Roles and Responsibilities of RSO and Medical Physicists in Nuclear Medicine

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# History of Radioiodine

- > 1937- John Livingood and Glenn Seaborg discovered iodine-131 and cobalt-60.
- > 1946- Seidlin, Marinelli and Oshry treated a patient with thyroid cancer with iodine-131, an "atomic cocktail."
- > 1950- Human serum albumin (RISA) labeled with iodine-131 for imaging the blood pool within the heart.

## **Other Significant Dates**

- > 1958- Hal Anger invented the "scintillation camera."
- > 1960- BNL advertises Tc-99m generators.
- > 1962- David Kuhl introduced emission reconstruction tomography – ultimately became SPECT and PET and CT.
   > 1971- AMA officially recognized nuclear
  - medicine as a medical specialty.

# Imaging with I-131

- Brain- Iodinated (I-131) human serum albumin (RISA)
- Cerebrospinal fluid- RISA
- > Heart (Blood Pool)- RISA
- Kidney- I-131 iodohippurate
- Liver- I-131 Rose bengal
- Lung- I-131 MAA
- > Placenta- RISA

## Treatments with <sup>131</sup>

- Grave's Disease, Hyperthyroidism
   5 15 mCi
- > Thyroid Cancer
  Usual Dose, 100 250 mCi
  High dose 400 1000 mCi

























### **Radioactive Waste Disposal**























#### 502 mCi = 750 mr/hr @ 1 ft.





#### RSO v. Medical Physicist in Nuc Med

		<u>RSO</u>	<u>Medical Physicist</u>
≽	Licensing	Х	
$\geqslant$	Inspections by regulators	Х	Х
$\geqslant$	Radiation safety rules and procedures	Х	
$\geqslant$	Radiation safety training	Х	
$\geqslant$	Dosimetry	Х	
$\geqslant$	Personnel radiation safety	Х	
	Patient radiation safety	Х	
$\geqslant$	Policy and procedure reviews	Х	
$\geqslant$	Emergency response	Х	
$\geqslant$	Radiation safety instructions to patients	Х	
$\geqslant$	Patient doses	Х	Х
	Public radiation safety	Х	
$\geqslant$	Shielding determinations	Х	Х
$\geqslant$	Equipment specifications		Х
$\geqslant$	Acceptance testing		Х
$\geqslant$	Routine Imaging equipment QA		X
$\geqslant$	Imaging issues		X
	Radioactive waste disposal	X	