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Isotopes

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Isotopes may be referred to in the medical literature alone or as a component of a radiopharmaceutical administered for therapeutic or diagnostic purposes. The nomenclature for the isotopes incorporated in radiopharmaceuticals follows the international nonproprietary name (INN) drug nomenclature and therefore differs from that of isotopes that occur as elements alone. | An isotope referred to as an element rather than as part of the name of a chemical compound may be described at first mention by providing the name of the element spelled out followed by the isotope number in the same typeface and type size (no hyphen, subscript,

Elements

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An isotope referred to as an element rather than as part of the name of a chemical compound may be described at first mention by providing the name of the element spelled out followed by the isotope number in the same typeface and type size (no hyphen, subscript, or superscript is used). The element abbreviation may be listed in parentheses at first mention and used thereafter in the article, with the isotope number preceding the element symbol as a superscript.Of the 13 known isotopes of iodine, only iodine 128 (128I) is not radioactive. The investigators used 128I to avoid the

Radiopharmaceutical Proprietary Names

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In proprietary names of radiopharmaceuticals, isotope numbers may appear in the same position as in the approved non-proprietary names, but they are usually joined to the rest of

the name by a hyphen and are not necessarily preceded by the element symbol. Follow the USP Dictionary or the usage of individual manufacturers. |

Radiopharmaceuticals

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The INN designations for radioactive pharmaceuticals consist of “the name of the compound serving as the carrier for the radioactivity, the symbol for the radioactive isotope, and the atomic weight.”(p11) Since the nonproprietary name comprises all these components, the complete name should be provided at first mention unless the radiopharmaceuticals being referred to are a general category. Subsequently, a shorter term may be used, such as iodinated albumin or gallium scan. Although the nonproprietary name for the radiopharmaceutical may appear to contain redundant information, maintaining consistent terminology is important for clarity. For example, technetium Tc 99m is contained in more

Uniform Labeling

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The abbreviation ul (for uniformly labeled) may be used without expansion in parentheses: [14C]glucose (ul) Similarly, terms such as carrier-free, no carrier added, and carrier added may be used. In general medical publications, these terms should be explained at first mention, since not all readers will be familiar with them. |

Hydrogen Isotopes

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Two isotopes of hydrogen have their own specific names, deuterium and tritium, which should be used instead of “hydrogen 2” and “hydrogen 3.” In text, the specific names are also preferred to the symbols 2H or D (for deuterium, which is stable) and 3H (for tritium, which is radioactive). The 2 forms of heavy water, D2O and 3H2O, should be referred to by the approved nonproprietary names deuterium oxide and tritiated water, respectively. |

Radiopharmaceutical Compounds Without Approved Names

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Compounds may be combined with radioisotopes for research purposes. Such compounds would not receive an INN if no commercial use is intended. In lieu of an INN, standard chemical nomenclature should be followed (see , Elements, or consult the CRC Handbook of Chemistry and Physics for more information). After first mention, the name of the substance can be abbreviated. Use the superscript form of the isotope number to the left of the element symbol. Enclose the isotope symbol in brackets and close up with the compound name if the nonradioactive isotope of the element is normally part of the compound.glucose

Metastable Isotopes

Margaret A. Winker

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The abbreviation m, as in krypton Kr 81m or technetium Tc 99m, stands for metastable. The abbreviation should never be deleted, since the term without the m designates a different radionuclide isomer. |