Diagnostic exams

Definitions

Updated: July 2018

<table>
<thead>
<tr>
<th>Diagnostic exams</th>
<th>An exam is defined as a medical imaging session to study one (or more than one) body part that yields one or more views for diagnostic purposes.</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Data are collected for Computed Tomography (CT) exams, Magnetic Resonance Imaging (MRI) exams, and Positron Emission Tomography (PET) exams.</td>
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<td>Data are collected for the total number of exams and for the breakdown between hospitals and ambulatory care providers.</td>
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<td>a) Hospitals (HP.1): Establishments primarily engaged in providing medical, diagnostic, and treatment services to inpatients and the specialised accommodation services required by inpatients. Hospitals may also provide outpatient services as a secondary activity.</td>
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<td></td>
<td>b) Ambulatory care providers (HP.3): Establishments primarily engaged in providing health care services to patients who do not require inpatient services. These include establishments specialised in day cases and health practitioners in ambulatory health care, primarily providing services to patients visiting their office.</td>
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</tbody>
</table>

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<thead>
<tr>
<th>Computed Tomography (CT)</th>
<th>CT or CAT scanner is an x-ray machine which combines many x-ray images with the aid of a computer to generate cross-sectional views and, if needed, three-dimensional images of the internal organs and structures of the body.</th>
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<tbody>
<tr>
<td>Magnetic Resonance Imaging (MRI)</td>
<td>MRI is an imaging technique designed to visualise internal structures of the body using magnetic and electromagnetic fields which induce a resonance effect of hydrogen atoms. The electromagnetic emission created by these atoms is registered and processed by a dedicated computer to produce the images of the body structures.</td>
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<tr>
<td>Positron Emission Tomography (PET)</td>
<td>PET is a highly specialised imaging technique using short-lived radioactive substances. This technique produces three dimensional images which are used mainly for the assessment of cancer spread in a patient’s body.</td>
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<td>Inclusion - Modern PET-CT systems using image fusion (superposition of CT and PET images)</td>
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</tbody>
</table>

Country specific notes

Belgium, Bulgaria, Czech Republic, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Croatia, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, Netherlands, Austria, Poland, Portugal, Romania, Slovenia, Slovakia, Finland, Sweden, Iceland, Liechtenstein, Norway, Switzerland, Montenegro, former Yugoslav Republic of Macedonia, Albania, Serbia, Turkey, United Kingdom
Belgium

Source of data: INAMI (Institut National d’Assurance Maladie-Invalidité).

Coverage:
- Total number of reimbursed cases for CT-Scans (nomenclature codes: 458673, 458684, 458710, 458732, 458743, 458813, 458824, 458835, 458846, 458850, 458861, 458872, 458883, 458894, 458905).
- Total number of reimbursed cases for MRI-examinations (nomenclature codes: 459395, 459406, 459410, 459421, 459432, 459443, 459454, 459465, 459476, 459480, 459491, 459502, 459513, 459524, 459524, 459535, 459546).
- Total number of PET-scans: estimation for the period 1999-2015, based on the consumption of the nomenclature code 442525. From 2016 onwards, data correspond to the specific PET-scan codes consumption of the nomenclature: 442536 - 442540.

Break in time series: 2016, for PET exams.

Bulgaria

Source of data: National Centre for Public Health and Analyses at the Ministry of Health


Czech Republic

Source of data: Institute of Health Information and Statistics of the Czech Republic. Survey on medical apparatuses in health establishments.

Coverage:
- The total number of diagnostic exams includes exams performed by hospitals and ambulatory care providers. However, because of the small number of medical equipment available in the ambulatory sector, there may be large variations over time in the number of exams performed with this equipment. Therefore, it has been decided not to show data by hospitals and ambulatory care providers in years 2004 and 2005.

Denmark

Source of data: Danish Health Authority; Based on data from The National Patient Register, maintained by ‘Sundhedsdatastyrelsen’.

Coverage:
- Until 2013, data for CT and MRI exams has only been provided for public hospitals. For 2014, data from private hospitals and clinics has also been included (a total of 3632 CT exams and 55503 MRI exams).
- Some scans are performed in both public and private hospitals for outpatient cases, but they cannot be separated.

Germany

Hospitals data
Source of data: Federal Statistical Office, DRG-statistics 2016 (Diagnosis Related Groups, diagnoses and procedures of full-time patients in hospitals); Statistisches Bundesamt 2017, Fachserie 12, Reihe 6.4., Fallpauschalenbezogene Krankenhausstatistik (DRG-Statistik), Operationen und Prozeduren der
- Included is the number of completed examinations with Computed Tomography scanners (CT) coded with OPS 2014 3-20...3-26, Magnetic Resonance Imaging units (MRI) coded with OPS 2014 3-80...3-84 and Positron Emission Tomography scanners (PET) coded with OPS 2014 3-74...3-75 in hospitals (HP.1).
- DRG-statistics extend to all hospitals that settle accounts according to the DRG-compensation system and that are subject to the scope of application of § 1KHEntgG. Facilities typically outside of the field of application of the new pay programme are primarily psychiatric and psychotherapeutic facilities.
- All significant operational interventions and medical procedures that are made from the time of the admission of a patient up to the time of the discharge and that are presentable in the official code of operations and procedures (OPS) are to be coded by the hospitals. The definition of a significant procedure is a procedure either of surgical nature, involving an interventional or anaesthetic risk, or requiring special facilities, special equipment or a special training.
- The official version of the operations and procedures key valid in the respective reporting year is relevant (OPS). The classification is published and provided by the German Institute of Medical Documentation and Information (DIMDI) pursuant to §§ 295 and 301 SGB V on behalf of the Federal Ministry of Health.
- Data before 2005 are not available.

**Ambulatory care providers' data (CT and MRI)**

**Source of data:** Federal Office for Radiation Protection (BfS), Department SG "Radiation Protection and Health", Section AG-SG 2.1 "Diagnostic Radiology"; special evaluations by the Federal Office for Radiation Protection.

**Coverage:**
- Data comprise Computed Tomography exams (CT) and Magnetic Resonance Imaging exams (MRI) performed in the ambulatory sector.
- The evaluations of the BfS are based on the billing data of radiological treatment delivered by the National Association of Statutory Health Insurance Physicians and the Association of Private Health Insurance.

**Ambulatory care providers' data (PET)**


**Coverage:**
- Data are estimates on Positron Emission Tomography exams (PET) performed in the ambulatory sector.
- The evaluations of the Federal Statistical Office and the BfS based on the results of a survey of the Positron emission tomography council of the German Society of Nuclear Medicine.

**Estonia**

**Source of data:** National Institute for Health Development, Annual statistical report of health care providers. See at: www.tai.ee/tstua.

**Coverage:**
- Both public and private sector are included.
- Data are collected about hospitals and ambulatory care providers. Due to the changes in the HP. coding in 2014 according to the SHA2011, some providers, previously classified under H.P.3, were classified under HP.4. To avoid data loss since 2014, HP.4 providers are also included under the category “ambulatory care”.

Deviation from the definition:
- Until 2014 in Estonia, data on MRI and CT exams were collected by organ system based on Estonian Health Insurance Fund classification. Each body part was counted as a different exam. In addition, exams performed on one body part were counted as two separate exams if patient’s position was different and if an additional scan was needed (e.g. lung study on back and stomach, or inhalation and exhalation).
- If CT is done with using contrast material, then the parenchymal phase and the late phase are separated.
- Since 2015 data on MRI, CT and PET correspond to definition.

- Due to changes in classification, there is a break in the series starting from 2010. The increased number of diagnostic exams is partially caused by the use of the new and more detailed classification.
- Since 2015 data on MRI, CT and PET correspond to definition (counting one exam per medical imaging session).

Ireland

Data not available.

Greece

Source of data: Estimates based on National Organisation for Healthcare Provision (EOPYY), Public Hospitals, Ambulatory Care providers.
Coverage:
- The figures represent number of exams both in hospitals and in outpatient units (diagnostic centers).

Spain

Source of data:
- Up to 2009: Ministerio de Sanidad, Servicios Sociales e Igualdad (Ministry of Health, Social Services and Equality), Estadística de Establecimientos Sanitarios con Régimen de Internado (Statistics on Health Establishments providing Inpatient Care).
  http://www.msssi.gob.es/estadEstudios/estadísticas/estHospInternado/inforAnual/homeESCRI.htm
- Since 2010: Ministry of Health, Social Services and Equity from Specialised Care Information System (Sistema de Información de Atención Especializada - SIAE).
Coverage:
- Data are available for diagnostic exams performed by ambulatory care providers since 2010.
Break in time series: There is a decrease in “PET exams” performed outside hospitals (ambulatory care providers, HP.3) in 2011. In 2010, 13 PETS units were reported as ambulatory ones (HP.3), but in further years two of them have been reported as included in a hospital.

France
Hospitals
Source of data:
- Data extracted from the SAE file (Statistique annuelle des établissements de santé/Annual statistics of health institutions) compiled by Drees (Direction de la recherche, des études, de l'évaluation et des statistiques) from the Ministère du Travail, de l'Emploi et de la Santé (Sector Santé). http://www.sae-diffusion.sante.gouv.fr/Collecte_2013/.
Coverage:
- France (Metropolitan and D.O.M, i.e. overseas territory).
- Institutions included irrespective of their legal status, categories, financing (e.g. private financing contributing to public hospital services) or size.

Ambulatory care providers
Source of data:
- CNAMTS, résultats annuels d'activité CCAM (Classification commune des actes médicaux) de scanographie et d'IRM en secteur libéral, en quantités et montants remboursables (HSD), pour les actes et les forfaits techniques (CCAM results for CT and MRI activity in ambulatory sector, unpublished).
Coverage:
- France (Metropolitan and D.O.M, i.e. overseas territory).

Croatia
Source of data: Croatian Institute of Public Health, Medical Procedures Database
Coverage: Data include all public and private health care institutions in Croatia, except prison hospital.

Italy
Source of data:
- Ministry of Health - General Directorate of digitalisation, health information system and statistics.
- National Hospital Discharge Data Base (NHDDB); Information system for outpatient care monitoring.
Reference period: during the year.
Coverage:
- Data include diagnostics exams performed as inpatient cases and diagnostics exams performed as outpatient cases. The latter refer to diagnostic exams performed in outpatient facilities both public and private accredited by the National Health Service. Data about diagnostic exams performed as outpatient cases refer to all the ambulatory activity, both outside and inside hospitals: territorial facilities provide the ambulatory activity outside hospitals; outpatient departments in hospitals provide ambulatory activity inside hospitals. Diagnostic exams provided by private facilities (not accredited by the National Health Service) are not available.

Cyprus
Source of data: General and Rural Hospitals of the public sector.
Coverage: Public sector only.
Deviation from the definition: Included are the exams performed on outpatients, since they are provided by hospitals, even if the outpatients do not use inpatient services.
Estimation method: The number of exams performed in Nicosia General Hospital during overtime are not included in the figures, due to the fact that their discrimination by type distinction was infeasible.

Break in time series: No break.

Latvia

Source of data: Centre for Disease Prevention and Control.
Coverage: Country total (excluding “PET exams” as no PET scanner is available in Latvia and accordingly Positron Emission Tomography (PET) exams are not available).

Lithuania

Source of data: Health Information Centre of Institute of Hygiene; Data of annual report of health care establishments.
Coverage:
- All health care institutions should report, but quality and coverage of private health care institutions, especially having no contract with Compulsory Health Insurance Fund, reporting is not complete.
- The number of PET exams is very low in 2012 as in Lithuania the first PET scanner started to be used at the end of 2012.

Luxembourg

Source of data: Fichiers de la sécurité sociale. Data prepared by Inspection générale de la sécurité sociale.
Coverage:
- Data refer to all diagnostic exams performed in hospitals, including outpatient cases in hospitals.
- There is no equipment available in private medical practices, and there are no private diagnostic centres in Luxembourg.
- The data refer to the resident population covered by the statutory health insurance scheme and to reimbursed medical acts performed in Luxembourg.
- Data for 2016 should be considered as preliminary.

Hungary

Source of data:
- Hungarian National Health Insurance Fund (OEP in Hungarian), Statistical Yearbook by the Hungarian National Health Insurance Fund. Further information at http://www.oep.hu. The National Health Insurance Fund (OEP) finances the patient examinations in the outpatient care as per item, whereas the examinations in the inpatient care are included in the Diagnosis-related group (DRG) fee.
Coverage: Data reported for "total" refer to outpatient examinations.
Break in time series:
- 2004: The accounting rules of CT and MRI examinations went through basic changes from 1 April 2004; the multipliers based on the age of machines and the duration of examination have been abolished. The maximum performance of service providers has been determined according to the number of examinations possible to carry out (TVK in Hungarian).
- 2005: From 1 October 2005 the financing rules of outpatient specialty care are applied to the accounting of CT, MRI examinations.
Note: Data for MRI exams are not shown up to 2005 because they strongly deviate from the data since 2006.

Malta

Source of data: The Occupational Health & Safety Authority (OHSA) and Individual Institutions
Coverage: CT scan data includes CT exams carried out in all hospitals and clinics. However, MRI data include MRI exams carried out in hospitals only. PET exams are only carried out in hospital.
2013: The number of CT Exams carried out in ambulatory care has decreased since a small private hospital is now being included under the hospital sector as it is licensed for overnight stays.

Netherlands

Source of data: Statistics Netherlands, data from survey Beeldvormende Diagnostiek, part of the annual reports of social accounting care.
Coverage: refers to publicly financed healthcare.

Austria

Source of data: Austrian Ministry of Labour, Social Affairs, Health and Consumer Protection; Hospital statistics.
Reference period: 31st December.
Coverage:
- Included are hospitals classified as HP.1 according to SHA/OECD.
- Included are diagnostic exams provided by ambulatory care units in hospitals.
- Excluded are diagnostic exams provided by ambulatory care units outside hospitals.

Poland

Source of data: the Ministry of Health and the Ministry of Interior and Administration.
Coverage:
- Data on Diagnostic exams from the Ministry of Health were prepared on a basis of information received from the National Health Fund (NHF). These data came from healthcare providers that had contract with NHF (public payer).
Deviation from the definition: The questionnaire provides a number of outpatient tests that the National Health Fund financed as part of additional financing for outpatient specialist care. This way of financing the hospital (according to JGP) does not require reporting by health care providers who have concluded a contract with the National Health Fund, the details of performed diagnostic tests, as long as it does not affect the correctness of the financial settlement, therefore given information concerning the number of tests performed during hospitalization may not reflect the actual number of diagnostic tests performed.

Portugal

Source of data: Statistics Portugal - Health statistics (published annually).
Coverage:
- National coverage.
- The number of diagnostic exams is available only for hospitals (public and private sector) from 1999 onwards. Data regarding PET exams was collected for the first time in 2011.
Romania

Source of data:
2000-2004: Ministry of Health - CT exams from hospitals and from ambulatory care
2005-2009: National School of Public Health and Health Management – CT and MRI exams from hospitals
2008-2009: Ministry of Health – PET exams from hospitals and from ambulatory care units
Since 2010:
- National House of Health Insurance: CT and MRI exams from sanitary units which provide outpatient services.
- Ministry of Health - National Institute for Public Health: CT and MRI exams provided in inpatient care.
- Ministry of Health, National Institute for Public Health: PET exams for inpatient and outpatient care. In 2015 data on PET exams refers only to outpatient care.

Coverage:
2000-2004: data refers to procedures in sanitary units from the Ministry of Health network (public sector).
Since 2005: data refers to procedures in sanitary units from the public and private sector.

Slovenia

CT and MRI exams in hospital
Coverage:
- E-DRG statistics extend to all hospitals that report data through e-DRG application from April 2004 (all public acute hospitals and some acute private hospitals).
- All e-DRG discharges from April 2004 are now coded using ICD-10-AM.
- The ICD-10-AM/ACHI (2nd Edition) codes used for 2004-2012 data and the ICD-10-AM/ACHI (6th Edition) codes used for 2013-2016 data are as follows:

CT and MRI exams in ambulatory care
Source of data: Health Insurance Institute (surveys of health care providers and contracts with health care providers).
Coverage:
- Health care providers of outpatient care (covered by compulsory health insurance).
- Clinics in Public Hospitals, Organizations licensed to practice and Health care professionals licensed to practice.

PET exams:
- No specific code in classification (ICD-10-AM/ACHI 2nd Ed.) for this exam.
- ICD-10-AM/ACHI (6th Edition) codes used for 2013-2016 data are: 9090500, 9090501, 9090502, 9090503.

Slovakia

Source of data: National Health Information Center (NHIC). Annual Statistical Report K (MZSR) 4-01.
Coverage:
- Data for 2009-2016 were revised and recalculated in accordance with OECD definition, i.e. examinations have been divided into examinations carried out in institutional health care facilities, hospitals (HP.1) and in ambulatory health care facilities (HP.3).
- The data cover both public and private sector.

Finland

**Source of data:** National Institute for Health and Welfare (THL); Hospital Discharge Register and Social Insurance Institute (KELA): Reimbursements on the use of private health care services.

**Reference period:** During the year.

**Coverage:**
- Hospital Discharge Register *Inpatient and day cases in hospitals, codes for exams according to NOMESCO Classification for Surgical Procedures. Data before 2010 is not reliable.*
- Reimbursements on the use of private health care services: *Cases treated in private health care, mainly outpatient care outside hospital, codes for exams according to NOMESCO Classification for Surgical Procedures.*

Sweden

Data not available.

Iceland

**Source of data:** Statistics Iceland.
- Data since 2006 collected by Statistics Iceland from the institutions which have MRI and/or CT machines for all years except 2008.
- 2008 data were collected by the Icelandic Radiation Safety Authority (IRSA collects the data on diagnostic exams from the institutions every five years).

**Coverage:**
- The use of one MRI and one CT machine is dedicated to research, so part of the total number of tests are for scientific purposes (2%-3% of MRI exams and less than 1% of the CT exams in 2006-2007; 3%-5% of MRI exams and 2% or less of CT exams in 2009-2011. In 2012, these figures are 0.5% for MRI and 1.5% for CT).

Liechtenstein

**Source of data:** data report from hospital. The MRI started in August 2009, therefore data is available from 2010 on.

**Coverage:** 100%

Norway

Data not available.

Switzerland
**Source of data:**

**Coverage:**
- Full coverage of hospitals (HP.1), inpatient and outpatient services (for data 2013, coverage of 95% of hospitals).
- No data yet from ambulatory care providers.

**Break in time series:**
- New data introduced in census in 2013; first year data may be of sub-optimal quality.

### Montenegro

Data not available.

### Former Yugoslav Republic of Macedonia

**Source of data:** Health Insurance fund – DRG.

**Reference period:** 31st December.

**Coverage:** public health sector

**Note:** the data are from publicly owned hospitals, outpatient departments in hospitals, emergency departments, outside hospitals. The private hospitals, private outpatient departments in hospitals, private emergency departments, and private outside hospitals are not included.

### Albania

Data not available.

### Serbia

**Source of data:** National Health Insurance Fund, Data as of December 31

[http://www.rfzo.rs/](http://www.rfzo.rs/)

**Coverage:** Data for Kosovo-Metohija province are not included in the coverage of data for the Republic of Serbia. Data from private health sector are not included. Data refer to services provided to insured citizens.

**Break in time series:** From 2014 onwards the new nomenclature of health services is applied (including CT exams) where multiple procedures are merged in one service (CT exam).

### Turkey

**Source of data:** General Directorate for Health Services, Ministry of Health.

**Coverage:**
- Data include Ministry of Health-affiliated health care facilities, universities and private hospitals.
- MoND-affiliated health care facilities are included since 2012.
- The number of diagnostic tests refers to both outpatient and inpatient totals.
- Diagnostic tests given by outsourcing are included.

**Note:** the data on MRI exams are under further investigation; hence they are not shown in database.
United Kingdom

Source of data:
- Wales: NHS Wales.
- Scotland: NHS National Services Scotland, Information Services Division (ISD).

Coverage:
- Data are for financial years, i.e. 2008 data is 2008/09.
- 2012-onwards is based on England, Wales & Scotland data but provided as a UK estimate.
- The England and Wales sets of data are based on numbers of sets of scans and not individual body part scans. No data based on the new methodology was available prior to 2012 so a break in series has been indicated.

Estimation method:
- Up to 2010: Data provided to the OECD for England only. The raw numbers of exams for 1995-2010 have been increased pro-rata by the OECD Secretariat to provide appropriate numbers for the UK, enabling the correct computation of rates using the UK population data stored within the database.
- From 2012 onwards: Data provided are based on England, Wales & Scotland only but are given as UK level estimates based on a pro rata basis.

Break in time series: 2012. Data up to 2010 refer to “individual body part scans” while data from 2012 onwards refer to “numbers of sets of scans”.