalence
- Shortlist group G. Complications of medical and surgical care (Y40-Y66, Y69-Y84) – Incidence by episode and period prevalence

The data sources taken into consideration for morbidity estimation for external causes are either hospital information systems, injury registers or health insurance databases, collected regularly for statistical or reimbursement purposes. They are legal mandatory data collections for all countries that chose best estimates for this group. Data is updated regularly, either continuously, monthly or annually.

In the case of countries that did not provide data for this chapter, issues regarding sustainability and updating frequency regarded pilot surveys and no inclusion or incomplete collection of external cause codes in the regular collection of health data.
5 Coverage

Main questions addressed in this paragraph:

- Under-coverage and double counting of the population at risk and/or total population: what is the current situation?
- Have methods/actions been identified by piloting countries to solve the problem in the future?
- This aspect needs to be discussed also in light of the selected source, for example: for a specific disease maybe the "ideal" source cannot be used, but it has been identified by the participants and should be tested in the future. How many of such cases do we have?
- Is the under coverage/double counting issue more relevant for incidence or prevalence indicators?

Chapter I. Certain infectious and parasitic diseases

- Diseases 1. Tuberculosis (A15-A19, B90) – Incidence by episode and period prevalence
- Diseases 2. Sexually transmitted diseases (STD) (A50-A64) – Incidence by episode and period prevalence
- Diseases 3. Viral hepatitis (incl. hepatitis B) (B15-B19) – Incidence by episode and period prevalence
- Diseases 4. Human immunodeficiency virus disease (HIV/AIDS) (B20-B24, Z21) – Incidence by episode, period prevalence and point prevalence

Excluding DE and NL, the data on incidence and prevalence data on infectious diseases covers total population or almost total population (LT: 99% of inpatient cases, 90% of outpatient cases, 100% primary care cases) in all pilot study countries (Table 1 to Table 4). Double counting was raised by BE and PL. These countries have algorithms to remove double notifications for a single person, but this may not be complete due to missing unique personal identifier in the surveillance system. Under-coverage, especially for sexually transmitted infections is a larger problem, and specifically reported by BE, CY, PL, and RO. For Tuberculoses, BE and PL reported underreporting. The same was true for PL data for Hepatitis as well as for AT and PL data for Human immunodeficiency virus disease (HIV/AIDS).
Table 1: Coverage reported by pilot countries for Tuberculosis

<table>
<thead>
<tr>
<th>Country</th>
<th>Disease 1. Tuberculosis</th>
<th>Period prevalence</th>
<th>Incidence by episode</th>
<th>Incidence by person</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>Hospital discharges (only hospitalised cases)</td>
<td>Total population (A15-A19 only)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CY</td>
<td>Total population (A15-A19 only)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td>Total population (may also include ICD-10 J65: Pneumoconiosis associated with tuberculosis)</td>
<td>Total population (A15-A19 only)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons)</td>
<td>Total population (A15-A19 only)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FI</td>
<td>Total population (only infectious diseases listed in the legislation)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HU</td>
<td>In and outpatients (B90 not covered)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LT</td>
<td>Population covered by public health insurance (99 % of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
<td>Total population</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LV</td>
<td>Total population</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MT</td>
<td>No information</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td>Total population</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PL</td>
<td>Population covered by public health insurance (excluding primary health care)</td>
<td>Total population (possible underreporting)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RO</td>
<td>Total population</td>
<td></td>
<td></td>
<td>Total population</td>
</tr>
<tr>
<td>SI</td>
<td>Total population</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SK</td>
<td>Total population</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 2: Coverage reported by pilot countries for Sexually transmitted diseases (STD)

<table>
<thead>
<tr>
<th>Country</th>
<th>Disease 2. Sexually transmitted diseases (STD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Incidence by person</td>
</tr>
<tr>
<td>AT</td>
<td>Total population (A50-A54 only)</td>
</tr>
<tr>
<td>CY</td>
<td>Total population (A60 not included)</td>
</tr>
<tr>
<td>CZ</td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>Total population (A50-A56, A60-A64; possible under/over reporting)</td>
</tr>
<tr>
<td>FI</td>
<td>Total population (only infectious diseases listed in the legislation)</td>
</tr>
<tr>
<td>HU</td>
<td>Total population (possible over reporting)</td>
</tr>
<tr>
<td>LT</td>
<td>Population covered by public health insurance (99 % of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
</tr>
<tr>
<td>LV</td>
<td>Total population (different coverage according to type of hepatitis)</td>
</tr>
<tr>
<td>MT</td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td>2% of the total population</td>
</tr>
<tr>
<td>PL</td>
<td>Total population (A50-A56, A60, A63; under reporting by private health care providers)</td>
</tr>
<tr>
<td>RO</td>
<td>Total population (only A50-54, A56; under reporting)</td>
</tr>
<tr>
<td>SI</td>
<td></td>
</tr>
<tr>
<td>SK</td>
<td></td>
</tr>
</tbody>
</table>

### Table 3: Coverage reported by pilot countries for Viral hepatitis (incl. hepatitis B)

<table>
<thead>
<tr>
<th>Country</th>
<th>Disease 3. Viral hepatitis (incl. hepatitis B)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Period prevalence</td>
</tr>
<tr>
<td>AT</td>
<td>Hospital discharges (only hospitalised cases)</td>
</tr>
<tr>
<td>CY</td>
<td>Total population</td>
</tr>
<tr>
<td>CZ</td>
<td>Total population</td>
</tr>
<tr>
<td>EE</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons)</td>
</tr>
<tr>
<td>FI</td>
<td>Total population (only infectious diseases listed in the legislation)</td>
</tr>
<tr>
<td>HU</td>
<td>Population with at least one contact with GP (private or public)</td>
</tr>
<tr>
<td>LT</td>
<td>Population covered by public health insurance (99 % of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
</tr>
<tr>
<td>LV</td>
<td>Total population (different coverage according to type of hepatitis)</td>
</tr>
<tr>
<td>MT</td>
<td>No information</td>
</tr>
<tr>
<td>NL</td>
<td>2% of the total population</td>
</tr>
<tr>
<td>PL</td>
<td>Population covered by public health insurance (excluding primary health care)</td>
</tr>
<tr>
<td>RO</td>
<td>Family doctor users (over 90 % of population)</td>
</tr>
<tr>
<td>SI</td>
<td>Total population (possible under reporting)</td>
</tr>
<tr>
<td>SK</td>
<td></td>
</tr>
</tbody>
</table>
Table 4: Coverage reported by pilot countries for Human immunodeficiency virus disease (HIV/AIDS)

<table>
<thead>
<tr>
<th>Country</th>
<th>Disease 4. Human immunodeficiency virus disease (HIV/AIDS)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Point prevalence</td>
</tr>
<tr>
<td>AT</td>
<td>Total population (possible over reporting)</td>
</tr>
<tr>
<td>BE</td>
<td>Total population (residents and non-residents)</td>
</tr>
<tr>
<td>CY</td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td></td>
</tr>
<tr>
<td>FI</td>
<td></td>
</tr>
<tr>
<td>HU</td>
<td></td>
</tr>
<tr>
<td>LT</td>
<td>Total population (only infectious diseases listed in the legislation) (under reporting)</td>
</tr>
<tr>
<td>LV</td>
<td>Total population (different coverage according to type of hepatitis)</td>
</tr>
<tr>
<td>MT</td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td></td>
</tr>
<tr>
<td>PL</td>
<td></td>
</tr>
<tr>
<td>RO</td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td></td>
</tr>
<tr>
<td>SK</td>
<td></td>
</tr>
</tbody>
</table>

Chapter II. Neoplasms

- Diseases 5. All malignant neoplasms (C00-C97) – Incidence by person and period prevalence
- Diseases 6. Malignant neoplasm of oesophagus (C15) – Incidence by person and period prevalence
- Diseases 7. Malignant neoplasm of stomach (C16) – Incidence by person and period prevalence
- Diseases 8. Malignant neoplasm of colon, rectum and anus (C18-C21) – Incidence by person and period prevalence
- Diseases 9. Malignant neoplasm of trachea, bronchus and lung (C33, C34) – Incidence by person and period prevalence
- Diseases 10. Malignant melanoma of skin (C43) – Incidence by person and period prevalence
- Diseases 11. Mesothelioma (C45) – Incidence by person and period prevalence
- Diseases 12. Malignant neoplasm of breast (C50) – Incidence by person and period prevalence
- Diseases 13. Malignant neoplasm of cervix uteri (C53) – Incidence by person and period prevalence
- Diseases 14. Malignant neoplasm of uterus other than cervix (C54, C55) – Incidence by person and period prevalence
- Diseases 15. Malignant neoplasm of ovary (C56) – Incidence by person and period prevalence
- Diseases 16. Malignant neoplasm of prostate (C61) – Incidence by person and period prevalence
- Diseases 17. Malignant neoplasm of bladder (C67) – Incidence by person and period prevalence
- Diseases 18. Leukaemia and other malignant neoplasms of lymphoid and haematopoietic tissue (C81-C96) – Incidence by person and period prevalence
Cancer Registers

Cancer registers cover whole population in the majority countries (Table 5). There are a few exceptions. In DE differences exist in the coverage of the Cancer Registries among registration areas; the German Childhood Cancer Register covers 46% target population. In CY, only Government controlled area is included. In Poland the undercoverage is known to be around 17%. In NL, the cancer register, suitable for prevalence calculation, includes only one regional centre with three million population. The current solution for NL implies extrapolation of the estimates from the particular region to the whole population despite raised concerns about lack of representativeness. But there are no proposals for other kind of solution in the future.

No country reported double counting of risk population as an important issue.

Other data sources

Problems with under-coverage are identified if the data source is the health insurance data bases (DE, EE). By definition, they cover only insured population (private insurance in DE, public in EE) and emergency care for non-insured persons (EE). Solutions for this problem are not proposed in EE. DE has used combination of several data sources to get the best estimates.

If the health interview survey is the data source for prevalence estimates (BE, CY), a probability sample from the population could lead to the estimate representing whole population; although, the response bias can affect validity.

Table 5: Coverage reported by pilot countries for All malignant neoplasms (cancer)

<table>
<thead>
<tr>
<th>Country</th>
<th>Disease 5. All malignant neoplasms (cancer)</th>
<th>Incidence by person</th>
<th>Period prevalence</th>
<th>Incidence by episode</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>Cases reported in hospitals</td>
<td>Total population</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BE</td>
<td></td>
<td>Total population</td>
<td>Total population</td>
<td>Total population</td>
</tr>
<tr>
<td>CY</td>
<td>Government controlled area</td>
<td>Total permanent population (Survey)</td>
<td>Total permanent population (Survey)</td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td>Total population</td>
<td>Populatoin covered by public health insurance (+ emergency health care services provided to uninsured persons)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>95% of the population (in 2000-2010 linkage with death causes registry wasn't possible: approx. 5% new cases were lost)</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FI</td>
<td>Total population</td>
<td>Total population</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HU</td>
<td>Total population</td>
<td>Total population</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LT</td>
<td>Total population (under reporting)</td>
<td>Total population</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LV</td>
<td>Population treated in the public sector</td>
<td>Total population</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MT</td>
<td>Total population</td>
<td>One regional centre (3 million people) (hospitalized cases or patients whose disease has been confirmed through tissue investigation) (excluding ICD-codes C77 through C79)</td>
<td>95% of the population (hospitalized cases or patients whose disease has been confirmed through tissue investigation) (excluding ICD-codes C77 through C79)</td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td>Total population</td>
<td>Total population</td>
<td>Total population</td>
<td>Total population</td>
</tr>
<tr>
<td>PL</td>
<td>Total population</td>
<td>Total population</td>
<td>Total population</td>
<td>Total population</td>
</tr>
<tr>
<td>RO</td>
<td>Total population</td>
<td>Total population</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td>Total population</td>
<td>Total population</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SK</td>
<td>Total population</td>
<td>Total population</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Chapter IV. Endocrine, nutritional and metabolic diseases

- Diseases 19. Diabetes mellitus (E10-E14) – Incidence by person, period prevalence and point prevalence

The most of countries stated that using data health care or insurance they could calculate treated diabetes patients rather than the total cases of diabetes. From this point of view the coverage health care data will never be full (Table 6).

But even from the point of view of diabetes cases registered by health care countries have reported many problems. They could be grouped into 4 groups, showing sometimes some overlapping characteristics:

1. Low population coverage due to voluntary data collection: NL GP’s database – 1.5% of population.
2. Specific age group covered by the source: AT HIS – 15 years and old, HU GP’s data – 18+, BE Diabetes registry – up to 40 years old.
3. Specific group of patient covered: GP’s or primary health care data (incidence – NL, PL, period prevalence – HU, NL, PL, point prevalence - NL), out-patient data (incidence – CZ, SK, point prevalence – CZ, SK), hospital data (incidence – MT, period prevalence – SI), patients with medication (incidence – BE, FI, period prevalence – BE, FI, RO). The question is how big could be the influence of each group to data. Certainly, hospital data seems to be not the best source for diabetes as it is treated mostly in out-patient care. GP’s or primary health care or out-patient care data could be quite complete as most of the diabetes cases are treated in primary or out-patient care level. Patient with medication could not fully represent the diabetes cases as part of diabetes is treated by diet without medication.
4. Insurance data could be restricted to insured population, very often excluding private health care institutions or paid treatment. The coverage in this case depends very much on the health insurance system in the country. Countries using insurance data stated quite high level of population coverage.
### Table 6: Coverage reported by pilot countries for diabetes mellitus

<table>
<thead>
<tr>
<th>Country</th>
<th>Disease 19. Diabetes mellitus</th>
<th>Incidence by person</th>
<th>Period prevalence</th>
<th>Point prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>Residents aged ≥ 15 (Survey)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BE</td>
<td>Residents aged &lt; 40 (under reporting: between 30% and 90% of population according to regions)</td>
<td>Population with reimbursed medication and reimbursed medical acts</td>
<td>Total population (Survey) + Population with reimbursed medication and reimbursed medical acts</td>
<td></td>
</tr>
<tr>
<td>CY</td>
<td>Total permanent population (except institutionalized population) (Survey)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td>Outpatients</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FI</td>
<td>Population with reimbursed medication and disability allowances</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HU</td>
<td>Population with at least one contact with GP (around 95% of the population), aged ≥ 18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LT</td>
<td>Population covered by public health insurance (99 % of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LV</td>
<td>Total population (possible under reporting)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MT</td>
<td>No information</td>
<td>No information (Survey)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td>1% of the population</td>
<td>3% of the population</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PL</td>
<td>Population with at least one contact with GP (possible over reporting)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RO</td>
<td>Persons with drug treatment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td>Inpatients, outpatients and primary health care users</td>
<td>Population aged 25-64 (Survey)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SK</td>
<td>Outpatients</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Double counting was detected only by Poland both for incidence and period prevalence indicators as the country is using summary reports which do not allow checking of duplication. Most of the countries have reported underestimation of diabetes cases (undiagnosed, untreated, unregistered).

Many countries stated that they are trying to develop or to expand the new data sources such as outpatient and primary care databases as well as to use health insurance databases as the new opportunity for collecting morbidity data. In the future introduction of e-health may enable to combine different health care sectors and increase the coverage of data (especially primary health care, private health care sector). Countries are trying to implement general composite keys (personal ID numbers or personal insurance numbers) to solve linkage problem.
Chapter V. Mental and behavioural disorders

- Diseases 20. Dementia (incl. Alzheimer's disease) (F00-F03, G30) – Period prevalence
- Diseases 21. Mental and behavioural disorders due to use of alcohol (incl. alcohol dependence) (F10) – Period prevalence
- Diseases 22. Mental and behavioural disorders due to use of psychoactive substances other than alcohol and tobacco (including drug dependence) (F11-F16, F18, F19) – Period prevalence
- Diseases 23. Schizophrenia (F20-F29) – Period prevalence
- Diseases 24. Depression and other affective disorders (F30-F39) – Period prevalence
- Diseases 25. Anxiety disorders (F40, F41) – Period prevalence
- Diseases 26. Eating disorders (F50) – Period prevalence

- Disease 20. Dementia (incl. Alzheimer's disease) (F00-F03, G30)

For countries which used insurance data, the problem of population coverage mostly reflects the insurance coverage which depends very much on the health insurance system in the country. Countries using insurance data stated quite high level of population coverage. Only CZ reported 65% coverage, NL GP’s database - 1.5% of population (Table 7).

For the countries using statistical data source different group of patients is covered: hospital cases (AT, RO, SI), hospital cases and out-patient (HU), GP’s data (NL), out-patient (SK). In SK if the patient had F00-F03 concurrently with G30, he was counted twice.

The information on patients living in social institutions is important for patients with dementia and Alzheimer diseases. Very often those patients are not included in any databases or HIS, therefore prevalence of dementia (incl. Alzheimer's disease) could be underestimated.

- Disease 21. Mental and behavioural disorders due to use of alcohol (incl. alcohol dependence) (F10)
- Disease 22. Mental and behavioural disorders due to use of psychoactive substances other than alcohol and tobacco (incl. drug dependence) (F11-F16, F18, F19)

For countries which used insurance data, the problem of population coverage mostly reflects the insurance coverage which depends very much on the health insurance system in the country. Countries using insurance data stated quite high level of population coverage. Only CZ reported 65% coverage. In NL for HIS coverage is 0.06% of population aged 18-64 years old (Table 7).

For the countries using statistical data source different group of patients is covered: hospital cases (AT, PL, RO, SI), out-patient (SK), primary health care data excluded in FI, some drug and alcohol abuse health care institutions are excluded in LT.

- Disease 23. Schizophrenia (F20-F29)
- Disease 24. Depression and other affective disorders (F30-F39)
- Disease 25. Anxiety disorders (F40, F41)
- Disease 26. Eating disorders (F50)

For countries which used insurance data, the problem of population coverage mostly reflects the insurance coverage which depends very much on the health insurance system in the country. Countries using insurance data stated quite high level of population coverage. Only CZ reported 65% coverage, NL GP’s database – 1.5-2% of population (Table 7).

For the countries using statistical data source different group of patients is covered: hospital cases (AT, RO, SI), hospital cases and out-patient (HU), GP’s data (NL), out-patient (SK). In SK in case of a patient having more than one mental diagnosis, he was counted once, namely with the most serious diagnosis.
<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>Hospital discharges (only hospitalised cases)</td>
<td>Total permanent population</td>
<td>Hospital discharges (only hospitalised cases)</td>
<td>Total permanent population</td>
<td>Hospital discharges (only hospitalised cases)</td>
<td>Total permanent population</td>
<td>Hospital discharges (only hospitalised cases)</td>
</tr>
<tr>
<td>CY</td>
<td>Population covered by public health insurance (65% of the total population) (missing some data from GP services)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FI</td>
<td>Hospital discharges (except welfare institutions and primary health care)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HU</td>
<td>Hospital discharges (total), outpatients (good coverage, with some exceptions)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LT</td>
<td>Population covered by public health insurance (99% of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LV</td>
<td>Patients of health care institutions of the State Mental Health Agency (± 1/3 of all patients)</td>
<td>Patients registered in the Register of Patients with Addictions (under representation of patients aged ≤ 18 and patients of private health care institutions)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MT</td>
<td>Unclear</td>
<td>Unclear</td>
<td>Unclear</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td>1.5% of the population</td>
<td>0.06% of the population (Survey, respondents aged 18-65)</td>
<td>0.5% of the population</td>
<td>2% of the population</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PL</td>
<td>Population covered by public health insurance (excluding primary health care) and hospital cases (F00-F03)</td>
<td>Hospital discharges (only hospitalised cases)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Population covered by public health insurance (excluding primary health care)</td>
</tr>
<tr>
<td>RO</td>
<td>Population covered by public health insurance (only hospital cases)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td>In and outpatients</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SK</td>
<td>Outpatients</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Table 7: Coverage reported by pilot countries for Dementia (incl. Alzheimer's disease), Mental and behavioural disorders due to use of alcohol (incl. alcohol dependence), Mental and behavioural disorders due to use of psychoactive substances other than alcohol and tobacco (incl. drug dependence), Schizophrenia, Depression and other affective disorders, Anxiety disorders and Eating disorders.
Chapter VI. Diseases of the nervous system

- Diseases 27. Parkinson’s disease (G20) – Period prevalence
- Diseases 28. Multiple sclerosis (G35) – Period prevalence
- Diseases 29. Epilepsy (G40, G41) – Period prevalence
- Diseases 30. Migraine and other headache syndromes (G43, G44) – Period prevalence

For countries which used insurance data, the problem of population coverage mostly reflects the insurance coverage which depends very much on the health insurance system in the country. Countries using insurance data stated quite high level of population coverage. Only CZ reported 65% coverage, NL GP’s database – 1.5-3% of population (Table 8).

For the countries using statistical data source different group of patients is covered: hospital cases (AT, RO, SI), GP’s data (NL), hospital cases and out-patient (PL), out-patient (SK). In SK if patient had more than one neurological diagnosis, he was counted once namely with the most serious one. FI used hospital data for migraine and other headache syndromes.

For multiple sclerosis for HU GP’s data covers age 18+.

Table 8: Coverage reported by pilot countries for period prevalence for Parkinson’s disease, Multiple sclerosis, Epilepsy and Migraine and other headache syndromes

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>Hospital discharges (only hospitalised cases)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BE</td>
<td>Population with reimbursed medical acts and reimbursed medication</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td>Population covered by public health insurance (65% of the total population) (missing some data from GP services)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FI</td>
<td>Population with reimbursed medication and disability allowances</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HU</td>
<td>Hospital discharges (total), out-patients (good coverage, with some exceptions)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LT</td>
<td>Population covered by public health insurance (99 % of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LV</td>
<td>Total population</td>
<td></td>
<td></td>
<td>No information (Survey)</td>
</tr>
<tr>
<td>MT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td>3% of the population</td>
<td>1.5% of the population</td>
<td>2% of the population</td>
<td></td>
</tr>
<tr>
<td>PL</td>
<td>Population covered by public health insurance (excluding primary health care)</td>
<td>Total population (except institutionalized population) (Survey)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RO</td>
<td>Population covered by public health insurance (only hospital cases)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td>In and outpatients</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SK</td>
<td>Outpatients</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Chapter VII. Diseases of the eye and adnexa**

- Diseases 31. Cataract (H25-H28) – Period prevalence
- Diseases 32. Glaucoma (H40, H42) – Period prevalence

Generally all countries had some problems with coverage.

Majority of data sources were chosen with coverage of total/almost total population. Few countries have used samples. HIS (AT, BE, CY, MT) was realized using representative sample for total population. NL computed data from small sample (1.5-2%) of total population. CZ used data from one health insurance which covered 65% of the population, but did not explain if coverage was improved by statistical methods (Table 9).

The biggest deficiency of data coverage was missing outpatient data (AT, RO). Hospital database does not seem to be a reliable source for cataract and glaucoma because most of the patients are diagnosed and treated outside of the hospitals.

Missing primary care information (CZ, FI, PL) could also cause data unreliability.

For countries which used the public health insurance database often only insured population was covered. Some approximate proportion for hospital, outpatient specialist or primary care coverage has been given by countries (HU nearly total for hospital care, LT 99% coverage for inpatients, 90% for outpatients, 100% of primary care visits), but not for separate diagnoses.

The second common problem for insurance data is missing data from providers without contract (EE, HU, LT, PL), but only PL mentioned that the treatment of ophthalmologic diseases was often offered in private health care. In the future introduction of national electronic patient journal system may widen its coverage to private health care services.

NL did not include people living in nursing homes.

In HIS people living in institutions were excluded, and that could cause underreporting as well.

In HIS people younger than 15 years were excluded, but it is not likely it brought about a large bias. CZ does not report H28 – Cataract and other disorders of lens in diseases classified elsewhere.
Table 9: Coverage reported by pilot countries for period prevalence for Cataract and Glaucoma

<table>
<thead>
<tr>
<th>Country</th>
<th>31. Cataract</th>
<th>32. Glaucoma</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>Hospital discharges (only hospitalised cases)</td>
<td>No information</td>
</tr>
<tr>
<td>CY</td>
<td>Total permanent population (except institutionalized population) (Survey)</td>
<td>No information</td>
</tr>
<tr>
<td>CZ</td>
<td>Population covered by public health insurance (65% of the total population) (missing some data from GP services)</td>
<td>No information</td>
</tr>
<tr>
<td>EE</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons)</td>
<td>No information</td>
</tr>
<tr>
<td>FI</td>
<td>Hospital discharges and Population with disability allowances (excluding patients treated in primary care only)</td>
<td>Population with reimbursed medication and disability allowances (excluding patients treated in primary care only)</td>
</tr>
<tr>
<td>HU</td>
<td>Hospital discharges (total), out-patients (good coverage, with some exceptions)</td>
<td>No information</td>
</tr>
<tr>
<td>LT</td>
<td>Population covered by public health insurance (99 % of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
<td>No information</td>
</tr>
<tr>
<td>LV</td>
<td>Population covered by public health insurance</td>
<td>No information (Survey)</td>
</tr>
<tr>
<td>MT</td>
<td>No information (Survey)</td>
<td>No information (Survey)</td>
</tr>
<tr>
<td>NL</td>
<td>2% of the population</td>
<td>1.5% of the population</td>
</tr>
<tr>
<td>PL</td>
<td>Population covered by public health insurance (excluding primary health care)</td>
<td>No information</td>
</tr>
<tr>
<td>RO</td>
<td>Population covered by public health insurance (only hospital cases)</td>
<td>No information</td>
</tr>
<tr>
<td>SI</td>
<td>Outpatients and primary health care users</td>
<td>No information</td>
</tr>
<tr>
<td>SK</td>
<td>Surgery patients</td>
<td>No information</td>
</tr>
</tbody>
</table>

Chapter VIII. Diseases of the ear and mastoid process

- Diseases 33. Hearing loss (H90, H91) – Period prevalence

Few countries have used samples. HIS was realized using representative sample for total population. NL used sample from general practitioners patients (1.5% of population) (Table 10).

The biggest deficiency of data coverage for hearing loss was missing outpatient data (AT, RO, SK).

Missing primary care information (FI, PL) could also cause data unreliability because of underreporting.

Countries which used the public health insurance database for data computing mentioned that only insured population was covered. Some approximate proportion for hospital, outpatient specialist or primary care coverage has been given by countries, but not for separate diagnoses.

The second common problem for insurance data is missing data from providers without contract (EE, HU, LT, PL).

NL did not cover people living in nursing homes.

In HIS people living in institutions (CZ, MT) were excluded and the population under 15 years either.

For NL H83.3 Acoustic trauma was included, leading to an overestimation of 9% in men and 5% in women.
### Table 10: Coverage reported by pilot countries for Hearing loss

<table>
<thead>
<tr>
<th>Country</th>
<th>Disease 33. Hearing loss</th>
<th>Period prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>Hospital discharges (only hospitalised cases)</td>
<td></td>
</tr>
<tr>
<td>CY</td>
<td>Population aged ≥ 15 (Survey)</td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons)</td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>Hospital discharges and Population with disability allowances (excluding patients treated in primary care only)</td>
<td></td>
</tr>
<tr>
<td>FI</td>
<td>Hospital discharges (total), out-patients (good coverage, with some exceptions)</td>
<td></td>
</tr>
<tr>
<td>HU</td>
<td>Population covered by public health insurance (99 % of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
<td></td>
</tr>
<tr>
<td>LV</td>
<td>No information (Survey)</td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td>1.5% of the population</td>
<td></td>
</tr>
<tr>
<td>PL</td>
<td>Population covered by public health insurance (excluding primary health care)</td>
<td></td>
</tr>
<tr>
<td>RO</td>
<td>Population covered by public health insurance (only hospital cases)</td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td>Outpatients</td>
<td></td>
</tr>
<tr>
<td>SK</td>
<td>Inpatients</td>
<td></td>
</tr>
</tbody>
</table>

**Chapter IX. Diseases of the circulatory system**

- Diseases 34. Hypertensive diseases (I10-I13, I15) – Period prevalence
- Diseases 35. Ischaemic heart diseases (I20-I25) – Period prevalence
- Diseases 36. Acute myocardial infarction (I21, I22) – Incidence by person and period prevalence
- Diseases 37. Heart failure (I50) – Period prevalence
- Diseases 38. Cerebrovascular diseases (I60-I69) – Incidence by person and period prevalence

Most sources appeared to have complete (or almost complete) national coverage, although for some countries this was reported as full coverage of the total insured population. It is often unclear though what proportion of the population is not insured, and therefore excluded from the data (Table 11 to Table 13).

The data from the Czech Republic is sourced from the “Annual report”, from which no further information were provided by the pilot country. Regarding Heart failure data from an insurance information system (General Health Insurance Company) are provided. However this source only includes people who are insured with the General Health Insurance Company, which is around 65% of the total population.

The GP information system being used in the Netherlands only accounts for a small proportion of the population (between 1 and 2%, depending on the registrations included). Indeed, in The Netherlands GP data are not collected in a central database. In General Practitioner Registration Networks (GPRNs) GPs from different practices are combined in a network. The databases (including LINH covering 2% of the population, CMR Nijmegen covering 0.08%, CMR sentinel covering 0.8%, RNH covering 0.5%, RNH-LEO covering 0.2, and the Transition project covering 0.08% (Note: apart from LINH and CMR – sentinels, no % of the population are mentioned; only number of patients that tentatively were converted to %, using the ratio % over number of patients of LINH and CMR sentinel)) contain coded information about symptoms and diagnoses, treatments, drug prescriptions, and patient characteristics. For each disease a choice has been made within the GPRNs to select the optimal base(s) to obtain the best estimates. Using a regression model, incidence and prevalence were estimated as a function of age, sex and interactions between these variables. The possible systematic differences between the GPRNs registrations were taken into account by including a GPRN identifier as a random intercept. Furthermore, regarding the LINH registration, in some cases one-year data, two-year data or three-year data are used and correction is made for loss to follow-up and other potential biases.
With the exception of the Netherlands, there were no indications whether any country had adjusted for incomplete coverage, or taken measures to solve the problem.

**Table 11**: Coverage reported by pilot countries for period prevalence for Hypertensive diseases, Ischaemic heart diseases and Heart failure

<table>
<thead>
<tr>
<th>Country</th>
<th>34. Hypertensive diseases</th>
<th>35. Ischaemic heart diseases</th>
<th>37. Heart failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>Hospital discharges</td>
<td>Hospital discharges (only hospitalised cases)</td>
<td></td>
</tr>
<tr>
<td>CY</td>
<td>Total permanent population (Survey)</td>
<td></td>
<td>Population covered by public health insurance (65% of the total population) (missing some data from GP services)</td>
</tr>
<tr>
<td>CZ</td>
<td>No information</td>
<td></td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons)</td>
</tr>
<tr>
<td>EE</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons)</td>
<td>Population with reimbursed medication and disability allowances</td>
<td></td>
</tr>
<tr>
<td>FI</td>
<td>Population with at least one contact with GP (around 95% of the population)</td>
<td>Hospital discharges (total), out-patients (good coverage, with some exceptions)</td>
<td></td>
</tr>
<tr>
<td>HU</td>
<td>Population covered by public health insurance (99 % of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LT</td>
<td>Population covered by public health insurance (99 % of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LV</td>
<td>Population covered by public health insurance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MT</td>
<td>No information (Survey)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td>0,5% of the population</td>
<td>1,5% of the population</td>
<td>3% of the population</td>
</tr>
<tr>
<td>PL</td>
<td>Total population (Survey)</td>
<td>Population covered by public health insurance (excluding primary health care)</td>
<td></td>
</tr>
<tr>
<td>RO</td>
<td>Population covered by public health insurance (only hospital cases)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td>Inpatients, outpatients and primary health care users</td>
<td>In and outpatients</td>
<td></td>
</tr>
<tr>
<td>SK</td>
<td>Inpatients</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Table 12**: Coverage reported by pilot countries for Acute myocardial infarction

<table>
<thead>
<tr>
<th>Country</th>
<th>Disease 36. Acute myocardial infarction</th>
<th>Period prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>Incidence by person</td>
<td>Hospital discharges</td>
</tr>
<tr>
<td>BE</td>
<td>Total population</td>
<td></td>
</tr>
<tr>
<td>CY</td>
<td>Total permanent population (Survey)</td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td>No information</td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons) + Total population</td>
<td></td>
</tr>
<tr>
<td>FI</td>
<td>Hospital discharges and Population with reimbursed medication and disability allowances (excluding patients treated in primary care only)</td>
<td></td>
</tr>
<tr>
<td>HU</td>
<td>Hospital discharges (total), out-patients (good coverage, with some exceptions)</td>
<td></td>
</tr>
<tr>
<td>LT</td>
<td>Population covered by public health insurance (99 % of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
<td></td>
</tr>
<tr>
<td>LV</td>
<td>Population covered by public health insurance</td>
<td></td>
</tr>
<tr>
<td>MT</td>
<td>No information (Survey)</td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td>1% of the population</td>
<td>Total population</td>
</tr>
<tr>
<td>PL</td>
<td>Total population</td>
<td>Population covered by public health insurance (excluding primary health care)</td>
</tr>
<tr>
<td>RO</td>
<td>Family doctor users (over 90 % of population)</td>
<td>Population covered by public health insurance (only hospital cases)</td>
</tr>
<tr>
<td>SI</td>
<td>Inpatients + Total population</td>
<td>In and outpatients</td>
</tr>
<tr>
<td>SK</td>
<td>Inpatients</td>
<td></td>
</tr>
</tbody>
</table>
Table 13: Coverage reported by pilot countries for Cerebrovascular diseases

<table>
<thead>
<tr>
<th>Country</th>
<th>Disease 38. Cerebrovascular diseases</th>
<th>Incidence by person</th>
<th>Period prevalence</th>
<th>Incidence by episode</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>Hospital discharges</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CY</td>
<td>Total permanent population (Survey)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td>No information</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons) + Total population</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FI</td>
<td>Hospital discharges and Population with disability allowances (excluding patients treated in primary care only)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HU</td>
<td>Hospital discharges (total), out-patients (good coverage, with some exceptions)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LT</td>
<td>Population covered by public health insurance (99 % of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LV</td>
<td>Population covered by public health insurance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MT</td>
<td>No information</td>
<td>No information (Survey)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td>1% of the population</td>
<td>1.5% of the population</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PL</td>
<td>Total population</td>
<td>Population covered by public health insurance (excluding primary health care)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RO</td>
<td>Population covered by public health insurance (only hospital cases)</td>
<td>Family doctor users (over 90 % of population)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td>In and outpatients</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SK</td>
<td>Inpatients</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Chapter X. Diseases of the respiratory system

- Diseases 39. Influenza (J09-J11) – Incidence by episode
- Diseases 40. Pneumonia (J12-J18) – Incidence by episode and period prevalence
- Diseases 41. Asthma (J45, J46) – Incidence by person and period prevalence
- Diseases 42. Chronic lower respiratory disease (J40-J44, J47) – Incidence by person and period prevalence

Most sources appeared to have complete (or almost complete) national coverage, although for some countries this was reported as full coverage of the total insured population. It is often unclear though what proportion of the population is not insured, and therefore excluded from the data (Table 14 to Table 17).

The data from the Czech Republic is sourced from the “Annual report”, from which we have no further information and which tentatively I included in the health statistics group of data sources.

The GP information system being used in the Netherlands only accounts for a small proportion of the population, however national data were extrapolated using various statistical techniques (see above Chapter X Diseases of the circulatory system).
With the exception of the Netherlands, there were no indications whether any country has adjusted for incomplete coverage, or taken measures to solve the problem.

Table 14: Coverage reported by pilot countries for Influenza

<table>
<thead>
<tr>
<th>Country</th>
<th>Disease 39. Influenza Incidence by episode</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td></td>
</tr>
<tr>
<td>CY</td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>Total population</td>
</tr>
<tr>
<td>FI</td>
<td>Hospital discharges (excluding patients treated in primary care only)</td>
</tr>
<tr>
<td>HU</td>
<td></td>
</tr>
<tr>
<td>LT</td>
<td>Population covered by public health insurance (99% of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
</tr>
<tr>
<td>LV</td>
<td>Unknown (voluntary reports)</td>
</tr>
<tr>
<td>MT</td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td>0.8% of the population</td>
</tr>
<tr>
<td>PL</td>
<td>Total population</td>
</tr>
<tr>
<td>RO</td>
<td>Family doctor users (over 90% of population)</td>
</tr>
<tr>
<td>SI</td>
<td>Total population</td>
</tr>
<tr>
<td>SK</td>
<td>Inpatients</td>
</tr>
</tbody>
</table>
**Table 15:** Coverage reported by pilot countries for Pneumonia

<table>
<thead>
<tr>
<th>Country</th>
<th>Disease 40. Pneumonia</th>
<th>Period prevalence</th>
<th>Incidence by episode</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>Hospital discharges (only hospitalised cases)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CY</td>
<td>Population covered by public health insurance (65% of the total population) (missing some data from GP services)</td>
<td>No information</td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons)</td>
<td>No information</td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>Population covered by public health insurance (including emergency health care services provided to uninsured persons)</td>
<td>No information</td>
<td></td>
</tr>
<tr>
<td>FI</td>
<td>Hospital discharges (excluding patients treated in primary care only)</td>
<td>No information</td>
<td></td>
</tr>
<tr>
<td>HU</td>
<td>Hospital discharges (total), out-patients (good coverage, with some exceptions)</td>
<td>No information</td>
<td></td>
</tr>
<tr>
<td>LT</td>
<td>Population covered by public health insurance (99% of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
<td>No information</td>
<td></td>
</tr>
<tr>
<td>LV</td>
<td>Population covered by public health insurance</td>
<td>No information</td>
<td></td>
</tr>
<tr>
<td>MT</td>
<td>Population covered by public health insurance</td>
<td>No information</td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td>2% of the population</td>
<td>1% - 2% of the population</td>
<td></td>
</tr>
<tr>
<td>PL</td>
<td>Population covered by public health insurance (only hospital cases)</td>
<td>Family doctor users (over 90% of population)</td>
<td></td>
</tr>
<tr>
<td>RO</td>
<td>Population covered by public health insurance (only hospital cases)</td>
<td>Family doctor users (over 90% of population)</td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td>In patients, outpatients and primary health care users</td>
<td>No information</td>
<td></td>
</tr>
<tr>
<td>SK</td>
<td>Inpatients</td>
<td>No information</td>
<td></td>
</tr>
</tbody>
</table>
### Table 16: Coverage reported by pilot countries for Asthma

<table>
<thead>
<tr>
<th>Country</th>
<th>Disease 41. Asthma</th>
<th>Disease 42. Asthma</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Incidence by person</td>
<td>Period prevalence</td>
</tr>
<tr>
<td>AT</td>
<td>Hospital discharges</td>
<td></td>
</tr>
<tr>
<td>CY</td>
<td>Total permanent population (Survey)</td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td>No information</td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons)</td>
<td></td>
</tr>
<tr>
<td>FI</td>
<td>Population with reimbursed medication</td>
<td></td>
</tr>
<tr>
<td>HU</td>
<td>Hospital discharges (total), out-patients (good coverage, with some exceptions)</td>
<td></td>
</tr>
<tr>
<td>LT</td>
<td>Population covered by public health insurance (99% of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
<td></td>
</tr>
<tr>
<td>LV</td>
<td>Population covered by public health insurance</td>
<td></td>
</tr>
<tr>
<td>MT</td>
<td>No information (Survey)</td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td>1% of the population</td>
<td></td>
</tr>
<tr>
<td>PL</td>
<td>Total population (Survey)</td>
<td></td>
</tr>
<tr>
<td>RO</td>
<td>Population covered by public health insurance (only hospital cases)</td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td>In patients, outpatients and primary health care users</td>
<td></td>
</tr>
<tr>
<td>SK</td>
<td>No information</td>
<td>Inpatients</td>
</tr>
</tbody>
</table>
Table 17: Coverage reported by pilot countries for Chronic lower respiratory diseases other than asthma (incl. COPD)

<table>
<thead>
<tr>
<th>Country</th>
<th>Disease 42. Chronic lower respiratory diseases other than asthma (incl. COPD)</th>
<th>Incidence by person</th>
<th>Period prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td></td>
<td>Hospital discharges</td>
<td></td>
</tr>
<tr>
<td>CY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td></td>
<td>No information</td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FI</td>
<td></td>
<td>Population with reimbursed medication</td>
<td></td>
</tr>
<tr>
<td>HU</td>
<td>Population covered by public health insurance (with at least one contact with GP, aged ≥ 18)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LT</td>
<td>Population covered by public health insurance (99 % of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LV</td>
<td></td>
<td>Population covered by public health insurance</td>
<td></td>
</tr>
<tr>
<td>MT</td>
<td></td>
<td>No information (Survey)</td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td>1% - 2% of the population</td>
<td>3% of the population</td>
<td></td>
</tr>
<tr>
<td>PL</td>
<td></td>
<td>Population covered by public health insurance (excluding primary health care)</td>
<td></td>
</tr>
<tr>
<td>RO</td>
<td>Family doctor users (over 90% of population)</td>
<td>Population covered by public health insurance (only hospital cases)</td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SK</td>
<td></td>
<td>No information</td>
<td>Inpatients</td>
</tr>
</tbody>
</table>

Chapter XI. Diseases of the digestive system

- Diseases 43. Gastric and duodenal ulcer (peptic ulcer) (K25-K28) – Period prevalence
- Diseases 44. Alcoholic liver disease (K70) – Period prevalence
- Diseases 45. Diseases of liver other than alcoholic (K71-K77) – Period prevalence
- Diseases 46. Cholelithiasis (K80) – Incidence by person and period prevalence

Majority of data sources were chosen with coverage of the total/almost total population (Table 18 and Table 19). HIS was realized using representative sample for total population.

NL used small sample (1.5-3%) from general practitioners’ patients for peptic ulcer and cholelithiasis.

CZ used data from one health insurance which covered 65% of the population (no explanations were given for algorithms).

Countries which used the public health insurance database for data computing mentioned that only insured population was covered. Some approximate proportion for hospital, outpatient specialist or primary care coverage has been given by countries, but not for separate diagnoses.

Secondly data from providers without contract were missing (EE, LV, LT, PL). It was not recorded how missing information influenced to the results. Countries have not reported diseases of digestive system as a disease often treated by private doctors.

Some health insurance databases covered inpatient, outpatient specialist and primary care (DE, EE, LT). Some of them did not cover primary care (CZ, LV, PL) and RO collected only hospital discharges data paid by DRG.
For hospital discharges data AT included only inpatient cases, SI inpatients and day care, FI inpatient and outpatient cases. For NL on private and long term hospitals were excluded.

In HIS people living in institutions were excluded and the population under 15 years either.

NL reported under coverage of people living in nursing homes when general practitioners database was used for peptic ulcer and cholelithiasis.

**Table 18:** Coverage reported by pilot countries for period prevalence for Gastric and duodenal ulcer (peptic ulcer), Alcoholic liver disease and Diseases of liver other than alcoholic

<table>
<thead>
<tr>
<th>Country</th>
<th>43. Gastric and duodenal ulcer (peptic ulcer)</th>
<th>44. Alcoholic liver disease</th>
<th>45. Diseases of liver other than alcoholic</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>Hospital discharges</td>
<td>Hospital discharges (only hospitalised cases)</td>
<td></td>
</tr>
<tr>
<td>CY</td>
<td>Total permanent population</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td>Population covered by public health insurance (65% of the total population) (missing some data from GP services)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FI</td>
<td>Hospital discharges (excluding patients treated in primary care only)</td>
<td>Hospital discharges and Population with disability allowances (excluding patients treated in primary care only)</td>
<td></td>
</tr>
<tr>
<td>HU</td>
<td>Population with at least one contact with GP (around 95% of the population)</td>
<td>Population with at least one contact with GP, aged ≥ 18 (possible underestimation)</td>
<td>Hospital discharges (total), outpatients (good coverage, with some exceptions)</td>
</tr>
<tr>
<td>LT</td>
<td>Population covered by public health insurance (99% of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LV</td>
<td>Population covered by public health insurance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MT</td>
<td>No information (Survey)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td>3% of the population</td>
<td>Hospital discharges (excluding epilepsy clinics, long-stay centres for rehabilitation and asthma treatment, private clinics, day patient care for childbirth, psychiatric treatment and rehabilitation treatment)</td>
<td></td>
</tr>
<tr>
<td>PL</td>
<td>Population covered by public health insurance (excluding primary health care)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RO</td>
<td>Population covered by public health insurance (only hospital cases)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td>In and outpatients</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SK</td>
<td>Inpatients</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

46
Table 19: Coverage reported by pilot countries for Cholelithiasis

<table>
<thead>
<tr>
<th>Country</th>
<th>Disease 46. Cholelithiasis</th>
<th>Incidence by person</th>
<th>Period prevalence</th>
<th>Incidence by episode</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>Hospital discharges (only hospitalised cases)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CY</td>
<td>Population covered by public health insurance (65% of the total population) (missing some data from GP services)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>Hospital discharges (excluding patients treated in primary care only)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FI</td>
<td>Hospital discharges (total), out-patients (good coverage, with some exceptions)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HU</td>
<td>Population covered by public health insurance (99 % of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LT</td>
<td>Population covered by public health insurance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LV</td>
<td>No information</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MT</td>
<td>2% of the population</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PL</td>
<td>Population covered by public health insurance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RO</td>
<td>Population covered by public health insurance (only hospital cases)</td>
<td></td>
<td></td>
<td>Family doctor users (over 90 % of population)</td>
</tr>
<tr>
<td>SI</td>
<td>In and outpatients</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SK</td>
<td>Inpatients</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Chapter XII. Diseases of the skin and subcutaneous tissue

- Diseases 47. Dermatitis and eczema (L20-L30) – Period prevalence
- Disease 48. Psoriasis (L40) – Period prevalence

Majority of data sources were chosen with coverage of the total/almost total population (Table 20). NL used sample from general practitioners’ patients (2% of population) and representative sample of total population for psoriasis (HIS).

Countries which have used the health insurance database for data computing mentioned that only insured population was covered. Some approximate proportion for hospital, outpatient specialist or primary care coverage has been given by countries, but not for separate diagnoses. The second common problem for insurance data was missing data from providers without contract (EE, HU, LT, LV, PL). HU has reported that the dermatovenerologists form remarkable proportion of private providers.

The biggest deficiency of data coverage was missing outpatient data. Hospital database (AT, RO) doesn’t seem to be a reliable source for skin diseases, because most of the patients are diagnosed and treated ambulatory.

Data from PL and FI did not include primary care. NL excluded people living in nursing homes.

*Diagnosis coverage:* CZ reported only L20 (Atopic dermatitis). NL left uncovered L26 (Dermatitis exfoliativa), L27.0/L27.1 (Generalized and localized skin eruptions due to drugs and medicaments taken internally), L28 (Lichen simplex chronicus and prurigo), L29 (Pruritus), and some parts of L30 (Other and unspecified dermatitis).
Table 20: Coverage reported by pilot countries for period prevalence Dermatitis and eczema and Psoriasis

<table>
<thead>
<tr>
<th>Country</th>
<th></th>
<th>47. Dermatitis and eczema</th>
<th>48. Psoriasis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Period prevalence</td>
<td></td>
</tr>
<tr>
<td>AT</td>
<td></td>
<td>Hospital discharges (only hospitalised cases)</td>
<td></td>
</tr>
<tr>
<td>CY</td>
<td></td>
<td>No information</td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td></td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons)</td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td></td>
<td>Population covered by public health insurance (total), out-patients (good coverage, with some exceptions)</td>
<td></td>
</tr>
<tr>
<td>FI</td>
<td></td>
<td>Hospital discharges and Population with disability allowances (excluding patients treated in primary care only)</td>
<td></td>
</tr>
<tr>
<td>HU</td>
<td></td>
<td>Hospital discharges (total), out-patients (good coverage, with some exceptions)</td>
<td></td>
</tr>
<tr>
<td>LT</td>
<td></td>
<td>Population covered by public health insurance (99 % of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
<td></td>
</tr>
<tr>
<td>LV</td>
<td></td>
<td>Population covered by public health insurance (only children)</td>
<td></td>
</tr>
<tr>
<td>MT</td>
<td></td>
<td>Population covered by public health insurance (only children)</td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td></td>
<td>2% of the population</td>
<td>Total population (Survey)</td>
</tr>
<tr>
<td>PL</td>
<td></td>
<td>Population covered by public health insurance (excluding primary health care)</td>
<td></td>
</tr>
<tr>
<td>RO</td>
<td></td>
<td>Population covered by public health insurance (only hospital cases)</td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td></td>
<td>In and outpatients</td>
<td></td>
</tr>
<tr>
<td>SK</td>
<td></td>
<td>Total population</td>
<td></td>
</tr>
</tbody>
</table>

Chapter XIII. Diseases of the Musculoskeletal System

- Diseases 49. Rheumatoid arthritis (M05, M06) – Period prevalence
- Diseases 50. Arthrosis (M15-M19) – Period prevalence
- Diseases 51. Systemic connective tissue disorders (M30-M36) – Period prevalence
- Diseases 52. Spondylopathies and other dorsopathies (incl. low back pain) (M45-M54) – Period prevalence
- Diseases 53. Osteoporosis (M80-M82) – Period prevalence

Most sources appeared to have complete (or almost complete) national coverage, although for some countries this was reported as full coverage of the total insured population (Table 21). It is often unclear though what proportion of the population is not insured, and therefore excluded from the data.

The data from the Czech Republic is sourced from an insurance information system operated by the largest of the nine health insurance companies in the country (General Health Insurance Company). However this source only includes people who are insured with the General Health Insurance Company, which is around 65% of the total population. It is unclear whether in the future data could be included from the other 8 insurance companies.

The GP information system being used in the Netherlands only accounts for a small proportion of the population, however national data were extrapolated using various statistical techniques.

With the exception of the Netherlands, there were no indications whether any country has adjusted for incomplete coverage, or to take measures to solve the problem.
Table 21: Coverage reported by pilot countries for period prevalence for Rheumatoid arthritis, Arthrosis, Systemic connective tissue disorders, Spondylopathies and other dorsopathies (incl. low back pain) and Osteoporosis

<table>
<thead>
<tr>
<th>Country</th>
<th>49. Rheumatoid arthritis</th>
<th>50. Arthrosis</th>
<th>51. Systemic connective tissue disorders</th>
<th>52. Spondylopathies and other dorsopathies (incl. low back pain)</th>
<th>53. Osteoporosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>Hospital discharges (inpatients)</td>
<td>Hospital discharges (only hospitalised cases)</td>
<td>Hospital discharges (only hospitalised cases)</td>
<td>Total permanent population (Survey)</td>
<td></td>
</tr>
<tr>
<td>CY</td>
<td>Total permanent population (Survey)</td>
<td></td>
<td></td>
<td>Total permanent population (Survey)</td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td>Population covered by public health insurance (65% of the total population) (missing some data from GP services)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FI</td>
<td>Population with reimbursed medication</td>
<td>Hospital discharges and Population with disability allowances (excluding patients treated in primary care only)</td>
<td>Population with reimbursed medication and disability allowances</td>
<td>Hospital discharges + Population with disability allowances (excluding patients treated in primary care only)</td>
<td></td>
</tr>
<tr>
<td>HU</td>
<td>Hospital discharges (total), out-patients (good coverage, with some exceptions)</td>
<td>Hospital discharges (total), out-patients (good coverage, with some exceptions) (only for &lt; 19 y + data are considered to be reliable)</td>
<td></td>
<td>Hospital discharges (total), out-patients (good coverage, with some exceptions) (+ only for &lt; 19 y + data are considered to be reliable)</td>
<td></td>
</tr>
<tr>
<td>LT</td>
<td>Population covered by public health insurance (99 % of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LV</td>
<td>Population covered by public health insurance (severe underestimation: only outpatients, reimbursement of medicine differs according to the diagnosis, part of the patients do self-treatment)</td>
<td>Population covered by public health insurance</td>
<td>Population covered by public health insurance (severe underestimation: only outpatients, reimbursement of medicine differs according to the diagnosis, long waiting list)</td>
<td>Population covered by public health insurance</td>
<td></td>
</tr>
<tr>
<td>MT</td>
<td>No information (Survey)</td>
<td></td>
<td></td>
<td>No information (Survey)</td>
<td></td>
</tr>
</tbody>
</table>
1,5% of the population

<table>
<thead>
<tr>
<th>Country</th>
<th>Database Description</th>
<th>Population Covered</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>NL</td>
<td>Hospital discharges</td>
<td>3% of the population</td>
<td>1% of the population</td>
</tr>
<tr>
<td></td>
<td>(excluding epilepsy</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>clinics, long-stay</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>centres for</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>rehabilitation and</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>asthma treatment,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>private clinics)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PL</td>
<td>Population covered</td>
<td>Total population</td>
<td></td>
</tr>
<tr>
<td></td>
<td>by public health</td>
<td>(Survey)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>insurance (excluding</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>primary health care)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RO</td>
<td>Population covered</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>by public health</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>insurance (only</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>hospital cases)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td>In and outpatients</td>
<td>Inpatients,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>outpatients and</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>primary health care</td>
<td></td>
</tr>
<tr>
<td>SK</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Chapter XIV. Diseases of the Genitourinary System**

- Diseases 54. Glomerular and renal tubulo-interstitial diseases (N00-N08, N10-N16) – Period prevalence
- Diseases 55. Renal Failure (N17-N19) – Period prevalence
- Diseases 56. Urolithiasis (N20-N23) – Incidence by person and period prevalence

Most sources appeared to have complete (or almost complete) national coverage, although for some countries this was reported as full coverage of the total insured population. It is often unclear though what proportion of the population is not insured, and therefore excluded from the data (Table 22 to Table 24).

The data from the Czech Republic is sourced from an insurance information system operated by the largest of the nine health insurance companies in the country (General Health Insurance Company). However this source only includes people who are insured with the General Health Insurance Company, which is around 65% of the total population. It is unclear whether in the future data could be included from the other 8 insurance companies.

The GP information system being used in the Netherlands only accounts for a small proportion of the population, however national data were extrapolated using various statistical techniques.

With the exception of the Netherlands, there were no indications whether any country has adjusted for incomplete coverage, or to take measures to solve the problem.
Table 22: Coverage reported by pilot countries for period prevalence for Glomerular and renal tubulo-interstitial diseases and Renal failure

<table>
<thead>
<tr>
<th>Country</th>
<th>54. Glomerular and renal tubulo-interstitial diseases</th>
<th>55. Renal failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>Hospital discharges (only hospitalised cases)</td>
<td></td>
</tr>
<tr>
<td>CY</td>
<td>Hospital discharges (only hospitalised cases)</td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td>Population covered by public health insurance (65% of the total population) (missing some data from GP services)</td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons)</td>
<td></td>
</tr>
<tr>
<td>FI</td>
<td>Hospital discharges and Population with disability allowances (excluding patients treated in primary care only)</td>
<td>Population with reimbursed medication and disability allowances</td>
</tr>
<tr>
<td>HU</td>
<td>Hospital discharges (total), out-patients (good coverage, with some exceptions)</td>
<td></td>
</tr>
<tr>
<td>LT</td>
<td>Population covered by public health insurance (99% of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
<td></td>
</tr>
<tr>
<td>LV</td>
<td>Population covered by public health insurance (underestimation)</td>
<td></td>
</tr>
<tr>
<td>MT</td>
<td>Hospital discharges (total), out-patients (good coverage, with some exceptions)</td>
<td>No information</td>
</tr>
<tr>
<td>NL</td>
<td>0,5% of the population</td>
<td>Hospital discharges (excluding epilepsy clinics, long-stay centres for rehabilitation and asthma treatment, private clinics)</td>
</tr>
<tr>
<td>PL</td>
<td>Population covered by public health insurance (excluding primary health care)</td>
<td></td>
</tr>
<tr>
<td>RO</td>
<td>Population covered by public health insurance (only hospital cases)</td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td>In patients, outpatients and primary health care users</td>
<td>In and outpatients</td>
</tr>
<tr>
<td>SK</td>
<td>Outpatients</td>
<td></td>
</tr>
</tbody>
</table>
**Table 23:** Coverage reported by pilot countries for period prevalence for Glomerular and renal tubulo-interstitial diseases and Renal failure

<table>
<thead>
<tr>
<th>Country</th>
<th>54. Glomerular and renal tubulo-interstitial diseases</th>
<th>55. Renal failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>Hospital discharges (only hospitalised cases)</td>
<td></td>
</tr>
<tr>
<td>CY</td>
<td>Population covered by public health insurance (65% of the total population) (missing some data from GP services)</td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons)</td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>Hospital discharges and Population with disability allowances (excluding patients treated in primary care only)</td>
<td>Population with reimbursed medication and disability allowances</td>
</tr>
<tr>
<td>FI</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons)</td>
<td></td>
</tr>
<tr>
<td>HU</td>
<td>Hospital discharges (total), out-patients (good coverage, with some exceptions)</td>
<td></td>
</tr>
<tr>
<td>LT</td>
<td>Population covered by public health insurance (99% of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
<td></td>
</tr>
<tr>
<td>LV</td>
<td>Population covered by public health insurance (underestimation)</td>
<td></td>
</tr>
<tr>
<td>MT</td>
<td>No information</td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td>0,5% of the population</td>
<td>Hospital discharges (excluding epilepsy clinics, long-stay centres for rehabilitation and asthma treatment, private clinics)</td>
</tr>
<tr>
<td>PL</td>
<td>Population covered by public health insurance (excluding primary health care)</td>
<td></td>
</tr>
<tr>
<td>RO</td>
<td>Population covered by public health insurance (only hospital cases)</td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td>In patients, outpatients and primary health care users</td>
<td>In and outpatients</td>
</tr>
<tr>
<td>SK</td>
<td>Outpatients</td>
<td></td>
</tr>
</tbody>
</table>
### Table 24: Coverage reported by pilot countries for Urolithiasis

<table>
<thead>
<tr>
<th>Country</th>
<th>Disease 56. Urolithiasis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Incidence by person</td>
</tr>
<tr>
<td>AT</td>
<td>Hospital discharges (only hospitalised cases)</td>
</tr>
<tr>
<td>CY</td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td>Population covered by public health insurance (65% of the total population) (missing some data from GP services)</td>
</tr>
<tr>
<td>EE</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons)</td>
</tr>
<tr>
<td>FI</td>
<td>Hospital discharges (excluding patients treated in primary care only)</td>
</tr>
<tr>
<td>HU</td>
<td>Hospital discharges (total), out-patients (good coverage, with some exceptions)</td>
</tr>
<tr>
<td>LT</td>
<td>Population covered by public health insurance (99% of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
</tr>
<tr>
<td>LV</td>
<td>Population covered by public health insurance (underestimation)</td>
</tr>
<tr>
<td>MT</td>
<td>No information (Survey)</td>
</tr>
<tr>
<td>NL</td>
<td>2% of the population</td>
</tr>
<tr>
<td>PL</td>
<td>Population covered by public health insurance</td>
</tr>
<tr>
<td>RO</td>
<td>Population covered by public health insurance (only hospital cases)</td>
</tr>
<tr>
<td>SI</td>
<td>In and outpatients</td>
</tr>
<tr>
<td>SK</td>
<td>Outpatients</td>
</tr>
</tbody>
</table>

### Chapter XIX. Injury, poisoning and certain other consequences of external causes

- Diseases 57. All morbidity due to injury, poisoning and certain other consequences of external causes (S00-T98) – Incidence by episode and period prevalence
- Diseases 58. Intracranial injury (S06) – Incidence by episode and period prevalence
- Diseases 59. Fracture of femur (S72) – Incidence by episode and period prevalence
- Diseases 60. Poisoning by drugs, medicaments and biological substances and toxic effects of substances chiefly nonmedicinal as to source (T36-T65) – Incidence by episode and period prevalence

The population covered by the data reported by the participating countries is closely linked with the purpose of the data source. Thus, estimations are covering either the entire population, or the total number of insured population or only a sample of the population (MT – covers only cases from a few hospitals) (Table 25 to Table 28).

The coverage can be analysed in terms of cases coverage or population coverage. For example, statutory health insurance covers all population, but one insured person may seek health care in an institution that does not have a contract with the health insurance company; thus, is not included in morbidity estimations.
Table 25: Coverage reported by pilot countries for All morbidity due to injury, poisoning and certain other consequences of external causes

<table>
<thead>
<tr>
<th>Country</th>
<th>Disease 57. All morbidity due to injury, poisoning and certain other consequences of external causes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Period prevalence</td>
</tr>
<tr>
<td>AT</td>
<td>Hospital discharges (only hospitalised cases)</td>
</tr>
<tr>
<td>CY</td>
<td>Population covered by public health insurance (65% of the total population) (missing some data from GP services)</td>
</tr>
<tr>
<td>CZ</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons) + Total population</td>
</tr>
<tr>
<td>EE</td>
<td>Hospital discharges (excluding patients treated in primary care only)</td>
</tr>
<tr>
<td>FI</td>
<td>Hospital discharges (total), out-patients (good coverage, with some exceptions)</td>
</tr>
<tr>
<td>LT</td>
<td>Population covered by public health insurance (99% of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
</tr>
<tr>
<td>LV</td>
<td>Population covered by public health insurance</td>
</tr>
<tr>
<td>MT</td>
<td>Users of one hospital</td>
</tr>
<tr>
<td>NL</td>
<td>Hospital discharges (excluding epilepsy clinics, long-stay centres for rehabilitation and asthma treatment, private clinics, day patient care for childbirth, psychiatric treatment and rehabilitation treatment)</td>
</tr>
<tr>
<td>PL</td>
<td>Population covered by public health insurance (excluding primary health care)</td>
</tr>
<tr>
<td>RO</td>
<td>Population covered by public health insurance (only hospital cases) (external causes not completed for all patients)</td>
</tr>
<tr>
<td>SI</td>
<td>Hospitalisations</td>
</tr>
<tr>
<td>SK</td>
<td></td>
</tr>
<tr>
<td>Country</td>
<td>Disease 58. Intracranial injury</td>
</tr>
<tr>
<td>---------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>AT</td>
<td></td>
</tr>
<tr>
<td>CY</td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td></td>
</tr>
<tr>
<td>FI</td>
<td></td>
</tr>
<tr>
<td>HU</td>
<td></td>
</tr>
<tr>
<td>LT</td>
<td></td>
</tr>
<tr>
<td>LV</td>
<td>Population covered by public health insurance</td>
</tr>
<tr>
<td>MT</td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td>2% of the total population + Hospital discharges (excluding epilepsy clinics, long-stay centres for rehabilitation and asthma treatment, private clinics, day patient care for childbirth, psychiatric treatment and rehabilitation treatment)</td>
</tr>
<tr>
<td>PL</td>
<td>Population covered by public health insurance (excluding primary health care)</td>
</tr>
<tr>
<td>RO</td>
<td>Population covered by public health insurance (only hospital cases) (external causes not completed for all patients)</td>
</tr>
<tr>
<td>SI</td>
<td></td>
</tr>
<tr>
<td>SK</td>
<td></td>
</tr>
</tbody>
</table>

**Table 26: Coverage reported by pilot countries for Intracranial injury**
Table 27: Coverage reported by pilot countries for Fracture of femur

<table>
<thead>
<tr>
<th>Country</th>
<th>Disease 59. Fracture of femur</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Period prevalence</strong></td>
</tr>
<tr>
<td>AT</td>
<td>Hospital discharges (only hospitalised cases)</td>
</tr>
<tr>
<td>BE</td>
<td>Total population</td>
</tr>
<tr>
<td>CY</td>
<td>Population covered by public health insurance (65% of the total population) (missing some data from GP services)</td>
</tr>
<tr>
<td>CZ</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons) + Total population</td>
</tr>
<tr>
<td>EE</td>
<td>Hospital discharges (excluding patients treated in primary care only)</td>
</tr>
<tr>
<td>FI</td>
<td>Hospital discharges (excluding epilepsy clinics, long-stay centres for rehabilitation and asthma treatment, private clinics, day patient care for childbirth, psychiatric treatment and rehabilitation treatment)</td>
</tr>
<tr>
<td>HU</td>
<td>Hospital discharges (total), outpatients (good coverage, with some exceptions)</td>
</tr>
<tr>
<td>LT</td>
<td>Population covered by public health insurance (99% of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
</tr>
<tr>
<td>LV</td>
<td>Population covered by public health insurance</td>
</tr>
<tr>
<td>MT</td>
<td>Users of one hospital</td>
</tr>
<tr>
<td>NL</td>
<td>Hospital discharges (excluding epilepsy clinics, long-stay centres for rehabilitation and asthma treatment, private clinics, day patient care for childbirth, psychiatric treatment and rehabilitation treatment)</td>
</tr>
<tr>
<td>PL</td>
<td>Population covered by public health insurance (excluding primary health care)</td>
</tr>
<tr>
<td>RO</td>
<td>Population covered by public health insurance (only hospital cases) (external causes not completed for all patients)</td>
</tr>
<tr>
<td>SI</td>
<td>Inpatients + Total population</td>
</tr>
<tr>
<td>SK</td>
<td></td>
</tr>
</tbody>
</table>
Table 28: Coverage reported by pilot countries for Poisoning by drugs, medicaments and biological substances and toxic effects of substances chiefly nonmedicinal as to source

<table>
<thead>
<tr>
<th>Country</th>
<th>Disease 60. Poisoning by drugs, medicaments and biological substances and toxic effects of substances chiefly nonmedicinal as to source</th>
<th>Period prevalence</th>
<th>Incidence by episode</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>Hospital discharges (only hospitalised cases)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td>Population covered by public health insurance (65% of the total population) (missing some data from GP services)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons) + Total population</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FI</td>
<td>Hospital discharges (excluding patients treated in primary care only)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HU</td>
<td>Hospital discharges (total), out-patients (good coverage, with some exceptions)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LT</td>
<td>Population covered by public health insurance (99% of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LV</td>
<td>Population covered by public health insurance</td>
<td></td>
<td>Population covered by public health insurance</td>
</tr>
<tr>
<td>MT</td>
<td></td>
<td>Users of one hospital</td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td>Hospital discharges (excluding epilepsy clinics, long-stay centres for rehabilitation and asthma treatment, private clinics, day patient care for childbirth, psychiatric treatment and rehabilitation treatment)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PL</td>
<td>Population covered by public health insurance (excluding primary health care)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RO</td>
<td>Population covered by public health insurance (only hospital cases) (external causes not completed for all patients)</td>
<td></td>
<td>Family doctor users (over 90% of population)</td>
</tr>
<tr>
<td>SI</td>
<td></td>
<td></td>
<td>Hospitalizations</td>
</tr>
<tr>
<td>SK</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Chapter XX. External causes of morbidity

- Shortlist group A. All morbidity due to external causes (injuries, poisonings, etc.) (V01-Y89) – Incidence by episode and period prevalence
- Shortlist group B. Land transport accidents (V01-Y89) – Incidence by episode and period prevalence
- Shortlist group C. Accidental falls (W00-W19) – Incidence by episode and period prevalence
- Shortlist group D. Accidental poisoning (X40-X49) – Incidence by episode and period prevalence
- Shortlist group E. Intentional self-harm (incl. suicidal attempt) (X60-X84) – Incidence by episode and period prevalence
- Shortlist group F. Assault (X85-Y09) – Incidence by episode and period prevalence
Shortlist group G. Complications of medical and surgical care (Y40-Y66, Y69-Y84) – Incidence by episode and period prevalence

External causes group of diseases data sources used by the reporting countries cover all population or insured population, although some countries reported some issues such as not including some codes from this group, the system problems in registering external causes of diseases or the different classification used by the data source (e.g. ICD-9), leading to underestimations or overestimations (NL).

The Table 29 to Table 35 summarize the information on coverage of sources for the whole external causes, both for incidence and prevalence. Diseases-specific information is included when relevant.

**Table 29: Coverage reported by pilot countries for All morbidity due to external causes (injuries, poisonings, etc.)**

<table>
<thead>
<tr>
<th>Country</th>
<th><strong>Group A. All morbidity due to external causes (injuries, poisonings, etc.)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Period prevalence</strong></td>
</tr>
<tr>
<td>AT</td>
<td>Hospital discharges (only hospitalised cases)</td>
</tr>
<tr>
<td>CY</td>
<td>Hospitalisations</td>
</tr>
<tr>
<td>CZ</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons) + Total population</td>
</tr>
<tr>
<td>EE</td>
<td>Hospital discharges (excluding patients treated in primary care only)</td>
</tr>
<tr>
<td>FI</td>
<td>Hospital discharges (total), out-patients (good coverage, with some exceptions)</td>
</tr>
<tr>
<td>HU</td>
<td>Population covered by public health insurance (99 % of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
</tr>
<tr>
<td>LT</td>
<td>Total population (underreporting: since 2008 only inpatient injuries must be reported)</td>
</tr>
<tr>
<td>LV</td>
<td>Users of one hospital</td>
</tr>
<tr>
<td>NL</td>
<td>Hospital discharges (excluding epilepsy clinics, long-stay centres for rehabilitation and asthma treatment, private clinics, day patient care for childbirth, psychiatric treatment and rehabilitation treatment) + Total population</td>
</tr>
<tr>
<td>PL</td>
<td>Family doctor users (over 90 % of population)</td>
</tr>
<tr>
<td>RO</td>
<td>Patients covered by public health insurance (only hospital cases) (external causes not completed for all patients)</td>
</tr>
<tr>
<td>SI</td>
<td>Hospitalisations</td>
</tr>
<tr>
<td>SK</td>
<td></td>
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</tbody>
</table>


<table>
<thead>
<tr>
<th>Country</th>
<th>Group B. Land transport accidents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Period prevalence</strong></td>
</tr>
<tr>
<td>AT</td>
<td>Hospital discharges (only hospitalised cases)</td>
</tr>
<tr>
<td>CY</td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td>Hospitalisations</td>
</tr>
<tr>
<td>EE</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons) + Total population</td>
</tr>
<tr>
<td>FI</td>
<td>Hospital discharges (excluding patients treated in primary care only)</td>
</tr>
<tr>
<td>HU</td>
<td>Hospital discharges (total), out-patients (good coverage, with some exceptions)</td>
</tr>
<tr>
<td>LT</td>
<td>Population covered by public health insurance (99% of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
</tr>
<tr>
<td>LV</td>
<td>Total population (underreporting: since 2008 only inpatient injuries must be reported)</td>
</tr>
<tr>
<td>MT</td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td>Hospital discharges (excluding epilepsy clinics, long-stay centres for rehabilitation and asthma treatment, private clinics, day patient care for childbirth, psychiatric treatment and rehabilitation treatment) + Total population</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>PL</td>
<td>Total population (+ traveling foreigners)</td>
</tr>
<tr>
<td>RO</td>
<td>Population covered by public health insurance (only hospital cases) (external causes not completed for all patients)</td>
</tr>
<tr>
<td>SI</td>
<td></td>
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<td>SK</td>
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</table>
### Table 31: Coverage reported by pilot countries for Accidental falls

<table>
<thead>
<tr>
<th>Country</th>
<th>Group C. Accidental falls</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Period prevalence</td>
</tr>
<tr>
<td>AT</td>
<td></td>
</tr>
<tr>
<td>CY</td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons) + Total population</td>
</tr>
<tr>
<td>FI</td>
<td>Hospital discharges (excluding patients treated in primary care only)</td>
</tr>
<tr>
<td>HU</td>
<td>Hospital discharges (total), out-patients (good coverage, with some exceptions)</td>
</tr>
<tr>
<td>LT</td>
<td>Population covered by public health insurance (99% of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
</tr>
<tr>
<td>LV</td>
<td>Total population (underreporting: since 2008 only inpatient injuries must be reported)</td>
</tr>
<tr>
<td>MT</td>
<td>Users of one hospital</td>
</tr>
<tr>
<td>NL</td>
<td>Hospital discharges (excluding epilepsy clinics, long-stay centres for rehabilitation and asthma treatment, private clinics, day patient care for childbirth, psychiatric treatment and rehabilitation treatment) + Total population</td>
</tr>
<tr>
<td>PL</td>
<td></td>
</tr>
<tr>
<td>RO</td>
<td>Population covered by public health insurance (only hospital cases) (external causes not completed for all patients)</td>
</tr>
<tr>
<td>SI</td>
<td></td>
</tr>
<tr>
<td>SK</td>
<td></td>
</tr>
</tbody>
</table>
Table 32: Coverage reported by pilot countries for Accidental poisoning

<table>
<thead>
<tr>
<th>Country</th>
<th>Group D. Accidental poisoning</th>
<th>Period prevalence</th>
<th>Incidence by episode</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td>Hospitalisations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons) + Total population</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FI</td>
<td>Hospital discharges (excluding patients treated in primary care only)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HU</td>
<td>Hospital discharges (total), out-patients (good coverage, with some exceptions)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LT</td>
<td>Population covered by public health insurance (99 % of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LV</td>
<td>Total population (underreporting: since 2008 only inpatient injuries must be reported)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MT</td>
<td>Users of one hospital</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td>Hospital discharges (excluding epilepsy clinics, long-stay centres for rehabilitation and asthma treatment, private clinics, day patient care for childbirth, psychiatric treatment and rehabilitation treatment) + Total population</td>
<td></td>
<td>14 hospitals</td>
</tr>
<tr>
<td>PL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RO</td>
<td>Population covered by public health insurance (only hospital cases) (external causes not completed for all patients)</td>
<td>Family doctor users (over 90 % of population)</td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td></td>
<td></td>
<td>Hospitalisations</td>
</tr>
<tr>
<td>SK</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Table 33: Coverage reported by pilot countries for Intentional self-harm (incl. suicidal attempt)

<table>
<thead>
<tr>
<th>Country</th>
<th>Group E. Intentional self-harm (incl. suicidal attempt)</th>
<th>Period prevalence</th>
<th>Incidence by episode</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>Hospital discharges (only hospitalised cases)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CY</td>
<td>Hospitalisations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons) + Total population</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>Hospital discharges (excluding patients treated in primary care only)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FI</td>
<td>Hospital discharges (total), out-patients (good coverage, with some exceptions)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HU</td>
<td>Population covered by public health insurance (99% of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LT</td>
<td>Total population (underreporting: since 2008 only inpatient injuries must be reported)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LV</td>
<td>Total population (users of one hospital)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td>Hospital discharges (excluding epilepsy clinics, long-stay centres for rehabilitation and asthma treatment, private clinics, day patient care for childbirth, psychiatric treatment and rehabilitation treatment) + Total population</td>
<td></td>
<td>14 hospitals</td>
</tr>
<tr>
<td>PL</td>
<td>Population covered by public health insurance (only hospital cases) (external causes not completed for all patients)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RO</td>
<td>Family doctor users (over 90% of population)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td>Hospitalisations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SK</td>
<td>Total population</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Table 34:** Coverage reported by pilot countries for Assault

<table>
<thead>
<tr>
<th>Country</th>
<th>Group F. Assault</th>
<th>Period prevalence</th>
<th>Incidence by episode</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td></td>
<td>Inpatients</td>
<td></td>
</tr>
<tr>
<td>CY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td></td>
<td>Hospitalisations</td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td></td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons) + Total population</td>
<td></td>
</tr>
<tr>
<td>FI</td>
<td></td>
<td>Hospital discharges (excluding patients treated in primary care only)</td>
<td></td>
</tr>
<tr>
<td>HU</td>
<td></td>
<td>Hospital discharges (total), out-patients (good coverage, with some exceptions)</td>
<td></td>
</tr>
<tr>
<td>LT</td>
<td></td>
<td>Population covered by public health insurance (99% of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
<td></td>
</tr>
<tr>
<td>LV</td>
<td></td>
<td>Total population (underreporting: since 2008 only inpatient injuries must be reported)</td>
<td></td>
</tr>
<tr>
<td>MT</td>
<td></td>
<td>Users of one hospital</td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td></td>
<td>Hospital discharges (excluding epilepsy clinics, long-stay centres for rehabilitation and asthma treatment, private clinics, day patient care for childbirth, psychiatric treatment and rehabilitation treatment) + Total population</td>
<td>14 hospitals</td>
</tr>
<tr>
<td>PL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RO</td>
<td></td>
<td>Population covered by public health insurance (only hospital cases) (external causes not completed for all patients)</td>
<td>Family doctor users (over 90% of population)</td>
</tr>
<tr>
<td>SI</td>
<td></td>
<td>Hospitalisations</td>
<td></td>
</tr>
<tr>
<td>SK</td>
<td></td>
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</tbody>
</table>
Table 35: Coverage reported by pilot countries for Complications of medical and surgical care

<table>
<thead>
<tr>
<th>Country</th>
<th>Group G. Complications of medical and surgical care</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Period prevalence</td>
</tr>
<tr>
<td>AT</td>
<td></td>
</tr>
<tr>
<td>CY</td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td>Hospitalisations</td>
</tr>
<tr>
<td>EE</td>
<td>Population covered by public health insurance (+ emergency health care services provided to uninsured persons)</td>
</tr>
<tr>
<td>FI</td>
<td>Hospital discharges (excluding patients treated in primary care only)</td>
</tr>
<tr>
<td>HU</td>
<td>Hospital discharges (total), outpatients (good coverage, with some exceptions)</td>
</tr>
<tr>
<td>LT</td>
<td>Population covered by public health insurance (99% of inpatient cases, 90% of outpatient visits, 100% of primary health care visits)</td>
</tr>
<tr>
<td>LV</td>
<td></td>
</tr>
<tr>
<td>MT</td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td></td>
</tr>
<tr>
<td>PL</td>
<td></td>
</tr>
<tr>
<td>RO</td>
<td>Population covered by public health insurance (only hospital cases) (external causes not completed for all patients)</td>
</tr>
<tr>
<td>SI</td>
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<tr>
<td>SK</td>
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</tbody>
</table>
6 Classifications used and coding differences

Main questions addressed in this paragraph:

- On case definitions: have pilot countries provided temporal windows/other clear definitions for separating new cases from recurrences of certain diseases? How do different case definitions impact on the estimates?
- In case different classifications from ICD-10 were used, are the codes traceable (by re-grouping or by re-coding) to the MORB shortlist ones? Has this been done by the pilot countries?
- What are the diseases where data for the grouping of the diseases according to the SL cannot be delivered? Are differences in the grouping creating substantial differences in the quality/comparability of the estimates provided? (i.e.: exclusion of B90 for EE register was not seen as major problem, see minutes of TF meeting 15-16 November 2011)
- Have specific problems with coding been reported?

Chapter I. Certain infectious and parasitic diseases

- Diseases 1. Tuberculosis (A15-A19, B90) – Incidence by episode and period prevalence
- Diseases 2. Sexually transmitted diseases (STD) (A50-A64) – Incidence by episode and period prevalence
- Diseases 3. Viral hepatitis (incl. hepatitis B) (B15-B19) – Incidence by episode and period prevalence
- Diseases 4. Human immunodeficiency virus disease (HIV/AIDS) (B20-B24, Z21) – Incidence by episode, period prevalence and point prevalence

Data on incidence of infectious diseases are mainly based on case reports, but in most countries the case reports for a single person can be distinguished. For some countries without unique personal identifier, the data collection system include algorithms which are use to distinguish duplicate reports.

For tuberculosis, most countries do not cover the ICD-10 code B90 (Sequelae of tuberculosis) in identifying their cases; for Human immunodeficiency virus disease (HIV/AIDS), all countries are not using the ICD-10 code Z21 (Asymptomatic human immunodeficiency virus [HIV] infection status) to find the cases. These minor differences in coding and classification for Tuberculosis and HIV/AIDS do not cause a major difference in international comparisons. The registration systems usually do not cover all sexually transmitted infections. The data collection is more complete for Syphilis and Gonorrhea than for Chlamydia.

Data on prevalence of infectious diseases came partly from the same case reports, but some countries have used several data sources to improve the coverage. Data on Tuberculoses and HIV/AIDS seems to be more reliable than data on Viral hepatitis. Prevalence data on sexually transmitted infections is less relevant, since the diseases are treatable.

Chapter II. Neoplasms

- Diseases 5. All malignant neoplasms (C00-C97) – Incidence by person and period prevalence
- Diseases 6. Malignant neoplasm of oesophagus (C15) – Incidence by person and period prevalence
- Diseases 7. Malignant neoplasm of stomach (C16) – Incidence by person and period prevalence
- Diseases 8. Malignant neoplasm of colon, rectum and anus (C18-C21) – Incidence by person and period prevalence
- Diseases 9. Malignant neoplasm of trachea, bronchus and lung (C33, C34) – Incidence by person and period prevalence
- Diseases 10. Malignant melanoma of skin (C43) – Incidence by person and period prevalence
- Diseases 11. Mesothelioma (C45) – Incidence by person and period prevalence
- Diseases 12. Malignant neoplasm of breast (C50) – Incidence by person and period prevalence
- Diseases 13. Malignant neoplasm of cervix uteri (C53) – Incidence by person and period prevalence
- Diseases 14. Malignant neoplasm of uterus other than cervix (C54, C55) – Incidence by person and period prevalence
- Diseases 15. Malignant neoplasm of ovary (C56) – Incidence by person and period prevalence
- Diseases 16. Malignant neoplasm of prostate (C61) – Incidence by person and period prevalence
- Diseases 17. Malignant neoplasm of bladder (C67) – Incidence by person and period prevalence
Incidence by person

Internationally accepted recommendations define cancer incidence as the number of new cancer cases in a given period in a given population. The definition “incidence by person”, as proposed by MORB Statistics project, implies that not new cancer cases, but persons, newly diagnosed with cancer must be counted. Difference between number of cases and number of persons occurs in situations when one person has multiple primary cancers.

Some countries (AT, CY, LV) have approached this concept in following way: for specific cancer site, every new case of cancer has been counted separately, but for indicator 5 “All neoplasms”, persons with multiple cancers have been counted only once.

Some countries (HU, MT, PL) clearly indicate, that a lack of personal identifications numbers does not allow distinguishing between cases and persons; therefore they present incidence by episode, where an episode means the new case of primary cancer.

But overall, the specific approach applied by each country has not been always stated clearly, e.g. FI refers to the international guidelines of data collection for IARC (International Agency for Research on Cancer); although, according to IARC, incidence counts new cases not persons. And SI does not agree on the given definition “incidence by person”, but considers that incidence should account for all new cases of cancers irrespective of person.

Although different definitions should not substantially influence estimates, because the number of persons with multiple cancers might be low, still, focus on persons not cases has resulted in inconsistencies.

Period prevalence

Several countries (AT, MT, NL, SI) draw attention to the problems with prevalence definitions. Very thorough and concise analysis was done in AT.

The period prevalence definition, proposed by the MORB Statistics project, implies that all persons with cancers within particular year are counted. However, it does not take into account how long ago person got the disease. E.g., some of these persons, in fact, are recovered from cancer; if they are counted as prevalent cases, then given indicator does not reflect the true burden of disease.

Therefore international recommendations (IARC) specify several cancer prevalence indicators. And one of them is complete / total prevalence, where all persons who ever had cancer are included. According to this definition, period prevalence has been estimated in at least four countries (HU, LT, LV, NL). Some countries (CY, PL) comment that the history of their cancer registers is not sufficiently long for such approach. Obviously, health insurance data (DE, EE) do not conform to this approach, as recovered persons may not contact health service with cancer diagnosis and, therefore, they do not appear in these data.

Some countries (AT, SI) argue that partial prevalence might be more appropriate indicator. E.g., AT has estimated all indicators of prevalence (point, partial (2-year, 5-year, 10-year) and period) and concludes that the partial prevalence is a more valuable measure.

SI has estimated partial 1-year prevalence: persons diagnosed with cancer within the given year and who were still alive at the end of that year. As a consequence, SI is the only country where prevalence rates are lower than incidence rates. And SI has substantially lower cancer prevalence than other countries. In PL 5-year prevalence was estimated on the basis of incidence data and the relative 5-year survival rates estimated for the Polish population applying survival indices of the patients diagnosed in years 2000-2002. The rates are also rather lower than in other countries.

All countries can provide incidence and prevalence data according to the ICD-10. An exception is prevalence data in countries where the HIS is the source for total cancer prevalence (BE, CY); estimates are based on self-reported morbidity, but not medical sources and diagnoses. Thus, comparability is questionable.
Chapter IV. Endocrine, nutritional and metabolic diseases

- Diseases 19. Diabetes mellitus (E10-E14) – Incidence by person, period prevalence and point prevalence

It was quite complicated to find the definition for incidence and prevalence in the reports. Most of the countries used insurance data have developed special operational definition for data calculation. BE, FI was using the definitions related to medication treatment. EE, LT, partly DE have special modifiers to make differences between incidence and prevalence. DE developed special methods for calculation and validation of incidence and prevalence.

Countries calculating data from statistical data sources probably do not need any operational definition. Some countries (CZ, SK, PL, LV) are getting incidence and prevalence data directly from annual reports or specialised registries/databases.

The most of the countries are using ICD-10 classification for diseases coding. DE used ICD-10-GE, LT since 2011 use ICD-10-AM (Australian modification). Those classifications are based on ICD-10 and on the 3-digit level has almost no differences. FI and BE used their own classification for medications. BE used own classification for GP’s data. In DE invoicing data of private insurance physicians mostly ICD-10 is used but some records contain freely-worded diagnoses which are converted to ICD by software. For self-reported data in HIS (AT, CY, MT) no classification is used. NL is using the International Classification of Primary Care (ICPC-1) in the GP networks and the ICD-9-CM in the Hospital Discharge Register with automatic converting into ICD-10.

In CZ data source for diabetes includes only ICD-10 codes E10, E11, E13. Other countries did not mention any bias from E10-E14 codes for diabetes.

Chapter V. Mental and behavioural disorders

- Diseases 20. Dementia (incl. Alzheimer's disease) (F00-F03, G30) – Period prevalence
- Diseases 21. Mental and behavioural disorders due to use of alcohol (incl. alcohol dependence) (F10) – Period prevalence
- Diseases 22. Mental and behavioural disorders due to use of psychoactive substances other than alcohol and tobacco (including drug dependence) (F11-F16, F18, F19) – Period prevalence
- Diseases 23. Schizophrenia (F20-F29) – Period prevalence
- Diseases 24. Depression and other affective disorders (F30-F39) – Period prevalence
- Diseases 25. Anxiety disorders (F40, F41) – Period prevalence
- Diseases 26. Eating disorders (F50) – Period prevalence

The most of the countries are using ICD-10 classification for diseases coding. DE used ICD-10-GE, LT since 2011 use ICD-10-AM (Australian modification), but those classification are based on ICD-10 and on the 3-digit level has almost no differences. BE used own classification for GP’s data and mediation. BE GP’s data for dementia cover only ICD-10 code G30.

Chapter VI. Diseases of the nervous system

- Diseases 27. Parkinson's disease (G20) – Period prevalence
- Diseases 28. Multiple sclerosis (G35) – Period prevalence
- Diseases 29. Epilepsy (G40, G41) – Period prevalence
- Diseases 30. Migraine and other headache syndromes (G43, G44) – Period prevalence

The most of the countries are using ICD-10 classification for diseases coding. DE used ICD-10-GE, LT since 2011 use ICD-10-AM (Australian modification), but those classification are based on ICD-10 and on the 3-digit
Chapter VII. Diseases of the eye and adnexa

- Diseases 31. Cataract (H25-H28) – Period prevalence
- Diseases 32. Glaucoma (H40, H42) – Period prevalence

For coding mainly ICD-10 was used. NL transferred diagnoses from ICPC-1 and ICD-9-CM to ICD-10 and reported complete correspondence to requested codes.

DE used mostly ICD-10, but private health insurance database included some freely-worded diagnoses, which were converted to ICD-10 by software.

For HIS list of diagnoses without exact ICD-10 coding is used.

Chapter VIII. Diseases of the ear and mastoid process

- Diseases 33. Hearing loss (H90, H91) – Period prevalence

For coding mainly ICD-10 was used. NL transferred diagnoses from ICPC-1 to ICD-10. H83.3 Acoustic trauma is included. In future collection the requested selection can be made.

DE used mostly ICD-10, but private health insurance database included some freely-worded diagnoses, which were converted to ICD-10 by software.

For self-reported data in HIS classification is not used.

Chapter IX. Diseases of the circulatory system

- Diseases 34. Hypertensive diseases (I10-I13, I15) – Period prevalence
- Diseases 35. Ischaemic heart diseases (I20-I25) – Period prevalence
- Diseases 36. Acute myocardial infarction (I21, I22) – Incidence by person and period prevalence
- Diseases 37. Heart failure (I50) – Period prevalence
- Diseases 38. Cerebrovascular diseases (I60-I69) – Incidence by person and period prevalence

Almost all of the sources used the ICD-10 classification, or some modification (German or Australian modifications). The data from the GP information system in the Netherlands were coded in ICPC-1, and then mapped to the relevant ICD-10 codes. In most cases this did not cause appreciable difficulties, although there are some slight coding differences for some of the indicators, namely for AMI where the ICPC-1 definition is somewhat larger (as it includes some post-myocardial postinfarction complications as well).

Data from the health interview surveys were self-reported, and were not based on exact ICD-10 reported diagnoses. Therefore this further limits the comparability of data from health interview surveys with the other sources.

Chapter X. Diseases of the respiratory system

- Diseases 39. Influenza (J09-J11) – Incidence by episode
- Diseases 40. Pneumonia (J12-J18) – Incidence by episode and period prevalence
- Diseases 41. Asthma (J45, J46) – Incidence by person and period prevalence
- Diseases 42. Chronic lower respiratory disease (J40-J44, J47) – Incidence by person and period prevalence
Almost all of the sources used the ICD-10 classification, or some modification (German or Australian modifications). The data from the GP information system in the Netherlands were coded in ICPC-1, and then mapped to the relevant ICD-10 codes. In most cases this did not cause appreciable difficulties, although there are some slight coding differences for some of the indicators.

Data from the health interview surveys were self-reported, and were not based on exact ICD-10 reported diagnoses. Therefore this further limits the comparability of data from health interview surveys with the other sources.

Chapter XI. Diseases of the digestive system

- Diseases 43. Gastric and duodenal ulcer (peptic ulcer) (K25-K28) – Period prevalence
- Diseases 44. Alcoholic liver disease (K70) – Period prevalence
- Diseases 45. Diseases of liver other than alcoholic (K71-K77) – Period prevalence
- Diseases 46. Cholelithiasis (K80) – Incidence by person and period prevalence

For coding the diseases of the digestive system, mainly ICD-10 was used, except for HIS. Transferring diagnoses from ICPC-1 to ICD-10 is problematic for diseases of digestive system. For liver diseases NL had to use hospital database instead of general practitioners’ database because of incompatibility of ICPC-1 with requested diagnose. ICD-9CM was mapped for liver diseases by them. For gastric and duodenal ulcer the Netherlands data (GP networks) were based on ICPC-1. For gastric and duodenal ulcer estimates also included ICD-10 code E16.4 (abnormal secretion of gastrin) and for cholelithiasis ICPC-code D98 (cholecystitis/cholelithiasis) also encodes for ICD K81-K83 (cholecystitis, other diseases of the gallbladder, other diseases of biliary tract), and K87 (disorders of gallbladder, biliary tract and pancreas in diseases classified elsewhere).

DE used mostly ICD-10, but private health insurance database included some freely-worded diagnoses, which were converted to ICD-10 by software.

Chapter XII. Diseases of the skin and subcutaneous tissue

- Diseases 47. Dermatitis and eczema (L20-L30) – Period prevalence
- Disease 48. Psoriasis (L40) – Period prevalence

For coding mainly ICD-10 was used. NL transferred diagnoses from ICPC-1 to ICD-10 and complete matching was not achieved. For HIS classification is not used.

DE used mostly ICD-10, but private health insurance database included some freely-worded diagnoses, which were converted to ICD-10 by software.

Chapter XIII. Diseases of the Musculoskeletal System

- Diseases 49. Rheumatoid arthritis (M05, M06) – Period prevalence
- Diseases 50. Arthritis (M15-M19) – Period prevalence
- Diseases 51. Systemic connective tissue disorders (M30-M36) – Period prevalence
- Diseases 52. Spondylopathies and other dorsopathies (incl. low back pain) (M45-M54) – Period prevalence
- Diseases 53. Osteoporosis (M80-M82) – Period prevalence

Almost all of the sources used the ICD-10 classification, or some modification (German or Australian modifications). The data from the GP information system in the Netherlands were coded in ICPC-1, and then mapped to the relevant ICD-10 codes. In most cases this did not cause any difficulties, although there are some slight coding differences for some of the indicators. The data from Finland sourced from the disability allowances register were based on diagnoses with ICD-9 or ICD-10 codes, depending on the year during which the benefit was received for the first time. The data from Finland sourced from the reimbursement of medication register were based on a specific coding system for that register and ICD-9 or ICD-10.
Data from the health interview surveys were self-reported, and were not based on exact ICD-10 reported diagnoses. Therefore this further limits the comparability of data from health interview surveys with the other sources.

Chapter XIV. Diseases of the Genitourinary System

- Diseases 54. Glomerular and renal tubulo-interstitial diseases (N00-N08, N10-N16) – Period prevalence
- Diseases 55. Renal Failure (N17-N19) – Period prevalence
- Diseases 56. Urolithiasis (N20-N23) – Incidence by person and period prevalence

Almost all of the sources used the ICD-10 classification, or some modification (German or Australian modifications). The data from the GP information system in the Netherlands were coded in ICPC-1, and then mapped to the relevant ICD-10 codes. In most cases this did not cause any difficulties, although there are some slight coding differences for some of the indicators.

Data from the health interview surveys were self-reported, and were not based on exact ICD-10 reported diagnoses. Therefore this limits the comparability of data from health interview surveys with the other sources.

Data from Finland sourced from the disability allowances register were based on diagnoses with ICD-9 or ICD-10 codes, depending on the year during which the benefit was received for the first time. The data from Finland sourced from the reimbursement of medication register were based on a specific coding system for that register and ICD-9 or ICD-10.

Chapter XIX. Injury, poisoning and certain other consequences of external causes

- Diseases 57. All morbidity due to injury, poisoning and certain other consequences of external causes (S00-T98) – Incidence by episode and period prevalence
- Diseases 58. Intracranial injury (S06) – Incidence by episode and period prevalence
- Diseases 59. Fracture of femur (S72) – Incidence by episode and period prevalence
- Diseases 60. Poisoning by drugs, medicaments and biological substances and toxic effects of substances chiefly nonmedicinal as to source (T36-T65) – Incidence by episode and period prevalence

All countries that provided estimates for this group of diseases used ICD-10; LT is using ICD-10-AM since April 2011. Some issues were noted regarding the coding of diseases, the main one being the coding made directly by the physicians might be influenced by reimbursement rules (severe conditions could be coded in invoices to receive better reimbursement). Also, freely worded diagnostics by the physicians are being converted to ICD-10 through software (DE).

Classification and coding for incidence and prevalence does not change, as data sources remain the same for most countries. The countries that provided data only for prevalence used ICD-10 coding, except for DE, hospital diagnostic data that uses ICD-10-GM coding. No information was available on how the re-grouping of the short list diseases by ICD-10 was done in this case.

Also, the NL data sources used other classifications than ICD-10. The general practitioners information system (LINH) uses ICPC-1 and hospital discharges register is using ICD-9-CM. Mapping of the two classifications with ICD-10 was made during the morbidity pilot collection and covered all ICD-10 codes.

Chapter XX. External causes of morbidity

- Shortlist group A. All morbidity due to external causes (injuries, poisonings, etc.) (V01-Y89) – Incidence by episode and period prevalence
- Shortlist group B. Land transport accidents (V01-V89) – Incidence by episode and period prevalence
- Shortlist group C. Accidental falls (W00-W19) – Incidence by episode and period prevalence
- Shortlist group D. Accidental poisoning (X40-X49) – Incidence by episode and period prevalence
- Shortlist group E. Intentional self-harm (incl. suicidal attempt) (X60-X84) – Incidence by episode and period prevalence
- Shortlist group F. Assault (X85-Y09) – Incidence by episode and period prevalence
Countries that reported best estimates for external causes incidence and prevalence, used data sources that provided ICD-10 data regarding these diseases. In some cases though, the data source used for estimating land transport accidents incidence, was the road traffic accidents database which does not use ICD-10 or other disease classification (PL).

There are special issues in this chapter relating to codification. Countries that did not choose best estimates for this group of diseases analysed data sources such as causes of death registers, injury databases etc., but in many cases either the external causes were not coded or the linkage with other sources was not possible, decreasing the quality of estimates.
7 Breakdowns

Main questions addressed in this paragraph:

- Age and sex are usually available based on the excel table on sources. Are the age breakdowns comparable or referable to a common breakdown that can be proposed by the TF?
- As for age breakdowns, is there the possibility to differentiate age-groups according to the disease characteristics?
- Is it possible to propose other common breakdowns such as NUTS levels?

### Chapter I. Certain Infectious and Parasitic Diseases

- Diseases 1. Tuberculosis (A15-A19, B90) – Incidence by episode and period prevalence
- Diseases 2. Sexually transmitted diseases (STD) (A50-A64) – Incidence by episode and period prevalence
- Diseases 3. Viral hepatitis (incl. hepatitis B) (B15-B19) – Incidence by episode and period prevalence
- Diseases 4. Human immunodeficiency virus disease (HIV/AIDS) (B20-B24, Z21) – Incidence by episode, period prevalence and point prevalence

All incidence data for AT and CZ was given for both sexes and without age-standardisation. The same was true for prevalence data for at least some variables for AT, CZ, DE, NL and LV. Most likely sex- and age-specific data is available for these countries, but the reason why they were not provided by the pilot study countries remained unclear.

The breakdown by NUTS is less relevant for infectious diseases.

### Chapter II. Neoplasms

- Diseases 5. All malignant neoplasms (C00-C97) – Incidence by person and period prevalence
- Diseases 6. Malignant neoplasm of oesophagus (C15) – Incidence by person and period prevalence
- Diseases 7. Malignant neoplasm of stomach (C16) – Incidence by person and period prevalence
- Diseases 8. Malignant neoplasm of colon, rectum and anus (C18-C21) – Incidence by person and period prevalence
- Diseases 9. Malignant neoplasm of trachea, bronchus and lung (C33, C34) – Incidence by person and period prevalence
- Diseases 10. Malignant melanoma of skin (C43) – Incidence by person and period prevalence
- Diseases 11. Mesothelioma (C45) – Incidence by person and period prevalence
- Diseases 12. Malignant neoplasm of breast (C50) – Incidence by person and period prevalence
- Diseases 13. Malignant neoplasm of cervix uteri (C53) – Incidence by person and period prevalence
- Diseases 14. Malignant neoplasm of uterus other than cervix (C54, C55) – Incidence by person and period prevalence
- Diseases 15. Malignant neoplasm of ovary (C56) – Incidence by person and period prevalence
- Diseases 16. Malignant neoplasm of prostate (C61) – Incidence by person and period prevalence
- Diseases 17. Malignant neoplasm of bladder (C67) – Incidence by person and period prevalence
- Diseases 18. Leukaemia and other malignant neoplasms of lymphoid and haematopoietic tissue (C81-C96) – Incidence by person and period prevalence

Breakdowns by age and sex are possible in all countries; a couple of countries specify 5-year age-groups (HU, PL). AT does not present prevalence data stratified by sex, however, such estimates can be done. And CY does not show data by sex and age groups because of confidentiality issues.

Although, there was no specific question about regional breakdown, some countries have noted it (BE, DE, HU, LT, NL, RO, SK). However, it may be possible in other countries as well (PL, LV); in order to clarify that, the question must be specifically addressed. For cancer prevalence data, NL might be an exception as only one region actually provides prevalence data.
Chapter IV. Endocrine, nutritional and metabolic diseases

- Diseases 19. Diabetes mellitus (E10-E14) – Incidence by person, period prevalence and point prevalence

Most of the countries have data by age and sex (at least what is needed for standardized rate calculation). CZ, PL, SK have only specific age groups and both sex, RO – specific age groups. For incidence MT has only both sex and specific age groups. DE has data for 5-years age intervals but standardised rate was not calculated.

NUTS level breakdowns are available in BE, NL, LT, HU, DE, CZ, PL, SK. For international comparison usually NUTS2 level is used. For small countries this level is not applicable.

Generally, standard age and sex breakdown is available and there no need to select other age groups. In morbidity project the national estimates calculation was stressed, it could be the reason for some countries not to mention the possibility of NUTS level breakdowns.

Chapter V. Mental and behavioural disorders

- Diseases 20. Dementia (incl. Alzheimer's disease) (F00-F03, G30) – Period prevalence
- Diseases 21. Mental and behavioural disorders due to use of alcohol (incl. alcohol dependence) (F10) – Period prevalence
- Diseases 22. Mental and behavioural disorders due to use of psychoactive substances other than alcohol and tobacco (including drug dependence) (F11-F16, F18, F19) – Period prevalence
- Diseases 23. Schizophrenia (F20-F29) – Period prevalence
- Diseases 24. Depression and other affective disorders (F30-F39) – Period prevalence
- Diseases 25. Anxiety disorders (F40, F41) – Period prevalence
- Diseases 26. Eating disorders (F50) – Period prevalence

Most of the countries have data by age and sex (at least what is needed for standardized rate calculation). For CZ and AT the possibility to have age and sex data is stated but only crude data is presented for both sexes. DE has data for 5-years age intervals but age standardised rate was not calculated. SK has no necessary age groups data for calculation of age standardised rate.

NUTS level breakdowns are available in DE, BE, LT, HU depending on the indicator (DE for schizophrenia only). Other countries have not stated such possibility.

Chapter VI. Diseases of the nervous system

- Diseases 27. Parkinson's disease (G20) – Period prevalence
- Diseases 28. Multiple sclerosis (G35) – Period prevalence
- Diseases 29. Epilepsy (G40, G41) – Period prevalence
- Diseases 30. Migraine and other headache syndromes (G43, G44) – Period prevalence

Most of the countries have data by age and sex (at least what is needed for standardized rate calculation). For CZ and AT the possibility to have age and sex data is stated but only crude data is presented for both sexes. DE has data for 5-years age intervals but age standardised rate was not calculated. SK has no necessary age groups data for calculation of age standardised rate.

NUTS level breakdowns are available in BE, DE, HU, LT, SK, depending on the indicator. Other countries have not stated such possibility.

Chapter VII. Diseases of the eye and adnexa

- Diseases 31. Cataract (H25-H28) – Period prevalence
- Diseases 32. Glaucoma (H40, H42) – Period prevalence

Most of the countries have data by age and sex (at least what is needed for standardized rate calculation). For CZ and AT the possibility to have age and sex data is stated but only crude data is presented for both sexes. DE has data for 5-years age intervals but age standardised rate was not calculated. SK has no necessary age groups data for calculation of age standardised rate.

NUTS level breakdowns are available in BE, DE, HU, LT, SK, depending on the indicator. Other countries have not stated such possibility.
Despite not computing age-standardised rate by sexes for all pilot countries, most countries showed the possibility to collect data by sex, age and municipality.

SI collected data from health care providers with annual reports by wider age groups.

**Chapter VIII. Diseases of the ear and mastoid process**

- Diseases 33. Hearing loss (H90, H91) – Period prevalence

Despite not computing age-standardised rate by sexes for all pilot countries, most countries show possibility to collect data by sex, age and municipality.

SI collected data from health care providers with annual reports by wider age groups.

**Chapter IX. Diseases of the circulatory system**

- Diseases 34. Hypertensive diseases (I10-I13, I15) – Period prevalence
- Diseases 35. Ischaemic heart diseases (I20-I25) – Period prevalence
- Diseases 36. Acute myocardial infarction (I21, I22) – Incidence by person and period prevalence
- Diseases 37. Heart failure (I50) – Period prevalence
- Diseases 38. Cerebrovascular diseases (I60-I69) – Incidence by person and period prevalence

Data by age and sex were included by every country that provided data, with the exception of Austria and the Czech Republic who only provided rates for males and females combined.

Some countries indicated additional breakdowns including area of residence, socio-economic status were also available.

It is not always clear if the data are available in single year ages (allowing other age-groups to be created), or only at specific age-group levels.

**Chapter X. Diseases of the respiratory system**

- Diseases 39. Influenza (J09-J11) – Incidence by episode
- Diseases 40. Pneumonia (J12-J18) – Incidence by episode and period prevalence
- Diseases 41. Asthma (J45, J46) – Incidence by person and period prevalence
- Diseases 42. Chronic lower respiratory disease (J40-J44, J47) – Incidence by person and period prevalence

Data by age and sex were included by every country that provided data, with the exception of Austria and the Czech Republic who only provided rates for males and females combined.

Some countries indicated additional breakdowns including area of residence, socio-economic status were also available.

It is not always clear if the data are available in single year ages (allowing other age-groups to be created), or only at specific age-group levels.

**Chapter XI. Diseases of the digestive system**

- Diseases 43. Gastric and duodenal ulcer (peptic ulcer) (K25-K28) – Period prevalence
- Diseases 44. Alcoholic liver disease (K70) – Period prevalence
- Diseases 45. Diseases of liver other than alcoholic (K71-K77) – Period prevalence
- Diseases 46. Cholelithiasis (K80) – Incidence by person and period prevalence

Despite not computing age-standardised rate by sexes for all pilot countries, most countries show the possibility to collect data by sex, age and municipality.

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Some countries that collected data with annual reports (HU, SI) were not able to distinguish necessary age groups.

Chapter XII. Diseases of the skin and subcutaneous tissue

- Diseases 47. Dermatitis and eczema (L20-L30) – Period prevalence
- Disease 48. Psoriasis (L40) – Period prevalence

Despite not computing ASR by sexes for all pilot countries, most countries show the possibility to collect data by sex, age and municipality.

SI collected data from health care providers with annual reports by wider age groups.

Chapter XIII. Diseases of the Musculoskeletal System

- Diseases 49. Rheumatoid arthritis (M05, M06) – Period prevalence
- Diseases 50. Arthrosis (M15-M19) – Period prevalence
- Diseases 51. Systemic connective tissue disorders (M30-M36) – Period prevalence
- Diseases 52. Spondylopathies and other dorsopathies (incl. low back pain) (M45-M54) – Period prevalence
- Diseases 53. Osteoporosis (M80-M82) – Period prevalence

Data by age and sex were included by every country that provided data, with the exception of Austria and the Czech Republic who only provided rates for males and females combined.

Some countries indicated additional breakdowns including area of residence, socio-economic status were also available.

It is not always clear if the data are available in single year ages (allowing other age-groups to be created), or only at specific age-group levels.

Chapter XIV. Diseases of the Genitourinary System

- Diseases 54. Glomerular and renal tubulo-interstitial diseases (N00-N08, N10-N16) – Period prevalence
- Diseases 55. Renal Failure (N17-N19) – Period prevalence
- Diseases 56. Urolithiasis (N20-N23) – Incidence by person and period prevalence

Data by age and sex were included by every country that provided data, with the exception of Austria and the Czech Republic who only provided rates for males and females combined.

Some countries indicated additional breakdowns including area of residence, socio-economic status were also available.

It is not always clear if the data are available in single year ages (allowing other age-groups to be created), or only at specific age-group levels.

Chapter XIX. Injury, poisoning and certain other consequences of external causes

- Diseases 57. All morbidity due to injury, poisoning and certain other consequences of external causes (S00-T98) – Incidence by episode and period prevalence
- Diseases 58. Intracranial injury (S06) – Incidence by episode and period prevalence
- Diseases 59. Fracture of femur (S72) – Incidence by episode and period prevalence
- Diseases 60. Poisoning by drugs, medicaments and biological substances and toxic effects of substances chiefly nonmedicinal as to source (T36-T65) – Incidence by episode and period prevalence
Incidence and prevalence estimates by sex for this chapter were provided by all reporting countries. Age breakdowns were also provided by the countries that choose best estimates, except for RO whose incidence data were available by different age groups. Breakdown by NUTS level can be potentially available only for LT, DE and RO.

Chapter XX. External causes of morbidity

- Shortlist group A. All morbidity due to external causes (injuries, poisonings, etc.) (V01-Y89) – Incidence by episode and period prevalence
- Shortlist group B. Land transport accidents (V01-V89) – Incidence by episode and period prevalence
- Shortlist group C. Accidental falls (W00-W19) – Incidence by episode and period prevalence
- Shortlist group D. Accidental poisoning (X40-X49) – Incidence by episode and period prevalence
- Shortlist group E. Intentional self-harm (incl. suicidal attempt) (X60-X84) – Incidence by episode and period prevalence
- Shortlist group F. Assault (X85-Y09) – Incidence by episode and period prevalence
- Shortlist group G. Complications of medical and surgical care (Y40-Y66, Y69-Y84) – Incidence by episode and period prevalence

Incidence and prevalence estimates by sex for this chapter were provided by all reporting countries. Age breakdowns were also provided by the countries that choose best estimates, except for RO whose incidence data were available by different age groups. AT and CZ provided estimates for prevalence of diseases in this chapter, but not by sex and age. Breakdowns by NUTS are not available for this group of diseases.
8 Methodology

Main questions addressed in this paragraph:

- Was the linkage of data sources necessary (desired), possible (allowed) and feasible in practical terms? Are there differences in the final outcome of best estimates that are related to such linkage or the respective obstacles for incidence vs. prevalence indicators?
- Are there identified sources readily available and capable of providing estimates without the need of a linkage? If yes, for which indicators?
- Did countries use algorithms for avoiding double counting, for excluding false positives and for linking different sources? Did countries include the results of matching in the reports and declare that the results are of acceptable quality?
- Is relevant information missing for the reported algorithms?
- Could the differently used algorithms "summed up" in general terms in order to include it in the recommendations? Can they be grouped according to certain criteria so to have different clusters of algorithms to propose for adoption?

Chapter I. Certain infectious and parasitic diseases

- Diseases 1. Tuberculosis (A15-A19, B90) – Incidence by episode and period prevalence
- Diseases 2. Sexually transmitted diseases (STD) (A50-A64) – Incidence by episode and period prevalence
- Diseases 3. Viral hepatitis (incl. hepatitis B) (B15-B19) – Incidence by episode and period prevalence
- Diseases 4. Human immunodeficiency virus disease (HIV/AIDS) (B20-B24, Z21) – Incidence by episode, period prevalence and point prevalence

The majority of the countries took the incidence data from one data source, even though in the primary data collection the use of multiple sources was possible. Due to low coverage, DE and NL used linkages and multiple data sources, but the feasibility of this method was evaluated to be low. Besides DE and NL, BE used algorithm to avoid double counting, but this was done already in the primary data source.

For prevalence data, POL used multiple data sources to calculate the figures for Human immunodeficiency virus disease (HIV/AIDS). Aggregated data was combined from two sources combined, but the data manipulation to remove duplicate records was done within HIV/AIDS database only. Detailed information on the algorithm and procedure was missing.

Chapter II. Neoplasms

- Diseases 5. All malignant neoplasms (C00-C97) – Incidence by person and period prevalence
- Diseases 6. Malignant neoplasm of oesophagus (C15) – Incidence by person and period prevalence
- Diseases 7. Malignant neoplasm of stomach (C16) – Incidence by person and period prevalence
- Diseases 8. Malignant neoplasm of colon, rectum and anus (C18-C21) – Incidence by person and period prevalence
- Diseases 9. Malignant neoplasm of trachea, bronchus and lung (C33, C34) – Incidence by person and period prevalence
- Diseases 10. Malignant melanoma of skin (C43) – Incidence by person and period prevalence
- Diseases 11. Mesothelioma (C45) – Incidence by person and period prevalence
- Diseases 12. Malignant neoplasm of breast (C50) – Incidence by person and period prevalence
- Diseases 13. Malignant neoplasm of cervix uteri (C53) – Incidence by person and period prevalence
- Diseases 14. Malignant neoplasm of uterus other than cervix (C54, C55) – Incidence by person and period prevalence
- Diseases 15. Malignant neoplasm of ovary (C56) – Incidence by person and period prevalence
- Diseases 16. Malignant neoplasm of prostate (C61) – Incidence by person and period prevalence
- Diseases 17. Malignant neoplasm of bladder (C67) – Incidence by person and period prevalence
- Diseases 18. Leukaemia and other malignant neoplasms of lymphoid and haematopoietic tissue (C81-C96) – Incidence by person and period prevalence
Incidence by person

Calculation of cancer incidence estimates, overall, was not associated with strong methodological challenges if compared to other groups of diseases. Many countries obviously can get all necessary data from the cancer registers as there was no linkage between different data sources used (EE, FI, LV, NL, PL, SI). Some countries (AT, CY) did linkage between cancer register and death register to add cases where cancer is diagnosed only after death, so called DCO (death certificate only) cases, but others (EE, LT, PL) recognize that linkage to the death register would improve completeness, although it was not possible.

However, regarding methodology, it is not always clear whether all countries have used the same approach where DCO cases are included in the final number.

Period prevalence

Above mentioned uncertainty about DCO cases applies to prevalence as well. And AT raises debate whether DCO cases have to be included in prevalence estimates or not.

Apart from that, there is a variety of approaches for prevalence calculation used. Some countries have estimated prevalence from incidence data and indicators of mortality / survival (AT, HU, PL) or by adding point prevalence at the beginning of the year and incidence during next year (NL), or by adding point prevalence at the end of the year and deaths during last year. AT has calculated prevalence indicators in several steps from point prevalence to partial prevalence and to period prevalence.

However, it seems (this is not clearly stated) that the cancer registers in many countries (and the health insurance data base in EE) provide opportunity to identify prevalent cases directly (using identification numbers) as no additional computations are reported (CZ, FI, LT, LV, RO).

Neither linkage nor specific algorithms have been used if the HIS was the source for prevalence calculation (CY).

Chapter IV. Endocrine, nutritional and metabolic diseases

- Diseases 19. Diabetes mellitus (E10-E14) – Incidence by person, period prevalence and point prevalence

Unique identifier for person is used in most of the countries and databases: BE (health insurance data, but not in GP’s data), EE, FI, LT, LV, NL, DE (only inside one insurance company), RO, SI (hospital data), HU. But for the project different data sources was not linked: some countries were not able to link databases due to confidentiality reasons (EE, LT, HU, BE). SI mentioned the need of linkage of hospital, out-patient and primary health care data, but linkage was not possible as out-patient and primary health care databases have no personal ID.

In order to calculate estimates from GP’s data sample statistical methods were used in The Netherlands: for the incidence measures a Poisson model, for the prevalence – a logistic model. Since the sample is not random, extrapolation of the findings towards the total population may be biased.

Only FI was used ad hoc linkage of two databases for the calculation of diabetes rates. BE, DE have used few data sources for particular indicator of diabetes. DE had calculated data from all possible data sources but have no possibility link different sources. BE have chosen only one data source. From the reports it is not very clear if one data source was chosen because of more data sources are not available or reliable, or because of linkage problems.

Even without using the linkage of different data sources, definitions developed by some countries include data validation algorithms (DE, BE, LT, EE, FI). Most of the countries, which have used insurance data for diabetes rates calculation, have developed special operational definition for data calculation and validation. Although details not always are clear in the countries reports.
Chapter V. Mental and behavioural disorders

- Diseases 20. Dementia (incl. Alzheimer's disease) (F00-F03, G30) – Period prevalence
- Diseases 21. Mental and behavioural disorders due to use of alcohol (incl. alcohol dependence) (F10) – Period prevalence
- Diseases 22. Mental and behavioural disorders due to use of psychoactive substances other than alcohol and tobacco (including drug dependence) (F11-F16, F18, F19) – Period prevalence
- Diseases 23. Schizophrenia (F20-F29) – Period prevalence
- Diseases 24. Depression and other affective disorders (F30-F39) – Period prevalence
- Diseases 25. Anxiety disorders (F40, F41) – Period prevalence
- Diseases 26. Eating disorders (F50) – Period prevalence

The use of personal ID is important for data validation (elimination of duplications) as well as for linkage of different data sources.

The linkage of different databases using personal ID was used only in FI. Sort of linkage was done in PL between psychiatric hospital data counting hospitalized patients (includes only F00-F03 data) and health insurance data counting out-patient who were not hospitalized. Records were linked using data of birth, sex, the first two letters of surname and name.

NL for prevalence of dementia calculation from GP’s data sample a logistic model was used. For data calculation from GP’s database LINH (diseases 23-26) patients were identified using the composite key based on date birth, sex and partial postal code what enables unique linkage for 80% of records. Since the sample is not random, extrapolation of the findings towards the total population may be biased.

Unique identifier for person is used in most of the countries and databases: BE, EE, FI, LT, LV, NL, DE (this last one only inside one insurance company), RO, SI (hospital data), HU. In AT for person identification ZIP code, data of birth, sex were used. But for the project different data sources was not linked: linkage was not possible as not all data sources have personal ID or data for statistical calculation is anonymised (SI, DE, EE, LT, HU) with no possibility for further linkage or linkage is not possible because of confidentiality.

It seems that the linkage is still a problem for the most of the countries due to different reasons.

Chapter VI. Diseases of the nervous system

- Diseases 27. Parkinson's disease (G20) – Period prevalence
- Diseases 28. Multiple sclerosis (G35) – Period prevalence
- Diseases 29. Epilepsy (G40, G41) – Period prevalence
- Diseases 30. Migraine and other headache syndromes (G43, G44) – Period prevalence

The use of personal ID is important for data validation (elimination of duplications) as well as for linkage of different data sources. Unique identifier for person is used in most of the countries and databases: BE, EE, FI, LT, PL, DE (this last one only inside one insurance company), RO, SI (hospital data), HU. In AT for person identification ZIP code, data of birth, sex were used. But for the project different data sources was not linked: linkage was not possible as not all data sources have personal ID or data for statistical calculation is anonymised (SI, DE, EE, LT, HU) with no possibility for further linkage or linkage is not possible because of confidentiality.

It seems that the linkage is still a problem for the most of the countries due to different reasons.
Chapter VII. Diseases of the eye and adnexa

- Diseases 31. Cataract (H25-H28) – Period prevalence
- Diseases 32. Glaucoma (H40, H42) – Period prevalence

For data computing the linkage of different databases was done by FI and NL. FI had the possibility to link data with ID, but linkage was complicated because of the data protection law. Using composite key between databases was more complicated because of technical reasons (NL has reported that 80% cases were linked in this way).

Avoiding double cases in the same database/parts of database the composite key or ID was used by member states (AT, EE, HU, LT, PL).

No special algorithms were described to correct coverage, except countries that used sample for data computing. NL used logistic regression to compute national prevalence rate from a sample of patients of general practitioners. CY (HIS) obtained prevalence rates after adjusting to the real proportions of the population by using weights.

Countries did not note that different population at risk was used for computing prevalence rate when data coverage was not complete.

Chapter VIII. Diseases of the ear and mastoid process

- Diseases 33. Hearing loss (H90, H91) – Period prevalence

For computing hearing loss data the linkage of statistical system (discharges) and reimbursements of health-related benefits was done by FI.

Inside one database/parts of database duplicated cases were avoided using composite key or ID (AT, EE, HU, LT, PL).

Special algorithms were not described to correct coverage, except countries that used sample for data computing. NL used logistic regression to compute national prevalence rate from a sample of patients of general practitioners.

Countries did not mention that different population at risk was used for computing prevalence rate when data coverage was not complete.

Chapter IX. Diseases of the circulatory system

- Diseases 34. Hypertensive diseases (I10-I13, I15) – Period prevalence
- Diseases 35. Ischaemic heart diseases (I20-I25) – Period prevalence
- Diseases 36. Acute myocardial infarction (I21, I22) – Incidence by person and period prevalence
- Diseases 37. Heart failure (I50) – Period prevalence
- Diseases 38. Cerebrovascular diseases (I60-I69) – Incidence by person and period prevalence

Incidence by person

Data linkage was done by SI, FI and PL by using different sources and methodologies in the case of AMI. In SI and FI the unique identifier ID was available and used. FI did an ad hoc linkage of three registers not including the CoD one, this further linkage can be done in the future. Lithuania and Poland created a simplified ID key consisting for PL of date of birth, sex and place of residence territorial number. By this method Poland successfully linked the hospital morbidity study and the CoD register, and persons who died from heart attack outside of hospitals (not treated previously in hospitals) were added to hospital patients. Potential biases in the method used in Poland are mis-diagnosed AMI for deaths occurring outside hospitals.

Estonia identified and merged two sources (Health insurance and CoD register), thanks to the unique identifier key. A linkage was not done, and the key was used to avoid duplicates: in this way 90% of persons with a new
AMI recorded in hospital + all nonhospital deaths from AMI were used for the estimates on incidence by persons.

Belgium identified and merged two sources (Hospital discharges and CoD register), but both these did not provide individual data, only aggregates; Indeed, acording to privacy regulations only aggregated data are provided, but individual data are accessible to the civil servants compiling the data. Furthermore to avoid double counting AMI- incidence figures are obtained by combination of non-fatal cases, based on MCD and fatal cases, based on CoD data. In Belgium hospital discharges records are episode based and hospitals are required to use the same patient-id during a year (which nowadays has been extended to the whole life-span). Although transferred patients can theoretically be identified, the mentioning variable is not well filled out\(^4\). This problem is vanishing because patients are now immediately directed to centers providing Percutaneous Coronary Intervention or CABG. Therefore it is unlikely that incidence-figures will be considerably overestimated due to doubling counting.

In the case of AMI underestimation may be present as shown in the past\(^4\) by the comparison with Multinational Monitoring of Trends and Determinants in Cardiovascular Diseases (MONICA) project\(^6\) data. The real problem lies with the diagnosis: level of knowledge of the case in the CoD certifying physician and, at the hospital level, as stated in the referenced article “Changes in definition and the diversity of the various cardiac troponin assays may have heavily affected AMI incidence rates and AMI-CFRs”.

The Netherlands used a Poisson model to estimate incidence as a function of age, sex and interactions, with a GP identifier as a random intercept to capture the differences between GP (differences in case definition, socioeconomic status, GP practices, GP computer software). Since the GP sample is not random, extrapolation of the findings towards the total population may be biased.

Germany estimates were based on one available source consisting of five insurance companies covering 11% of the population; furthermore the ID was available from only one among these.

For CVD Finland linked two registries by the unique identifier key, but being primary care patients not included in neither one of the two sources, the estimate is somewhat biased. For the rest, the same methodologies used for incidence estimations of AMI were used.

**Period prevalence**

Most countries did not or could not use data linkage, nor require any algorithms. In some cases this was due to the absence of a unique health identifier to enable linkage, or data protection or patient confidentiality rules that prohibit linkage.

Some countries did however use different methodologies in the calculation of the indicators, either to estimate prevalence or to avoid overestimation.

Hypertensive diseases are typically treated by GP or in outpatients regime by specialists. These diseases required therefore the integration of more sources in order to provide complete estimates on prevalence in the population. Linkage of different sources was done by FI.

The Netherlands used a composite key based on date birth, sex and partial postal code which enabled unique linkage for 80% of records belonging to a non-random sample from a GP network database (LINH) with pooled three years data collected. The pooling was done to catch people who do not contact their GP annually. However, patients present during all three years appear to have a slightly higher prevalence of most chronic diseases. In future analyses, this effect partially can be corrected for by additional weighting of the population (consisting of a multiple step weighting method based on the probability to link, sex, age, level of urbanization, ethnicity, and mean neighborhood income level) and by reducing the time-period to two years, which leads to a smaller reduction of the population and less bias. For the rest of diseases included in the SL, no other specific procedures were followed which substantially differed from those already described. The some of the attempts done by pilot countries of using univocal keys for prevalence estimations are reported below.


In Estonia, a unique anonymised personal identifiable code was used in order to avoid duplicated cases. An algorithm was derived whereby prevalence was calculated on the basis of persons having at least 2 family practitioner invoices or at least one hospital or two specialists’ invoices.

In Austria data linkage was not done, but it was possible to eliminate duplicated cases from the HDR by matching ZIP code, date of birth, sex and nationality.

In Poland the inpatient and specialist ambulatory databases were linked and an algorithm was used to exclude multiple visits.

In the Netherlands the data were not linked, but a logistic regression model was used to estimate prevalence. No detailed algorithms were provided by any country.

**Chapter X. Diseases of the respiratory system**

- Diseases 39. Influenza (J09-J11) – Incidence by episode
- Diseases 40. Pneumonia (J12-J18) – Incidence by episode and period prevalence
- Diseases 41. Asthma (J45, J46) – Incidence by person and period prevalence
- Diseases 42. Chronic lower respiratory disease (J40-J44, J47) – Incidence by person and period prevalence

Most countries did not or could not use data linkage, nor require any algorithms. In some cases this was due to the absence of a unique health identifier to enable linkage, or data protection or patient confidentiality rules that prohibit linkage.

Some countries did however use different methodologies in the calculation of the indicators, either to estimate prevalence or to avoid overestimation.

**Incidence by episode and incidence by person**

Almost none of the countries did or could use data linkage for calculating the estimates on incidence by episode for influenza and pneumonia, and on incidence by person for asthma and chronic lower respiratory disease. The exceptions were NL for pneumonia; here the LINH GP network databases, the alternative source, produced estimates close to those provided by the main source (the GPRN network databases, wherein LINH is included) and FI for asthma and chronic lower respiratory diseases. The personal ID was available for some of the sources used by the pilot countries, and could be used in the future, subject either to legal authorization and/or wider availability across different sources.

Estimated standardized rates for incidence by persons were provided by four countries only (EE, FI, LT, NL), confirming the difficulties in accessing the right information and and/or the right authorizations/tools for correct persons-based calculations.

**Period prevalence**

In Estonia, a unique anonymised personal identifiable code was used in order to avoid duplicated cases. An algorithm was derived whereby prevalence was calculated on the basis of persons having at least 2 family practitioner invoices or at least one hospital or two specialists’ invoices.

In Austria data linkage was not done, but it was possible to eliminate duplicated cases by ZIP code, date of birth, sex and nationality.

In Poland the inpatient and specialist ambulatory databases were linked and an algorithm was used to exclude multiple visits.

For the moment in the Netherlands LINH (one year for pneumonia, multiple years otherwise) is considered the best source. As HDR may include patients that were not included in the registration of general practitioners, a combination of registers may be relevant for future analyses. A logistic regression model was used to estimate prevalence.

No detailed algorithms were provided by any country.
Chapter XI. Diseases of the digestive system

- Diseases 43. Gastric and duodenal ulcer (peptic ulcer) (K25-K28) – Period prevalence
- Diseases 44. Alcoholic liver disease (K70) – Period prevalence
- Diseases 45. Diseases of liver other than alcoholic (K71-K77) – Period prevalence
- Diseases 46. Cholelithiasis (K80) – Incidence by person and period prevalence

Incidence by person

NL, LT and EE explained how incidence by persons for cholelithiasis was computed.

The doctors have to identify is the diagnosis confirmed the first time in life or not in LT and EE. Specific modifiers are used in the database for separating new cases (“+” means that disease is diagnosed the first time in life).

LT chose from database identified persons having at least one particular diagnosis registered with a modifier „+” per year. EE used algorithm „Persons having at least one specialist or hospital invoice with modifier “+” of cholelithiasis code during the year are included; family doctors visits not taken into account”. Algorithm is used to improve diagnosing quality, because doctors could over diagnose symptoms or conditions. Cholelithiasis diagnosed by family doctor is usually transferred to the specialist to decide operative treatment need in EE.

NL has used the episode based general practitioners database. Each episode should be registered whether new or not. To convert cases into persons the linked data with population registry (enable for 80%) were used. A multiple step weighting method is available based on probability to link, sex, age, level of urbanization, ethnicity, and mean neighbourhood income level and would be used in future. Incidence estimates were generated with Poisson model.

Period prevalence

Linkage of different databases was done by FI, but mainly countries used one database or parts of database for data computing. Avoiding double cases the composite key or ID was used by member states (AT, EE, HU, LT, PL).

No special algorithms were described to correct coverage, except NL who computed data from small sample of population. NL has mentioned correcting limited linkage variables and non response hospital either. CY (HIS) obtained prevalence rates after adjusting to the real proportions of the population by using weights.

Countries did not mention that different population at risk was used for computing prevalence rate when data coverage was not complete.

LT has separated the reason (diagnoses) of the services and final diagnoses, thus avoiding direct influence of the health insurance reimbursement system on morbidity statistics. However it should also be noted that diagnosis has no direct influence for paying for services in out-patient care as services part and diagnosis part of data is separated. Per capita payment system used in primary health care has no direct influence to diagnosis as well. But reimbursement of medicine certainly has influence to diagnosis on all levels of health care. DRG system used in hospitals has influence to inpatient diagnosis as well.

Chapter XII. Diseases of the skin and subcutaneous tissue

- Diseases 47. Dermatitis and eczema (L20-L30) – Period prevalence
- Disease 48. Psoriasis (L40) – Period prevalence

The linkage of different databases was done by FI.

Inside database/parts of database the composite key or ID was used by member states (AT, EE, HU, LT, PL) to avoid double cases.

No special algorithms were described to correct coverage, except NL. A multiple step weighting method is available based on probability to link, sex, age and level of urbanization, ethnicity, and mean neighbourhood income level.

83
Countries did not mention that different population at risk was used for computing prevalence rate when data coverage was not complete.

EE used the algorithm “Persons having at least 2 invoices with psoriasis code or at least one specialist or one hospital invoice with psoriasis code during the year” for reducing possible over registering by doctors.

**Chapter XIII. Diseases of the Musculoskeletal System**

- Diseases 49. Rheumatoid arthritis (M05, M06) – Period prevalence
- Diseases 50. Arthrosis (M15-M19) – Period prevalence
- Diseases 51. Systemic connective tissue disorders (M30-M36) – Period prevalence
- Diseases 52. Spondylopathies and other dorsopathies (incl. low back pain) (M45-M54) – Period prevalence
- Diseases 53. Osteoporosis (M80-M82) – Period prevalence

Most countries did not or could not use data linkage, or require any algorithms. In some cases this was due to the absence of a unique health identifier to enable linkage, or data protection or patient confidentiality rules that prohibit linkage.

Some countries did however use different methodologies in the calculation of the indicators, either to estimate prevalence or to avoid overestimation.

In Estonia, a unique anonymised personal identifiable code was used in order to avoid duplicated cases. An algorithm was derived whereby prevalence was calculated on the basis of persons having at least 2 family practitioner invoices or at least one hospital or two specialists’ invoices. In Austria data linkage was not done, but it was possible to eliminate duplicated cases by ZIP code, date of birth, sex and nationality. In Poland the inpatient and specialist ambulatory databases were linked and an algorithm was used to exclude multiple visits. In the Netherlands the data were not linked, but a logistic regression model was used to estimate prevalence. In Finland data linkage was carried out between different registers using the personal identity code which is included in all registers.

No detailed algorithms were provided by any country.

**Chapter XIV. Diseases of the Genitourinary System**

- Diseases 54. Glomerular and renal tubulo-interstitial diseases (N00-N08, N10-N16) – Period prevalence
- Diseases 55. Renal Failure (N17-N19) – Period prevalence
- Diseases 56. Urolithiasis (N20-N23) – Incidence by person and period prevalence

Most countries did not or could not use data linkage, or require any algorithms. In some cases this was due to the absence of a unique health identifier to enable linkage, or data protection or patient confidentiality rules that prohibit linkage.

Some countries did however use different methodologies in the calculation of the indicators, either to estimate prevalence or to avoid overestimation.

In Estonia, a unique anonymised personal identifiable code was used in order to avoid duplicated cases. An algorithm was derived whereby prevalence was calculated on the basis of persons having at least 2 family practitioner invoices or at least one hospital or two specialists’ invoices. In Austria data linkage was not done, but it was possible to eliminate duplicated cases by ZIP code, date of birth, sex and nationality. In Poland the inpatient and specialist ambulatory databases were linked and an algorithm was used to exclude multiple visits. In the Netherlands the data were not linked, but a logistic regression model was used to estimate prevalence. In Finland data linkage was carried out between different registers using the personal identity code which is included in all registers.

No detailed algorithms were provided by any country.
Chapter XIX. Injury, poisoning and certain other consequences of external causes

- Diseases 57. All morbidity due to injury, poisoning and certain other consequences of external causes (S00-T98) – Incidence by episode and period prevalence
- Diseases 58. Intracranial injury (S06) – Incidence by episode and period prevalence
- Diseases 59. Fracture of femur (S72) – Incidence by episode and period prevalence
- Diseases 60. Poisoning by drugs, medicaments and biological substances and toxic effects of substances chiefly nonmedicinal as to source (T36-T65) – Incidence by episode and period prevalence

For the incidence estimations the countries used, in majority, only one data source which covered either only hospital cases, only outpatient cases, only primary care cases or inpatient and outpatient cases. The databases contain personal identifier and can be linked with other databases. Exception is LT that cannot link the health insurance fund database with other databases.

Also, NL linked outpatient and inpatient data from the HDR, using a composite key based on birth date, sex and partial postal code. As these were the only linkage variables available, not all discharges can be unlikely linked to a person; this enabled unique linkage for 85% of the records. The algorithm used included advanced weighting techniques It also corrects for non response hospital, based on an old year which was almost complete (2004).

The prevalence estimations were obtained mainly through one source. There were few cases when countries used linkage between two sources in order to avoid double counting. Thus, PL linked data regarding inpatient cases with specialty ambulatory cases, excluding the multiple visits.

EE used for both incidence and prevalence two data sources, health insurance fund database and causes of death register. Although both sources used personal identification, they were not used for linkage. The indicators were calculated by adding non-hospital deaths by injury to all episodes regarding the assigned diseases.

NL calculated prevalence calculated using the weighted subpopulation of people linkable over the full year.

For both incidence and prevalence estimations linkage of individual records was done to avoid double counting in some cases by pilot countries (EE, NL, LT, FI, PL) depending on the injury and source used. The algorithm provided for estimation of incidence defined a new episode of injury during the year if occurred at least 2 months from the previous injury for the same person.

Chapter XX. External causes of morbidity

- Shortlist group A. All morbidity due to external causes (injuries, poisonings, etc.) (V01-Y89) – Incidence by episode and period prevalence
- Shortlist group B. Land transport accidents (V01-V89) – Incidence by episode and period prevalence
- Shortlist group C. Accidental falls (W00-W19) – Incidence by episode and period prevalence
- Shortlist group D. Accidental poisoning (X40-X49) – Incidence by episode and period prevalence
- Shortlist group E. Intentional self-harm (incl. suicidal attempt) (X60-X84) – Incidence by episode and period prevalence
- Shortlist group F. Assault (X85-Y09) – Incidence by episode and period prevalence
- Shortlist group G. Complications of medical and surgical care (Y40-Y66, Y69-Y84) – Incidence by episode and period prevalence

Countries that used hospital data or health insurance data to provide best estimates for external causes group were able to used personal identification data, to avoid double counting.

Estonia used two data sources, as for chapter XIX. For incidence it added all non-hospital death to the number of new episodes during the year, defined when at least two months have passed from the previous accident. In one case (PL), data from the road accident database could not be linked, no personal identification is used.

The small number of countries who provided estimates for the diseases in this chapter could be explained by the inconsistencies of the data sources. Because some the external cases (land transport accidents, accidental falls, accidental poisoning, intentional self-harm and assault) vary from mild to severe injuries, or even death, multiple data sources can be linked. The lack of unique identification of entries in the database, other identifiers or lack of
disease codification that could allow linkage between sources were the main causes for not choosing best estimates for this group of diseases.
9 Hints on comparability (geographical and over time, periodicity of data collection)

Some notes for reading and interpreting the following paragraph are necessary.

1. Referring to tables “Summary of pilot data”: “Complete data set provided” refers to the number of countries (out of 16 countries in total) who supplied age-standardised rates, crude rates and absolute numbers for both males and females; “Incomplete data set provided” refers to the number of countries who supplied some data, but did not provide complete data on age-standardised rates, crude rates and absolute numbers for both males and females. Some countries were able to provide age-standardized rates (by sex) per 10,000 but did not provide either crude rates and/or absolute numbers, that were needed to compute those age-standardized rates (by sex) per 10,000 and that were required in order to be considered “complete”. However, from the viewpoint of comparability these age-standardized rates (by sex) per 10,000 seem the most appropriate.

2. The crude rates and standardized rates are presented in two separate sets of graphs, being the standardized rates the most useful for comparisons among different countries.

3. Some countries are not shown in the graphs on estimates: this is mainly due to either a specific request that the estimates should not be made publicly available or the fact that the country presented several different sets of data derived from different sources and did not make a choice about the best one for showing data at national level. Both these reasons apply for instance to Germany.

4. In order to assist the reader in having a clearer view of the estimates presented in the following graphs, the sources have been grouped mainly based on their similarities on purposes and/or methodologies used (Table 36). For example those grouped under the term "Hospital data" are meant to collect data on hospital discharges, whereas those grouped under the term "Insurance" are mainly reimbursement-driven sources, and grouped under the term "Combined" are the examples where a linkage of two or more sources was done. The indication "N/A" in the reported graphs should be read as "no reliable source or data not available". This is particularly evident when data crude rates and standardized rates are shown for the same country. In fact, in some cases the pilot countries provided the crude rates only. Being the second indicator derived from the first one, it is evident that one (or more) source was identified, but the standardized estimates were not provided in some cases due to different reasons.

### Table 36: Categories of the graphs

<table>
<thead>
<tr>
<th>Category</th>
<th>Sources included in the category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disease-specific register</td>
<td>Includes administrative public health registries and different kinds of administrative reports.</td>
</tr>
<tr>
<td>Hospital data</td>
<td>Includes data from hospitals discharges both for inpatients and day cases. For Finland: Data on hospitals includes inpatient care, day cases and outpatient care excluding groups related to external causes of injuries and accidents (groups 57-60 and A-G) which only include inpatient care and day cases.</td>
</tr>
<tr>
<td>Providers of ambulatory health care</td>
<td>Includes data from General Practitioners’ information systems, such as reports on GPs activities, primary care information systems, prescriptions from information systems, data for outpatients and data from specialists (providing care outside a hospital).</td>
</tr>
<tr>
<td>Insurance</td>
<td>Includes data from compulsory health insurances and from voluntary ones. For Romania insurance data source refers to hospital data. For Latvia there are two possible mutually exclusive options - data can refer to out-patient or in-patient data set.</td>
</tr>
<tr>
<td>Self-reported (HIS or EHIS)</td>
<td>Data from HIS and EHIS surveys.</td>
</tr>
<tr>
<td>Combined</td>
<td>Includes linked/merged information from different data sources.</td>
</tr>
<tr>
<td>N/A</td>
<td>Non available data. This may include situations where the pilot countries did not provide the standardized rates, but only the crude ones. This was mainly due to a certain level of uncertainty about the estimates.</td>
</tr>
</tbody>
</table>
Chapter I. Certain infectious and parasitic diseases

The definitions of the selected four infectious diseases are clear. For tuberculosis, most countries, with the exception of LT, do not cover the ICD-10 code B90 (Sequelae of tuberculosis) in identifying their cases. For sexually transferred infections (STI), most of the reported cases are Chlamydia cases, but several countries do not collect data on Chlamydia (yet) or the coverage is very limited. National information systems on infectious diseases should be expanded to cover Chlamydia cases. For viral hepatitis, including Hepatitis B, the combination of different viral hepatitis (A, B and C) as one category is not the most ideal way to collect data because of the different aetiology and risk factors of each disease. For Human immunodeficiency virus disease (HIV/AIDS), all countries could not use the ICD-10 code Z21 (Asymptomatic human immunodeficiency virus [HIV] infection status) to identify the cases.

Data on the selected infectious diseases were collected for incidence by episode (all four diseases), period prevalence (all four diseases) and point prevalence (HIV/AIDS only) (Table 37).

Table 37: Summary of Pilot Data

<table>
<thead>
<tr>
<th>Morbidity Shortlist Number</th>
<th>Name of disease</th>
<th>ICD-10 codes corresponding</th>
<th>Measure</th>
<th>Complete data set provided</th>
<th>Incomplete data set provided</th>
<th>No data supplied</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tuberculosis</td>
<td>A15-A19, B90</td>
<td>Incidence by episode</td>
<td>11</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>1</td>
<td>Tuberculosis</td>
<td>A15-A19, B90</td>
<td>Period prevalence</td>
<td>9</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Sexually transmitted diseases</td>
<td>A50-A64</td>
<td>Incidence by episode</td>
<td>9</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>Sexually transmitted diseases</td>
<td>A50-A64</td>
<td>Period prevalence</td>
<td>7</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>Viral hepatitis, including Hepatitis B</td>
<td>B15-B19</td>
<td>Incidence by episode</td>
<td>11</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Viral hepatitis, including Hepatitis B</td>
<td>B15-B19</td>
<td>Period prevalence</td>
<td>9</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>Human immunodeficiency virus disease (HIV/AIDS)</td>
<td>B20-B24, Z21</td>
<td>Incidence by episode</td>
<td>12</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Human immunodeficiency virus disease (HIV/AIDS)</td>
<td>B20-B24, Z21</td>
<td>Period prevalence</td>
<td>7</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>Human immunodeficiency virus disease (HIV/AIDS)</td>
<td>B20-B24, Z21</td>
<td>Point prevalence</td>
<td>4</td>
<td>3</td>
<td>9</td>
</tr>
</tbody>
</table>

- Diseases 1. Tuberculosis (A15-A19, B90)

All pilot countries excluding Belgium were able to provide at least some information on tuberculosis. The crude incidence rates varied between 0.5 and 3.7 per 10 000 population in all countries but Latvia (12.2/10 000) (Table 38).

Only 12 pilot countries provided period prevalence, which varied from 0.6/10 000 in the Netherlands to above 20/10 000 in Poland, Estonia and Latvia.
Data on new cases of tuberculosis are collected also by WHO Regional Office for Europe and ECDC (Table 38). The data shows that the similar data with only a minor variation can be found in all countries except Lithuania, for which the estimate in the pilot study was almost double compared to the rates reported to WHO and ECDC. This suggests that the ECDC data is underreported and their quality should be improved.

**Table 38:** Crude tuberculosis incidence rate per 10 000 population in different international data sources (2005)

<table>
<thead>
<tr>
<th>Country</th>
<th>Eurostat</th>
<th>WHO</th>
<th>ECDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>1.2</td>
<td>1.1</td>
<td>1.2</td>
</tr>
<tr>
<td>BE</td>
<td>..</td>
<td>1.0</td>
<td>1.1</td>
</tr>
<tr>
<td>CY</td>
<td>0.5</td>
<td>0.4</td>
<td>0.5</td>
</tr>
<tr>
<td>CZ</td>
<td>0.9</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>EE</td>
<td>3.7</td>
<td>3.6</td>
<td>3.8</td>
</tr>
<tr>
<td>FI</td>
<td>0.7</td>
<td>0.6</td>
<td>0.7</td>
</tr>
<tr>
<td>HU</td>
<td>2.0</td>
<td>1.8</td>
<td>1.9</td>
</tr>
<tr>
<td>LT</td>
<td>12.2</td>
<td>6.2</td>
<td>7.5</td>
</tr>
<tr>
<td>LV</td>
<td>5.4</td>
<td>6.1</td>
<td>6.3</td>
</tr>
<tr>
<td>MT</td>
<td>0.5</td>
<td>0.5</td>
<td>0.6</td>
</tr>
<tr>
<td>NL</td>
<td>0.6</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>PL</td>
<td>2.3</td>
<td>2.1</td>
<td>2.4</td>
</tr>
<tr>
<td>RO</td>
<td>..</td>
<td>12.1</td>
<td>13.5</td>
</tr>
<tr>
<td>SI</td>
<td>1.2</td>
<td>1.3</td>
<td>1.4</td>
</tr>
<tr>
<td>SK</td>
<td>1.4</td>
<td>1.3</td>
<td>1.4</td>
</tr>
<tr>
<td>Minimum</td>
<td>0.5</td>
<td>0.4</td>
<td>0.5</td>
</tr>
<tr>
<td>Average</td>
<td>2.5</td>
<td>2.5</td>
<td>2.8</td>
</tr>
<tr>
<td>Maximum</td>
<td>12.2</td>
<td>12.1</td>
<td>13.5</td>
</tr>
</tbody>
</table>

.. No data
**Figure 1:** Indicators on tuberculosis per 10 000 population according to pilot studies for Eurostat Morbidity Statistics (2005)

**Figure 2:** Disease 1 – Tuberculosis, Incidence by episode, Age-standardised rate per 10,000 (2005)

1. Tuberculosis
   Incidence by episode (2005)
Figure 3: Disease 1 – Tuberculosis, Incidence by episode, Crude rate per 10 000 (2005)

1. Tuberculosis
Incidence by episode (2005)

Figure 4: Disease 1 – Tuberculosis, Period prevalence, Age-standardised rate per 10 000 (2005)

1. Tuberculosis
Period prevalence (2005)
Diseases 2. Sexually transmitted diseases (STD) (A50-A64)

The Eurostat Morbidity classification includes all sexually transmitted infections, while most of the national reporting systems on infectious diseases include only Syphilis, Gonorrhoea and Chlamydia. For several countries, Chlamydia is not covered by the national data collection schemes (ECDC 2011). Therefore, the number of reported Chlamydias varied significantly between countries. For example ECDC reported 1 cases for Cyprus and 12 720 cases for Finland in 2005.

There were no data available for Austria, Belgium, Hungary and the Netherlands (Figure 6).

This is also reflected in the pilot results with a 50-fold difference in the incidence rate between Cyprus (0.5/10 000) and Finland (25.0/10 000) among the ten countries which provided this information. Eight countries gave data on period prevalence with an almost 70-fold difference between Slovakia (1.1/10 000) and Estonia (70.7/10 000).

Figure 6: Indicators on sexually transmitted infections per 10 000 population according to pilot studies for Eurostat Morbidity Statistics (2005)
More detailed analysis revealed that the crude rate were very similar for all countries. The rates for Slovenia and Lithuania, however, were two-fold and four-fold, respectively, in the pilot studies for Eurostat Morbidity Statistics compared to data compiled by ECDC and WHO (Table 39). This suggests that the ECDC data is underreported and their quality should be improved.

**Table 39:** Crude incidence rate for sexually transmitted infections per 10 000 population in different international data sources (2005)

<table>
<thead>
<tr>
<th></th>
<th>Eurostat</th>
<th>WHO</th>
<th>ECDC</th>
<th>Combined WHO/ECDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>..</td>
<td>1.1</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>BE</td>
<td>..</td>
<td>2.7</td>
<td>2.8</td>
<td>2.8</td>
</tr>
<tr>
<td>CY</td>
<td>0.5</td>
<td>0.6</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>CZ</td>
<td>1.5</td>
<td>1.3↑</td>
<td>1.3↑</td>
<td>1.3↑</td>
</tr>
<tr>
<td>EE</td>
<td>23.7</td>
<td>21.8</td>
<td>21.8</td>
<td>21.8</td>
</tr>
<tr>
<td>FI</td>
<td>25.0</td>
<td>25.0</td>
<td>0.7</td>
<td>25.0</td>
</tr>
<tr>
<td>HU</td>
<td>..</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>LT</td>
<td>16.5</td>
<td>3.8</td>
<td>3.8</td>
<td>3.8</td>
</tr>
<tr>
<td>LV</td>
<td>8.5</td>
<td>8.1</td>
<td>7.7</td>
<td>7.7</td>
</tr>
<tr>
<td>MT</td>
<td>2.3</td>
<td>2.3</td>
<td>2.3</td>
<td>2.3</td>
</tr>
<tr>
<td>NL</td>
<td>..</td>
<td>4.5</td>
<td>..</td>
<td>4.5</td>
</tr>
<tr>
<td>PL</td>
<td>0.8</td>
<td>0.6</td>
<td>0.3</td>
<td>0.6</td>
</tr>
<tr>
<td>RO</td>
<td>..</td>
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<td>..</td>
<td>4.0</td>
</tr>
<tr>
<td>SI</td>
<td>3.1</td>
<td>1.6</td>
<td>1.6</td>
<td>1.6</td>
</tr>
<tr>
<td>SK</td>
<td>1.2</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>Minimum</td>
<td>0.5</td>
<td>0.4</td>
<td>0.3</td>
<td>0.4</td>
</tr>
<tr>
<td>Average</td>
<td>6.4</td>
<td>5.0</td>
<td>3.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Maximum</td>
<td>25.0</td>
<td>25.0</td>
<td>21.8</td>
<td>25.0</td>
</tr>
</tbody>
</table>

↑ Excluding Chlamydia
.. No data

**Figure 7:** Disease 2 – Sexually transmitted diseases (STD), Incidence by episode, Age-standardised rate per 10 000 (2005)
Figure 8: Disease 2 – Sexually transmitted diseases (STD), Incidence by episode, Crude rate per 10 000 (2005)

Figure 9: Disease 2 – Sexually transmitted diseases (STD), Period prevalence, Age-standardised rate per 10 000 (2005)
Diseases 3. Viral hepatitis (incl. hepatitis B) (B15-B19)

Thirteen pilot countries provided information on incidence with a variation between 0.2 and 6.8 per 10,000 population (Figure 11). Period prevalence was reported by ten countries with a large variation from 1.6 per 10,000 to 25.0 (not shown) per 10,000 (Figure 14). Slovakia reported similar incidence and prevalence figures, and the prevalence was lower than the incidence in the Netherlands.

Figure 11: Indicators on viral hepatitis per 10,000 population according to pilot studies for Eurostat Morbidity Statistics (2005)

International comparison showed that Estonia, Finland, Poland, Slovakia, and Slovenia reported somewhat higher rates than those found in the existing international databases (Figure 15). For Latvia and Lithuania, the rates were significantly higher in Eurostat pilot than elsewhere. This suggests that the ECDC data includes only acute cases,
not all cases as some national pilot studies did. The data collection definitions should be systematised to improve the data quality and comparability. Malta and Romania reported lower rates than reported for WHO and ECDC (Table 40).

**Table 40:** Crude incidence rate for hepatitis A, B and C per 10 000 population in different international data sources (2005)

<table>
<thead>
<tr>
<th>Country</th>
<th>Eurostat</th>
<th>WHO</th>
<th>ECDC</th>
<th>Combined WHO/ECDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>..</td>
<td>2.0</td>
<td>0.9</td>
<td>2.0</td>
</tr>
<tr>
<td>BE</td>
<td>..</td>
<td>0.5</td>
<td>0.8</td>
<td>1.6</td>
</tr>
<tr>
<td>CY</td>
<td>0.2</td>
<td>0.3</td>
<td>0.2</td>
<td>0.3</td>
</tr>
<tr>
<td>CZ</td>
<td>1.7</td>
<td>0.8</td>
<td>0.7</td>
<td>1.5</td>
</tr>
<tr>
<td>EE</td>
<td>2.3</td>
<td>1.3</td>
<td>0.7</td>
<td>1.3</td>
</tr>
<tr>
<td>FI</td>
<td>3.0</td>
<td>2.5</td>
<td>0.0</td>
<td>2.5</td>
</tr>
<tr>
<td>HU</td>
<td>..</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
</tr>
<tr>
<td>LT</td>
<td>5.4</td>
<td>0.8</td>
<td>0.6</td>
<td>0.8</td>
</tr>
<tr>
<td>LV</td>
<td>6.8</td>
<td>1.8</td>
<td>1.4</td>
<td>1.8</td>
</tr>
<tr>
<td>MT</td>
<td>0.3</td>
<td>0.7</td>
<td>0.4</td>
<td>0.6</td>
</tr>
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<td>0.1</td>
<td>0.2</td>
</tr>
<tr>
<td>SK</td>
<td>1.6</td>
<td>1.3</td>
<td>1.2</td>
<td>1.3</td>
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<td>Minimum</td>
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<td>Maximum</td>
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<td>4.6</td>
<td>1.4</td>
<td>4.6</td>
</tr>
</tbody>
</table>

.. No data

**Figure 12:** Disease 3 – Viral hepatitis (incl. hepatitis B), Incidence by episode, Age-standardised rate per 10 000 (2005)
Figure 13: Disease 3 – Viral hepatitis (incl. hepatitis B), Incidence by episode, Crude rate per 10 000 (2005)

Figure 14: Disease 3 – Viral hepatitis (incl. hepatitis B), Period prevalence, Age-standardised rate per 10 000 (2005)
Figure 15: Disease 3 – Viral hepatitis (incl. hepatitis B), Period prevalence, Crude rate per 10 000 (2005)

3. Viral hepatitis (incl. hepatitis B)
Period prevalence (2005)

- Diseases 4. Human immunodeficiency virus disease (HIV/AIDS) (B20-B24, Z21)

In total, 13 countries provided data on HIV/AIDS incidence, nine on period prevalence and seven on point prevalence (Figure 16). The data reflects the current understanding of the epidemics with a significant differences between EU-15 (low incidence, high prevalence), Central and Eastern European countries (low incidence, low prevalence) and the Baltic countries (low incidence excluding Estonia, high prevalence after the epidemics in the late 1990s).

Figure 16: Indicators on HIV/AIDS per 10 000 population according to pilot studies for Eurostat Morbidity Statistics (2005)

The data in general were estimated to be reliable. The Austrian period prevalence, however, was based on hospitalised people with HIV/AIDS, while the point prevalence was taken from statutory reporting of AIDS cases and voluntary reporting of newly diagnosed HIV cases. Thus, the period prevalence (1.0 per 10 000) is significantly underreported compared to the point prevalence (7.0 per 10 000).
Data from international organisations confirm that the incidence rates are almost identical in all countries (Table 41).

**Table 41:** Crude HIV/AIDS incidence rate per 10 000 population in different international data sources (2005)

<table>
<thead>
<tr>
<th></th>
<th>Eurostat (HIV/AIDS)</th>
<th>WHO (HIV)</th>
<th>ECDC (HIV)</th>
</tr>
</thead>
<tbody>
<tr>
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<td>0.6</td>
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<td>0.6</td>
</tr>
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<td>0.1</td>
<td>0.1</td>
</tr>
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<td>EE</td>
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<td>0.1</td>
<td>0.1</td>
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<tr>
<td>LT</td>
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<td>0.4</td>
<td>0.4</td>
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<td>1.3</td>
<td>1.3</td>
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</tr>
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<td>0.7</td>
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</tr>
<tr>
<td>PL</td>
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<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>RO</td>
<td>..</td>
<td>0.1</td>
<td>..</td>
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<tr>
<td>SI</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
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<tr>
<td>SK</td>
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<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Minimum</td>
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<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Average</td>
<td>0.8</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>Maximum</td>
<td>4.8</td>
<td>4.6</td>
<td>4.6</td>
</tr>
</tbody>
</table>

.. No data

**Figure 17:** Disease 4 – Human immunodeficiency virus disease (HIV/AIDS), Incidence by episode, Age-standardised rate per 10 000 (2005)
Figure 18: Disease 4 – Human immunodeficiency virus disease (HIV/AIDS), Incidence by episode, Crude rate per 10,000 (2005)

4. Human immunodeficiency virus disease (HIV/AIDS)
   Incidence by episode (2005)

Figure 19: Disease 4 – Human immunodeficiency virus disease (HIV/AIDS), Period prevalence, Age-standardised rate per 10,000 (2005)

4. Human immunodeficiency virus disease (HIV/AIDS)
   Period prevalence (2005)
**Figure 20:** Disease 4 – Human immunodeficiency virus disease (HIV/AIDS), Period prevalence, Crude rate per 10 000 (2005)

**Figure 21:** Disease 4 – Human immunodeficiency virus disease (HIV/AIDS), Point prevalence, Age-standardised rate per 10 000 (2005)
**Expert's view**

Infectious diseases are globally a significant burden of disease. Even though non-communicable diseases, including mental health disorders, causes the vast majority of burden of disease in contemporary Europe, all European countries have surveillance and monitoring systems for infectious diseases. Since the emergence of the epidemic, such as SARS and A (H1N1) influenza, many European countries have substantially improved their information systems in order to implement evidence-based measures to prevent and control infectious diseases (ECDC and EMCDDA 2011).

At European level both WHO Regional Office for Europe and DG Health and Consumers at the European Commission have for a long time been in charge of gathering, analysing and disseminating information on infectious diseases. For European Union, the European Centre for Disease Prevention and Control (ECDC) was established in 2005. Its mission is to identify, assess and communicate current and emerging threats to human health posed by infectious diseases. The centre search for, collect, collate, evaluate and disseminate relevant scientific and technical data and provide timely information to the Commission, the Member States, Community agencies and international organizations active in the field of public health. The most recent data can be received from the annual publications (ECDC 2007) and from interactive databases (ECDC 2012).

The Eurostat Morbidity Shortlist includes four infectious diseases: Tuberculosis, Sexually transmitted diseases (STD), Viral hepatitis (incl. hepatitis B) and Human immunodeficiency virus disease (HIV/AIDS). The European Centre for Disease Prevention and Control (ECDC) collects information on tuberculosis (ResInf), sexually transmitted infections, viral hepatitis and HIV/AIDS (HASH) as a part of the European Surveillance System (TESSy). Also WHO has been collecting detailed information on infectious diseases in their statistical databases.

All EU Member States are nominated a competent body for cooperation with ECDC, in particular in surveillance. Infectious diseases are collected at national level either as compulsory notifications in a register or through sentinel networks of a sample of health care actors. The data collection is based on national legislation on infectious diseases, and it may be exempted from the strict data protection regulations. In some cases, only infectious diseases confirmed in laboratory are included.

---

In conclusion, statistical information on infectious diseases should be taken directly from ECDC with already validated statistics. In some cases morbidity pilot studies gave higher incidence data, which suggests that the ECDC data is underreported and their quality should be improved.

If prevalence data is to be collected, it should cover tuberculoses and HIV/AIDS only. This data is not available yet excluding WHO estimates on tuberculoses and UNAIDS estimates on HIV/AIDS.

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Chapter II. Neoplasms

Summary of main findings

All countries already have well established cancer surveillance systems – cancer registers; they are the main source of cancer statistics. And therefore, in regard of this group of diseases, there are few truly missing data.

Incidence data, in particular, are available in all countries, as registration of new cancer cases is mandatory and follows international guidelines and rules. Thus the main threat to validity of cancer incidence data might be incomplete reporting of new cancer cases by health professionals and inability to account for those cases of cancer which are found after death only, as such concerns were mentioned by some countries. Some concern may also be raised regarding two approaches to incidence calculation – by person and by case. This issue should be discussed in the future. However overall, a comparability of cancer incidence data across countries might be acceptable.

But overall, a comparability of cancer incidence data across countries might be acceptable.

On the other hand, an estimation of prevalence data turned out to be complicated for many countries. Not all cancer registers allow identification of individuals. Some cancer registers do not have history long enough. Thus, various approaches were used to calculate prevalence from cancer register data. And some countries recognize that their cancer registers are not a suitable data source for cancer prevalence estimation, thus they have used health insurance data, health interview surveys or did not estimate cancer prevalence at all.

Besides that, several countries raise debate on definitions of cancer incidence and prevalence proposed by the MORB statistics project. In particular, there are concerns about the definition of period prevalence, but some comments on the incidence by person are present as well. There exist internationally accepted definitions on how to report cancer incidence and prevalence from cancer registers. First, some countries admit that there is discrepancy between those definitions; second, they argue that the concept of period prevalence, proposed by the MORB Statistics project, lacks clarity and sound reasoning. Nevertheless, nearly all countries have adopted themselves the best approach how to apply definition of period prevalence. However, some of them present estimates according to somewhat different definitions and many of them do not specify particular approach chosen.

Consequently, a comparability of cancer period prevalence estimates is highly questionable.

While incidence data seem to be rather comparable, even though some differences are apparent, the prevalence indicators lack comparability among many countries for reasons described above.

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9 http://www.unaids.org/globalreport/Global_report.htm
Table 42: Summary of Pilot Data

<table>
<thead>
<tr>
<th>Morbidity Shortlist Number</th>
<th>Name of disease</th>
<th>ICD-10 codes corresponding</th>
<th>Measure</th>
<th>Complete data set provided</th>
<th>Incomplete data set provided</th>
<th>No data supplied</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>All malignant neoplasms</td>
<td>C00-C97</td>
<td>Incidence by person (or by episode)</td>
<td>15</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>All malignant neoplasms</td>
<td>C00-C97</td>
<td>Period prevalence (different definitions)</td>
<td>10</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>6-18</td>
<td>Cancer of specific site</td>
<td>C15; C16; C18-C21; C33; C34; C43; C45; C50; C53; C54; C55; C56; C61; C67; C81-C96</td>
<td>Incidence by person (or by episode)</td>
<td>15</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>6-18</td>
<td>Cancer of specific site</td>
<td>C15; C16; C18-C21; C33; C34; C43; C45; C50; C53; C54; C55; C56; C61; C67; C81-C96</td>
<td>Period prevalence (different definitions)</td>
<td>10</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

Remark regarding site-specific cancers

As many site-specific cancers are relatively rare diseases, actual differences across countries might be masked if rates are presented per 10 000 without decimals (e.g. CY, EE, MT, NL).

In the case of mesothelioma, comparability among countries could be distorted significantly simply due to random variation. The disease is rare: there are countries (e.g. CY, EE, LT, LV, MT) having less than 10 incident cases by sex per year. And then, the method of direct standardization distorts the rates even more: e.g., age-standardized incidence among males in MT is four times higher than crude incidence. Although, the importance of this particular cancer in occupational health is undeniable; it is highly questionable if age-standardized population rates provide suitable information for comparative analysis.

Figure 23: Disease 5 – All malignant neoplasms (cancer), Incidence by person, Age-standardised rate per 10 000 (2005)
The estimates of age-standardized cancer incidence rates were calculated from common data source – cancer registers; thus the differences among countries can be explained by several factors other than data source: 1) the true difference (e.g. due to life-style habits); 2) above mentioned problems with adding DCO cases; 3) population coverage; 4) possibility to count only cancer episodes, not persons (although the overall effect should not be huge, this kind of “double-counting” might affect “all malignant neoplasms” more than site-specific cancers; e.g. HU shows the highest rate of all cancer incidence); 5) underreporting of cancer cases by practising physicians (e.g. RO has the lowest all cancer rate) – problem not covered in this chapter. The real impact of those factors on the final estimates is unclear.

**Figure 24:** Disease 5 – All malignant neoplasms (cancer), Incidence by person, Crude rate per 10 000 (2005)

The reason why CY provides only standardized, but no crude incidence rates is unclear, as, certainly, they must be available.

Regarding cancer prevalence rates, there can be even more reasons of differences among countries than in the case of incidence rates: 1) some countries use other data sources than registers; 2) different definitions of cancer prevalence (e.g., SI calculated 1-year prevalence and therefore they have the lowest rate); 3) if prevalence definition applies to all persons who ever had cancer and are still alive (irrespective of year of diagnosis and possibility of cure), then the number of such people depends on the length of register history: the longer the register exists, the more patients accumulate; 4) survival of cancer patients: better survival leads to higher prevalence (there can be differences in cancer care and treatment among countries).

The reason why SK does not provide prevalence data is unknown.

AT provides only crude total prevalence rate as a result of several stage calculation to show the difference between partial and total prevalence to discuss suitability of those definitions.
Figure 25: Disease 5 – All malignant neoplasms (cancer), Period prevalence, Age-standardised rate per 10,000 (2005)

Figure 26: Disease 5 – All malignant neoplasms (cancer), Period prevalence, Crude rate per 10,000 (2005)
**Figure 27:** Disease 6 – Malignant neoplasm of oesophagus, Incidence by person, Age-standardised rate per 10,000 (2005)

6. Malignant neoplasm of oesophagus
Incidence by person (2005)

![Graph showing incidence of malignant neoplasm of oesophagus by age-standardised rate per 10,000 for different countries, with bars for males and females.]

**Figure 28:** Disease 6 – Malignant neoplasm of oesophagus, Incidence by person, Crude rate per 10,000 (2005)

6. Malignant neoplasm of oesophagus
Incidence by person (2005)

![Graph showing incidence of malignant neoplasm of oesophagus by crude rate per 10,000 for different countries, with bars for males and females.]

Disease-specific register

N/A

Male ■ Female
Figure 29: Disease 6 – Malignant neoplasm of oesophagus, Period prevalence, Age-standardised rate per 10,000 (2005)

Figure 30: Disease 6 – Malignant neoplasm of oesophagus, Period prevalence, Crude rate per 10,000 (2005)
**Figure 31:** Disease 7 – Malignant neoplasm of stomach, Incidence by person, Age-standardised rate per 10,000 (2005)

![Graph showing age-standardised incidence rates for malignant neoplasm of stomach by country and gender, 2005.](image)

**Figure 32:** Disease 7 – Malignant neoplasm of stomach, Incidence by person, Crude rate per 10,000 (2005)

![Graph showing crude incidence rates for malignant neoplasm of stomach by country and gender, 2005.](image)
**Figure 33:** Disease 7 – Malignant neoplasm of stomach, Period prevalence, Age-standardised rate per 10,000 (2005)

**Figure 34:** Disease 7 – Malignant neoplasm of stomach, period prevalence, Age-standardised rate per 10,000 (2005)
Figure 35: Disease 8 – Malignant neoplasm of colon, rectum and anus, Incidence by person, Age-standardised rate per 10 000 (2005)

Figure 36: Disease 8 – Malignant neoplasm of colon, rectum and anus, Incidence by person, Crude rate per 10 000 (2005)
Figure 37: Disease 8 – Malignant neoplasm of colon, rectum and anus, Period prevalence, Age-standardised rate per 10,000 (2005)

8. Malignant neoplasm of colon, rectum and anus
Period prevalence (2005)

Figure 38: Disease 8 – Malignant neoplasm of colon, rectum and anus, Period prevalence, Crude rate per 10,000 (2005)

8. Malignant neoplasm of colon, rectum and anus
Period prevalence (2005)
**Figure 39:** Disease 9 – Malignant neoplasm of trachea, bronchus and lung, Incidence by person, Age-standardised rate per 10,000 (2005)

**Figure 40:** Disease 9 – Malignant neoplasm of trachea, bronchus and lung, Incidence by person, Crude rate per 10,000 (2005)
Figure 41: Disease 9 – Malignant neoplasm of trachea, bronchus and lung, Period prevalence, Age-standardised rate per 10 000 (2005)

9. Malignant neoplasm of trachea, bronchus and lung
Period prevalence (2005)

Figure 42: Disease 9 – Malignant neoplasm of trachea, bronchus and lung, Period prevalence, Age-standardised rate per 10 000 (2005)

9. Malignant neoplasm of trachea, bronchus and lung
Period prevalence (2005)
**Figure 43:** Disease 10 – Malignant melanoma of skin, Incidence by person, Age-standardised rate per 10,000 (2005)

**Figure 44:** Disease 10 – Malignant melanoma of skin, Incidence by person, Crude rate per 10,000 (2005)
**Figure 45:** Disease 10 – Malignant melanoma of skin, Period prevalence, Age-standardised rate per 10,000 (2005)

10. Malignant melanoma of skin
Period prevalence (2005)

**Figure 46:** Disease 10 – Malignant melanoma of skin, Period prevalence, Crude rate per 10,000 (2005)

10. Malignant melanoma of skin
Period prevalence (2005)
Mesothelioma as a comparatively rare condition serves as an example of situation where relative rates per population have little value; and direct standardization leads to enormous changes in rates which hardly can be plausible (e.g., MT) (Figure 48).
**Figure 49:** Disease 11 – Mesothelioma, Period prevalence, Age-standardised rate per 10 000 (2005)

**Figure 50:** Disease 11 – Mesothelioma, Period prevalence, Crude rate per 10 000 (2005)
Figure 51: Disease 12 – Malignant neoplasm of breast, Incidence by person, Age-standardised rate per 10,000 (2005)

Figure 52: Disease 12 – Malignant neoplasm of breast, Incidence by person, Crude rate per 10,000 (2005)
Figure 53: Disease 12 – Malignant neoplasm of breast, Period prevalence, Age-standardised rate per 10 000 (2005)

Figure 54: Disease 12 – Malignant neoplasm of breast, Period prevalence, Crude rate per 10 000 (2005)
**Figure 55:** Disease 13 – Malignant neoplasm of cervix uteri, Incidence by person, Age-standardised rate per 10,000 (2005)

**Figure 56:** Disease 13 – Malignant neoplasm of cervix uteri, Incidence by person, Crude rate per 10,000 (2005)
Figure 57: Disease 13 – Malignant neoplasm of cervix uteri, Period prevalence, Age-standardised rate per 10,000 (2005)

Figure 58: Disease 13 – Malignant neoplasm of cervix uteri, Period prevalence, Crude rate per 10,000 (2005)

Regarding AT prevalence estimate in the case of sex-specific cancers, the prevalence rate is supposed to be sex-specific (the women or men population included in denominator), not total; however, some discrepancy (that denominator is the whole population) cannot be ruled out.
**Figure 59:** Disease 14 – Malignant neoplasm of uterus other than cervix, Incidence by person, Age-standardised rate per 10,000 (2005)

**Figure 60:** Disease 14 – Malignant neoplasm of uterus other than cervix, Incidence by person, Crude rate per 10,000 (2005)
Figure 61: Disease 14 – Malignant neoplasm of uterus other than cervix, Period prevalence, Age-standardised rate per 10,000 (2005)

Figure 62: Disease 14 – Malignant neoplasm of uterus other than cervix, Period prevalence, Crude rate per 10,000 (2005)
**Figure 63:** Disease 15 – Malignant neoplasm of ovary, Incidence by person, Age-standardised rate per 10 000 (2005)

**Figure 64:** Disease 15 – Malignant neoplasm of ovary, Incidence by person, Crude rate per 10 000 (2005)
**Figure 65:** Disease 15 – Malignant neoplasm of ovary, Period prevalence, Age-standardised rate per 10,000 (2005)

15. Malignant neoplasm of ovary
   Period prevalence (2005)

**Figure 66:** Disease 15 – Malignant neoplasm of ovary, Period prevalence, Crude rate per 10,000 (2005)

15. Malignant neoplasm of ovary
   Period prevalence (2005)
Figure 67: Disease 16 – Malignant neoplasm of prostate, Incidence by person, Age-standardised rate per 10 000 (2005)

16. Malignant neoplasm of prostate
Incidence by person (2005)

Figure 68: Disease 16 – Malignant neoplasm of prostate, Incidence by person, Crude rate per 10 000 (2005)

16. Malignant neoplasm of prostate
Incidence by person (2005)
Figure 69: Disease 16 – Malignant neoplasm of prostate, Period prevalence, Age-standardised rate per 10 000 (2005)

16. Malignant neoplasm of prostate
Period prevalence (2005)

Figure 70: Disease 16 – Malignant neoplasm of prostate, Period prevalence, Crude rate per 10 000 (2005)

16. Malignant neoplasm of prostate
Period prevalence (2005)
Figure 71: Disease 17 – Malignant neoplasm of bladder, Incidence by person, Age-standardised rate per 10,000 (2005)

Figure 72: Disease 17 – Malignant neoplasm of bladder, Incidence by person, Crude rate per 10,000 (2005)
**Figure 73:** Disease 17 – Malignant neoplasm of bladder, Period prevalence, Age-standardised rate per 10 000 (2005)

![Age-standardised rate per 10,000 for Malignant neoplasm of bladder](image1)

**Figure 74:** Disease 17 – Malignant neoplasm of bladder, Period prevalence, Crude rate per 10 000 (2005)

![Crude rate per 10,000 for Malignant neoplasm of bladder](image2)
**Figure 75:** Disease 18 – Leukaemia and other malignant neoplasms of lymphoid and haematopoietic tissue, Incidence by person, Age-standardised rate per 10 000 (2005)

![Age-standardised rate per 10,000 (2005)](image)

**Figure 76:** Disease 18 – Leukaemia and other malignant neoplasms of lymphoid and haematopoietic tissue, Incidence by person, Crude rate per 10 000 (2005)

![Crude rate per 10,000 (2005)](image)
**Expert’s views**

In order to estimate the burden of malignant neoplasms on health care sector across the member states, some measurement of cancer prevalence could be of great value. Contrary to cancer incidence rates that are already reported by nearly all countries on routine basis, the pilots show, that many countries do not have experience in calculating and reporting cancer prevalence rates. The GLOBOCAN project (International Agency for Research on Cancer) shows data on partial (e.g., 5-year) cancer prevalence over the world, including the European region, in 2008; it has been calculated on the bases of incidence and mortality. At the same time, less than half (~ 12) of 27 EU member states provide cancer prevalence estimates to the WHO Health for All Data Base, where cancer prevalence is defined as the point prevalence at the end of year.
But before implementation of data collection, a debate among experts in cancer research and surveillance is needed in order to agree on acceptable and clear definitions of cancer incidence and prevalence. If possible, the existing international recommendations and the fact that cancer registers are the main data sources should be taken into consideration. The present definitions, used in the MORB Statistics project, are, probably, more applicable and effective if the data source is health care service data, what was the main focus of the project. However, for the particular group of diseases – neoplasms, where data sources are cancer registers, these definitions appeared to create unnecessary inconsistencies. E.g., the project report from AT provides extensive discussion on the definitions.

Countries should have been asked to specify whether DCO (death certificate only) cases are included in the total number of cases (incidence and prevalence).

In the case of rare diseases, excessive rounding can mask actual differences across countries. E.g. SI suggests that the rate, if presented per 100 000 with one decimal digit, might be more appropriate in the case of cancers.

Disease 11 Mesothelioma (C45) should be removed from the shortlist as a rarity of this cancer does not allow an efficient comparison across countries by means of age-standardized rates per population.

Chapter IV. Endocrine, nutritional and metabolic diseases

Summary of main findings

- All countries presented data from at least one source for at least for one indicator of diabetes (Table 43).
- Countries have chosen quite sustainable data sources for diabetes data.
- Accessibility do not seems to be the major problem for receiving best quality data, although problems with data confidentiality and cost of receiving data could arise in the future with development of new databases and wider use of personal ID.
- Hospital data seems to be not the best source for diabetes. Patient with medication could not fully represent the diabetes cases as part of diabetes is treated by diet without medication. GP’s or primary health care or out-patient care data could be quite complete as most of the diabetes cases are treated in primary or out-patient care level.
- Linkage of data sources for diabetes was used only by FI.
- Most of the countries have reported underestimation of diabetes cases (undiagnosed, untreated, unregistered).
- There are significant differences in diabetes indicators (especially in period prevalence) between the countries.

Table 43: Summary of pilot studies

<table>
<thead>
<tr>
<th>Morbidity Shortlist Number</th>
<th>Name of disease</th>
<th>ICD-10 codes corresponding</th>
<th>Measure</th>
<th>Complete data set provided</th>
<th>Incomplete data set provided</th>
<th>No data supplied</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Diabetes mellitus</td>
<td>E10-E14</td>
<td>Incidence by person</td>
<td>7</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19</td>
<td>Diabetes mellitus</td>
<td>E10-E14</td>
<td>Period prevalence</td>
<td>13</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>19</td>
<td>Diabetes mellitus</td>
<td>E10-E14</td>
<td>Point prevalence</td>
<td>3</td>
<td>2</td>
<td>11</td>
</tr>
</tbody>
</table>

Age standardised incidence by person rate for diabetes was presented by 7 countries (Figure 79). 4 countries presented crude rate only. Generally, the difference between the rates is about 2-3 times. For the countries (FI, LT, EE) that used insurance data the incidence rate is somehow lower. For FI the rates probably could be higher as only the cases with medications and disability were included. Quite similar rates are between the countries.
using different health care data (BE, LV, NL, PL) and generally they are higher than for the countries using insurance data.

**Figure 79:** Disease 19 – Diabetes mellitus, Incidence by person, Age-standardised rate per 10,000 (2005)

![Graph showing age-standardised rate for diabetes mellitus](image)

Combined sources: FI: Registers on Social Benefits under the National Sickness Insurance Scheme: special reimbursements of medicine + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances.

**Figure 80:** Disease 19 – Diabetes mellitus, Incidence by person, Crude rate per 10,000 (2005)

![Graph showing crude rate for diabetes mellitus](image)

Combined sources: FI: Registers on Social Benefits under the National Sickness Insurance Scheme: special reimbursements of medicine + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances.

Age standardised period prevalence rate for diabetes was presented by 13 countries (Figure 81). 1 country presented crude rate only. Differences between the countries are significant. The rates for countries (CY, AT, MT) using HIS data are higher than for other countries. NL and HU GP’s data is quite close to HIS data. SI data is lowest as the country used hospital data, what hardly could be the best estimate for diabetes. Data for other countries is somehow closer (LV, RO, PL, LT, EE, FI, BE).
Figure 81: Disease 19 – Diabetes mellitus, Period prevalence, Age-standardised rate per 100 000 (2005)

19. Diabetes mellitus
Period prevalence (2005)

Combined sources: FI: Registers on Social Benefits under the National Sickness Insurance Scheme: special reimbursements of medicine + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

Figure 82: Disease 19 – Diabetes mellitus, Period prevalence, Crude rate per 10 000 (2005)

As point prevalence for diabetes was calculated only for 5 countries (3 countries have calculated age standardised rate and 2 countries – crude rate only) it is complicated to analyse those results (Figure 83 and Figure 84). High rates for SK and CZ could be explained by the use of annual report where there is no possibility for data validation. LV and LT shows quite similar rates although the sources were different: insurance data for LT and specialised database for LV.
**Member States have recommended**

**BE:** Information from the HIS is based on the declaration of the respondents; this may raise questions on the validity of the information. Especially in the framework of the Eurostat project it is important to obtain information that is the result of a medical diagnosis.

**EE:** Diabetes is a chronic disease with long duration and do not have very high case-fatality may be the difference with period prevalence is marginal.

**FI:** If no national disease register exists, internationally collected register-based data on diabetes should cover only people with medication. Health interview surveys and health examination surveys are needed to get information on those who are not in medication and on the undiagnosed cases, respectively.
Expert's view

Diabetes is an important cause of morbidity. It is an important risk factor for cerebrovascular disease and peripheral arterial disease. It contributes substantially to mortality, although mainly as a secondary cause, as a result of which the impact on mortality is often underestimated.

Hospital data seems to be not the best source for diabetes. Patient with medication could not fully represent the diabetes cases as part of diabetes is treated by diet without medication. GP’s or primary health care or out-patient care data could be quite complete as most of the diabetes cases are treated in primary or out-patient care level.

Information from the HIS is based on the declaration of the respondents; this may raise questions on the validity of the information. Data for the first wave of European HIS shows quite significant differences between countries (12 months prevalence of diagnosed diabetes differs between the 17 countries from 3.1 to 7.9%).

Most of the countries have reported underestimation of diabetes cases (undiagnosed, untreated, unregistered).

There are significant differences in diagnosis-based diabetes indicators (especially in period prevalence) between the countries.

Point prevalence for diabetes should be excluded, as diabetes is a chronic disease with long duration, do not have very high case-fatality and data for point prevalence of diabetes was presented only for 5 countries.

Chapter V. Mental and behavioural disorders

Summary of main findings

For diagnosis-specific morbidity statistics for chapter V. Mental and behavioural disorders only period prevalence is required (Table 44). 11 countries (AT, CZ, DE, EE, FI, HU, LT, LV, RO, SI, SK) have chosen the same or almost the same data sources for SL diseases 20-26.

- Countries have chosen quite sustainable data sources for data for mental and behavioural disorders.
- Accessibility do not seems to be the major problem for receiving best quality data, although problems with data confidentiality and cost of receiving data could arise in the future with development of new databases and wider use of personal ID.
- Hospital data seems to be not the best source for any of mental and behavioural disorders.
- Linkage of data sources for some mental and behavioural disorders was used only by FI, PL, NL.
- The prevalence of dementia (incl. Alzheimer's disease) is related very much with diagnostic traditions in the country and differences between the countries are significant. The information on patients living in social institutions very often is not included in any databases or HIS, therefore prevalence of dementia (incl. Alzheimer's disease) could be underestimated.
- Rates of mental and behavioural disorders due to use of psychoactive substances (alcohol and drugs) could be significantly underestimated for most of the countries as a biggest part of persons depending of the use of psychoactive substances are not seeking health care. For the general prevalence of the problem health care or insurance data is not the right data source. Other data sources and probably other indicators (e.g. frequency, amount and type of psychoactive substances used) should be used to get better estimates.
- As schizophrenia is well defined disease, coded similarly in different countries and mostly treated using medication (covered by insurance), data for different countries seems quite comparable.
- Prevalence of depression and other affective disorders, anxiety disorders and eating disorders differ significantly between the countries. Those diseases are differently understood, diagnosed and coded in the countries. Therefore for those diseases other data sources should be considered (such as Mental health studies).
### Table 44: Summary of pilot studies

<table>
<thead>
<tr>
<th>Morbidity Shortlist Number</th>
<th>Name of disease</th>
<th>ICD-10 codes corresponding</th>
<th>Measure</th>
<th>Complete data set provided</th>
<th>Incomplete data set provided</th>
<th>No data supplied</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Dementia (incl. Alzheimer's disease)</td>
<td>F00-F03, G30</td>
<td>Period prevalence</td>
<td>9</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>21</td>
<td>Mental and behavioural disorders due to use of alcohol (incl. alcohol dependence)</td>
<td>F10</td>
<td>Period prevalence</td>
<td>8</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>22</td>
<td>Mental and behavioural disorders due to use of psychoactive substances other than alcohol and tobacco (incl. drug dependence)</td>
<td>F11-F16, F18, F19</td>
<td>Period prevalence</td>
<td>8</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>23</td>
<td>Schizophrenia</td>
<td>F20-F29</td>
<td>Period prevalence</td>
<td>9</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>24</td>
<td>Depression and other affective disorders</td>
<td>F30-F39</td>
<td>Period prevalence</td>
<td>10</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>25</td>
<td>Anxiety disorders</td>
<td>F40, F41</td>
<td>Period prevalence</td>
<td>9</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>26</td>
<td>Eating disorders</td>
<td>F50</td>
<td>Period prevalence</td>
<td>9</td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>

- Diseases 20. Dementia (incl. Alzheimer's disease) (F00-F03, G30)

Age standardised period prevalence rate for dementia (incl. Alzheimer's disease) was presented by 9 countries (Figure 85). 5 countries presented crude rate only (Figure 86). The lowest data was for AT, RO (DRG-based and therefore included in the Insurance category), SI. The reason could be that those countries used hospital data, which could not fully cover data for this disease. For LV, SK, NL, PL, LT, EE, HU, CZ data was quite similar; FI show very high rates. MT had the highest rate. MT has used data of special study, but the reliability of this study is questionable. The prevalence of dementia (incl. Alzheimer's disease) is related very much with diagnostic traditions in the country.
Figure 85: Disease 20 – Dementia (incl. Alzheimer’s disease), Period prevalence, Age-standardised rate per 10,000 (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

Figure 86: Disease 20 – Dementia (incl. Alzheimer’s disease), Period prevalence, Crude rate per 10,000 (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

- Diseases 21. Mental and behavioural disorders due to use of alcohol (incl. alcohol dependence) (F10)
- Diseases 22. Mental and behavioural disorders due to use of psychoactive substances other than alcohol and tobacco (incl. drug dependence) (F11-F16, F18, F19)

Both for alcohol or psychoactive substances disorders age standardised period prevalence rate was presented by 8 countries, 5 countries presented crude rate only (Figure 87 and Figure 88). Prevalence of mental and behavioural disorders due to use of psychoactive substances differs significantly between the countries. For both
diseases NL had very high rate in comparison with other countries, NL was the only country used HIS for the best estimates.

For mental and behavioural disorders due to use of alcohol (incl. alcohol dependence) LV shows the lowest results (SDR 0.2 per 10 000 - data from specialised registry). AT, PL, RO, SI show lowest data, but those countries have used hospital data.

Figure 87: Disease 21 – Mental and behavioural disorders due to use of alcohol (incl. alcohol dependence), Period prevalence, Age-standardised rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.

Figure 88: Disease 21 – Mental and behavioural disorders due to use of alcohol (incl. alcohol dependence), Period prevalence, Crude rate per 10,000 (2005)

For Romania the data refers only to DRG hospital data.

For mental and behavioural disorders due to use of psychoactive substances other than alcohol and tobacco (incl. drug dependence) LV shows the high crude rates (Figure 90). AT, PL, RO, SI show lowest data, but those countries have used hospital data. LT data is very low as well as some important budget financed drug and alcohol abuse health care institutions are not included in health insurance data.
**Figure 89:** Disease 22 – Mental and behavioural disorders due to use of psychoactive substances other than alcohol and tobacco (incl. drug dependence), Period prevalence, Age-standardised rate per 10 000 (2005)

**Figure 90:** Disease 22 – Mental and behavioural disorders due to use of psychoactive substances other than alcohol and tobacco (incl. drug dependence), Period prevalence, Crude rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.

Combined sources: FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

- **Disease 23. Schizophrenia (F20-F29)**

Age standardised period prevalence rate for schizophrenia was presented by 9 countries, 4 countries presented crude rate only (Figure 91 and Figure 92). SI, AT, RO shows the lowest data for schizophrenia, but those countries has used hospital data only. Data of other countries is quite similar except NL. NL used GP’s data what
could be not enough as schizophrenia often is treated by specialist psychiatrists or in long term-care institutions. As schizophrenia is well defined disease, coded quite similarly in different countries and mostly treated using medication (covered by insurance), data for different countries seems quite comparable.

**Figure 91:** Disease 23 – Schizophrenia, Period prevalence, Age-standardised rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: Fi: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

**Figure 92:** Disease 23 – Schizophrenia, Period prevalence, Crude rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: Fi: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

- Disease 24. Depression and other affective disorders (F30-F39)

Age standardised period prevalence rate for depression and other affective disorders was presented by 10 countries, 5 countries presented crude rate only (Figure 93 and Figure 94). SI, AT, RO, LV shows the lowest
data for depression and other affective disorders, but those countries has used hospital data only, except LV. LV used special registry data, this registry gets data from psychiatrists, but depression is very often diagnosed by GP’s, therefore data could be underestimated. CY, EE, HU, MT, show the highest rates. For CY and MT it could be justified by use of HIS data. Prevalence of depression and other affective disorders differs significantly between the countries.

**Figure 93:** Disease 24 – Depression and other affective disorders, Period prevalence, Age-standardised rate per 10 000 (2005)

**Figure 94:** Disease 24 – Depression and other affective disorders, Period prevalence, Crude per 10 000 (2005)
• Disease 25. Anxiety disorders (F40, F41)

Age standardised period prevalence rate for anxiety disorders was presented by 9 countries, 5 countries presented crude rate only (Figure 95 and Figure 96). SI, AT, RO, LV shows the lowest data for anxiety disorders, but those countries have used hospital data only, except LV. LV used special registry data, this registry gets data from psychiatrists, but anxiety disorders are very often diagnosed by GP’s, therefore data could be underestimated. MT, using HIS, shows the highest rate. Prevalence of anxiety disorders differs significantly between the countries.

**Figure 95:** Disease 25 – Anxiety disorders, Period prevalence, Age-standardised rate per 10 000 (2005)

**Figure 96:** Disease 25 – Anxiety disorders, Period prevalence, Crude rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

For Romania the data refers only to DRG hospital data.
Combined sources: FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances
Disease 26. Eating disorders (F50)

Age standardised period prevalence rate for eating disorders was presented by 8 countries, 5 countries presented crude rate only (Figure 97 and Figure 98). SI, AT, RO, LV shows the lowest data for eating disorders, but those countries has used hospital data only, except LV. MT using HIS, shows the highest rate. Prevalence of eating disorders differs significantly between the countries.

**Figure 97: Disease 26 – Eating disorders, Period prevalence, Age-standardised rate per 10 000 (2005)**

For Romania the data refers only to DRG hospital data.  
Combined sources: FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

**Figure 98: Disease 26 – Eating disorders, Period prevalence, Crude rate per 10 000 (2005)**

For Romania the data refers only to DRG hospital data.  
Combined sources: FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances
Member States have recommended

- EE: dementia prevalence could be underestimated while e.g. people living in institutions usually do not turn to the doctor without any additional cause.
- EE: alcohol dependence prevalence could be underestimated while many people may not recognise the problem and may not turn to the doctor with this cause. Also uninsured have often alcohol problems and do not turn to the doctor.
- NL: There is no recent data source for diagnosis-specific data of the population of nursing homes. For some diseases that often require prolonged stays in nursing homes, such as dementia, these data are necessary to correct the estimates for the morbidity in this specific population, especially in the older age groups.

Expert's view

The prevalence of dementia (incl. Alzheimer's disease) is related very much with diagnostic traditions in the country and differences between the countries are significant. The information on patients living in social institutions very often is not included in any databases or HIS, therefore prevalence of dementia (incl. Alzheimer's disease) could be underestimated.

Rates of mental and behavioural disorders due to use of psychoactive substances (alcohol and drugs) could be significantly underestimated for most of the countries as a biggest part of persons depending of the use of psychoactive substances are not seeking health care. For the general prevalence of the problem health care or insurance data is not the right data source. Other data sources and probably other indicators (e.g. frequency, amount and type of psychoactive substances used) should be used to get better estimates.

As schizophrenia is well defined disease, coded similarly in different countries and mostly treated using medication (covered by insurance), data for different countries seems quite comparable.

Prevalence of depression and other affective disorders, anxiety disorders and eating disorders differ significantly between the countries. Those diseases are differently understood, diagnosed and coded in the countries. Therefore for those diseases other data sources should be considered (such as Mental health studies). But even the results of EHIS shows that 12 months prevalence of depression between countries varies from 0.4 to 4.3% for males and from 0.9 to 7.6% for females.

Chapter VI. Diseases of the nervous system

Summary of main findings

- Countries have chosen quite sustainable data sources for diseases of the nervous system.
- Accessibility do not seems to be the major problem for receiving best quality data, although problems with data confidentiality and cost of receiving data could arise in the future with development of new databases and wider use of personal ID.
- Hospital data seems to be not the best source for any of diseases of the nervous system.
- Linkage of data sources for some diseases of the nervous system was used only by FI, PL.
- Data for prevalence of Parkinson's disease, multiple sclerosis and epilepsy seems quite comparable between the countries.
- For migraine and other headache syndromes the differences between countries are quite significant. Migraine and other headache syndromes is symptom more than diagnosis, very often the headache is the symptom of other diseases and it is not coded by physicians (the main disease is coded). Therefore the other data sources should be considered for migraine and other headache syndromes.
Table 45: Summary of pilot studies

<table>
<thead>
<tr>
<th>Morbidity Shortlist Number</th>
<th>Name of disease</th>
<th>ICD-10 codes corresponding</th>
<th>Measure</th>
<th>Complete data set provided</th>
<th>Incomplete data set provided</th>
<th>No data supplied</th>
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</thead>
<tbody>
<tr>
<td>27</td>
<td>Parkinson's disease</td>
<td>G20</td>
<td>Period prevalence</td>
<td>9</td>
<td>4</td>
<td>3</td>
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<tr>
<td>28</td>
<td>Multiple sclerosis</td>
<td>G35</td>
<td>Period prevalence</td>
<td>9</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>29</td>
<td>Epilepsy</td>
<td>G40, G41</td>
<td>Period prevalence</td>
<td>8</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>30</td>
<td>Migraine and other headache syndromes</td>
<td>G43, G44</td>
<td>Period prevalence</td>
<td>10</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

- Disease 27. Parkinson’s disease (G20)

Age standardised period prevalence rate for Parkinson’s disease was presented by 9 countries, 4 countries presented crude rate only (Figure 99 and Figure 100). SI, AT, RO shows the lowest data for Parkinson's disease, but those countries has used hospital data only. BE shows the highest rates. BE stated serious doubts on the validity of their estimate.

Figure 99: Disease 27 – Parkinson's disease, Period prevalence, Age-standardised rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: FI: Registers on Social Benefits under the National Sickness Insurance Scheme; special reimbursements of medicine + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances.
Figure 100: Disease 27 – Parkinson’s disease, Period prevalence, Crude rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.

Combined sources: FI: Registers on Social Benefits under the National Sickness Insurance Scheme: special reimbursements of medicine + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

- Diseases 28. Multiple sclerosis (G35)

Age standardised period prevalence rate for multiple sclerosis was presented by 9 countries, 3 countries (AT, CZ, SK) presented crude rates only (Figure 101 and Figure 102). SI, AT, RO show the lowest data for multiple sclerosis, but those countries has used hospital data only. SK, CZ shows the highest rates. Data for other countries seems quite comparable.

Figure 101: Disease 28 – Multiple sclerosis, Period prevalence, Age-standardised rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.

Combined sources: FI: Registers on Social Benefits under the National Sickness Insurance Scheme: special reimbursements of medicine + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances, PL: National Health Fund – inpatient care + National Health Fund – ambulatory specialist care
For Romania the data refers only to DRG hospital data.

Combined sources: FI: Registers on Social Benefits under the National Sickness Insurance Scheme: special reimbursements of medicine + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances; PL: National Health Fund – inpatient care + National Health Fund – ambulatory specialist care

- Diseases 29. Epilepsy (G40, G41)

Age standardised period prevalence rate for epilepsy was presented by 8 countries, 4 countries presented crude rate only (Figure 103 and Figure 104). SI, AT, RO shows the lowest data for epilepsy, but those countries has used hospital data only. All other countries show quite similar rates.
Figure 104: Disease 29 – Epilepsy, Period prevalence, Crude rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.

Combined sources: FI: Registers on Social Benefits under the National Sickness Insurance Scheme: special reimbursements of medicine + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

- Disease 30. Migraine and other headache syndromes (G43, G44)

Age standardised period prevalence rate for migraine and other headache syndromes was presented by 10 countries, 4 countries presented crude rate only (Figure 105 and Figure 106). SI, AT, RO, FI shows the lowest data for migraine and other headache syndromes, but these countries have used hospital data only. PL, CY, MT shows the highest rates as those countries has used HIS data. The differences between countries are quite significant.

Figure 105: Disease 30 – Migraine and other headache syndromes, Period prevalence, Age-standardised rate per 10 000 (2005)
**Figure 106:** Disease 30 – Migraine and other headache syndromes, Period prevalence, Crude rate per 10 000 (2005)

### 30. Migraine and other headache syndromes

**Period prevalence (2005)**

<table>
<thead>
<tr>
<th>Country</th>
<th>Prov. ambul. health care</th>
<th>Hosp. data</th>
<th>Insurance</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Female</td>
<td>Total</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For Romania the data refers only to DRG hospital data.

**Member States have recommended**

- **EE:** Migraine and other headache syndromes [G43–G44] – if only data for most severe cases of headache are required then the diagnosed prevalence of migraine and other headaches is adequate. For the true prevalence of migraine and headache we suggest to use survey data.
- **FI:** Health interview surveys are to be used to get data on migraine since these medical conditions are not covered by the existing health registers.
- **FI:** Migraine and other headache syndromes are not clinically relevant, since they include several diseases and medical conditions with different aetiology and treatment.

**Expert's view**

Hospital data seems to be not the best source for any of diseases of the nervous system.

Data for prevalence of Parkinson's disease, multiple sclerosis and epilepsy seems quite comparable between the countries.

For migraine and other headache syndromes the differences between countries are quite significant. Migraine and other headache syndromes is symptom more than diagnosis, very often the headache is the symptom of other diseases and it is not coded by physicians (the main disease is coded). Therefore the other data sources should be considered for migraine and other headache syndromes.

### Chapter VII. Diseases of the eye and adnexa

**Summary of main findings**

Numbers were presented by 13 countries, but for cataract the age-standardised rates were provided only by 5 countries, and for glaucoma by 9 countries. Crude rate differed from the age-standardised rate for majority of countries.

Results from hospital database were significantly lower than data from insurance or HIS.

Health insurance database was the preferred data source. Insurance databases are relatively new sources for computing morbidity data, sometimes not used for statistical purposes, not validated for that, and data access could be restricted.
Different problems with coverage were reported (missing outpatient care, primary care, private health care, nursing homes), but it seemed to be difficult to estimate the proportion of under coverage.

Table 46: Summary of pilot data

<table>
<thead>
<tr>
<th>Morbidity Shortlist Number</th>
<th>Name of disease</th>
<th>ICD-10 codes corresponding</th>
<th>Measure</th>
<th>Complete data set provided</th>
<th>Incomplete data set provided</th>
<th>No data supplied</th>
</tr>
</thead>
<tbody>
<tr>
<td>31</td>
<td>Cataract</td>
<td>H25-H28</td>
<td>Period prevalence</td>
<td>8</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>32</td>
<td>Glaucoma</td>
<td>H40, H42</td>
<td>Period prevalence</td>
<td>9</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

In total, for cataract prevalence rates were higher for women than for men (ex. MT, RO) (Figure 107). Crude rate differed from the age standardized rate for majority of countries (Figure 108).

MT who used HIS for data computing showed significantly higher rates than other countries. CY used HIS either, but showed smaller rates and was comparable with other countries.

The lowest rates were shown for RO (hospital cases paid by DRG).

Figure 107: Disease 31 – Cataract, Period prevalence, Age-standardised rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.

Combined sources: FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances
Figure 108: Disease 31 – Cataract, Period prevalence, Crude rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data. Combined sources: FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances; NL: Hospital Discharge Register + General practitioners information system.

For glaucoma, very low rates were shown by three countries (AT, RO, SI) (Figure 110). Latvia used insurance data with almost total coverage and low result is not reasonable.

In total, prevalence rates were higher for women than for men. Crude rate differed from the age-standardized rate for a majority of countries, but less than in case of cataract (Figure 109 and Figure 110).

Figure 109: Disease 32 – Glaucoma, Period prevalence, Age-standardised rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data. Combined sources: FI: Registers on Social Benefits under the National Sickness Insurance Scheme: special reimbursements of medicine + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances.
Figure 110: Disease 32 – Glaucoma, Period prevalence, Crude rate per 10,000 (2005)

For Romania the data refers only to DRG hospital data. Combined sources: FI: Registers on Social Benefits under the National Sickness Insurance Scheme: special reimbursements of medicine + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

Expert’s view

For glaucoma period prevalence could be more comparable indicator for measuring than for cataract, because of continuous treatment need. Serious cataract patients mostly are operated and could not visit doctor every year. On other hand comparing cataract patients who visited the doctor during the year and proportion of them operated could be useful.

Hospital database (only inpatient cases) does not seem to be the reliable data source for cataract and glaucoma.

Member States have recommended

MS (FI) have recommended using health interview surveys to get data on visual impairments, since these diseases and medical conditions are not covered by the existing health registers, but separate results (LT). HIS is not the first choice in my opinion if we want to collect data about patients who are treated by doctors.

NL recommended compute lifetime prevalence for chronic disease if disease cannot cure.

To give a useful insight into these two conditions, age-standardised rates by gender are needed, because of age and gender related occurrence of diseases.

Chapter VIII. Diseases of the ear and mastoid process

Summary of main findings

Eleven countries presented data, complete data set was provided only by 8 countries (Table 47).

Often the preferred data source was the only reliable source. Most widely used source was a health insurance database, and it could cause restricted data access.

For hearing loss big variance of results was characteristic depending on used data source: data from hospital database were significantly lower and data from HIS were significantly higher than data from other sources.
Table 47: Summary of pilot data

<table>
<thead>
<tr>
<th>Morbidity Shortlist Number</th>
<th>Name of disease</th>
<th>ICD-10 codes corresponding</th>
<th>Measure</th>
<th>Complete data set provided</th>
<th>Incomplete data set provided</th>
<th>No data supplied</th>
<th>Number of Countries (Total 16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>33</td>
<td>Hearing loss</td>
<td>H90, H91</td>
<td>Period prevalence</td>
<td>8</td>
<td>3</td>
<td>4</td>
<td>33</td>
</tr>
</tbody>
</table>

The lowest rates were presented when data source was the inpatient database only (AT, RO, SK) (Figure 112). The highest rates were presented when data source was HIS (MT, CZ).

In total, prevalence rates were higher for men than for women. Females crude rate differed from the age standardized rate for a majority of countries (Figure 111 and Figure 112).

Figure 111: Disease 33 – Hearing loss, Period prevalence, Age-standardised rate per 10,000 (2005)

For Romania the data refers only to DRG hospital data.

Combined sources: FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme; disability allowances
Figure 112: Disease 33 – Hearing loss, Period prevalence, Crude rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: Fi: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances.

Expert's view
The diagnosis of hearing loss is presumably underestimated by doctors. Different treatment possibilities could improve quality of life and patients don’t need observation every year. Comparability could be a problem for computing hearing loss data.

It was obvious that if hospital care data was used for data computing, results were not comparable.

FI recommended use health interview surveys to get data on hearing loss, since these diseases and medical conditions are not covered by the existing health registers. HIS is not a reliable source for registering hearing loss diagnosed by doctors in my opinion. Self-reported results differ widely from registered prevalence.

NL recommended compute lifetime prevalence for chronic disease if disease cannot cure.

Age-standardised rates by gender are needed to compute, because of age and gender related occurrence of diseases.

Chapter IX. Diseases of the circulatory system

Summary of main findings
Only regarding Acute Myocardial Infarction and Cerebrovascular diseases, incidence by person data were asked after in the project. Less than half of the countries were able to provide incidence data that were almost always of the type of “complete data sets” (Table 48). The contrary holds for the prevalence data: the majority of countries delivered data but many of them were of the type of “incomplete data sets”, a drawback in terms of comparability. Regarding AMI a difficult choice has to be made between incidence, which is to be preferred from an epidemiological point of view, and, from an operational point of view, prevalence, for which more countries were able to provide data.
**Table 48: Summary of Pilot Data**

<table>
<thead>
<tr>
<th>Morbidity Shortlist Number</th>
<th>Name of disease</th>
<th>ICD-10 codes corresponding</th>
<th>Measure</th>
<th>Complete data set provided</th>
<th>Incomplete data set provided</th>
<th>No data supplied</th>
<th>Number of Countries (Total 16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>34</td>
<td>Hypertension</td>
<td>I10-I13, I15</td>
<td>Period prevalence</td>
<td>8</td>
<td>6</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>Ischaemic Heart disease</td>
<td>I20-I25</td>
<td>Period prevalence</td>
<td>8</td>
<td>5</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>Acute Myocardial Infarction</td>
<td>I21, I22</td>
<td>Incidence by person</td>
<td>7</td>
<td>1</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>Heart failure</td>
<td>I50</td>
<td>Period prevalence</td>
<td>7</td>
<td>6</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>Cerebrovascular disease</td>
<td>I60-I69</td>
<td>Incidence by person</td>
<td>6</td>
<td>1</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>Cerebrovascular disease</td>
<td>I60-I69</td>
<td>Period prevalence</td>
<td>6</td>
<td>7</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

- Diseases 34. Hypertensive diseases (I10-I13, I15)

The range ratio of the 10 age-standardized rates reporting countries amounts to 43.9 which is very high and is not influenced by leaving out HIS and/or Hospital data (Annex 8). Leaving out the RO data, however, we obtain a ratio of 2.7 in males and 1.8 in females and an overall ratio of 2.7, which constitute a huge improvement of the ratio. Notice that the RO data cover merely in-patients paid by the DRG system.

Twelve countries supplied crude rates (Figure 114). The extremely low rates of Romania and Slovakia are probably due their exclusively relying on hospital data. The case of Austria is a more surprising one in that it provides data from both inpatients and HIS, and has an extreme low figure.

**Figure 113: Disease 34 – Hypertensive diseases, Period prevalence, Age-standardised rate per 10 000 (2005)**

For Romania the data refers only to DRG hospital data.

Combined sources: FI: Registers on Social Benefits under the National Sickness Insurance Scheme: special reimbursements of medicine + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances
Figure 114: Disease 34 – Hypertensive diseases, Period prevalence, Crude rate per 10 000 (2005)

34. Hypertensive diseases
Period prevalence (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: AT: Hospital discharges + Health interview survey; FI: Registers on Social Benefits under the National Sickness Insurance Scheme: special reimbursements of medicine + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

Expert’s view

Some drawbacks on comparability were identified as follow: quality of data in 1 country (LT, ICPC does not cover all the ICD-10 codes (NL), non at random sample (NL); creep in 2 countries (EE, LT); More generally exclusion of certain groups hamper comparison: inpatients only (SK); insured people only (EE, LT, LV); institutionalized excluded if HIS is unique source (MT, CY, PL); only in-patients paid by DRG system (RO). Data sources: providers of ambulatory health care, insurance, and self-reported data are sufficiently comparable.

Are the comparable data to be considered “best estimates” remains an open question in the absence of a validation study. The closeness of the ratio, especially in the females, however seems not in contradiction with the notion of “best estimates”.

Since nine countries came up with sufficiently comparable data, Hypertensive diseases (Period prevalence) may be considered a good candidate for next steps in establishing a routine data collection on morbidity.

- Diseases 35. Ischaemic heart diseases (I20-I25)

The range ratio of the 9 age-standardized rates reporting countries amounts to 17.8 is very high and is barely influenced by leaving out HIS and/or Hospital data (Annex 8). Leaving out the Romanian data, however, we obtain a “fine” ratio of 1.9 in males and 2.4 in females and an overall ratio of 3.0, that constitute a huge improvement of the ratio. Notice that the Romania data cover merely in-patients paid by the DRG system, whereas one may suspect that IHD mostly is cared for in an ambulatory setting.

The low Romanian rate may be due to the exclusion of outpatients from the provided data. Malta’s high rate may be due to the use of self-reported data.

12 Countries supplied crude rates (Figure 116). Here also the low Austrian and Slovakian figures, exclusively based on hospital data, may be underestimated.
**Figure 115:** Disease 35 – Ischaemic heart diseases, Period prevalence, Age-standardised rate per 10,000 (2005)

**35. Ischaemic heart diseases**  
Period prevalence (2005)

For Romania the data refers only to DRG hospital data.

Combined sources: FI: Registers on Social Benefits under the National Sickness Insurance Scheme: special reimbursements of medicine + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

**Figure 116:** Disease 35 – Ischaemic heart diseases, Period prevalence, Crude rate per 10,000 (2005)

**35. Ischaemic heart diseases**  
Period prevalence (2005)

For Romania the data refers only to DRG hospital data.

Combined sources: FI: Registers on Social Benefits under the National Sickness Insurance Scheme: special reimbursements of medicine + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

**Expert’s view**

Some drawbacks on comparability were identified as follow: quality of data in 1 country (LT), ICPC does not cover all the ICD-10 codes (NL), non at random sample (NL); creep in 2 countries (EE, LT). More generally exclusion of certain groups hamper comparison: inpatients only (SK, AT); insured people only (EE, LT, LV); institutionalized excluded if HIS is unique source (MT, BE); exclusion of psychiatric and rehabilitation facilities (DE – DRG), exclusion of preventive and rehabilitation facilities of < 100 beds (DE – HDR); no primary care and no patients with non contractual doctors (PL); only in-patients paid by DRG system (RO).

Data sources: providers of ambulatory health care, insurance, and self-reported data are sufficiently comparable.
The three types of sources provided data comparable with each other and further also comparable with US data. A US telephone survey (BRFSS) shows a significantly higher prevalence of angina/CHD of 5.5% in men versus 3.4% in women. According to CDC “States use BRFSS data to identify emerging health problems, establish and track health objectives, and develop and evaluate public health policies and programs. Many states also use BRFSS data to support health-related legislative efforts.” Notice that the American Heart Association does not mention another source and seems to trust this BRFSS without reservation. In contrast, a recent study on stroke in New-Zealand shows that HIS may overestimate a rate.

Although we are not sure that they are “best estimates”, these findings are not in contradiction with the notion of “best estimates”. The observed range ratios may well reflect inter-countries differences. IHD being a major risk factor for both myocardial infarction and cerebro-vascular diseases and since three sources may be considered to be almost equally well, IHD (period prevalence) may be considered a good candidate for next steps in establishing a routine data collection on morbidity.

- Diseases 36. Acute myocardial infarction (I21, I22) – Incidence by person

Seven of the 16 countries that participated in the pilot provided age-standardised rates for this indicator (Figure 117). There is a clear gender divide regarding the Acute Myocardial Infarction (AMI) incidence rate. Six countries (SI, EE, BE, FI, PL, NL) seem to dispose of a suitable source, in 3 countries this seems less obvious (RO, LT and SK), in 5 countries (MT, HU, AT, LV, CY) no suitable source is available and for 1 country (CZ) no sufficient info is available. In particular:

- LT: insurance data; quality of data is mentioned as problematic (up-coding); private patients not included; no COD mentioned; but figures provided compared to the other countries seem realistic.
- SK: only inpatients; no COD mentioned; but figures provided compared to the other countries seem realistic.

**Expert’s view**

The range-ratio of the 7 age-standardized rates reporting countries amounts to 3.8 and is rather insensitive to the removing of Hospital data (Annex 8). Notice that within males this ratio drops to 1.8 and within females to 1.6. The graph shows a very constant picture across the 7 countries of males having double or more incidence rates than females.

All these are in favor to assimilate these rates to the concept of “best estimates”.

Sources: countries with incidence based on exclusively hospital data or exclusively ambulatory data display the smallest incidence rates. In both cases the combination with CoD data should improve the incidence rates.

AMI is high priority from a public health viewpoint. The upgrade for Slovakia and the Netherlands does not seem a big problem. Combining hospital discharge data with CoD should be feasible for most MS. Acute Myocardial Infarction (AMI) (Incidence by person), may be considered a good candidate for next steps in establishing a routine data collection on morbidity.

Since they are very close to the notion of “attack rates”, incidence rates by episode may constitute a more meaningful alternative to the incidence by person rates. The same problems of case-definition and distinction to be made between initial and subsequent episode of care (e.g. rehabilitation service) hold for both types of indicators.

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Figure 117: Disease 36 – Acute myocardial infarction, Incidence by person, Age-standardised rate per 10 000 (2005)

36. Acute myocardial infarction
Incidence by person (2005)

Combined sources: BE: Hospital discharges + Mortality Registry; FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: special reimbursements of medicine + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances; PL: Hospital Morbidity Study + Statistical Survey of the Mortality

Figure 118: Disease 36 – Acute myocardial infarction, Incidence by person, Crude rate per 10 000 (2005)

36. Acute myocardial infarction
Incidence by person (2005)

Combined sources: BE: Hospital discharges + Mortality Registry; FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: special reimbursements of medicine + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances; PL: Hospital Morbidity Study + Statistical Survey of the Mortality

- Diseases 36. Acute myocardial infarction (I21, I22) – Period prevalence

Twelve countries provided crude prevalence rates (Figure 120). As already mentioned overestimation seems to explain the high rates of Malta. The very low rates of Austria and Romania are probably partially due to the type of sources used that do not include (reliable) primary care data. The Polish data that include ambulatory specialist data but no primary care data and that exclude multiple visits may underestimate both the age-standardised and crude prevalence rates.
Four countries (FI, PL, HU and NL) seem to dispose of a suitable source, in 6 countries this seems less obvious (SI, EE, AT, RO, LT and SK), in 3 countries no suitable source is available (MT and CY: HIS; LV: very bad quality of data mentioned) and about 1 country (CZ) no sufficient info is available.

**Figure 119:** Disease 36 – Acute myocardial infarction, Period prevalence, Age-standardised rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.

Combined sources: FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: special reimbursements of medicine + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

**Figure 120:** Disease 36 – Acute myocardial infarction, Period prevalence, Crude rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.

Combined sources: AT: Hospital discharges + Health interview survey; FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: special reimbursements of medicine + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances; NL: Hospital Discharge Register + Causes of Death Register; SI: The Hospital In-Patient Health Care Database + The Out-Patient Specialist Services Database
Why less obvious?

- SI: 2 possible sources mentioned from which one provides only aggregated data; no link between them is possible; no COD mentioned; no data provided.
- EE: insurance data; quality of coding by physicians may be dubious; up-coding may be present; 90% of hospital cases + all deaths; but figures provided, compared to the other countries seem realistic.
- AT: only hospitalized patients + HIS; no COD mentioned; very low crude rate compared to most of the countries.
- RO: only hospitalized patients, only contractual services (proportion of non-contractual service is not mentioned); no COD mentioned; very low figures
- LT: insurance data; quality of data is mentioned as problematic (up-coding); private patients not included); no COD mentioned; figures provided compared to the other countries seem realistic.
- SK: only inpatients; no COD mentioned; low rate.

Expert's view

Although 10 countries provided with age-standardized estimates, the range-rate of 80.3 is enormous (Annex 8). Leaving out HIS data downsizes this ratio to a still very high 16.1 ratio. The ratio by gender downsizes further to 6.7 in men and 6.6 in women, but is still very high.

A US telephone survey (BRFSS) shows a significantly higher prevalence of MI history in men than in women (5.5% versus 2.9%), and similarly in angina/CHD (5.5% in men versus 3.4% in women). According to CDC “States use BRFSS data to identify emerging health problems, establish and track health objectives, and develop and evaluate public health policies and programs. Many states also use BRFSS data to support health-related legislative efforts.” Even the data from Malta are lower than the US data and those of Cyprus are much lower. Notice that the American Heart Association does not mention another source and seems to trust this BRFSS without reservation.

From a point of view of health care, period prevalences are valuable. It remains unclear for me which source we should prefer. An experts’ consultation seems necessary to develop a consensus on how to tackle this problem and to fix a time window for the data collection.

- Diseases 37. Heart failure (I50)

The range ratio of the 8 age-standardized rates reporting countries is high, i.e. 15.8, and leaving out HIS data reduces the ratio to a still high 7.9 (Annex 8).

Within the group of countries relying on an insurance source, the range ratio amounts to 5.6 in males and 7.2 in females.

11 Countries provided crude rates, even more diverging (Figure 122).

Figure 121: Disease 37 – Heart failure, Period prevalence, Age-standardised rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: FI: Registers on Social Benefits under the National Sickness Insurance Scheme: special reimbursements of medicine + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

Figure 122: Disease 37 – Heart failure, Period prevalence, Crude rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: FI: Registers on Social Benefits under the National Sickness Insurance Scheme: special reimbursements of medicine + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

Expert’s view
Some drawbacks on comparability were identified as follow: diagnostic problems, ICPC does not cover all the ICD-10 codes), not an at random sample (NL); quality of data mentioned as problematic in 1 country (LT). More generally exclusion of certain groups hamper comparison: inpatients only (SK, AT); insured people only (EE, LT, LV); no primary care and no patients with non-contractual doctors (PL); only in-patients paid by DRG system (RO). Further it appears that:” Any attempt to describe the epidemiology, aetiology, and prognosis of heart failure, however, must take account of the difficulty in defining exactly what heart failure is”\(^\text{17}\). Although a

\(^{17}\) McMurray JJ, Stewart S. Epidemiology, aetiology, and prognosis of heart failure. Heart 2000; 83(5):596-602.
wide variation in reported prevalence rates has been observed, two findings remain constant: (1) an increasing rate with increasing age, and (2) increasing prevalence rates over the past few decades. In conclusion: apart from a certain expected variation in prevalence rates, the quality and coverage of the data sources are such that the comparability does not seem evident. To be implemented, it will require inter-country consultation about case-definitions and how to collect the data.

- Diseases 38. Cerebrovascular diseases (I60-I69) – Incidence by person

Six countries were able to provide age-standardised incidence rates (Figure 123) characterized by sizeable between-countries and between-genders differences. Underestimation may occur since no COD data are mentioned but in Poland. In addition, the non-inclusion of institutionalized patients, a particular vulnerable group, may suggest an underestimation in the Netherlands. In contrast, lowering of the rates in Finland has been documented, that may at least partially explain Finland’s low rates. Seven countries provided crude rates (Figure 124).

The range ratio of 3.5 across the 6 countries that provided data is rather sizable and is not influenced by leaving out Hospital data (Annex 8). However the ratio by gender reduces to respectively 2.9 in males and 2.7 in females. Hence comparability seems not to constitute a major problem. Apart from real inter-country differences, it may that for reimbursement purposes hospital and insurance data lead to “overestimations”.

Expert’s view

Due to the important clinical and economic burden they cause and a foreseeable increase of the problem in an ageing society, cerebro-vascular diseases are a public health priority. Since most of the non-immediately fatal cases seem to be hospitalized, most MS should be able to provide data. From the literature it is known that the pooled male/female incidence ratio in Europe amounts to 1.24 (95%CI: 1.20 to 1.29). For the six countries this pooled estimate is a very comparable 1.27. In the Framingham study, for the period 1990-2004 the age-adjusted first stroke was 52/10 000 in men and 51/10 000 in women, comparable with those of SK and EE. The table below shows the results of a Scottish study with figures comparable to those of FI and PL. The NL figures may be an underestimation since institutionalized people are not included.

All these underpin the hypothesis that these figures are indeed “best estimates” and since most MS have hospital data at their disposal, cerebrovascular diseases (Incidence by person) could be collected by most MS (Figure 123 and Figure 124).

---

Figure 123: Disease 38 – Cerebrovascular, Incidence by person, Age-standardised rate per 10 000 (2005)

38. Cerebrovascular diseases
Incidence by person (2005)

Combined sources: FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances; PL: Hospital Morbidity Study + Statistical Survey of the Mortality

Figure 124: Disease 38 – Cerebrovascular, Incidence by person, Crude rate per 10 000 (2005)

38. Cerebrovascular diseases
Incidence by person (2005)

Combined sources: FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances; PL: Hospital Morbidity Study + Statistical Survey of the Mortality

- Diseases 38. Cerebrovascular diseases (I60-I69) – Period prevalence

8 Countries provided age-standardised figures with important between-countries and rather slight between-gender differences (Figure 125). As already mentioned, lowering of the rates in Finland has been documented\(^{23}\), that may at least partially explain Finland’s low rates. In Poland the exclusion from the data of multiple visits and of primary care patients may have contributed to its low rates. 13 Countries came up with crude rates.

**Figure 125:** Disease 38 – Cerebrovascular, Period prevalence, Age-standardised rate per 10 000 (2005)

**Figure 126:** Disease 38 – Cerebrovascular, Period prevalence, Crude rate per 10 000 (2005)

Drawbacks regarding comparability: diagnostic problems in patients deceased outside the hospital in 1 country (PL); creep in 2 countries (EE, LT); quality of data in 1 country (LT; ICPC does not cover all the ICD-10 codes and exclusion of institutionalized patients (NL); More generally exclusion of certain groups hamper comparison: primary care excluded (FI, PL); inpatients only (SK) + , private hospitals not included (MT); insured people only (EE, LT, LV(but ≥90% coverage), deceased and institutionalized excluded if HIS (MT, CY), patients without “contractual” physicians excluded (PL), only in-patients paid by DRG system (RO-prevalence).
Expert's view

Due to the presence of excluded groups, that in addition differ across countries, label the provided rates “best estimates” is questionable. It seems not easy to overcome this drawback. An experts’ consultation seems necessary to develop a consensus on how to tackle this problem and to fix a time window for the data collection especially because this type of data is needed.

Chapter X. Diseases of the respiratory system

Summary of main findings

Most countries were able to provide prevalence data but, unfortunately, only a minority provided incidence data (Table 49). Moreover both incidence and prevalence rates (whether standardized or not) displayed enormous between-countries differences, questioning an early inclusion of these diseases in a request of incidence and prevalence rates by Eurostat (Annex 8).

Table 49: Summary of Pilot Data

<table>
<thead>
<tr>
<th>Morbidity Shortlist Number</th>
<th>Name of disease</th>
<th>ICD-10 codes corresponding</th>
<th>Measure</th>
<th>Complete data set provided</th>
<th>Incomplete data set provided</th>
<th>No data supplied</th>
<th>Number of Countries (Total 16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>39</td>
<td>Influenza</td>
<td>J09-J11</td>
<td>Incidence by episode</td>
<td>5</td>
<td>2</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>Pneumonia</td>
<td>J12-J18</td>
<td>Incidence by episode</td>
<td>6</td>
<td>1</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>Pneumonia</td>
<td>J12-J18</td>
<td>Period prevalence</td>
<td>7</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>Asthma</td>
<td>J45, J46</td>
<td>Incidence by person</td>
<td>4</td>
<td>1</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>Asthma</td>
<td>J45, J46</td>
<td>Period prevalence</td>
<td>7</td>
<td>6</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>Chronic lower respiratory</td>
<td>J40-J44, J47</td>
<td>Incidence by person</td>
<td>4</td>
<td>1</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>Chronic lower respiratory</td>
<td>J40-J44, J47</td>
<td>Period prevalence</td>
<td>7</td>
<td>6</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

- Diseases 39. Influenza (J09-J11)

The range ratio of the 6 age-standardized rates reporting countries amounts to 64.0 and is very high and is not importantly influenced by leaving out HIS and/or Hospital data (Annex 8). We clearly have high figures for the Netherlands and Lithuania, low figures for Finland (hospital data), Estonia and Romania, Poland finding itself between (Figure 127).
Figure 127: Disease 39 – Influenza, Incidence by episode, Age-standardised rate per 10,000 (2005)

For Romania the data refers only to DRG hospital data.

Figure 128: Disease 39 – Influenza, Incidence by episode, Crude rate per 10,000 (2005)

For Romania the data refers only to DRG hospital data.
Expert's view

Some drawbacks on comparability were identified as follow: in FI primary care is excluded; PL mentions diagnostic uncertainty (influenza-like cases are included); NL: no institutionalized persons are included, data from a convenience sample, case of influenza plus pneumonia are not included (Pel criteria); LT: private sector not included, quality of data control is insufficient; RO: figures provided compared with those of the other countries are far too small; SK: in-patients only.

In conclusion: only 6 countries came up with, in addition, insufficiently comparable data (and even in one country the age-standardized rate was not obtained by gender). The explanation of this disparity merits to be clarified through a rather complex approach; this may require some time despite influenza is a high priority from a public health point of view.

- Diseases 40. Pneumonia (J12-J18) – Incidence by episode

The range ratio, across the 6 countries delivering age-standardized estimates, of 11.5 is high and leaving out the hospital data reduces it to 4 (Annex 8). However this does not necessarily mean that hospital data are an underestimation: for instance, in a recent review mentioning an 1981-1982 incidence study of Finland gave rates that do not contradict the Finnish rates in our table.

Also, the providers of ambulant care in the Netherlands do supply data comparable with the hospital data.

Sources: the insurance-data (especially those of Romania) are higher as a group, but within the insurance group itself the “ratio” of the range is about 2.5. Similarly, the differences within the hospital data group are not negligible.

These rates are clearly not nearly comparable. Given the rather huge differences within the insurance type of source and the rates provided by a Finnish incidence study that are comparable to the Finnish hospital data, it is doubtful that insurance-based rates are to be considered “best estimates”.

The reason for these important differences across the 6 countries seems apparently not related to the type of source and merit to be clarified. Unfortunately, the latter, necessitating an in-depth “inquiry”, appears rather complex.

Figure 129: Disease 40 – Pneumonia, Incidence by episode, Age-standardised rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.

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**Figure 130:** Disease 40 – Pneumonia, Incidence by episode, Crude rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.

**Expert's view**

Some drawbacks on comparability were identified as follow: in FI primary care is excluded, reimbursement-driven purpose is present; NE: no institutionalized persons are included, data from a convenience sample, influenza plus pneumonia cases are included (Pel criteria); LT: private sector not included, quality of data control is insufficient; RO: although no Hospital data are provided, the figures, compared to those of the other countries, look adequate; CZ: in-patients only, figures provided compared with those of the other countries are far too small; SK: in-patients only are included, the figures provided compared with those of the other countries are far too small.

Since only 6 countries came up with, in addition, insufficiently comparable data, demanding for a tough explanation, this may require some time despite Pneumonia (Incidence by episode) is a high priority from a public health point of view.

However, these data may allow the monitoring of rates over time in the own country.

- Diseases 40. Pneumonia (J12-J18) – Period prevalence

The range ratio of 8.6 between the 7 countries that reported age-standardized estimates is sizable and is reduced to 4.0 by leaving out Hospital data (Annex 8). Countries came up with crude rates, characterized by important (more than fivefold) between-countries differences (Figure 132).
**Figure 131**: Disease 40 – Pneumonia, Period prevalence, Age-standardised rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.

**Figure 132**: Disease 40 – Pneumonia, Period prevalence, Crude rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.

A quick literature search did not yield any results allowing a benchmark against which our age-standardized estimates could be judged.

**Expert's views**

Several sources mention drawbacks: In FI primary care is excluded, reimbursement-driven purpose is present; NL: no institutionalized persons are included, data from a convenience sample, case of influenza plus pneumonia are included (Pel criteria), and data collection of merely 1 year; LT: private sector is not included, quality of data control is mentioned as insufficient; RO: although no Hospital data are provided, the figures, compared to those of the other countries, look adequate; SK: only in-patients are included, the figures provided, compared with those of the other countries, are far too small; EE: private care and uninsured patients are excluded and data are not regularly submitted to quality control.
The quality and coverage of the data sources are such that between-countries comparison seems hazardous. This brings to the conclusion that, at present, the available sources seem more suitable for monitoring the evolution in the own country rather than for international comparison. Since pneumonia is not a chronic disease the burden can be estimated by the combination of several years of the incidence by episode; therefore its presence in the shortlist is questionable.

- Diseases 41. Asthma (J45, J46) – Incidence by person

Although only 4 countries contributed age-adjusted incidence data, the ratio of the range of 6.6 is important and is quite the same for both genders (Annex 8). Five countries were able to come up with crude incidence data (Figure 134). Here also, the between-countries variability is high (six-fold).

**Figure 133**: Disease 41 – Asthma, Incidence by person, Age-standardised rate per 10 000 (2005)

Combined sources: FI: Registers on Social Benefits under the National Sickness Insurance Scheme: special reimbursements of medicine + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances
Figure 134: Disease 41 – Asthma, Incidence by person, Crude rate per 10 000 (2005)

Several sources mention drawbacks: FI: covers mainly those with medication, which may not be specific; In EE private care patients are excluded; NL: no institutionalized persons are included, data from a convenience sample. Both reasons seem not to be important ones; LT: private sector is not included, quality of data control is insufficient; RO: data will be available as from 2007.

Looking into the age group specific data of each country, one observes for each of them that the major part of the cases occurs in the younger age groups as it should.

“No single instrument can be used to identify asthma with certainty. Asthma is a clinical diagnosis made by physicians on the basis of a patient’s medical history, physical examination, assessment of the reversibility of airway obstruction, and exclusion of alternative diagnoses that mimic asthma.”

More emphasis is seemingly laid on prevalence.

Expert’s view

Although to be considered a public health problem, associated with environmental factors, it seems difficult to obtain routinely comparable figures let alone “best estimates”.

If Eurostat wants that this indicator should be collected an important effort has to been made in order to get rid of the drawbacks and to define the source(s) to be used. Therefore more in-depth discussion is needed on how to collect data on Asthma (Incidence by person).

- Diseases 41. Asthma (J45, J46) – Period prevalence

The range ratio of 69.0 between the 9 countries that reported age-standardized estimates is sizable and is slightly reduced to 45.6 by leaving out HIS data (Annex 8). Discarding RO data reduces the ratio to 4.4 in men and 4.8 in women, suggesting that the low rates of this country cause by far the largest part of the range ratio. Notice that we finally end up with 5 countries. Even within the same type of source the rates are importantly varying. 14 Countries supplied crude prevalence data (Figure 136). Here also enormous differences between countries are observed.

For Romania the data refers only to DRG hospital data. Combined sources: FI: Registers on Social Benefits under the National Sickness Insurance Scheme: special reimbursements of medicine + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

Figure 136: Disease 41 – Asthma, Period prevalence, Crude rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data. Combined sources: AT: Hospital discharges + Health interview survey FI: Registers on Social Benefits under the National Sickness Insurance Scheme: special reimbursements of medicine + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

U.S. data from 1982 through 1992 demonstrate an increase in the overall age-adjusted prevalence rate of self-reported asthma from 34.7 per 1 000 to 49.4 per 1 000 (42% increase) and in 2009, asthma prevalence was 8.2% of the U.S. population. Notice that the MT HIS rates are quite comparable with the US ones. In an Australian

survey the prevalence of doctor-diagnosed asthma (DDA) was around 6% from 1966 to 1975, 8% in 1981 and rose to 19% in 2005–2007.\(^{28}\)

**Expert's view**

Several sources mention drawbacks: FI: covers mainly those with medication, which may not be specific; In EE private care patients are excluded; NE: no institutionalized persons are included, data stem from a convenience sample. Both reasons seem not to be important ones; LT: the private sector is not included and the quality of data control is insufficient.

Comparability as yet is not reached and we are in doubt how “best estimates” should look like.

Conclusion: the period prevalence of asthma is a public health, high priority indicator, but estimates vary widely. An important effort has to been made in order to get rid of the drawbacks, to define the source(s) to be used and to agree on a precise time window for the data collection of Asthma (period prevalence).

- Diseases 42. Chronic lower respiratory disease (J40-J44, J47) – Incidence by person

The range ratio of 71.4 between the 4 countries that reported age-standardized estimates is enormous (Annex 8). Leaving out FI, that provides figures based on medication data, reduces the rate to 2.3, but doing so we remain with only 3 countries coming up with age-standardized estimates by gender. Five countries were able to provide crude incidence data. Here also, the between-countries variability is high (> 20-fold).

Chronic lower respiratory diseases is expected to be the third leading cause of death by 2020 and smoking is its main etiologic factor.\(^{29}\)

Overall incidence figures are not easily found in tools as Google Scholar and Medline.

**Expert's view**

Several sources mention drawbacks regarding incidence about chronic lower respiratory diseases other than asthma (incl. COPD): FI: covers mainly those with medication, which may not be specific; EE: private care patients are excluded; NL: institutionalized persons are excluded, data from a convenience sample. Both reasons seem not to be important ones; LT: private sector not included, quality of data control is insufficient.

As incidence has mainly an interest from a preventive point of view and as the main risk factor (smoking) is known, often a topic for an (E)HIS or another survey, and since in addition we have only 3 countries providing comparable figures, chronic lower respiratory diseases incidence should considered as a lower priority information to be collected.


**Figure 137:** Disease 42 – Chronic lower respiratory diseases other than asthma (incl. COPD), Incidence by person, Age-standardised rate per 10 000 (2005)

**Figure 138:** Disease 42 – Chronic lower respiratory diseases other than asthma (incl. COPD), Incidence by person, Crude rate per 10 000 (2005)

- Diseases 42. Chronic lower respiratory disease (J40-J44, J47) – Period prevalence

The range ratio of 59.3 between the 8 countries that reported age-standardized estimates is very high and is considerably influenced, but still very important (24.9), by leaving out HIS data (Annex 8). Twelve countries supplied crude prevalence data (Figure 140). Here also enormous between-countries differences are observed.
Sources: RO (insurance) and FI (combined), on the one hand, display very low rates, whereas, on the other hand MT (HIS) displays a very high rate.

**Figure 139:** Disease 42 – Chronic lower respiratory diseases other than asthma (incl. COPD), Period prevalence, Age-standardised rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.

**Figure 140:** Disease 42 – Chronic lower respiratory diseases other than asthma (incl. COPD), Period prevalence, Crude rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.

**Expert’s view**

Several sources mention drawbacks: FI: covers mainly those with medication, which may not be specific; EE: private care and uninsured/private care patients are excluded; AT: covers hospitalized as well as HIS, but there is no clue as how the two are to be combined; PL: primary care and private physicians’ patients are not covered; LV: private care patients are not covered, quality of data is doubtful; NE: institutionalized persons are excluded,
data from a convenience sample, Bronchitis NOS excluded. These reasons seem not to be too important ones; LT: private sector not included, quality of data control is insufficient; RO and SK: only hospitalized patients are included.

On average 5–15% of adults in industrialized countries have COPD defined by spirometry. Chronic lower respiratory disease, primarily COPD, are the third leading cause of death in the United States. Within the US rates vary by state (between 390/10 000 and 750/10 000), gender (more in women) and race. Only 1 out of the 8 countries having supplied with age-standardized estimates is within those ranges, which seems to suggest the difficulty of collecting adequate data. However, it seems to be possible to collect data within a survey in whom a spirometry is performed at home. This type of “upgrading” a HIS or including it within an EHIS seems a feasible objective.

Chapter XI. Diseases of the digestive system

Summary of main findings

Incidence per person was required only for cholelithiasis and data submitting was low – 5 countries computed data. For prevalence data submitting was better, but only half of the countries provided complete data set (Table 50).

In general, the most widely used sources were the health insurance databases.

Restricted data access could be the problem especially using data sources that are not performed for collecting the regular health statistics. Linkage of different databases was a problem and could cause choosing the database not covering all patients.

Table 50: Summary of pilot data

<table>
<thead>
<tr>
<th>Morbidity Shortlist Number</th>
<th>Name of disease</th>
<th>ICD-10 codes corresponding</th>
<th>Measure</th>
<th>Complete data set provided</th>
<th>Incomplete data set provided</th>
<th>No data supplied</th>
<th>Number of Countries (Total 16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>43</td>
<td>Gastric and duodenal ulcer (peptic ulcer)</td>
<td>K25-K28</td>
<td>Period prevalence</td>
<td>11</td>
<td>4</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>Alcoholic liver disease</td>
<td>K70</td>
<td>Period prevalence</td>
<td>9</td>
<td>4</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>Diseases of liver other than alcoholic</td>
<td>K71-K77</td>
<td>Period prevalence</td>
<td>9</td>
<td>4</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>Cholelithiasis</td>
<td>K80</td>
<td>Incidence by person</td>
<td>5</td>
<td>0</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>Cholelithiasis</td>
<td>K80</td>
<td>Period prevalence</td>
<td>9</td>
<td>4</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

For gastric and duodenal ulcer lowest rates were shown when the data source was the hospital database (AT, SK, SL) (Figure 141).

Highest rates were shown for MT, HU, EE and CY. For MT and CY reason for high results could be using interview survey. HU and EE presumably show high numbers partly because of real high number of patients (origin - Eastern Europe, high alcohol consumption level), but partly the difference could be from different diagnosing and coding habits.

In total, prevalence rates were higher for men than for women (ex. CY).

**Figure 141:** Disease 43 – Gastric and duodenal ulcer (peptic ulcer), Period prevalence, Age-standardised rate per 10 000 (2005)

43. Gastric and duodenal ulcer (peptic ulcer)

Period prevalence (2005)

For Romania the data refers only to DRG hospital data.

**Figure 142:** Disease 43 – Gastric and duodenal ulcer (peptic ulcer), Period prevalence, Crude rate per 10 000 (2005)

43. Gastric and duodenal ulcer (peptic ulcer)

Period prevalence (2005)

For Romania the data refers only to DRG hospital data.

Generally for alcoholic liver disease low numbers were shown. AT, FI, LT, NL, PL, SL and SK showed rates less than 10 per 10 000 (Figure 144). Unlike other diseases there is no so big difference between hospital data and other databases.

Very high rate was shown for HU but despite that, experts suspected under estimation.

In total, prevalence rates were higher for men than for women.
**Figure 143:** Disease 44 – Alcoholic liver disease, Period prevalence, Age-standardised rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data. Combined sources: FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances.

**Figure 144:** Disease 44 – Alcoholic liver disease, Period prevalence, Age-standardised rate per 10 000 (without HU) (2005)

For Romania the data refers only to DRG hospital data. Combined sources: FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances.

For diseases other than alcoholic lowest rates were shown for NL, SK, AT, SL (hospital data) (Figure 146). The highest rate was shown for HU. It could be difficult to differentiate alcoholic or not alcoholic liver disease. HU showed higher numbers than other countries for both liver diseases. Big difference could be caused from different diagnosis criteria or under reporting of diagnoses by other countries either.
For Romania the data refers only to DRG hospital data.

Combined sources: FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

For cholelithiasis incidence per person results are quite similar (Figure 147). In total, incidence rates were higher for women than for men.
For cholelithiasis period prevalence lower rates were presented for AT, FI, RO, SK, SL (hospital database) and NL (general practitioners). In total, prevalence rates were higher for women than for men.

For Romania the data refers only to DRG hospital data.
**Figure 149:** Disease 46 – Cholelithiasis, Period prevalence, Crude rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.

**Expert’s view**

Incidence estimates are based according to doctors’ choice whether the diagnosis is new or not. If data are possible to link or database covers different health care providers and different years more reliable could be using the algorithms not the doctors’ choice.

Quality of differentiation of alcoholic and non-alcoholic liver disease by doctors could be questionable, but it is not recommended to integrate them taking into account the different aetiology.

The expert agrees on the FI recommendation to add for alcoholic liver disease deaths if possible, because alcoholic liver disease is often diagnosed in death certificate only. On other hand counting liver diseases cases must consider counting other diseases with large proportion of cases diagnosed in death certificate only.

NL has recommended compute lifetime prevalence for chronic disease if disease cannot be cured. Usually it is not so easy to measure what proportion of cases is missing. No algorithms were described to advise member states how to improve coverage (NL has used algorithms for correction the missing data, but hardly it is easy to overtake by others).

**Chapter XII. Diseases of the skin and subcutaneous tissue**

**Summary of main findings**

Complete data set was provided only by 7 countries (Table 51).

In general, the most widely used sources were the health insurance databases. Restricted access could be a problem especially for health insurance data and data with need for linkage with other database.

Data from hospital database were significantly lower and data from HIS were significantly higher than data from other sources. This may be in part due to the fact that most of the patients are diagnosed and treated ambulatory.
Table 51: Summary of pilot data

<table>
<thead>
<tr>
<th>Morbidity Shortlist Number</th>
<th>Name of disease</th>
<th>ICD-10 codes corresponding</th>
<th>Measure</th>
<th>Complete data set provided</th>
<th>Incomplete data set provided</th>
<th>No data supplied</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Number of Countries (Total 16)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>Dermatitis and eczema</td>
<td>L20-L30</td>
<td>Period prevalence</td>
<td>7</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>48</td>
<td>Psoriasis</td>
<td>L40</td>
<td>Period prevalence</td>
<td>7</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

For dermatitis and eczema lowest rates were shown when the data source was the hospital database (AT, RO, SL) (Figure 151).

Highest rates were shown for SK (skin diseases information system), NL (general practitioners) and EE (insurance database).

In total, prevalence rates are higher for women than for men.

Figure 150: Disease 47 – Dermatitis and eczema, Period prevalence, Age-standardised rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.

Combined sources: FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances
**Figure 151**: Disease 47 – Dermatitis and eczema, Period prevalence, Crude rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.

Combined sources: FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

For psoriasis lowest rates were shown when the data source was the hospital database (AT, RO, SI) (Figure 153). Highest rates showed NL (HIS).

Generally prevalence rate was slightly higher for men than women. Crude rate was similar to age-standardised rate.

**Figure 152**: Disease 48 – Psoriasis, Period prevalence, Age-standardised rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.

Combined sources: FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances
**Figure 153**: Disease 48 – Psoriasis, Period prevalence, Crude rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data. Combined sources: FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances.

**Expert’s view**

Dermatitis and eczema diagnoses include several acute conditions and recurrences of chronic disease and it could cause wide variation of results. Question is do we need all this information together or serious chronic dermatitis only.

Hospital database doesn’t seem to be a reliable source for skin diseases, because most of the patients are diagnosed and treated ambulatory.

FI recommended HIS are to be used for dermatitis and eczema (since health registers do not exist). HIS is not a reliable source for registering skin diseases diagnosed by doctors in my opinion.

NL recommended compute lifetime prevalence for psoriasis.

**Chapter XIII. Diseases of the Musculoskeletal System**

**Summary of main findings**

The analysis shows substantial differences between the age-standardised rates and the crude rates, and also significant variations between male and female rates. This emphasizes the need for all countries to provide age-standardised rates for males and females separately.

The technical report from Finland concludes that diseases 51 (systemic connective tissue disorders) and 52 (spondylopathies and other dorsopathies) are not clinically relevant, since they include several diseases and medical conditions with different aetiology and treatment.
### Table 52: Summary of Pilot Data

<table>
<thead>
<tr>
<th>Morbidity Shortlist Number</th>
<th>Name of disease</th>
<th>ICD-10 codes corresponding</th>
<th>Measure</th>
<th>Complete data set provided</th>
<th>Incomplete data set provided</th>
<th>No data supplied</th>
<th>Number of Countries (Total 16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>49</td>
<td>Rheumatoid arthritis</td>
<td>M05, M06</td>
<td>Period prevalence</td>
<td>8</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>Arthrosis</td>
<td>M15 - M19</td>
<td>Period prevalence</td>
<td>7</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>Systemic connective tissue disorders</td>
<td>M30 - M36</td>
<td>Period prevalence</td>
<td>7</td>
<td>3</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>52</td>
<td>Spondylopathies and other dorsopathies (incl. low back pain)</td>
<td>M45 - M54</td>
<td>Period prevalence</td>
<td>8</td>
<td>5</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>53</td>
<td>Osteoporosis</td>
<td>M80 - M82</td>
<td>Period prevalence</td>
<td>8</td>
<td>5</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

- Diseases 49. Rheumatoid arthritis (M05, M06) – Period prevalence

Nine of the 16 countries that participated in the pilot provided age-standardised rates for this indicator (Figure 154). There is a very wide variation in the results, with a range of 0.6 to 307 cases per 10 000 population for males, and 2.4 to 777 cases per 10 000 population for females.

The rates for Cyprus which were derived from a health interview survey are clear outliers, and would appear to be a significant overestimation of the prevalence when compared to the rates derived from other sources.

**Figure 154:** Disease 49 – Rheumatoid arthritis, Period prevalence, Age-standardised rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.

Combined sources: FI: Registers on Social Benefits under the National Sickness Insurance Scheme: special reimbursements of medicine + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

Austria and the Czech Republic did not provide age-standardised rates, but did provide crude rates.
If the crude rates only are analysed, then this eliminates the outlying data provided by Cyprus as their results did not include crude rates (Figure 155). The variation in the rates is therefore less, although still significant.

**Figure 155:** Disease 49 – Rheumatoid arthritis, Period prevalence, Crude rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.

Combined sources: FI: Registers on Social Benefits under the National Sickness Insurance Scheme: special reimbursements of medicine + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

It is clear that using DRG or hospital discharge based sources results in an underestimation of the rates. This is to be expected as rheumatoid arthritis is a condition that generally does not result in hospitalisation.

The data for the Netherlands shows the highest crude rates for both males and females. This data also includes juvenile arthritis and ankylosing spondylitis and so there is some over-estimation, although it is not clear to what extent this is affecting the results.

The data for the Czech Republic shows a relatively high rate for males and females combined, even though the data source only included 65% of the population.

It is notable that while there is a large variation among the rates, the rates for females are higher than males for all countries.

- Diseases 50. Arthrosis (M15-M19) – Period prevalence

Eight of the 16 countries that participated in the pilot provided age-standardised rates for this indicator (Figure 156). There is a very wide variation in the results with the data from Malta sourced from a health interview survey appearing to be a significant outlier (almost 2 000 cases per 10 000 females, i.e. nearly 20% of the female population).

The range among the other countries is still very wide with 11.9 cases per 10 000 population for males in Slovenia compared to 494.4 cases per 10,000 population for females in Hungary.
**Figure 156**: Disease 50 – Arthrosis, Period prevalence, Age-standardised rate per 10,000 (2005)

For Romania the data refers only to DRG hospital data.

Combined sources: FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme; disability allowances

Analysis of the crude rates reveals a similar pattern, with very high results for Malta based on a health interview survey, and very low rates for Romania (DRG payments data) and Austria and Slovenia (hospital discharges data) (Figure 157).

Even among countries using sources which appear to be more reliable (insurance related sources), there is a wide variation among rates. However analysis of crude unadjusted rates should only be undertaken with caution.

The data for Finland is based on patients with hospital discharges or disability allowances for Arthrosis. However most patients are treated in primary health care, for which data are not available prior to the year 2011. Other studies suggested that the true prevalence is higher than the results based on the linkage of these two data sources, and therefore the data for Finland are considered to be unreliable estimates.
Figure 157: Disease 50 – Arthrosis, Period prevalence, Crude rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

- Diseases 51. Systemic connective tissue disorders (M30-M36) – Period prevalence

The reporting levels for this indicator were quite low, with nine countries unable to provide age-standardised rates (Figure 158). Of the 7 countries that provided complete data, 5 used insurance related sources. Slovenia used hospital discharge data. Finland supplied data derived from the linkage of the reimbursement of medication and disability allowances registers. No country used health interview surveys as a source.

It appears from the data that hospital discharges and DRG payments data are inadequate data sources for this indicator as they underestimate the prevalence. Among the 5 countries providing data from insurance related sources there is still a wide range, with particularly high rates in Hungary.

Figure 158: Disease 51 – Systemic connective tissue disorders, Period prevalence, Age-standardised rate per 10 000 (2005)
Crude rates were supplied for 2 additional countries (Czech Republic and Austria) (Figure 159). This variation is even more significant when compared to other countries with data sourced from insurance databases. However it’s unlikely that disparity in the rates is solely due to the effects of age.

**Figure 159**: Disease 51 – Systemic connective tissue disorders, Period prevalence, Crude rate per 10,000 (2005)

For Romania the data refers only to DRG hospital data.

Combined sources: FI: Registers on Social Benefits under the National Sickness Insurance Scheme: special reimbursements of medicine + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

- Diseases 52. Spondylopathies and other dorsopathies (incl. low back pain) (M45-M54) – Period prevalence

Nine of the 16 countries that participated in the pilot provided age-standardised rates for this indicator (Figure 160). Again there is a very wide variation in the results with the data from Malta sourced from a health interview survey appearing to be a significant outlier (over 4,000 cases per 10,000 population for females, i.e. a prevalence rate of more than 40%).
Figure 160: Disease 52 – Spondylopathies and other dorsopathies (incl. low back pain), Period prevalence, Age-standardised rate per 10,000 (2005)

The Netherlands had the highest rates among countries using sources other than health interview surveys, with age-standardised rates of 911 per 10,000 males and 1146 per 10,000 females. These data were based on a GP information system which uses the ICPC classification system. The technical report from the Netherlands indicates that there were difficulties in selecting a combination of ICPC codes that accurately covers the requested ICD-10 codes for this indicator. Therefore the comparability of this data may be limited.

Crude rates were supplied for 2 additional countries (Czech Republic and Austria) (Figure 161). In general the crude rates are higher than the age-standardised rates, and as expected show more variation.

Figure 161: Disease 52 – Spondylopathies and other dorsopathies (incl. low back pain), Period prevalence, Crude rate per 10,000 (2005)
It is clear again from the results that sources based on hospital discharges and DRG payments systems are inadequate for this indicator, as patients with this condition are usually treated in primary care or outpatient settings and do not regularly require hospitalisation.

- Diseases 53. Osteoporosis (M80-M82) – Period prevalence

Overall the data availability for this indicator initially appears to be good, with 9 countries providing age-standardised rates (Figure 162). Two countries did not supply any rates for this indicator (Latvia and Slovakia, although Latvia provided absolute numbers). The data sourced from health interview surveys results in very high rates relative to other sources, similar to other indicators.

However the data for Hungary which was sourced from a national health insurance database shows very high rates compared to other countries using insurance related sources. The technical report from Hungary suggests that this data is reliable, although there can be a distorting effect due to the nature of the reimbursement system.

Austria and Czech Republic supplied crude rates for this indicator (Figure 163), but didn’t provide age-standardised rates. The variation in the rates is again quite substantial, even among countries using similar reimbursement driven sources.

Similar to the other indicators in this section, it is clear from the results that data derived from hospital discharges databases or DRG payments systems are inadequate for this indicator.

**Figure 162: Disease 53 – Osteoporosis, Period prevalence, Age-standardised rate per 10,000 (2005)**

For Romania the data refers only to DRG hospital data.

Combined sources: FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

Both the age-standardised rates and the crude rates for osteoporosis in Lithuania are very low. The technical report for Lithuania indicates that there may be significant under-registration of osteoporosis in health care, as not all patients receive treatment for this condition and they may purchase medication privately for their own use. Also, it is possible that only serious cases of osteoporosis are traditionally registered.

The data from Finland were derived from the linkage of the hospital discharges register and the disability allowances register. The technical report from Finland advises that osteoporosis is often a symptom-free disease which is diagnosed after a major fracture, and the register data is not a reliable source for this disease.
**Figure 1: Disease 53 – Osteoporosis, Period prevalence, Crude rate per 10 000 (2005)**

For Romania the data refers only to DRG hospital data.
Combined sources: FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

**Expert’s view**

It is apparent from analysis of this data and other morbidity indicators that health interview surveys should not be used to derive data for these indicators. Although health interview surveys provide reliable and comparable data for many conditions, the results cannot be compared to data derived from other sources including reimbursement driven sources and hospital activity sources. However, only three countries (MT, PL, CY) used the HIS as the main source for this group of diseases.

It is also clear that for this group of indicators, data sourced only from hospital discharges data or DRG payments data are insufficient. Most of these conditions do not normally require hospitalisation, and therefore the use of hospital activity based sources result in estimates that vastly underestimate the true prevalence or incidence of a condition. Therefore the use of hospital discharges data or DRG payments data as the only source for these indicators should not be recommended. However hospital activity sources may be useful if combined with other sources such as primary care or outpatient databases.

If the data derived from health interview surveys, hospital discharges and DRG payments systems are excluded, then the data availability for these indicators will be significantly lower.

Even among countries which appear to have reasonably reliable sources (primarily insurance related sources), there can be wide variations in the results. The reasons for the variations are often unclear; it may be a natural difference in the prevalence of conditions in different countries, or due to distorting effects resulting from the reimbursement, or different methodologies for estimating prevalence (e.g. one outpatient visit per year, or 2 GP visits).

It is also important to note that effect of different classifications (e.g. data from the Netherlands based on the ICPC-1 classification compared to ICD-10). Caution should be used in the interpretation of results, as comparisons can be limited based on different classifications.

**Chapter XIV. Diseases of the Genitourinary System**

**Summary of main findings**

The analysis shows substantial differences between the age-standardised rates and the crude rates, and also significant variations between male and female rates. This emphasizes the need for all countries to provide age-standardised rates for males and females separately.
The OECD collects data on the prevalence of End Stage Renal Failure (as opposed to all renal failure). It may be useful to examine the quality of this data, as it could be better defined and easier to report accurately than data on the prevalence of all types of renal failure. The technical report from Finland suggests that information on renal failure should include the people requiring dialysis treatment only.

### Table 53: Summary of Pilot Data

<table>
<thead>
<tr>
<th>Morbidity Shortlist Number</th>
<th>Name of disease</th>
<th>ICD-10 codes corresponding</th>
<th>Measure</th>
<th>Complete data set provided</th>
<th>Incomplete data set provided</th>
<th>No data supplied</th>
</tr>
</thead>
<tbody>
<tr>
<td>54</td>
<td>Glomerular and renal tubulo-interstitial diseases</td>
<td>N00 - N08, N10 - N16</td>
<td>Period prevalence</td>
<td>8</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>55</td>
<td>Renal Failure</td>
<td>N17 - N19</td>
<td>Period prevalence</td>
<td>8</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>56</td>
<td>Urolithiasis</td>
<td>N20 - N23</td>
<td>Incidence by person</td>
<td>4</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>56</td>
<td>Urolithiasis</td>
<td>N20 - N23</td>
<td>Period prevalence</td>
<td>9</td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>

- Diseases 54. Glomerular and renal tubulo-interstitial diseases (N00-N08, N10-N16) – Period prevalence

Eight countries provided data for this indicator; 4 countries used insurance related sources; the Netherlands used a GP information system; Romania provided data derived from a DRG payments system; Slovenia used hospital activity data and Finland linked the hospital discharges register with the disability allowances register (Figure 164). The remaining 7 countries did not provide age-standardised rates, although Austria, Czech Republic and Slovakia provided crude rates (Figure 165). Belgium, Cyprus and Malta did not provide any data for this indicator.

**Figure 164: Disease 54 – Glomerular and renal tubulo-interstitial diseases, Period prevalence, Age-standardised rate per 10 000 (2005)**

For Romania the data refers only to DRG hospital data.

Combined sources: FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme; disability allowances
There is substantial variation in the age-standardised rates. The data for Slovenia (derived from hospital discharges data) shows a rate of 5.5 per 10,000 males and 10.2 per 10,000 females compared to 77 per 10,000 males and 199 per 10,000 females in Estonia.

The data from Estonia are based on the number of patients with glomerular and renal tubulo-interstitial disease documented on health insurance invoices. However this is considerably higher than the number of people receiving prescribed medication for this condition. As glomerular diseases do not always require medication, it was decided that the algorithm for glomerular and renal tubulo-interstitial diseases prevalence should be based on health insurance invoices and not prescribed medication. However this can cause some overestimation of glomerular disease.

Also, note that there may be some quality issues with this data source from Estonia, as there are no regular quality controls and there may be incentives to code more severe conditions due to the nature of the reimbursement driven source. This may also be the case for other countries using reimbursement driven sources, and may apply to other indicators.

Austria, Czech Republic and Slovakia did not provide age-standardised rates, but reported crude rates for males and females combined. The data for Austria are based on hospital discharges activity, which results in very low rates, similar to the rates for Slovenia which were also based on hospital activity. The data for Slovakia are based on a register of outpatients requiring kidney substitution treatment.

The age-standardised rates for the Netherlands (based on a GP information system) are not too dissimilar from some other countries using insurance related sources; however it is important to note that the ICPC codes on which the Netherlands data are based on do not match the requested ICD-10 codes exactly.

**Figure 165: Disease 54 – Glomerular and renal tubulo-interstitial diseases, Period prevalence, crude rate per 10,000 (2005)**

For Romania the data refers only to DRG hospital data.
Combined sources: FI: Hospital Discharge Register + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

- Diseases 55. Renal Failure (N17-N19) – Period prevalence

Eight countries reported age-standardised rates for this indicator (Figure 166). Estonia, Hungary, Lithuania and Poland used insurance related sources; Romania provided data derived from a DRG payments system; Slovenia used hospital activity data and Finland linked the medication and disability registers. It was not possible to use the GP information system in the Netherlands to estimate period prevalence due to classification problems, and so the only alternative source was the Hospital Discharge Register.
The age-standardised rates for most countries using insurance related sources are generally substantially higher than the rates for countries using hospital activity or DRG payments based sources. However the rates for Lithuania sourced from the Compulsory Health Insurance Fund (CHIF) database are quite low in comparison to other countries using similar sources.

The data for the Netherlands are based on lifetime prevalence. Other countries may have used a different definition of prevalence.

**Figure 166:** Disease 55 – Renal failure, Period prevalence, Age-standardised rate per 10,000 (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: FI: Registers on Social Benefits under the National Sickness Insurance Scheme: special reimbursements of medicine + Registers on Social Benefits under the National Sickness Insurance Scheme: disability allowances

Austria, Czech Republic and Slovakia did not provide age-standardised rates, but reported crude rates for males and females combined (Figure 167). The data for Austria were based on hospital discharges activity, which results in very low rates, similar to the rates for Slovenia which were also based on hospital activity. The data for Slovakia were based on a register of outpatients requiring kidney substitution treatment.

The rates for Estonia are based on patients with at least one hospital invoice or two specialist or GP invoices with a code for renal failure. Other countries may have used different guidelines, for example only one GP invoice with a diagnosis of renal failure.
Figure 167: Disease 55 – Renal failure, Period prevalence, Crude rate per 10 000 (2005)

- **Diseases 56. Urolithiasis (N20-N23) – Incidence by person**

Four countries supplied data on incidence by person for urolithiasis (Figure 168). Estonia and Lithuania used insurance related sources to derive estimates of incidence. The data for Slovakia are based on a register of outpatients requiring kidney substitution treatment. The Netherlands used data from the GP information system, as analysis of different data sources revealed that most new cases of urolithiasis are diagnosed at the family doctor. However, the analysis by the Netherlands also showed that linkage to hospital discharge data would improve the estimates of both incidence and prevalence, although due to coverage issues it was not possible to do this at the time of the pilot project. The remaining 8 countries did not provide either age-standardised rates or crude rates for this indicator.

The age-standardised rates for this indicator range from 9.4 per 10 000 females in Slovakia to 29 per 10 000 females in Lithuania, and 14.3 per 10 000 males in Slovakia to 28 per 10 000 males in Estonia.

It is notable that the rates for countries using insurance related sources (Estonia and Lithuania) are reasonably similar, although the rates indicate different patterns of incidence between males and females in these countries. In Estonia the rate for males is 40% higher than the rate for females, whereas the data for Lithuania indicates that the rate for males is around 20% lower than the rate for females.

For this indicator the data for Estonia refer to patients with at least one specialist or hospital invoice with diagnosis of urolithiasis in the selected year.
**Figure 168:** Disease 56 – Urolithiasis, Incidence by person, Age-standardised rate per 10,000 (2005)

The graph of the crude rates is similar to the age-standardised rates, although as expected there is a slightly greater variation in the rates (Figure 169).

**Figure 169:** Disease 56 – Urolithiasis, Incidence by person, Crude rate per 10,000 (2005)

- Diseases 56. Urolithiasis (N20-N23) – Period prevalence

Ten countries provided data for this indicator (Figure 170). Similar to other indicators, the data provided by Malta from a health interview survey is a clear outlier. The age-standardised rate per 10,000 males in Malta was reported as 369. The age-standardised rates for males ranged from 55 to 92 among countries using insurance related sources, and 10 to 31 among countries using other sources.
Figure 170: Disease 56 – Urolithiasis, Period prevalence, Age-standardised rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.

The technical report for the Netherlands indicates that most cases of urolithiasis are treated by GPs, and therefore this is a better source than hospital activity data alone. However ideally it would be possible to link outpatient, primary care and hospital discharges activity to produce an estimate of prevalence. Note that the Netherlands defined period prevalence as year prevalence, because urolithiasis can be cured. Other countries may have used different definitions, for example lifetime prevalence.

Figure 171: Disease 56 – Urolithiasis, Period prevalence, Crude rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.

Austria and the Czech Republic did not provide age-standardised rates, but reported crude rates for males and females combined (Figure 171).

The data for Finland were based on hospital discharges, and this was considered to provide reliable estimates as most people are treated in hospitals. The data for Austria and Slovenia were also based on hospital discharges activity. The prevalence rates for these countries are substantially lower than for countries using other sources.
Estonia and Lithuania provided data on both incidence and prevalence for urolithiasis derived from insurance related source. For both of these countries the age-standardised prevalence rates are between 130% and 180% higher than the age-standardised incidence rates. However the age-standardised prevalence rates for the Netherlands are only around 40% higher than the age-standardised incidence rates. This may be due to differences in the definition of period prevalence. Slovakia reported the same rates for both incidence and prevalence.

Expert's view

Similar to other indicators, it is clear that health interview surveys should not be recommended as suitable sources to derive data for these indicators. The results cannot be compared to data derived from other sources including insurance related sources and hospital activity sources.

It is also clear that for this group of indicators, data sourced only from hospital discharges data or DRG payments data are insufficient. Many of these conditions do not normally require hospitalisation, and therefore the use of hospital activity based sources result in estimates that vastly underestimate the true prevalence or incidence of a condition. Therefore the use of hospital discharges data or DRG payments data as the only source for these indicators should not be recommended. However hospital activity sources may be useful if combined with other sources such as primary care or outpatient databases.

Even among countries which appear to have reasonably reliable sources (primarily insurance related sources), there can be wide variations in the results. The reasons for the variations are often unclear; it may be a natural difference in the prevalence of conditions in different countries, or due to distorting effects resulting from the reimbursement, or different methodologies for estimating prevalence (e.g. one outpatient visit per year, or 2 GP visits).

Chapter XIX. Injury, poisoning and certain other consequences of external causes

Summary of main findings

The analysis of the data sent by the reporting countries show a low response rate and low comparability, lack of reliable sources and although some countries noted that injury registers could be available in the future or that registries are needed for the data to be comparable.

Incidence rates for the specific diseases due to injury showed higher comparability than those for all morbidity due to injury, poisoning and certain other consequences of external causes (S00-T98), a reason being a better possibility to analyze the specificity of the disease. For example, intracranial injury incidence rates refer for most countries to hospitalized cases, except for RO incidence rates which refer to primary care.

As most countries that provided both incidence and prevalence estimates used the same data sources, but some countries choose to provide data only for prevalence as they had no possibility of identifying new cases.
### Table 54: Summary of Pilot Data

<table>
<thead>
<tr>
<th>Morbidity Shortlist Number</th>
<th>Name of disease</th>
<th>ICD-10 codes corresponding</th>
<th>Measure</th>
<th>Complete data set provided</th>
<th>Incomplete data set provided</th>
<th>No data supplied</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All morbidity due to injury, poisoning and certain other consequences of external causes</td>
<td>S00-T98</td>
<td>Incidence by episode</td>
<td>5</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>All morbidity due to injury, poisoning and certain other consequences of external causes</td>
<td>S00-T98</td>
<td>Period prevalence</td>
<td>6</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Intracranial injury</td>
<td>S06</td>
<td>Incidence by episode</td>
<td>9</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Intracranial injury</td>
<td>S06</td>
<td>Period prevalence</td>
<td>8</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Fracture of femur</td>
<td>S72</td>
<td>Incidence by episode</td>
<td>9</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Fracture of femur</td>
<td>S72</td>
<td>Period prevalence</td>
<td>10</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Poisoning by drugs, medicaments and biological substances and toxic effects of substances chiefly nonmedicinal as to source</td>
<td>T36-T65</td>
<td>Incidence by episode</td>
<td>6</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Poisoning by drugs, medicaments and biological substances and toxic effects of substances chiefly nonmedicinal as to source</td>
<td>T36-T65</td>
<td>Period prevalence</td>
<td>7</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>

- Diseases 57. All morbidity due to injury, poisoning and certain other consequences of external causes (S00-T98) – Incidence by episode and period prevalence

Age standardised rates incidence by episode for poisoning and other consequences of external causes was provided by 6 countries (Figure 172), while crude rates incidence was provided by 7 countries (Figure 173). The best estimates seem to be the Estonian and Lithuanian ones, one linking the insurance in-patient data with COD cases and the other one linking in-patient and out-patient data. Lowest rates derive from insurance sources (PL). Insurance based and linked estimates are giving the fullest and clearer image of this indicator but it could be noticed that COD should be used for the estimates calculation. Also, it could be presumed that most cases presented in the GP office would have been referred to hospital's emergency room thus in-patient data should be the main source.
**Figure 172:** Disease 57 – All morbidity due to injury, poisoning and certain other consequences of external causes, Incidence by episode, Age-standardised rate per 10 000 (2005)

57. All morbidity due to injury, poisoning and certain other consequences of external causes
   Incidence by episode (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: EE: Health Insurance Fund + Causes of Death Registry

**Figure 173:** Disease 57 – All morbidity due to injury, poisoning and certain other consequences of external causes, Incidence by episode, Crude rate per 10 000 (2005)

57. All morbidity due to injury, poisoning and certain other consequences of external causes
   Incidence by episode (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: EE: Health Insurance Fund + Causes of Death Registry

Period prevalence has higher reporting rate and a better estimates quality considering that four counties were able to link in-patient and out-patient sources. EE is the only country that used COD as data source. Again, more countries provided crude rates than age-standardised rates, but age standardised rates seem to provide more quality (Figure 174 and Figure 175). Some countries noted that, although COD registers were considered as data sources they were unable to link it with other sources. Also, the insurance and linked in-patient – out-patient based rates are more comparable.
Figure 174: Disease 57 – All morbidity due to injury, poisoning and certain other consequences of external causes, Period prevalence, Age-standardised rate per 10 000 (2005)

57. All morbidity due to injury, poisoning and certain other consequences of external causes
Period prevalence (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: EE: Health Insurance Fund + Causes of Death Registry

Figure 175: Disease 57 – All morbidity due to injury, poisoning and certain other consequences of external causes, Period prevalence, Crude rate per 10 000 (2005)

57. All morbidity due to injury, poisoning and certain other consequences of external causes
Period prevalence (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: EE: Health Insurance Fund + Causes of Death Registry

Expert’s view

This indicator, S00-T98, has the lowest reporting rates in this chapter some countries noted that it was too comprehensive. Although morbidity for this chapter should provide an interesting analysis of injury, poisoning and other consequences of external causes incidence, the low reporting and the inconstancy of sources used show that the inclusion of this indicator should be reconsidered. Specific diseases, as the ones selected for this chapter, could give a more comparable view and a high level of consistency. The ideal estimate for this indicator is a
linkage of the in-patient, out-patient and COD data but the sources available to the countries are too specific thus influencing the comparability between countries.

- Diseases 58. Intracranial injury (S06) – Incidence by episode and period prevalence

Incidence by episode for intracranial injury was provided by 8 countries (Figure 176). One country, EE, used two data sources: inpatient and outpatient insurance data linked with causes of death database. Three countries used only insurance sources but the data included either only inpatient or outpatient cases and in one case both sources. Most countries used statistical data sources, mostly for inpatient cases (except for NL which used general practitioner data). The highest rate for incidence by episode is in FI and the lowest rate is in RO and MT. In the case of MT the low rate can be explained by the weak coverage of the sample. RO covered only outpatient cases and although S06 includes also less severe cases treated by GPs or family doctors, in comparison with other countries rates, it can be seen that the source should include hospital cases.

Figure 176: Disease 58 – Intracranial injury, Incidence by episode, Age-standardised rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: EE: Health Insurance Fund + Causes of Death Registry
**Figure 177**: Disease 58 – Intracranial injury, Incidence by episode, Crude rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: EE: Health Insurance Fund + Causes of Death Registry

Period prevalence, age-standardised rates were calculated by 8 countries while crude rates were provided by 11 (Figure 178 and Figure 179). Two of the countries that calculated crude rates, CZ and AT, were not able to provide information by sex. The highest rates for intracranial injury were present in LT and HU which used inpatient and outpatient data. The lowest rates were in RO and PL.

**Figure 178**: Disease 58 – Intracranial injury, Period prevalence, Age-standardised rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: EE: Health Insurance Fund + Causes of Death Registry
**Figure 179:** Disease 58 – Intracranial injury, Period prevalence, Crude rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data. Combined sources: EE: Health Insurance Fund + Causes of Death Registry; NL: Hospital Discharge Register + General practitioners information system

**Expert’s view**

Considering the nature of the injury, the hospital data should be considered as main data source, while the link with outpatient and COD data should improve the quality of the estimates.

- Diseases 59. Fracture of femur (S72) – Incidence by episode and period prevalence

Incidence by episode for fracture of femur shows a good response rate and a good comparability between countries. RO is the only country that used outpatient data (family doctor offices), but these data can be considered relevant as the patients have to present the hospitalisation papers to their family doctor in order to obtain sick leave documents. FI has the highest rate for this injury, with a noticeable difference between age-standardised rates (29.6) and crude rates (59.5) for women (Figure 180 and Figure 181).
**Figure 180**: Disease 59 – Fracture of femur, Incidence by episode, Age-standardised rate per 10,000 (2005)

**Figure 181**: Disease 59 – Fracture of femur, Incidence by episode, Crude rate per 10,000 (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: EE: Health Insurance Fund + Causes of Death Registry

Period prevalence rates were provided by 12 countries, 10 also provided age-standardised rates and 2 (CZ and AT) provided crude rates only for total population (Figure 182 and Figure 183). For most countries that provided both indicators a shift between male and female rate can be seen.
Figure 182: Disease 59 – Fracture of femur, Period prevalence, Age-standardised rate per 10,000 (2005)

59. Fracture of femur
Period prevalence (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: BE: Hospital discharges + Mortality Registry; EE: Health Insurance Fund + Causes of Death Registry

Figure 183: Disease 59 – Fracture of femur, Period prevalence, Crude rate per 10,000 (2005)

59. Fracture of femur
Period prevalence (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: BE: Hospital discharges + Mortality Registry; EE: Health Insurance Fund + Causes of Death Registry

Expert’s view

Hospital data seem to be the main data source for incidence by episode for fracture of femur. It’s not clear why FI incidence rates are this high as, in the final report, it suggests that data is even underestimated.

For prevalence there is a need to clearly define the cases included: only patients with fracture recorded in the reference year should be taken into account, or cases still in treatment after an injury that took place outside the reference year should also be counted? Data from GP or specialty offices could include the latter and taken into account that some countries used these data sources, the data comparability can suffer.
• Diseases 60. Poisoning by drugs, medicaments and biological substances and toxic effects of substances chiefly nonmedicinal as to source (T36-T65) – Incidence by episode and period prevalence

Only six countries provided data for this indicator (Figure 184 and Figure 185). EE used two data sources, LT used outpatient and inpatient data, LV, FI and SI used only hospital data and RO used data from family doctor offices. The linked sources, insurance data and COD, provided the highest rates.

**Figure 184:** Disease 60 – Poisoning by drugs, medicaments and biological substances and toxic effects of substances chiefly nonmedicinal as to source, Incidence by episode, Age-standardised rate per 10,000 (2005)

For Romania the data refers only to DRG hospital data.

**Figure 185:** Disease 60 – Poisoning by drugs, medicaments and biological substances and toxic effects of substances chiefly nonmedicinal as to source, Incidence by episode, Crude rate per 10,000 (2005)

For Romania the data refers only to DRG hospital data.

Combined sources: EE: Health Insurance Fund + Causes of Death Registry

Combined sources: EE: Health Insurance Fund + Causes of Death Registry
10 countries provided period prevalence data, seven of them have calculated standardised rates that included hospital data and four countries included both inpatient and outpatient cases (Figure 186 and Figure 187). A high rate is recorded in CZ but there is no indication of the reason for this discrepancy in the technical report.

**Figure 186**: Disease 60 – Poisoning by drugs, medicaments and biological substances and toxic effects of substances chiefly nonmedicinal as to source, Period prevalence, Age-standardised rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.

Combined sources: EE: Health Insurance Fund + Causes of Death Registry

**Figure 187**: Disease 60 – Poisoning by drugs, medicaments and biological substances and toxic effects of substances chiefly nonmedicinal as to source, Period prevalence, Crude rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.

Combined sources: EE: Health Insurance Fund + Causes of Death Registry

**Expert's view**

The indicator has good comparability but low reporting rate. Some of the countries that did not provide any information on this indicator noted though that in the future there is possibility of reporting data.
Member States have recommended

- SI: considers hospital database (used for calculating rates for diseases in chapters XIX and XX) of slightly lower data quality than other sources they used, but being very reliable for tracing movement of population within the health care system. Also SI cannot find sufficiently powerful and convincing professional arguments for presentation of period prevalence for diseases in Groups XIX and XX. Also, it was decided that an estimate of incidence would be a more reliable parameter than an estimate of prevalence for these groups of diseases, and that hospital treatments would be used as the most suitable data source to estimate incidence by episode. SI cites that other projects for which prevalence for these diseases is reported.

- FI: estimates for external causes of injuries and poisoning (57-69 and A-G) are considered to have a low degree of reliability. Also, FI recommends that a data collection should be based on gentlemen’s agreement and voluntary data collection and in linkage with causes-of-death if this is not done routinely in the primary data source.

- PL: at the moment of the report sources of interest for these diseases, such as database of attempted suicides, database of crimes, central register of occupational diseases etc., were assessed on the basis of collected information and based on expert knowledge as having low quality (no ICD-10 use, low percent of population coverage etc.). In the future, PL expects a better availability of health care data as digital medical registers will be introduced.

- NL: in some cases (e.g. intracranial injury) the definition of the disease group included both severe and milder forms, which makes it more difficult to select a suitable data source as the different diseases are usually seen by different health care providers. For some diseases, especially diseases with short duration, the types of indicators to be delivered could be reconsidered (for instance in the case of pneumonia and external causes of morbidity, it is not clear what the value is of period prevalence as an indicator).

- AT: case definition by ICD-10 should be enhanced by measures of severity of the disease. Data linkage with causes of death is not possible because hospital discharges have no personal identification codes. Also, primary care data is not collected yet.

- MT: Injury and Accidents database collects regularly data from Gozo General Hospital and on a sample basis from health centres but is not representative of the Maltese population. Data from Emergency department in Malta will be included in the near future.

- LT: it is expected that the Health Insurance Fund will include also external cause of morbidity codes in their database.

- EE: while 11 or 5–8% of all episodes for diseases 57-60 and A-G are skipped due to missing age of patient, to avoid large underestimations and ensure better international comparability the general recommendations for methodology for involvement of such persons into the data should be given.

Expert's view

The quality and comparability of the estimations provided by the participating countries for Chapters XIX and XX can be analysed from the point of view of the data source case coverage. From the point of view of data quality, it could be noted that the severity of the cases covered by different data sources lead to underestimations by not including the mild cases which are treated ambulatory.

As most countries that provided both incidence and prevalence estimates used the same data sources, but some countries choose to provide data only for prevalence as they had no possibility of identifying new cases.

Another effect of using only hospital data or only outpatient data for estimations was that the results did not include cases treated in primary or inpatient care, thus underestimation is an important problem. It is important to have a common methodology regarding the case coverage as countries do not envision new data sources that could cover both patient and outpatient causes.

Another source of underestimation is the difficulty to ensure data quality or data accessibility from private data sources, such as private insurance companies.
Chapter XX. External causes of morbidity

Summary of main findings

The analysis of the data show a low response rate for the indicators in this chapter, the availability of data for prevalence being higher than the one for the incidence. There are signs that some countries, that did not find a best data source for this chapter, can envisage a possibility of collecting these data in the future.

Although prevalence rates were provided by more countries, NL and LV, noted that due to the nature of the injuries, the request for prevalence rates could be reconsidered.

The quality of data for the “all morbidity due to external causes” is lower than that for the specific codes in this chapter (land transport accidents, accidental falls, accidental poisoning, intentional self-harm, assault, complication of medical and surgical care).

The purpose of the data sources did not seem to influence the estimates or the reporting, but all countries experienced problems regarding the lack of/or poor codification of the external causes.

Table 55: Summary of Pilot Data

<table>
<thead>
<tr>
<th>Morbidity Shortlist Number</th>
<th>Name of disease</th>
<th>ICD-10 codes corresponding</th>
<th>Measure</th>
<th>Complete data set provided</th>
<th>Incomplete data set provided</th>
<th>No data supplied</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>All morbidity due to external causes (injuries, poisonings, etc.)</td>
<td>V01-Y89</td>
<td>Incidence by episode</td>
<td>5</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>A</td>
<td>All morbidity due to external causes (injuries, poisonings, etc.)</td>
<td>V01-Y90</td>
<td>Period prevalence</td>
<td>5</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>B</td>
<td>Land transport accidents</td>
<td>V01-V89</td>
<td>Incidence by episode</td>
<td>7</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>B</td>
<td>Land transport accidents</td>
<td>V01-V90</td>
<td>Period prevalence</td>
<td>6</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>C</td>
<td>Accidental falls</td>
<td>W00-W19</td>
<td>Incidence by episode</td>
<td>5</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>C</td>
<td>Accidental falls</td>
<td>W00-W20</td>
<td>Period prevalence</td>
<td>6</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>D</td>
<td>Accidental poisoning</td>
<td>X40-X49</td>
<td>Incidence by episode</td>
<td>6</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>D</td>
<td>Accidental poisoning</td>
<td>X40-X50</td>
<td>Period prevalence</td>
<td>7</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>E</td>
<td>Intentional self-harm (incl. suicidal attempt)</td>
<td>X60-X84</td>
<td>Incidence by episode</td>
<td>6</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>E</td>
<td>Intentional self-harm (incl. suicidal attempt)</td>
<td>X60-X85</td>
<td>Period prevalence</td>
<td>7</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>F</td>
<td>Assault</td>
<td>X85-Y09</td>
<td>Incidence by episode</td>
<td>5</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>F</td>
<td>Assault</td>
<td>X85-Y10</td>
<td>Period prevalence</td>
<td>6</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>G</td>
<td>Complications of medical and surgical care</td>
<td>Y40-Y66, Y69-Y84</td>
<td>Incidence by episode</td>
<td>4</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>G</td>
<td>Complications of medical and surgical care</td>
<td>Y40-Y66, Y69-Y85</td>
<td>Period prevalence</td>
<td>5</td>
<td>2</td>
<td>9</td>
</tr>
</tbody>
</table>
- Shortlist group A. All morbidity due to external causes (injuries, poisonings, etc.) (V01-Y89) – Incidence by episode and period prevalence

This incidence by episode indicator has a very poor response rate: only 5 out of 16 countries provided data (Figure 188 and Figure 189). EE was the only country that used COD as data source linked with insurance data, resulting in high incidence rate. LV used trauma register for the estimations but noted that it should not be used for international comparison due to the small number of cases registered which does not reflect the real situation. Two other countries, FI and SI, used inpatient data, while one country, RO, used outpatient data.

**Figure 188**: Group A – All morbidity due to external causes (injuries, poisonings, etc.), Incidence by episode, Age-standardised rate per 10,000 (2005)

<table>
<thead>
<tr>
<th>Hospital data</th>
<th>Dis.-spec. reg.</th>
<th>Insur.</th>
<th>Comb.</th>
<th>AT</th>
<th>CY</th>
<th>CZ</th>
<th>HU</th>
<th>LT</th>
<th>MT</th>
<th>NL</th>
<th>PL</th>
<th>SK</th>
</tr>
</thead>
<tbody>
<tr>
<td>FI</td>
<td>SI</td>
<td>LV</td>
<td>RO</td>
<td>EE</td>
<td>EE</td>
<td>EE</td>
<td>EE</td>
<td>EE</td>
<td>EE</td>
<td>EE</td>
<td>EE</td>
<td>EE</td>
</tr>
</tbody>
</table>

Combined sources: EE: Health Insurance Fund + Causes of Death Registry

**Figure 189**: Group A – All morbidity due to external causes (injuries, poisonings, etc.), Incidence by episode, Crude rate per 10,000 (2005)

<table>
<thead>
<tr>
<th>Hospital data</th>
<th>Dis.-spec. reg.</th>
<th>Insur.</th>
<th>Comb.</th>
<th>AT</th>
<th>CY</th>
<th>CZ</th>
<th>HU</th>
<th>LT</th>
<th>MT</th>
<th>NL</th>
<th>PL</th>
<th>SK</th>
</tr>
</thead>
<tbody>
<tr>
<td>FI</td>
<td>SI</td>
<td>LV</td>
<td>RO</td>
<td>EE</td>
<td>EE</td>
<td>EE</td>
<td>EE</td>
<td>EE</td>
<td>EE</td>
<td>EE</td>
<td>EE</td>
<td>EE</td>
</tr>
</tbody>
</table>

Combined sources: EE: Health Insurance Fund + Causes of Death Registry
For period prevalence the number of reporting countries was 7 but there are obvious comparison problems between countries due mostly to coding procedures and the nature of the diseases included in this group (Figure 190 and Figure 191). The data sources differ: 4 countries used inpatient data, one used outpatient data, LV used trauma register, HU used both inpatient and outpatient data and EE used insurance data together with COD.

**Figure 190:** Group A – All morbidity due to external causes (injuries, poisonings, etc.), Period prevalence, Age-standardised rate per 10 000 (2005)

**A. All morbidity due to external causes (injuries, poisonings, etc.)
Period prevalence (2005)**

For Romania the data refers only to DRG hospital data. Combined sources: EE: Health Insurance Fund + Causes of Death Registry

**Figure 191:** Group A – All morbidity due to external causes (injuries, poisonings, etc.), Period prevalence, Age-standardised rate per 10 000 (2005)

**A. All morbidity due to external causes (injuries, poisonings, etc.)
Period prevalence (2005)**

For Romania the data refers only to DRG hospital data. Combined sources: EE: Health Insurance Fund + Causes of Death Registry

**Expert’s view**

As in the case of S00-T98 group, this indicator is too comprehensive and some countries reported problems in the coding and inclusion of some diseases from this group thus making harder the comparison between countries.
Incidence rates for land transport accidents were provided by 7 countries. All 7 countries provided data for both crude rates and standardised rates (Figure 192 and Figure 193). The data sources were mostly hospital, general practice statistics, trauma or road traffic accident registers. As with V01-Y89, LV noted that the data source used is not yet ready to be used for international comparison. The highest incidence rate is recorded in EE which used the COD register, while the lowest rate was recorded in RO where only the cases registered with the family doctor offices were used. PL was the only country that used road traffic accidents reports and it was noted that the calculated rate could be underestimated due to the exclusion of cases that were not reported to the police.

**Figure 192**: Group B – Land transport accidents, Incidence by episode, Age-standardised rate per 10 000 (2005)

Combined sources: EE: Health Insurance Fund + Causes of Death Registry
Prevalence standardised rates were calculated by 6 countries and an additional 3 provided only crude rates for total population (Figure 194 and Figure 195). The highest rates were in NL, HU and EE that included hospital, outpatient or COD data, the lowest rates were in RO that used DRG data on hospital discharges. AT, CZ and SK provided crude rates for total population, with a significant discrepancy between CZ (197.6 rate per 10,000 persons) and AT (13 rate per 10,000 persons), both countries estimating a good quality of the data source.

For Romania the data refers only to DRG hospital data.

Combined sources: EE: Health Insurance Fund + Causes of Death Registry

Combined sources: EE: Health Insurance Fund + Causes of Death Registry; NL: Hospital Discharge Register + Causes of Death Register
Figure 195: Group B – Land transport accidents, Period prevalence, Crude rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: EE: Health Insurance Fund + Causes of Death Registry; NL: Hospital Discharge Register + Causes of Death Registry

- Shortlist group C. Accidental falls (W00-W19) – Incidence by episode and period prevalence

Accidental falls incidence by episode standardised rates were provided by 5 countries, with an additional country, MT, providing data for crude rates (Figure 196 and Figure 197). The rates for EE are clearly higher as COD data was used. There are obvious differences between countries caused mainly by the nature of the sources used.
The results show that the use of causes of death data could improve the quality and comparability of this indicator.

Figure 196: Group C – Accidental falls, Incidence by episode, Age-standardised rate per 10 000 (2005)
Figure 197: Group C – Accidental falls, Incidence by episode, Crude rate per 10,000 (2005)

C. Accidental falls
Incidence by episode (2005)

The standardised rates for period prevalence were provided by 6 countries, with an additional country, AT, providing crude rates for men and women together (Figure 198 and Figure 199). EE, NL and HU rates are comparable, all using inpatient and outpatient data, EE and NL also linking the COD data. The lower rates of RO and FI are due probably to the use of only inpatient data.

Based on these results we can assume that the best estimates can be obtained using both inpatient and outpatient data, also the quality should increase by linking the COD registers.

Figure 198: Group C – Accidental falls, Period prevalence, Age-standardised rate per 10,000 (2005)

C. Accidental falls
Period prevalence (2005)

For Romania the data refers only to DRG hospital data.

Combined sources: EE: Health Insurance Fund + Causes of Death Registry; NL: Hospital Discharge Register + Causes of Death Register
Figure 199: Group C – Accidental falls, Period prevalence, Crude rate per 10 000 (2005)

C. Accidental falls
Period prevalence (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: EE: Health Insurance Fund + Causes of Death Registry; NL: Hospital Discharge Register + Causes of Death Register

- Shortlist group D. Accidental poisoning (X40-X49) – Incidence by episode and period prevalence

Accidental poisoning incidence standardised rates were provided by 6 countries, with an additional country, MT, providing data for crude rates (Figure 200 and Figure 201). The calculated rates range from 0.1 in LV to 13 in EE. LV noted that the data should not be used for international comparison, but included it in the reported data as best estimate. EE used again COD data and thus had the highest rates. RO had the lowest rates due to the use of only outpatient data.

Figure 200: Group D – Accidental poisoning, Incidence by episode, Age-standardised rate per 10 000 (2005)
The prevalence rates follow the same patterns as previous indicators, with the note for the CZ that now provided data comparable with the other countries (Figure 202 and Figure 203). EE prevalence rates show a more visible difference between men and women, while NL is the only reporting country in which the prevalence rates for women exceed the rates for men.

**Figure 202:** Group D – Accidental poisoning, Period prevalence, Age-standardised rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.

Combined sources: EE: Health Insurance Fund + Causes of Death Registry; NL: Hospital Discharge Register + Causes of Death Register
Figure 203: Group D – Accidental poisoning, Period prevalence, Crude rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.

Combined sources: EE: Health Insurance Fund + Causes of Death Registry; NL: Hospital Discharge Register + Causes of Death Register

- Shortlist group E. Intentional self-harm (incl. suicidal attempt) (X60-X84) – Incidence by episode and period prevalence

Incidence rates for intentional self-harm range from 0.2 in LV to 15.7 in FI (Figure 204). EE and FI rates are the highest. The EE cause for the difference was already addressed, for FI a cause for the higher rate could be the inclusion of both primary and secondary diagnosis.

Inpatient data seem to be the main source in order to provide quality and comparable data, as most cases included are hospitalized.
The most interesting result from the analysis of prevalence rates are the country difference between men and women. Thus, in EE the prevalence rate for men was much higher than the women’s, while in NL the prevalence rate for men was more than half lower than the women’s. The highest rates were calculated in HU, approximately 16 cases per 10 000 persons (Figure 206).
**Figure 206**: Group E – Intentional self-harm (incl. suicidal attempt), Period prevalence, Age-standardised rate per 10,000 (2005)

**E. Intentional self-harm (incl. suicidal attempt)**
Period prevalence (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: EE: Health Insurance Fund + Causes of Death Registry; NL: Hospital Discharge Register + Causes of Death Register

**Figure 207**: Group E – Intentional self-harm (incl. suicidal attempt), Period prevalence, Crude rate per 10,000 (2005)

**E. Intentional self-harm (incl. suicidal attempt)**
Period prevalence (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: EE: Health Insurance Fund + Causes of Death Registry; NL: Hospital Discharge Register + Causes of Death Register

- Shortlist group F. Assault (X85-Y09) – Incidence by episode and period prevalence

Incidence rates for assault were provided by 6 countries (Figure 208 and Figure 209). An important discrepancy can be seen in the case of EE that could be explained by the use of the COD register. The comparability between countries is not dependable considering the different sources used: inpatient or outpatient data, trauma or injury databases, also countries noted coding difficulties.
Prevalence standardised rates for assault were provided by 6 countries (EE, NL, HU, RO, FI and LV), while crude rates were provided by another 3 countries (AT, CZ and SK) (Figure 210 and Figure 211). Three countries (AT, CZ and SK) only calculated rates for both men and women together. The highest rates were in EE, NL and HU, the first two using linkage with the COD data and HU using both inpatient and outpatient data.
**Figure 210**: Group F – Assault, Period prevalence, Age-standardised rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: EE: Health Insurance Fund + Causes of Death Registry; NL: Hospital Discharge Register + Causes of Death Register

**Figure 211**: Group F – Assault, Period prevalence, Crude rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data.
Combined sources: EE: Health Insurance Fund + Causes of Death Registry; NL: Hospital Discharge Register + Causes of Death Register
Shortlist group G. Complications of medical and surgical care (Y40-Y66, Y69-Y84)

Only 4 countries provided data on incidence by episode and the discrepancies between country rates are significant irrespective of the data sources used (Figure 212 and Figure 213).

**Figure 212:** Group G – Complications of medical and surgical care, Incidence by episode, Age-standardised rate per 10 000 (2005)

**Figure 213:** Group G – Complications of medical and surgical care, Incidence by episode, Crude rate per 10 000 (2005)

Seven countries provided crude rates for period prevalence, while 5 of them provided standardised rates (Figure 214 and Figure 215). As in the case of incidence, the differences between countries are not necessarily linked to the data sources used, but the lack of more specific information on the process of selection or codification it’s difficult to understand these inconsistencies.
**Figure 214:** Group G – Complications of medical and surgical care, Period prevalence, Age-standardised rate per 10 000 (2005)

**Figure 215:** Group G – Complications of medical and surgical care, Period prevalence, Crude rate per 10 000 (2005)

For Romania the data refers only to DRG hospital data. Combined sources: NL: Hospital Discharge Register + Causes of Death Register

**Member States have recommended**

See also the notes under same paragraph referring to chapter XIX

As in the reports of the majority of countries the last two chapters, XIX and XX, were analysed together, most of the issues raised are similar. Some specific notes for chapter XX were:

- **SI:** as noted for the chapter XIX, SI estimates that although the data quality is lower it helps tracing the movement of the population in the health care system. The report also explains that, for the purpose of the project, period prevalence is not suitable
- **FI:** estimates have a low degree of reliability and recommends linkage with causes-of-death.
- **PL:** at the moment of the report sources of interest for these diseases, such as database of attempted suicides, database of crimes, central register of occupational diseases etc., were assessed on the basis of
collected information and based on expert knowledge as having low quality (no ICD-10 use, low percent of population coverage etc.). In the future, PL expects a better availability of health care data as digital medical registers will be introduced.

- NL and LV: raised the issue of the value of reporting period prevalence as an indicator
- LT and MT: it is expected that data sources will include also external cause of morbidity codes in their database.

**Expert's view**

*See also expert's view for chapter XIX*

Morbidity due to external causes had a low reporting rate mostly due to lack of reporting by the data sources: no codifications, incomplete coverage of the ICD-10 codes, incomplete information in the databases that prevented linkage with other sources. Some countries did noted that in the future these data sources (injury databases, trauma registers etc.) could be used for estimations.

Also, pilot surveys used by some countries to provide estimates (e.g. MT, DE) have no sustainability guarantees, thus further reporting is not certain.

Although the prevalence reporting for both chapters XIX and XX was higher, it would be useful to analyse the relevance of morbidity incidence rates compared to the prevalence rates for the diseases in these chapters. Also, there was a lack of information regarding the algorithms used to identify new episodes of diseases which made it difficult to analyse discrepancies between incidence and prevalence rates.
10 Missing data

Main questions addressed in this paragraph:

- Why were the requested data not available?
- Will the data be available in the future?
- Has a method for estimating missing data been proposed by the pilot countries?
- Is the problem with missing data more relevant for incidence or prevalence estimates?

Chapter I. Certain infectious and parasitic diseases

- Diseases 1. Tuberculosis (A15-A19, B90) – Incidence by episode and period prevalence
- Diseases 2. Sexually transmitted diseases (STD) (A50-A64) – Incidence by episode and period prevalence
- Diseases 3. Viral hepatitis (incl. hepatitis B) (B15-B19) – Incidence by episode and period prevalence
- Diseases 4. Human immunodeficiency virus disease (HIV/AIDS) (B20-B24, Z21) – Incidence by episode, period prevalence and point prevalence

The data on tuberculosis incidence by episode was missing for BE, DE and RO, for sexually transmitted diseases for AT, BE, DE, HU, NL and RO, for viral hepatitis (incl. hepatitis B) for BE, DE and HU, and for Human immunodeficiency virus disease (HIV/AIDS) for DE, HU, and RO. Even more countries did not provide data for period prevalence: for tuberculosis, BE, CY and MT, for sexually transmitted diseases AT, BE, CY, HU, MT, NL and SI, for viral hepatitis (incl. hepatitis B) BE, CY, LV, MT and SI, and for Human immunodeficiency virus disease (HIV/AIDS) BE, CY, CZ, LV, MT and SI did not provide the requested data. The point prevalence estimates for Human immunodeficiency virus disease (HIV/AIDS) were not given by BE, CY, DE, EE, FI, HU, MT, RO and SI.

All incidence data for AT and CZ was given for both sexes and without age-standardisation. The same was true for prevalence data for at least some variables for AT, CZ, DE, NL and LV. Most likely sex- and age-specific data is available for these countries, but the reason why they were not provided by the pilot study countries remained unclear.

Increasing national data collections on infectious diseases will most likely improve the availability of data in the future. The quality of national statistics may also be improved through increased harmonization of and better guidelines for international statistics on infectious diseases.

Chapter II. Neoplasms

- Diseases 5. All malignant neoplasms (C00-C97) – Incidence by person and period prevalence
- Diseases 6. Malignant neoplasm of oesophagus (C15) – Incidence by person and period prevalence
- Diseases 7. Malignant neoplasm of stomach (C16) – Incidence by person and period prevalence
- Diseases 8. Malignant neoplasm of colon, rectum and anus (C18-C21) – Incidence by person and period prevalence
- Diseases 9. Malignant neoplasm of trachea, bronchus and lung (C33, C34) – Incidence by person and period prevalence
- Diseases 10. Malignant melanoma of skin (C43) – Incidence by person and period prevalence
- Diseases 11. Mesothelioma (C45) – Incidence by person and period prevalence
- Diseases 12. Malignant neoplasm of breast (C50) – Incidence by person and period prevalence
- Diseases 13. Malignant neoplasm of cervix uteri (C53) – Incidence by person and period prevalence
- Diseases 14. Malignant neoplasm of uterus other than cervix (C54, C55) – Incidence by person and period prevalence
- Diseases 15. Malignant neoplasm of ovary (C56) – Incidence by person and period prevalence
- Diseases 16. Malignant neoplasm of prostate (C61) – Incidence by person and period prevalence
- Diseases 17. Malignant neoplasm of bladder (C67) – Incidence by person and period prevalence
- Diseases 18. Leukaemia and other malignant neoplasms of lymphoid and haematopoietic tissue (C81-C96) – Incidence by person and period prevalence
Incidence by person

No really missing data. For unknown reason, CY does not present crude rates, but age-standardized only; however, crude rates obviously must be available.

Period prevalence

Data are missing for MT.

Site-specific cancer prevalence missing for BE and CY as HIS cannot provide such data; and for BE, all cancer prevalence in the particular year is missing too.

For unknown reason, prevalence data are not presented for SK; although data source description says that they are available.

AT provides only total crude rate; however, this is rather technical issue, as methods they used allow calculating all indicators.

Chapter IV. Endocrine, nutritional and metabolic diseases

- Diseases 19. Diabetes mellitus (E10-E14) – Incidence by person, period prevalence and point prevalence

For incidence of diabetes mellitus 5 countries (AT, CY, HU, RO, SI) reported no data source available. For period prevalence only 2 counties (CZ, SK) reported no data source available. For point prevalence 11 countries (AT, BE, DE, CY, EE, FI, HU, MT, PL, RO, SI) not indicated any source available.

It seems that point prevalence is the most problematic indicator for diabetes what need probably linkage with death registry (no country had mentioned death data in connection with diabetes).

It was not easy to calculate incidence for many countries as the most of data sources has no special separation for incidence cases (especially insurance databases).

Some future improvement of databases is stated in some reports although in most of the reports nothing is said about the future possibilities.

Chapter V. Mental and behavioural disorders

- Diseases 20. Dementia (incl. Alzheimer's disease) (F00-F03, G30) – Period prevalence
- Diseases 21. Mental and behavioural disorders due to use of alcohol (incl. alcohol dependence) (F10) – Period prevalence
- Diseases 22. Mental and behavioural disorders due to use of psychoactive substances other than alcohol and tobacco (including drug dependence) (F11-F16, F18, F19) – Period prevalence
- Diseases 23. Schizophrenia (F20-F29) – Period prevalence
- Diseases 24. Depression and other affective disorders (F30-F39) – Period prevalence
- Diseases 25. Anxiety disorders (F40, F41) – Period prevalence
- Diseases 26. Eating disorders (F50) – Period prevalence

- Diseases 20. Dementia (incl. Alzheimer's disease) (F00-F03, G30)

For dementia (incl. Alzheimer's disease) only two countries (BE, CY) did not calculated data.

- Disease 21. Mental and behavioural disorders due to use of alcohol (incl. alcohol dependence) (F10)
- Disease 22. Mental and behavioural disorders due to use of psychoactive substances other than alcohol and tobacco (incl. drug dependence) (F11-F16, F18, F19)
Only 2 countries (CY, MT) have no data for mental and behavioural disorders due to use of alcohol (incl. alcohol dependence) and for mental and behavioural disorders due to use of psychoactive substances other than alcohol and tobacco (incl. drug dependence).

- Disease 23. Schizophrenia (F20-F29)

Only 2 countries (CY, MT) have no data for schizophrenia.

- Disease 24. Depression and other affective disorders (F30-F39)

All the pilot countries provided estimates, except BE who did not pilot for this disease.

- Disease 25. Anxiety disorders (F40, F41)
- Disease 26. Eating disorders (F50)

Only CY has no data for anxiety disorders and eating disorders.

**Chapter VI. Diseases of the nervous system**

- Diseases 27. Parkinson's disease (G20) – Period prevalence
- Diseases 28. Multiple sclerosis (G35) – Period prevalence
- Diseases 29. Epilepsy (G40, G41) – Period prevalence
- Diseases 30. Migraine and other headache syndromes (G43, G44) – Period prevalence

- Disease 27. Parkinson's disease (G20)

Only 3 countries (CY, LV, MT) have no data for Parkinson’s disease.

- Diseases 28. Multiple sclerosis (G35)

Only 2 countries (CY, MT) have no data for multiple sclerosis.

- Diseases 29. Epilepsy (G40, G41)

Three countries (CY, LV, MT) have no data for epilepsy.

- Disease 30. Migraine and other headache syndromes (G43, G44)

Only LV has no data for migraine and other headache syndromes.

**Chapter VII. Diseases of the eye and adnexa**

- Diseases 31. Cataract (H25-H28) – Period prevalence
- Diseases 32. Glaucoma (H40, H42) – Period prevalence
Those countries that have not filled the data table:

- For Belgium cataract and glaucoma weren’t a diagnose for validation in this project;
- MT and CY did not have the reliable data sources for glaucoma;
- No clear explanations were given why data for SI were not shown in table.

**Chapter VIII. Diseases of the ear and mastoid process**

- Diseases 33. Hearing loss (H90, H91) – Period prevalence

Those countries that have not filled the data table:

- For BE hearing loss wasn’t a diagnose for validation in this project;
- Data were not available for CY and LV;
- No explanations were given why data for SL were not shown in the table.

**Chapter IX. Diseases of the circulatory system**

- Diseases 34. Hypertensive diseases (I10-I13, I15) – Period prevalence
- Diseases 35. Ischaemic heart diseases (I20-I25) – Period prevalence
- Diseases 36. Acute myocardial infarction (I21, I22) – Incidence by person and period prevalence
- Diseases 37. Heart failure (I50) – Period prevalence
- Diseases 38. Cerebrovascular diseases (I60-I69) – Incidence by person and period prevalence

Overall prevalence data are more available than incidence data, although when one considers the availability from a viewpoint of comparability i.e. complete data set provided incidence and prevalence data are very similar. Merely half of the countries are able to provide complete data sets. When no data are available mostly no explanation is given. Sometimes, although a data source is mentioned, no data were provided. This was especially true regarding SI.

**Chapter X. Diseases of the respiratory system**

- Diseases 39. Influenza (J09-J11) – Incidence by episode
- Diseases 40. Pneumonia (J12-J18) – Incidence by episode and period prevalence
- Diseases 41. Asthma (J45, J46) – Incidence by person and period prevalence
- Diseases 42. Chronic lower respiratory disease (J40-J44, J47) – Incidence by person and period prevalence

Incidence data regarding Influenza (9 countries), Pneumonia (9 countries), Asthma (11 countries) and COPD (11 countries) were lacking for the majority of countries, mostly without an explanation. Prevalence data were better reported (respectively 11, 14 and 13 countries regarding pneumonia, asthma and COPD), be it with a non-negligible proportion of incomplete datasets. No explanation was given regarding missing data. Here also it happened that a data source was mentioned and that no data were provided (SI, DE, RO).

**Chapter XI. Diseases of the digestive system**

- Diseases 43. Gastric and duodenal ulcer (peptic ulcer) (K25-K28) – Period prevalence
- Diseases 44. Alcoholic liver disease (K70) – Period prevalence
- Diseases 45. Diseases of liver other than alcoholic (K71-K77) – Period prevalence
- Diseases 46. Cholelithiasis (K80) – Incidence by person and period prevalence
Those countries that have not filled the data table:

- AT, BE, CY, CZ, DE, HU, LV, MT, PL, RO, SI did not find suitable source for cholelithiasis incidence per person;
- For BE diseases of digestive system were not for validation in this project and suitable data sources were not found (ex. gastric and duodenal ulcer);
- MT and CY did not find a reliable data source for liver diseases and cholelithiasis;
- For LV data are not shown in table, because only absolute numbers are presented.

**Chapter XII. Diseases of the skin and subcutaneous tissue**

- Diseases 47. Dermatitis and eczema (L20-L30) – Period prevalence
- Disease 48. Psoriasis (L40) – Period prevalence

Those countries that have not filled the data table:

- For BE skin diseases weren’t diagnoses for validation in this project and for dermatitis and eczema useable data source was not found;
- For CY and MT reliable data source did not exist.

**Chapter XIII. Diseases of the Musculoskeletal System**

- Diseases 49. Rheumatoid arthritis (M05, M06) – Period prevalence
- Diseases 50. Arthrosis (M15-M19) – Period prevalence
- Diseases 51. Systemic connective tissue disorders (M30-M36) – Period prevalence
- Diseases 52. Spondylopathies and other dorsopathies (incl. low back pain) (M45-M54) – Period prevalence
- Diseases 53. Osteoporosis (M80-M82) – Period prevalence

Overall the availability of data for these indicators is quite low; about half of the countries provided complete data (age-standardised rates, crude rates and absolute numbers) for these indicators. This however is probably not unexpected, as these are conditions that are typically chronic diseases which rarely result in hospitalisation. Also these conditions may not be of sufficient public health interest to warrant the development of registers to monitor the treatment of these diseases.

**Chapter XIV. Diseases of the Genitourinary System**

- Diseases 54. Glomerular and renal tubulo-interstitial diseases (N00-N08, N10-N16) – Period prevalence
- Diseases 55. Renal Failure (N17-N19) – Period prevalence
- Diseases 56. Urolithiasis (N20-N23) – Incidence by person and period prevalence

Overall the availability of data for these indicators is quite low; just half of the countries provided complete data (age-standardised rates, crude rates and absolute numbers) for period prevalence of glomerular and renal tubulo-interstitial diseases and renal failure.

Only a quarter of the pilot countries provided data on incidence of urolithiasis, but just over half of the countries provided data on period prevalence of urolithiasis (although there are comparability issues with some of this data).

**Chapter XIX. Injury, poisoning and certain other consequences of external causes**

- Diseases 57. All morbidity due to injury, poisoning and certain other consequences of external causes (S00-T98) – Incidence by episode and period prevalence
- Diseases 58. Intracranial injury (S06) – Incidence by episode and period prevalence
- Diseases 59. Fracture of femur (S72) – Incidence by episode and period prevalence
• Diseases 60. Poisoning by drugs, medicaments and biological substances and toxic effects of substances chiefly nonmedicinal as to source (T36-T65) – Incidence by episode and period prevalence

• Diseases 57. All morbidity due to injury, poisoning and certain other consequences of external causes (S00-T98) – Incidence by episode and period prevalence

The availability of data for this indicator is low, 9 countries did not find the best source to provide estimates. One country (MT) provided only crude rates without absolute numbers. For prevalence, 6 countries could not find best source for the estimates. Another 4 countries provided incomplete sets of data: AT and CZ could only estimate prevalence crude rate for the total population; one (LV) provided only absolute numbers.

• Diseases 58. Intracranial injury (S06) – Incidence by episode and period prevalence

Complete data sets for this indicator were provided by half of the countries, for incidence and prevalence. The other 8 countries could not find best source, most of them did not provide a clear explanation on the reasons for which they couldn’t provide any data. Four additional countries provided incomplete data sets for prevalence (AT, CZ, DE, NL) with no age-standardized rate.

• Diseases 59. Fracture of femur (S72) – Incidence by episode and period prevalence

Seven countries provided no data or incomplete data set (MT) for incidence. Six countries did not provide estimates for prevalence of which 3 had incomplete data sets, no age-standardized rate or estimates for total population.

• Diseases 60. Poisoning by drugs, medicaments and biological substances and toxic effects of substances chiefly nonmedicinal as to source (T36-T65) – Incidence by episode and period prevalence

The availability of incidence estimates for this indicator is low, 10 countries did not find suitable sources. Prevalence rates were not estimated by 6 countries, while 3 did not provide age-standardized rates.

Most countries cited no best source available for not providing data for this chapter, limited coverage (NL, CZ) such as only hospital data or only police register on accidents. LV did not provide data for prevalence considering it is not relevant for morbidity statistics for this indicator.

Chapter XX. External causes of morbidity

• Shortlist group A. All morbidity due to external causes (injuries, poisonings, etc.) (V01-Y89) – Incidence by episode and period prevalence
• Shortlist group B. Land transport accidents (V01-V89) – Incidence by episode and period prevalence
• Shortlist group C. Accidental falls (W00-W19) – Incidence by episode and period prevalence
• Shortlist group D. Accidental poisoning (X40-X49) – Incidence by episode and period prevalence
• Shortlist group E. Intentional self-harm (incl. suicidal attempt) (X60-X84) – Incidence by episode and period prevalence
• Shortlist group F. Assault (X85-Y09) – Incidence by episode and period prevalence
• Shortlist group G. Complications of medical and surgical care (Y40-Y66, Y69-Y84) – Incidence by episode and period prevalence

Complete incidence rates data sets for these indicators were provided by 7 countries, the 9 countries left did not provide any data, either because they did not find a data source or the source available had a very low case
coverage. SK provided complete data sets for “accidental poisoning” and “intentional self-harm” but the reason for not providing estimates for the other indicators in this chapter being the unavailability of cases in full coverage or indicator missing from health statistics. MT also provided incomplete data for these indicators, only crude rates without the absolute numbers. The same situation is with NL for “intentional self-harm”. There is no indication as to why the absolute numbers are not provided. NL noted that for the other indicators the reason for no available data is that the ICD-9 codes in the regular published Dutch statistics do not correspond exactly to the requested ICD-10 codes ICD-9-CM codes used for hospital morbidity statistics, thus data were not used.

Six countries provided no data for prevalence rates of these indicators, mainly because they couldn’t identify a good data source or the data source data was incomplete. CZ did not calculate estimates for age-standardized rates, but did provide crude rates for men and women together. This is also the case for AT, except for “accidental falls” and “accidental poisoning” for which there is no data. SK also provided complete data for two of these indicators but provided only crude rates for men and women together. Although from the report the data source seems to be the same, the reason for this is not specified.

- Shortlist group G. Complications of medical and surgical care (Y40-Y66, Y69-Y84) – Incidence by episode and period prevalence

Incidence rates for “complications of medical and surgical care” have a very low reporting rate, 12 countries did not provide any data for this indicator. Prevalence data is provided by 4 additional countries, 2 with complete data sets and 2 without age-standardized rates.

A few countries (NL, LT, CY) specified that in the future, inclusion of these codes in hospitals databases are considered in order to be able to provide data for this group.
11 References mentioned in Annex 1

Chapter I. Certain infectious and parasitic diseases


Chapter IV. Endocrine, nutritional and metabolic diseases

Results of EHIS on diabetes with the Heidi data tool:
http://ec.europa.eu/health/indicators/echi/list/echi_21a.html#main?

Chapter V. Mental and behavioural disorders

DG SANCO web site:
http://ec.europa.eu/health/major_chronic_diseases/diseases/brain_neurological/index_en.htm
Results of EHIS on depression with the Heidi data tool:
http://ec.europa.eu/health/indicators/indicators/index_en.htm

Chapter VI. Diseases of the nervous system

DG SANCO web site:
http://ec.europa.eu/health/major_chronic_diseases/diseases/brain_neurological/index_en.htm
http://ec.europa.eu/health/archive/ph_information/dissemination/diseases/neuro_1.pdf
Chapter IX. Diseases of the circulatory system


Chapter X. Diseases of the respiratory system