JQ18 – Medical Technology

Medical technology data is compiled by the Department of Health as part of the Non-Monetary Health Care Statistics, administered jointly by Eurostat, OECD and WHO in fulfilment of the European regulation (EU) 2022/2294. These statistics are compiled and published on an annual basis and refer to the number of Computed Tomography (CT) scanners, Magnetic Reasoning Imaging (MRI) units, Positron Emission Tomography (PET) scanners, Gamma cameras and Radiation Therapy equipment available in public and private hospitals in the Republic of Ireland.

Source:

Data for CT scanners, PET scanners and RT equipment is compiled from the Environmental Protection Agency (EPA) (https://www.epa.ie/) licensing database, while data for MRI units and Gamma cameras is compiled from the Irish Association of Physicists in Medicine (IAPM) (https://iapm.ie) administrative records.

Definitions:

Medical technology refers to the different types of medical technology presented in this table, generally used for detection of disease or illness in medical care settings.

Year (also referred to as data reference year) is taken as at the end of the calendar year of reference. (31st December).

Medical Technology reported on:

- **Computed Tomography (CT) scanners**: A 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. This excludes the Single Photon Emission Computed Tomography (SPECT) units.
- **Magnetic Resonance Imaging (MRI) units**: MRI is an imaging technique designed to visualize 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.
- **Positron Emission Tomography (PET) scanners**: A PET scanner 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. This includes also the PET-CT systems using image fusion (superposition of CT and PET images).
- **Gamma cameras**: A Gamma camera (including Single Photon Emission Computed Tomography, SPECT) is used for a nuclear medicine procedure in which the camera rotates around the patient to register gamma rays emission from an isotope injected to the patient's body. The gathered data are processed by a computer to form a tomographic (cross-sectional) image.
- **Radiation Therapy equipment**: This includes linear accelerators, Cobalt-60 units, Caesium-137 therapy units, low to orthovoltage x-ray units, high dose and low dose rate brachytherapy units and conventional brachytherapy units.

Type of setting refers to hospital category from which medical technology in which the medical technological unit is being utilised in. The category is classified as either being used in a Hospital (HP.1) setting or in an Ambulatory (HP.3) setting.

Unit refers to the unit of measure applied, which in this case refers to a numerical headcount of CT scanners, MRI units, PET scanners, Gamma cameras and RT equipment for the given reference year.

Value refers to the count of CT scanners, MRI units, PET scanners, Gamma cameras and RT equipment for the respective data reference year.

Flag indicates any particular caution or issues with the data worth of note for further data use. The following flags may be applied, along with their definition:

- **Flag M** indicates that the value is missing as it was not collected for that particular instance. This may be due to legal requirements, unavailability of data or data quality issues, among many reasons.
- **Flag B** indicates that the values from that data reference point onwards are not directly comparable with previous data points due to methodological issues which are explained in the coverage section below.
- **Flag E** indicates that the particular data point is based on an estimate and should be compares with other non-estimate data points with caution. Estimation methods applies are explained in the coverage section below.
- **Flag S** indicates that the particular data point has been supressed for confidentiality and/or quality purposes, such as; small counts or very high variation. This should not be treated as a true zero. Whenever a value is a true zero, this has been indicated and not supressed.

Coverage:

CT scanners, PET scanners and RT equipment: Figures reflect the number of machines licensed by the EPA in the Republic of Ireland. Under the licensing system used, the EPA assigns purposes to each item of equipment which indicates the clinical use of that item (e.g. mammography, fluoroscopy, CT, etc.). This designation is based upon data supplied from equipment users.

Note that the figure for CT scanning units does not include PET/CT, SPEC/CT scanners or CT Scanners used for radiotherapy simulation.

MRI units and Gamma cameras: Figures are taken from the Association of Physicists in Medicine's licensing database and were calculated at the end of each calendar year. These reflect the number of machines licensed by the Association in the Republic of Ireland and their designation is based upon data supplied from equipment users.

Estimation:

Not applicable.

Breaks in series:

Not applicable.

Suppression:

Not applicable.

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Period of time	As at end of calendar year from 2009-2022.