

Appendix D.—Glossary of Terms and Acronyms

Glossary of Terms

Field strength: The strength of the magnetic field of a magnet.

Inhomogeneities in magnetic field: Lack of uniformity in magnetic field strength.

Ionizing radiation: A form of radiant energy within the electromagnetic spectrum that has the capability of penetrating solid objects and altering the electrical charge of their atoms. High-energy radiation, such as X-rays and gamma rays, is ionizing radiation.

Kilogauss: A unit of measurement of the magnetic force per unit area that can be generated within a defined region. (See *tesla*.)

Magnetic field gradient: A magnetic field that increases or decreases in strength in a given direction along a sample.

Magnetic moments: The vector representations of the net magnetic properties of hydrogen atoms.

Medical technology: The drugs, devices, medical and surgical procedures used in medical care, and the organizational and supportive systems within which such care is provided.

Nuclear: Pertaining to the nucleus, the positively charged central portion of an atom that consists of protons and neutrons, except in hydrogen, which has only one proton.

Paramagnetic: A substance with a small but positive magnetic susceptibility (magnetizability) that may increase the contrast between tissues and NMR images (4).

Prospective payment: Payment for medical care according to rates set in advance of the period during which they apply.

Pulse sequence: The pattern of radiofrequency energy used to excite protons.

Radiation: Emission of or exposure to radiant energy, which travels as a wave motion. Radiant energy ranges from low-frequency, nonionizing radiofrequency waves used in NMR to high-frequency, ionizing waves used in X-rays.

Radiofrequency waves: Low-energy, electromagnetic waves that do not emit ionizing radiation and that are used in NMR imaging.

Rate of loss of coherence: The rate at which protons stop rotating in phase with each other.

Relaxation time characteristics: The rate at which tissue hydrogen atoms that have been excited by radiofrequency energy return to their equilibrium states.

Resonance: The oscillation of nuclei between higher and lower energy levels as radiofrequency energy is applied and withdrawn.

Shimming: Adjustments, such as addition of special coils, made to eliminate inhomogeneities in the magnetic field.

Spatial resolution: The extent to which two adjacent structures can be distinguished.

Spectrogram: Graphic depiction of the individual components of NMR signals from phosphorus-containing compounds arranged according to frequency.

Spectroscopy: A technique in which the individual components of the NMR signals from compounds, such as phosphorus-containing compounds, are analyzed according to frequency.

T₁: "Spin-lattice" relaxation time. A time constant that reflects the rate at which excited protons exchange energy with the surrounding environment.

T₂: "Spin-spin" relaxation time. A time constant that reflects the rate at which protons stop rotating in phase with each other because of the local magnetic fields of adjacent nuclei.

Tesla: A unit of measurement of the magnetic force per unit area that can be generated within a defined region; 1 tesla = 10,000 gauss (10 kilogauss). For perspective, the magnetic field strength of the Earth is approximately half a gauss.

Tomographic scan: The image of an individual slice or plane.

Glossary of Acronyms

ACR - American College of Radiology
AMI - American Medical International
ATP - adenosine triphosphate
BC/BS -- Blue Cross and Blue Shield Association
CON - certificate of need
CT - computed tomograph,
DHHS -- Department of Health and Human Services (United States)
DHSS - Department of Health and Social Security (United Kingdom)
DRG - diagnostic related group
ECG - electrocardiogram
EMI - English Music Industry
FDA - Food and Drug Administration, DHHS
FDCA - Food, Drug, and Cosmetic Act
FONAR - field focusing nuclear magnetic resonance
GE - General Electric Co. (United States)
GEC - General Electric Co. (United Kingdom)
HCA - Hospital Corporation of America
HCFA - Health Care Financing Administration, DHHS
HIAA - Health Insurance Association of America
HMO - health maintenance organization

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| HSA | - Health Systems Agency | PET | - positron emission tomography |
| IDE | - investigational device exemption | PMA | - premarket approval |
| IGC | - Intermagnetics General Corp. | PMAA | - premarket approval application |
| IRB | - Institutional Review Board | Pro | - Preferred Provider Organization |
| NCI | - National Cancer Institute, NIH | RCHSA | - Radiation Control for Health and Safety Act |
| NEMA | - National Electrical Manufacturers Association | R&D | - research and development |
| NHLBI | - National Heart, Lung, and Blood Institute, NIH | RF | - radiofrequency waves |
| NHPIC | - National Health Planning Information Center | SBIR | - Small Business Innovation Research program |
| NIH | - National Institutes of Health, DHHS | SHCC | - Statewide Health Coordinating Council |
| NME | - National Medical Enterprises, Inc. | SHPDA | - State Health Planning and Development Agency |
| NMR | - nuclear magnetic resonance | SPECT | - single photon emission computed tomography |
| NRPB | - National Radiological Protection Board (United Kingdom) | SUNY | - State University of New York |
| NSF | - National Science Foundation | UCR | - usual, customary, and reasonable charges |
| OHTA | - Office of Health Technology Assessment, DHHS | UCSF | - University of California, San Francisco |
| PDP | - Product Development Protocol | VA | - Veterans Administration |
| | | YAG | - yttrium aluminum garnet laser |