Strengthening Pharmaceutical Care in Nuclear Medicine:

The Role of Drug-Related Problem (DRP) Identification

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The identification and classification of drug related problem (DRP) are fundamental to delivering optimal pharmaceutical care. This critical step ensures the safe, effective, and economical use of medications, ultimately improving therapeutic outcomes. Numerous studies have demonstrated the benefits of DRP identification, including reduced morbidity and mortality, shorter hospital stay and lower treatment cost. These benefits align with the core goals of pharmaceutical care as defined by the American Public Health Association (APhA) that is optimise the patient's health-related quality of life and to achieve positive clinical outcomes, within realistic economic parameters.

In the nuclear medicine, where radiopharmaceuticals are used for both diagnosis and therapy, DRP identification presents unique challenges not typically encountered with conventional pharmaceuticals. The process begins as early as the manufacturing stage, where factors such as pH, reagent concentration, and specific activity must meet stringent pharmacopoeia standards. Quality control measures including radionuclidic, radiochemical, and chemical purity tests are vital to ensure product safety and therapeutic efficacy.

Radiopharmaceuticals, particularly those used diagnostically, are often administered in tiny, single-use doses. As a result, they are frequently overlooked in traditional pharmaceutical care discussions. Nonetheless, reported DRPs do exist in the literature, although data remains limited. The most common DRPs include adverse drug reactions and drug interactions. Unique issues specific to radiopharmaceuticals such as incorrect administration technique, improper timing, or inappropriate selection, have also been documented, albeit less frequently. While these may not always pose direct harm to patients, they can lead to increased radiation exposure, repeated procedures, and delayed diagnoses, ultimately compromising patient care.

Importantly, the landscape of nuclear medicine is becoming increasingly complex with the introduction of therapeutic radiopharmaceuticals such as Radium-223 (^{223}Ra), Lutetium-177 PSMA (^{177}Lu–PSMA), and Lutetium-177 DOTATATE (^{177}Lu–DOTATATE). These agents are being used more frequently in routine oncology practice, especially for patients with advanced or refractory cancers. As a result, we can expect a corresponding rise in the incidence and diversity of DRPs related to their use, including issues with patient preparation, dosing accuracy, timing of administration, radiation safety, and monitoring.

This anticipated rise underscores the urgent need to strengthen pharmaceutical care in nuclear medicine. Pharmacists must be proactive in identifying and managing DRPs, ensuring appropriate medication use, and contributing meaningfully to patient safety and therapeutic success in this advancing field.