



## **Perspective on Nuclear Pharmacy's Role in the Use of Non-HEU Mo-99 for Tc-99m Compounded Patient Preparations**

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- I have no conflicts of interest that I am aware of.
- I do speak on behalf of myself, with the full awareness and approval of Triad Isotopes, Inc.



1. Understand what drives a nuclear medicine department to prescribe a dose compounded from Tc-99m sourced from Non-HEU Mo-99
2. Understand the process of generator receipt to final dose using HEU derived Mo-99
3. Understand the process of generator receipt to final dose using non-HEU derived Mo-99

- A nuclear physician or technologist will call the pharmacy and they will order a Tc-99m compounded preparation for a patient scan.
  - Do they order one where the Mo-99 came from HEU?
  - Do they order one where the Mo-99 came from Non-HEU?
    - Medicare Hospital Outpatient doses receive an extra \$10
    - Hospital policy may dictate the decision
- There is no known *clinical difference* between a dose compounded with Tc-99m from a HEU Mo-99 generator and a Non-HEU Mo-99 generator.

- Nuclear medicine physician's or their designee will call and prescribe the radiopharmaceutical.
- Doses are sent from our central nuclear pharmacy to the nuclear medicine department in batches.
  - Call in day before and receive doses ~0500-0900
  - Call in ~0600-0900 and receive doses ~0800-1300
  - Call in doses ~1000-1300 and receive doses ~1300-1800
- STAT one-off doses are often dispensed and delivered throughout the day.
- To avoid delay, doses calibrated at 1800 and 2359 are often dispensed and delivered for use in emergency cases.

- At the current time, it is unlikely a nuclear pharmacy will only have Non-HEU Mo-99 generators available, due to the following: greater expense, limited supply, limited availability on certain days of the week, and limited demand from end users.
- Therefore, the process to compound the dose is complicated by logistics challenges that arise when a mix of HEU/Non-HEU Mo-99/Tc- 99m generators are inventoried by the pharmacy.

- “Normal” generator is eluted.
  - This generator can only be used for doses that are not Non-HEU derived.
    - This is currently the majority of doses dispensed >99%
- “Normal” Tc-99m pertechnetate elution is processed and entered into inventory.
  - This elution can only be used for doses that are not derived from Non-HEU sources.
- Tc-99m kit is compounded from elution and placed into inventory.
  - This kit can only be used for doses that are not derived from Non-HEU sources.

- Doses are drawn from compounded kit
  - This dose is not labeled with any reference to HEU Mo-99 wording.
- This dose may have a name on it or may not depending on Board of Pharmacy rules.
  - This is still considered a patient specific dose.

- Regardless, due to time constraints, if an immediate scan is required (for a variety of reasons), this dose may be used for another patient. When/if that occurs, an additional dose is prescribed for the pharmacy to dispense and deliver for the original patient.
- This dose will not be available for any extra reimbursement if administered to a hospital outpatient covered by Medicare.
- This dose will cost less to the end user due to the lower cost of the HEU MO-99 generator.

- Non-HEU generator is eluted.
  - This generator can be used for any patient, however the cost of this generator is more than the cost of a “normal” generator.
    - Pharmacy incurs the cost.
  - This generator must be labeled as Non-HEU Mo-99 (from manufacturer and within pharmacy) for tracking and traceability purposes.
- Non-HEU Tc-99m pertechnetate elution is processed and entered into inventory.
  - This elution can be used for any doses, but at a higher cost.
    - Pharmacy incurs the cost.

- Tc-99m kit is compounded from elution and placed into inventory.
  - This kit can be used for any doses that are not Non-HEU, but at a higher cost.
    - Pharmacy incurs the cost.
- Doses are drawn from the compounded kit
  - This dose is labeled with reference to Non-HEU Mo-99 wording for extra reimbursement i.e. Mo-99 is 95% or more from Non-HEU production.
  - Cost is higher to end user and may exceed extra \$10 reimbursement addition.
- This dose may have a name on it or may not, depending on Board of Pharmacy rules
  - Still patient specific

- Regardless, due to time constraints, if an immediate scan is required (for a variety of reasons), this dose may be used for another patient. When/if that occurs, an additional dose is prescribed for the pharmacy to dispense and deliver for the original patient.
- This dose will only be available for any extra reimbursement if administered to an individual who is a hospital outpatient covered by Medicare.
- This dose will cost more to the end user due to the higher cost of the HEU Mo-99 generator, so obtaining the extra \$10 reimbursement is important.

- Having a mix of Non-HEU and HEU Mo-99 derived generators can makes logistics challenging, as all contents must be kept separated and properly labeled.
- Sourcing higher priced Non-HEU generators adds considerable costs to a nuclear pharmacy, especially if demand isn't available to efficiently use the elution and compounded kits.
- Currently there is little demand from end users for Non-HEU Mo-99 derived generators, due to increased cost and no known clinical advantages.

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