Hospital	Event Number: 44449
Rep Org: UNIVERSITY OF VA MEDICAL CENTER Licensee: UNIVERSITY OF VA MEDICAL CENTER Region: 1 City: CHARLOTTESVILLE State: VA County: License #: Agreement: N Docket: NRC Notified By: CATHERINE PERHAM HQ OPS Officer: JOHN KNOKE	Notification Date: 08/29/2008 Notification Time: 10:47 [ET] Event Date: 08/28/2008 Event Time: 16:00 [EDT] Last Update Date: 08/29/2008
Emergency Class: NON EMERGENCY 10 CFR Section: 35.3045(a)(1) - DOSE <> PRESCRIBED DOSAGE	Person (Organization): RAY POWELL (R1) CHRIS EINBERG (FSME)

This material event contains a "Less than Cat 3" level of radioactive material.

Event Text

MEDICAL EVENT - PRESCRIBED DOSE DIFFERED GREATER THAN 20%

"Male patient was treated Thursday August 28, 2008 with 'TheraSpheres [TS]' (a Y-90 pure beta-emitting Nordion microsphere product for liver cancer treatment). The procedure began at about 1600 hours. The written directive specified a radiation dose to the right liver lobe of 92 Gy. This required the implantation into the right liver lobe of 1.83 GBq of Y-90 at 4 PM.

"Y-90 operations are guided by a written procedural check-list which is read out aloud in the Operating Room in a step-by-step fashion during every operation. Unfortunately, the [authorized user, (AU)] failed to carry out a step which had been read out aloud to him which required that a blue stopcock in the delivery device be turned toward the delivery device's 'waste vial'. Note: When the blue stopcock is turned toward the 'waste vial' the flow is from the 'source vial' to patient. Otherwise, flow is to the 'waste vial.'

"When [the AU] began the 'source vial' flushing sequence, he saw that flow in the delivery device's transparent tubing was going from the 'source vial' to the 'waste vial' (instead of to the patient). He then turned the blue stopcock to the correct position and continued the flushing sequences. Unfortunately, about 2/3 of the initial activity in the 'source vial' had been diverted to the waste vial during the start of the first flushing sequence. The flushing sequences were repeated several times until no further reduction was observed in the delivery device dose-rate indicators (normally, flushing ceases when the two dose-rate meters indicate 0.0 Mr/h). As per procedure, the 'waste vial,' together with contaminated tubing, stopcocks, catheters and gloves were placed in a plexiglass-shielded waste 'mayo' jar and its dose-rate measured at a distance of 30 cm between jar and meter. Note: The Y-90 activity in the waste jar is determined by a ratio calculation involving the dose-rate measured with the source vial within the plexiglass shield located at 30 cm from the survey meter. (Most beta particles are absorbed in the mayo jar and plexiglass shield. Survey meter measures X-rays produced by the ~1 MeV particles, and not the beta particles).

"From the waste container measurements it appears that 0.68 GBq were implanted into the patient's [right (RT)] liver, with 0.12 GBq going to the patient's lungs. The calculated dose to the RT liver is 34.3 Gy and to the lungs it is 13.2 Gy. The dose delivered to the target is low by about 63%. This, then, is a medical event requiring notifications.

"Note: There was no leakage from the delivery device, its tubes, catheters, stopcocks, therefore, there was no contamination to be cleaned up. All other procedural steps were completed as required

by our procedures. The OR and the personnel exiting it were checked for contamination and none was found.

"This scenario, of an accidental diversion of activity to the delivery device's waste vial, has occurred at other institutions. This was RSO's motivation, many months ago, to change the print color of this procedural step from black to red, and to alert the AU to this possibility. This event was due to a simple mistake that may be resolved when a newer version of a TS delivery device is introduced by Nordion in the near future."

A "Medical Event" may indicate potential problems in a medical facility's use of radioactive materials. It does not necessarily result in harm to the patient.