National consistency: Austria

Class 1 – Demography and socio-economic situation

- The population structure stratified by age and gender serves as a basis to compare health outcomes between regions in a standardised way. The relevant data for Austria are updated by Statistic Austria based on census data and interpolated for each year taking into account rates of birth, death, and migration. Data are provided down to sub-national level for counties and districts.

- Socio-economic data in Austria are based on representative surveys regularly performed. Results are cross-checked with other data sources like unemployment statistics, reports from public social services, school attendance rates, etc. In previous projects we have realised that not all SES data are directly comparable between European countries. So we suggest that some additional calculations might be necessary to reach a European harmonisation.

Class 2 - Health Status

- **Cause specific mortality:** A high autopsy rate and close co-operation between hospitals (where most citizens are treated until or nearly until their death) and the public health professionals provide a good quality of the Austrian death certificates. These certificates include primary and secondary causes of death as well as additional severe diseases at the relevant time. Unfortunately routine data provided by Statistic Austria that are based on the death certificates besides age, gender, and home district include one ICD code for a single cause of death only. Therefore the contribution of COPD and asthma to deaths e.g. from cardiac disease remains obscured.

- **Cause specific morbidity:** Here we must distinguish between hospital and extramural treatment. Hospital admissions are documented including home address (district), hospital entry and exit date, and diagnoses coded at exit according to ICD 9. Economic pressures have shown to influence the coding of diagnoses in that sense that a change in reimbursement rules have obviously changed the rank order of certain diagnoses (primary and secondary diagnoses in the same patient). It is also evident that a pulmonary department will tend to list pulmonary diagnoses prior to e.g. cardiac diagnoses while the cardiac department would choose vice versa even with the same patient. So number of pulmonary beds in a region might influence COPD reporting as primary cause for hospitalisation. But Neuberger and Fülöp have shown [26] that although Upper Austria has a relatively high number of pulmonary beds this does not sufficiently account for the high number of reported COPD cases in Upper Austria. Furthermore also COPD mortality is high in small rural communities of Upper Austria compared to Vienna which could not likely be caused by a better or more intense therapy.

- Data on extramural morbidity are scarce for Austria. There exist some studies notably for asthma especially in children. These have partly been performed in the context of the ISAAC project [27-29] and partly as an independent study [30]. Doctor diagnosed chronic bronchitis had been included in one Austrian Health Interview Survey (HIS [31]) as have been simple questions concerning severity in terms of everyday life restrictions. The same HIS also included questions on allergic symptoms and allergies. Environmental factors leading to asthma and COPD are assessed best in birth cohort morbidity studies [32], while mortality studies including end stages of these diseases in the elderly have to use broader categories of disease as the endpoint [33], since patients with asthma develop COPD within 20 years 12 times more likely [34] and the pathologist at autopsy will diagnose chronic bronchitis, emphysema, etc., but not asthma.

- More detailed data on severity of COPD (e.g. stage 0-IV) could only be obtained in future from specific surveys. We believe that these focused clinical surveys would be sufficient and a representative HES is not wanted. The same holds true for bronchial hyperreactivity where at least some data from specific studies (mostly hospital based) do exist. Closer co-operation with patients' support-groups (e.g. Lungenunion) might improve the data base especially on self-assessed severity of disease and quality of life issues.

- Sentinels would be a good means to produce data on extramural disease frequency. Unfortunately in Austria there is only little experience with this technique. A project in Carinthia including a group of family doctors and paediatricians succeeded with swimming associated diseases in the bathing season but not with respiratory diseases [35].

- Representative Health Examination Surveys (HES) have so far not been implemented in Austria. Routine check-ups of pregnant women, new-born and toddlers ("Mutter-Kind-Pass") have a nearly total coverage in Austria (because of financial incentives for the mother) but there is no central data registry for the results of these check-ups. Routine check-ups of school children of several grades are performed by medical doctors that are specifically appointed to this task. In some cities or even counties there are at least rudimentary reporting mechanisms but there is no Austrian-wide uniform documentation. The city of Linz (the capital of Upper Austria) has for example for many years included complete pneumology check-ups in these pupils' programs and has developed a huge database on school children's lung function measurements, clinical findings and interview data. The scientific presentation of these findings is only partially done [36,37].

- All male adolescents in Austria have to undergo military muster at the age of approx. 18 years. Part of this two-days medical examination is also a check up on respiratory health including x-ray of the lung and lung function measurements. Statistical and scientific [38] evaluation of this bounty of data is still scarce.

Class 3 – Determinants of health

- Biological risk factors: Indicators include age and gender. It is evident that these influence the risk of disease. But it is not clear if these indicators are the same as under class 1 – meaning age and gender distribution of the general population – which would be logical, because it's about risk factors and the whole population is at risk – or if it is about age and gender distribution in (COPD) patients. Existing Austrian data on COPD and asthma prevalence (mortality, hospital admissions) usually include age and gender information.

- Childhood infections are reported for the general population (though highly underreported!) but usually cannot be linked to COPD outcome. There are no specific recent Austrian studies on this issue. Data on childhood infections were not included in the last Austrian HIS [31] but vaccination status was.

- Concerning sensitisation there are only few non-representative studies from Austria [30,39-42]. A question could and should be integrated in the next Austrian HIS while a representative lab examination (e.g. with RAST) as an Austrian HES does not seem viable for the time being. Some of the clinical studies mentioned above also measured bronchial hyperreactivity [30].

- The last Austrian HIS [31] also included body weight and height. So the BMI could be calculated and linked to health outcomes. The BODE index [43] that combines BMI, airflow obstruction, dyspnea, and exercise capacity, has not been used in Austria yet. While this index might be of added value for clinical studies especially concerning quality of life effects of therapeutic schemes we do not see its need for representative HIS/HES surveys.

- Information on birth weight or family history in Austria is usually confined to clinical studies only. Since hereditary aspects of asthma and allergy are already well established the need for future studies in the association between family history and health outcome in this field is limited. Genetics should be studied on a molecular basis or be considered as possible confounder. But both is outside the scope of our discussion.

- **Health behaviours:** There are valid data on smoking frequency in the Austrian population. "Nutrition" would need a more detailed definition (e.g. antioxidants might be of interest, should vitamin supplements also be included?). Also "physical activity" still lacks a definition that is comparable between different countries and studies. Data are available for the general population. Questions both on nutrition ("healthy nutrition": yes/no) and sports (yes/no) were included in the last Austrian HIS [31].

- **Living and working conditions:** Air pollution is monitored all over Austria [44]. Concerning occupation and health there are the statistics of

the Worker's Compensation Board (AUVA), the health insurance companies of the farmers, and some epidemiological studies [45].

Class 4 - Health systems

- **Health promotion:** Medical doctors, public health authorities, several non-governmental organisations, consumer groups, and patients' support groups work in the fields of health promotion and encourage health-enhancing lifestyle changes. But reliable and representative data on these activities are not documented in Austria. Only insofar as insurance companies are active in this field themselves or pay for these activities (e.g. for preventive medical check-ups) coherent documentation is in place.

- **Health protection:** This part of the indicator lists deals with the protection from occupational and environmental exposures and with environmental tobacco smoke and vaccination programs (COPD patients only). Documentation exists on occupational protection programs and on vaccination of the general population. While some vaccines (e.g. influenca, pneumococcus) have COPD patients as one target group it is usually not documented how many COPD patients received a specific vaccination. The last Austrian HIS [31] included both questions on chronic bronchitis and on vaccination status. Programs to protect the general public and various risk groups from environmental air pollution and environmental tobacco smoke have been implemented but no consistent documentation is in place. Some of the projects might have been co-financed by the "Fonds Gesundes Österreich" and some documentation should be available there.

- **Health care resources (facilities, manpower, education, technology):** Data on the availability of health care resources on county and district level are usually available in Austria. Comparability of data formats between European countries should be improved.

- **Health care utilisation (In-patient, out-patient, and medicine use):** Obligatory health insurance companies cover most of the health care utilisation in Austria. Private care in many instances receives also public financial support. So only a small part of health care utilisation is not available for statistical analysis. But there are many different data sources (public and private insurance companies, public welfare agencies) to consider to reach a holistic overview.

- **Health care expenditure:** As most (in-patient and out-patient) health care is paid by the public health insurance companies and additional payments by private insurance companies are also available these data should be retrieved easily.

- **Health outcomes:** School absenteeism and sick leave are documented. Quality of life and limitations in everyday life have been asked in the last Austrian HIS. Symptoms frequency etc. could be investigated in clinical studies or be included in the next HIS. An interview survey could also be

distributed with the help of the "Lungenunion", the patients' support group for asthma and COPD.

Discussion

The Austrian Society of Pneumology published the revised consensus statement on COPD [46] in 2004. As usual this consensus concentrates on therapeutic aspects, but diagnostic standards and indicators of severity are presented also. The Austrian consensus is based on the GOLD initiative [19]. But diagnostic criteria that are applied in the personal contact between patient and medical doctor are not necessarily the best choice for a population based monitoring program. Such a monitoring must be cost effective and viable. Too many questions in one health survey reduce the participation rate and the accuracy of the responses. Also the frequency of such a survey should be considered. Currently there is much concern about the increasing rates of asthma and allergies. So maybe a more frequent monitoring of these health outcomes is warranted. But repeating an asthma-specific HIS in less than 10 years intervals is neither practicable nor necessary. Relevant changes will only be visible after at least 10 to 15 years. In between a more coarse monitoring could be based on statistics from health insurance companies (sick leaves, hospital admissions, drug sales).

An important issue for monitoring trends in asthma frequency is a valid definition of "asthma" that is also applicable in the survey setting. More detailed differentiation (allergic versus non-allergic asthma, severity, etc.) - although a rewarding goal - will often be not achievable. Many of these details could only be identified by clinical measurements (e.g. specific IgE, lung function). We encourage the introduction of Health Examination Surveys (HES) in Austria but we are aware of the fact that most of the clinical examinations needed will not be performed in a representative survey but in clinical studies or in specific settings (e.g. pupils of one grade in one county) only.
Table 1 compares a list of possible indicators for bronchial asthma and COPD. Some are useful for both conditions, some are only applicable in one of them. Table 2 defines methods and tools for data collection and gives a justification of each indicator.

Conclusion

A European set of indicators is important for the purposes of benchmarking and quality assurance. Data on most of the indicators discussed are available one way or the other in Austria. But many of them still lack standardisation. Access is hindered by a multitude of responsible institutions and data formats. Protection of personal data forbids cross linking of data even if an *ad personam* attribution is not intended. Medical doctors and other health professionals should be aware of the reasons for data collection. Otherwise the quality of their input is endangered.

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