

The Future of NM Practice in Canada: A Round Table Discussion

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Many revolutions in diagnostic NM



Limited practice of radionuclide therapy (RNT)

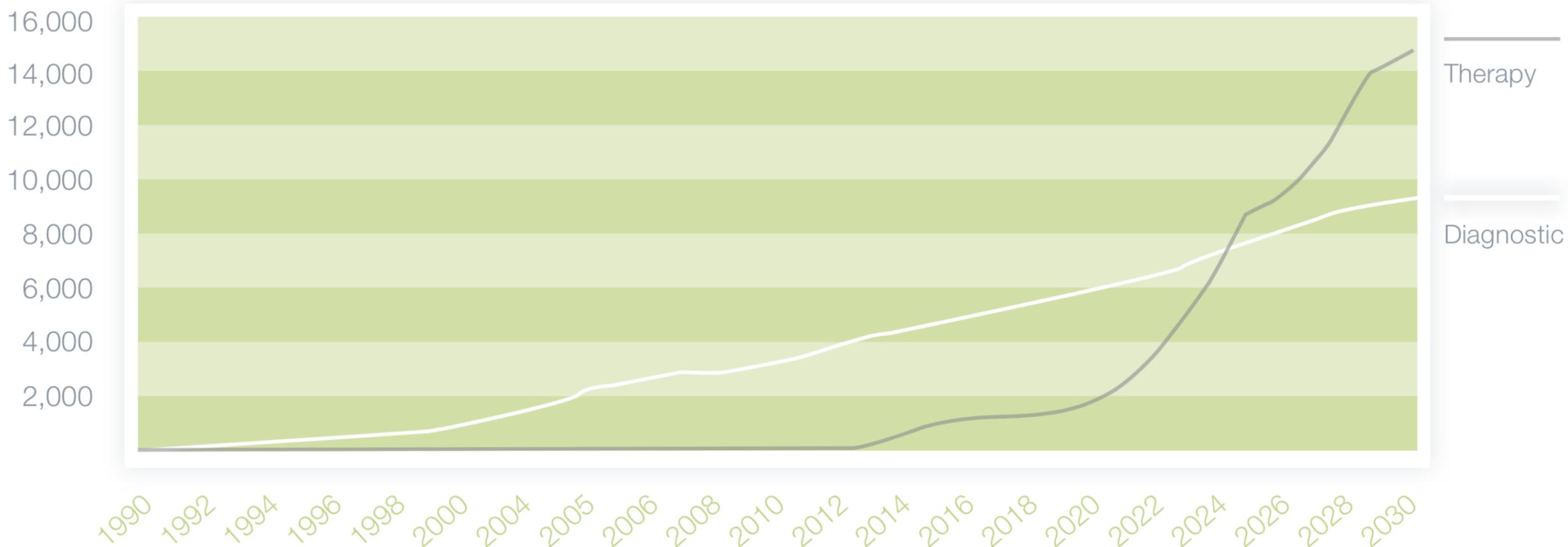


The Theranostic Revolution in NM

- Novel RNTs:
 - Highly effective, Life-prolonging
 - Low toxicity
 - Blockbuster applications
- More involving:
 - Consulting
 - Patient selection
 - Multi-cycle
 - Imaging and dosimetry
 - Long-term follow-up
 - Multidisciplinary approach
- New/evolving roles for NM physician: becoming a **Nuclear Oncologist**



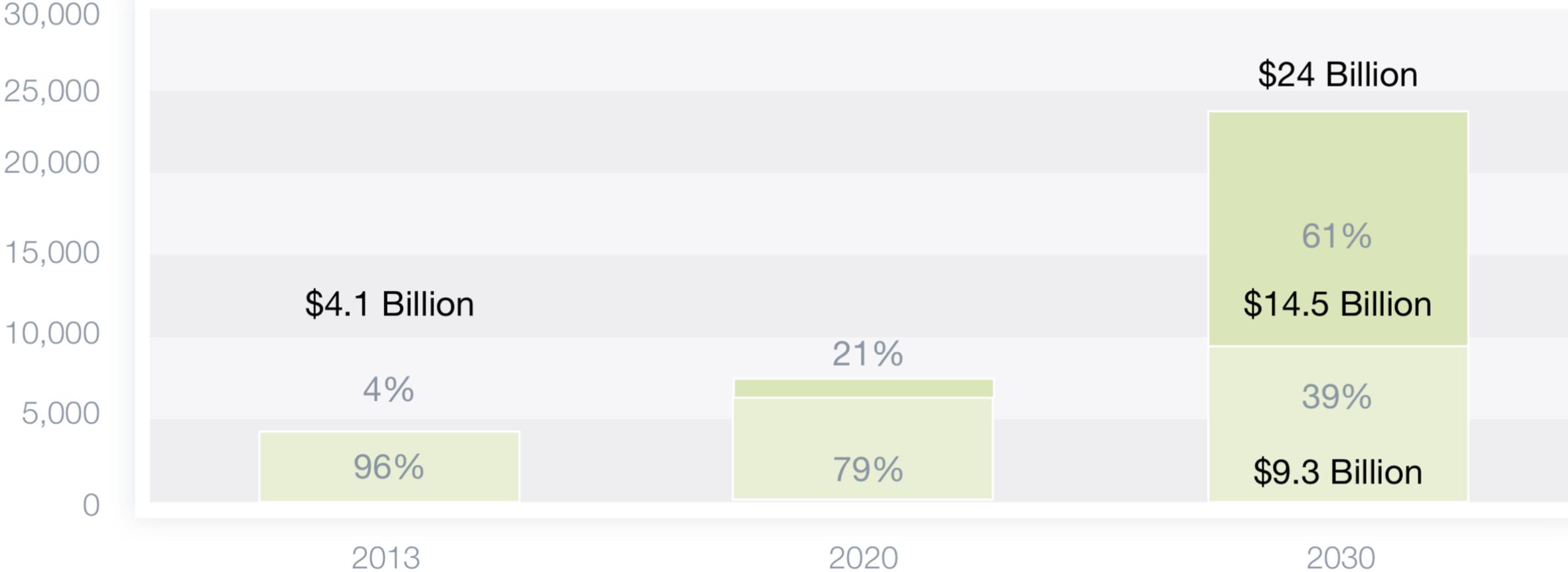
Diagnostic and Therapy radiopharmaceuticals worldwide sales forecast in \$ Millions



Source: ME-Draysintell 2014 report - Opportunities in nuclear medicine – radioisotopes, radiopharmaceuticals

MNM - Diagnostic & Therapy evolution

Sales in \$ Millions



- Diagnostic
- Therapy

Current trends in NM

- Novartis acquired:
 - AAA for \$ 3.9 billions in 2017 (Lutathera® PRRT)
 - Endocyte for \$ 2.1 billions in 2018 (PSMA-617 RLT)
- RP start-ups are mushrooming
 - Many early phase trials
- Phase 3 trials (e.g. Vision)
- Alpha therapy emerging fast

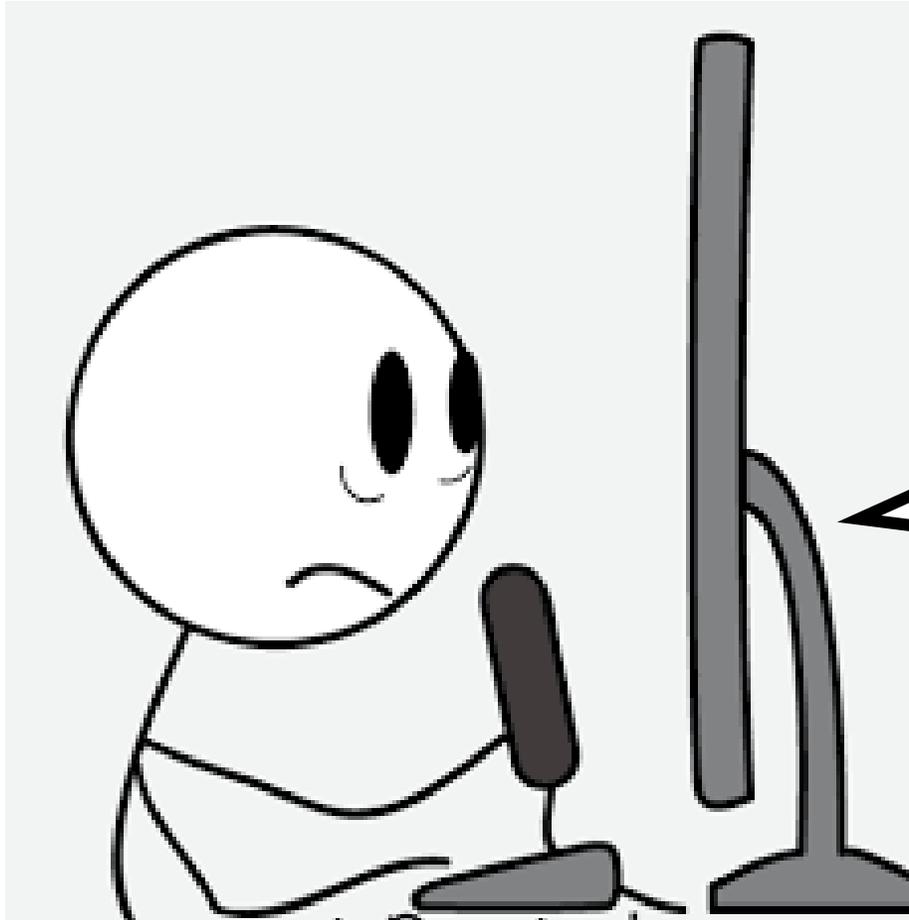
- 261 active trials on ClinicalTrials.gov:

Nuclide	No. active trials
I-131	79
Y-90	76
Lu-177	59
Ra-223	38
Ac-225	4
Re-188	3
Sm-153	2

Why RNT is best practiced by NM physicians?

- Expert in radiopharmaceuticals
- Expert in molecular imaging and molecular delivery of radiation
 - Able to predict response and toxicity
 - Able to image RNT biodistribution and perform dosimetry
 - Able to tailor RNT to patients/tumour characteristics
- RNT has the potential to become a MAJOR component of practice
 - Further consolidate and increase expertise

The diagnostician...



There are 23
lesions on CT,
but one clearly
takes up Ga-68
above background

...and the therapist

The PET report
says you have
cancer...
Don't worry, I've
got a radiation
shot for you !



The diagnostician and the therapist model

- Risks:
 - Poor patient selection
 - Futile treatments
 - Suboptimal outcomes
 - Undue toxicity
- (Radio)pharma: concerned about maximum return on investment
 - Market growth
 - Easy access: administration by whoever cares for patients and/or willing
 - Simplicity: one-size-fits-all regimens, no imaging
 - May favor this alternate model

CANM Statement on Theranostics

Nuclear Medicine specializes in the use of medical radioisotopes in the diagnosis and treatment of many medical conditions including cancer. Radioisotope **therapy is a rapidly growing** area in medicine particularly in the area of theranostics, which is the utilization of specific targeted therapy of certain diseases based on targeted diagnostic imaging tests. Because of the **importance of nuclear imaging** in the therapeutic decisions and treatment monitoring, radioisotope therapy is **best practiced by certified nuclear medicine physicians**. Accordingly, as the role of radioisotope therapy is evolving to become an important tool in patient care, this growth **should be reflected in Nuclear Medicine Residency Programs** to ensure (i) the appropriate training of future Nuclear Medicine Specialists to dispense radioisotope therapy with the highest standards of quality and (ii) ensure patient access to treatment with no disruption to patient care in centers where it is already in use.

Where do we stand?

- Acknowledge the importance of theranostic revolution and urgency to react
 - Jump on the train RIGHT NOW!
- Need expand the field of practice towards direct patient care
 - Substantial change to current practice model
- Redefine the training pathway(s) to ensure sufficient expertise and workforce
 - Residency programs
 - Fellowships
 - MDs in practice
- Elevate the standards of practice
 - We can do better
- Become **Nuclear Oncologists**
 - Be indispensable to practice RNT with the highest standards of quality