

Introduction to MPPG 14: ^{90}Y Microsphere Radioembolization

NATHAN BUSSE, M.S. DABR DABSNM
CO-CHAIR, MPPG 14.A



COLORADO
ASSOCIATES
MEDICAL
PHYSICS

Disclosures

No relevant disclosures

Motivation

- Last AAPM document on topic was TG-144 (2011)
- AAPM BBS posting
- Early actions of Working Group on Radioactive Microspheres (RMWG)
- Informal practice survey May 2020 indicating large variability

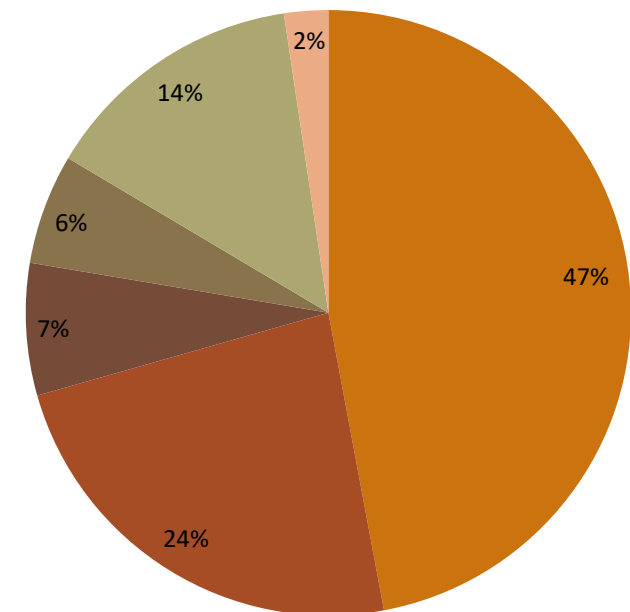
Two-fold purpose

- Consensus minimum practice standard
- Serve as guidance document and introduction for physicists new to this procedure or the IR environment

Recommendations of the American Association of Physicists in Medicine on dosimetry, imaging, and quality assurance procedures for ^{90}Y microsphere brachytherapy in the treatment of hepatic malignancies

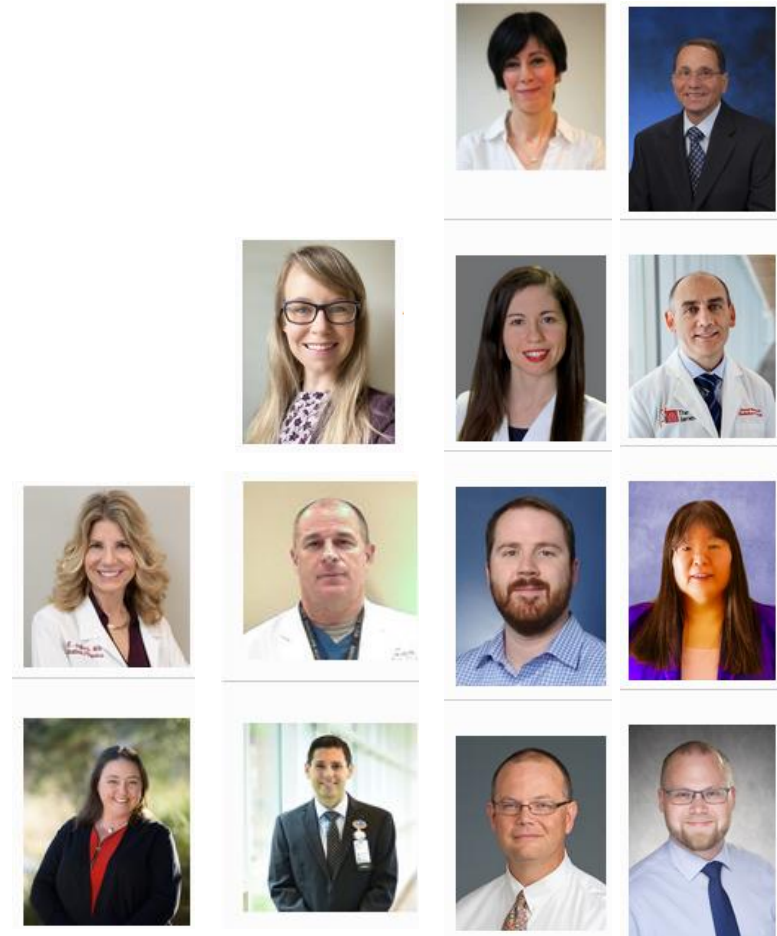
William A. Dezarn
Medical Radiation Physics Inc., Milford, Ohio 45150

MP Certification: Y-90 support



Committee Membership

- Formed December 2020 as TG 356
- Fourteenth MPPG created
- 16 members, roughly split between DX/NM and TX backgrounds
- Co-chaired by DX/NM private practice physicist (Busse) and TX academic physicist (Al-Ghazi)
- One radiation oncologist, one interventional radiologist, and one student (all not pictured)



Bad news? What is this 2020?

Let's get the bad news out of the way:

Public comments were received in March. A revised draft was submitted in April with the goal of AAPM approval by this meeting.

Some delays have occurred and review is still not complete. We continue to target JACMP publication in fall 2022.

What does that mean for today? We can't present on *should / must* statements from the document. We can, however, tell you what topics will be addressed in the document.



Structure of Report

1. Introduction / Information For Administrators
2. Regulatory Compliance
3. Personnel and Training
4. Pre-treatment Imaging
5. Treatment Planning
6. Dosage Preparation and Administration
7. Post-treatment Imaging and Dosimetry
8. Patient Safety
9. Potential Failure Modes

Roughly 17,000 words
(Sorry in advance!)

Topics of Interest

Introduction

- Defining which board certifications are appropriate to function as QMP
- Requirements around QMP involvement / other radiation safety support (i.e., CHP)
- CPT code guidance

Regulatory Compliance

- Not as much need for us to make recommendations here
- References NRC licensing guidance

Personnel and training

- Overarching training
- Skills assessment / retraining for low frequency sites

Topics of Interest

Pre-treatment Imaging

- Additional safety requirements around high lung-shunt / lung absorbed dose
- Considerations around where to inject ^{99m}Tc -MAA (i.e., max shunt, mean shunt, etc.)

Treatment Planning

- Standardized dosimetry formalism and nomenclature
- Simplifying assumptions specific to ^{90}Y microspheres
- Limitations of some existing dosimetry models

Dosage Preparation and Administration

- Dose calibrator 'dial' setting and potential issues
- Limits and procedures for disagreement between site and manufacturer assay
- Written directive review and contents

Topics of Interest

Post-treatment Imaging and Dosimetry

- Acquisition recommendations for SPECT or PET
- Imaging requirements for post-treatment dosimetry

Patient Safety

- When patient instructions are required
- Recommended contents of patient instructions

Potential Failure Modes

- Summary of historical medical events
- ⁹⁰Y FMEA literature, common failure modes

Thanks!

Please reach out with any follow up questions,
Especially once MPPG 14.a is published, to Matthew and me.

busse.nathan@gmail.com and malghazi@hs.uci.edu