

Physics at  *Gaborone Private Hospital*
Botswana: An Overview

Remigio Makufa





Population: 2.021 million (2013)

The Okavango Delta is the largest inland delta in the world

Botswana is the worlds biggest diamond producing country in terms of value and the second biggest in terms of production.



MPULE



2001



5000 + PTS

2015

Year(s) Manufactured	1997-2005	2013 & newer
Power Source	Magnetron	n
Photon Energy Configuration	6, 10	6, 10
Electron Energies	6, 8, 10, 12	4, 6, 8, 10, 12
Multi-Leaf Collimator	NONE	160 Agility MLC (Field size 40x40cm, leaf thickness- 5mm)
Portal Imager (EPID)**	NONE	iViewGT(Amorphous Silicon)
Treatment Delivery	3D	3D, IMRT, VMAT, SRS, SRT, SABR
CBCT	NONE	XVI
Stereotactic Radiosurgery		
Treatment Couch	Precise	Hexapod (6 degrees of motion)
FFF	NONE	YES



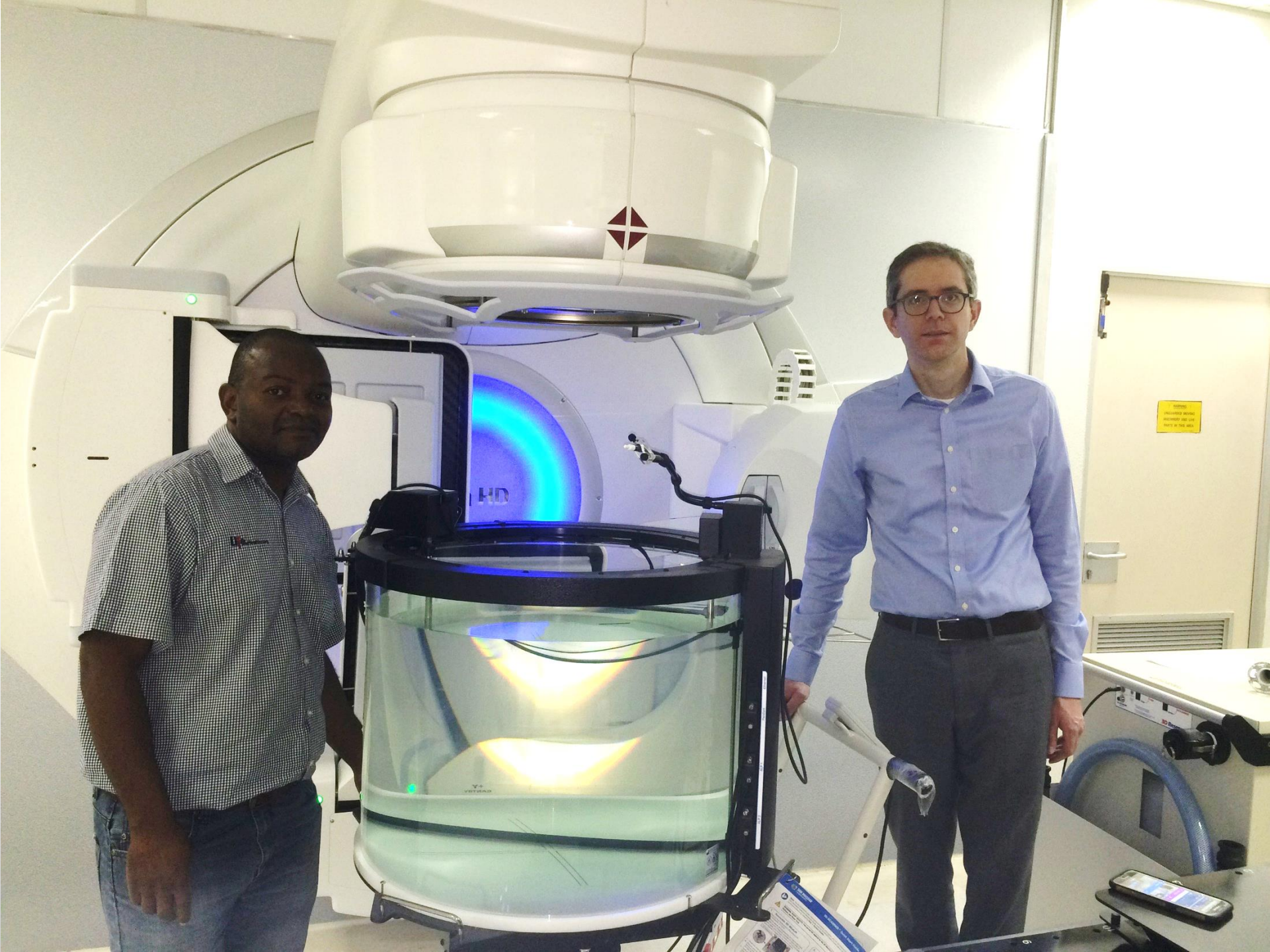






2 Dec 2015



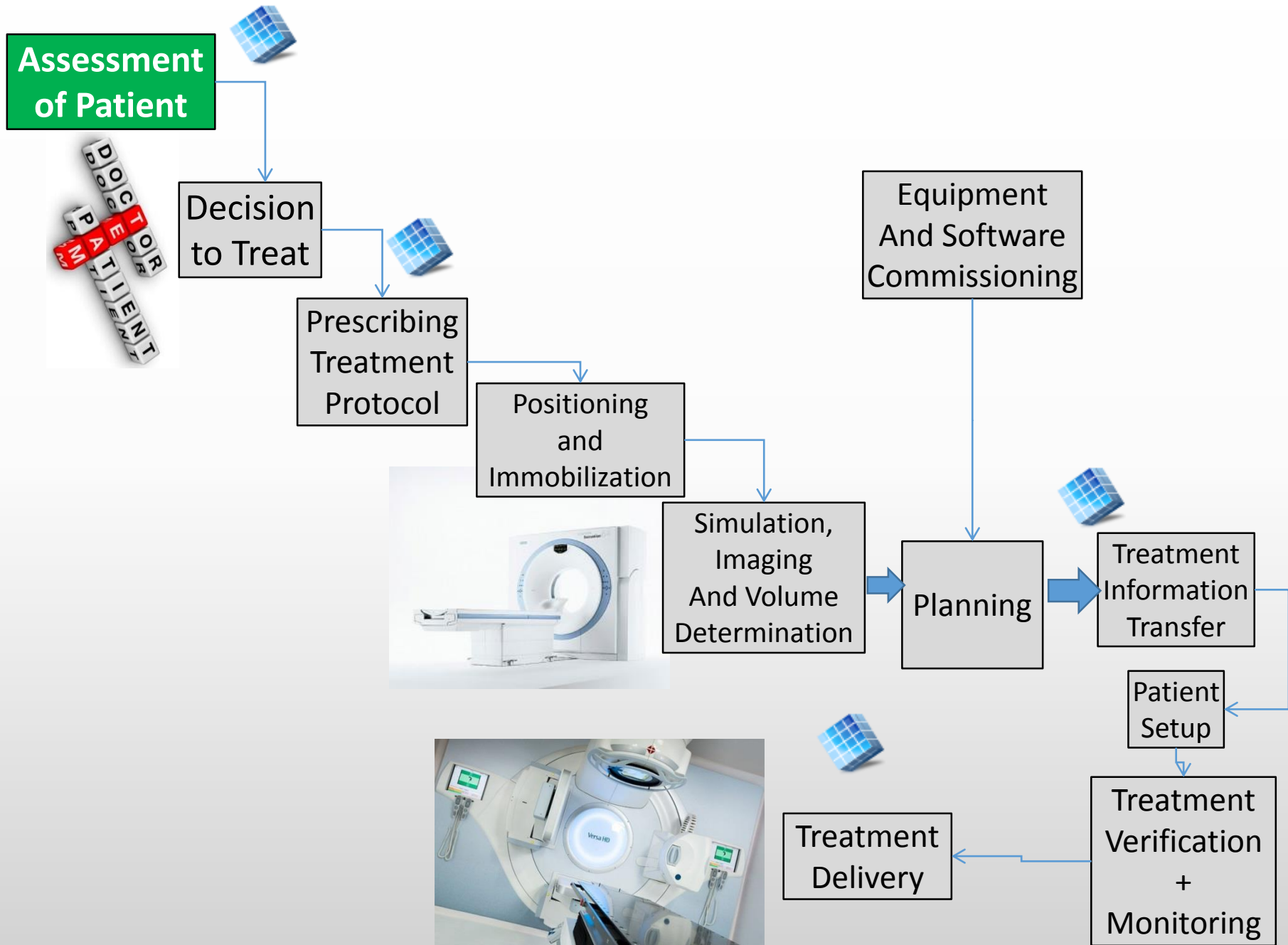


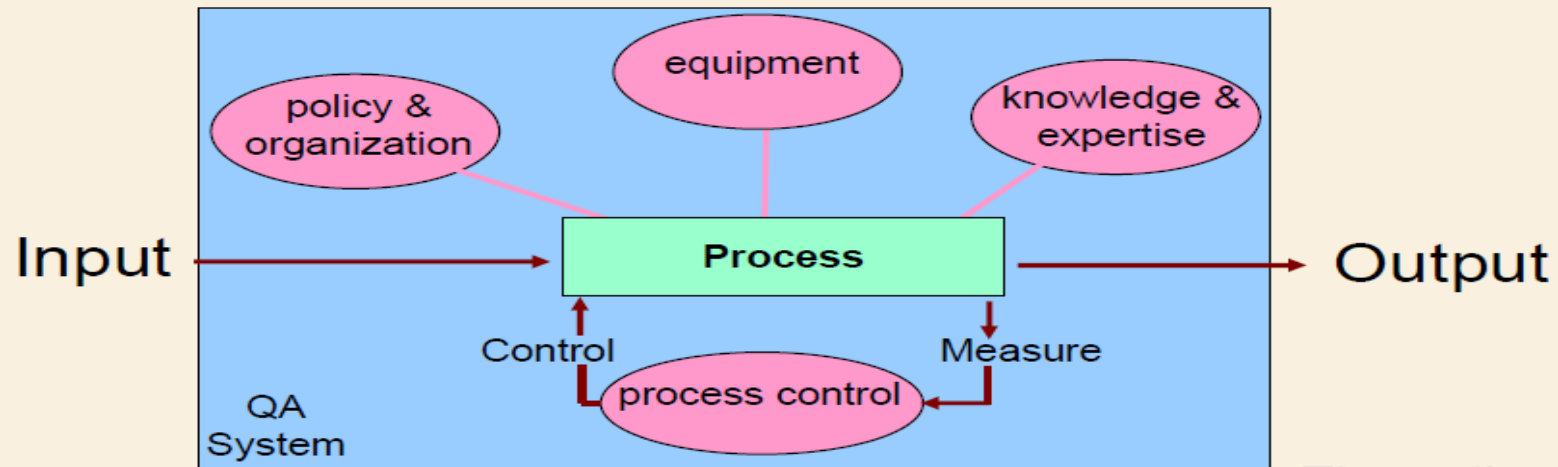


SERVICE LAUNCHED 2011



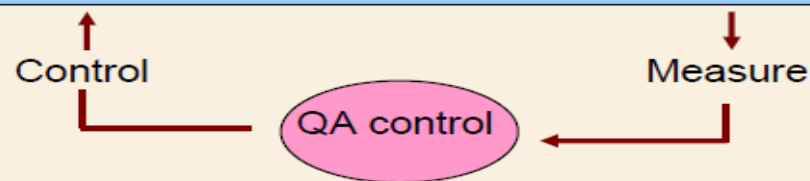






The patient enters the process seeking treatment

The patient leaves the department after treatment



RADIOTHERAPY RISK PROFILE

Technical Manual



**World Health
Organization**

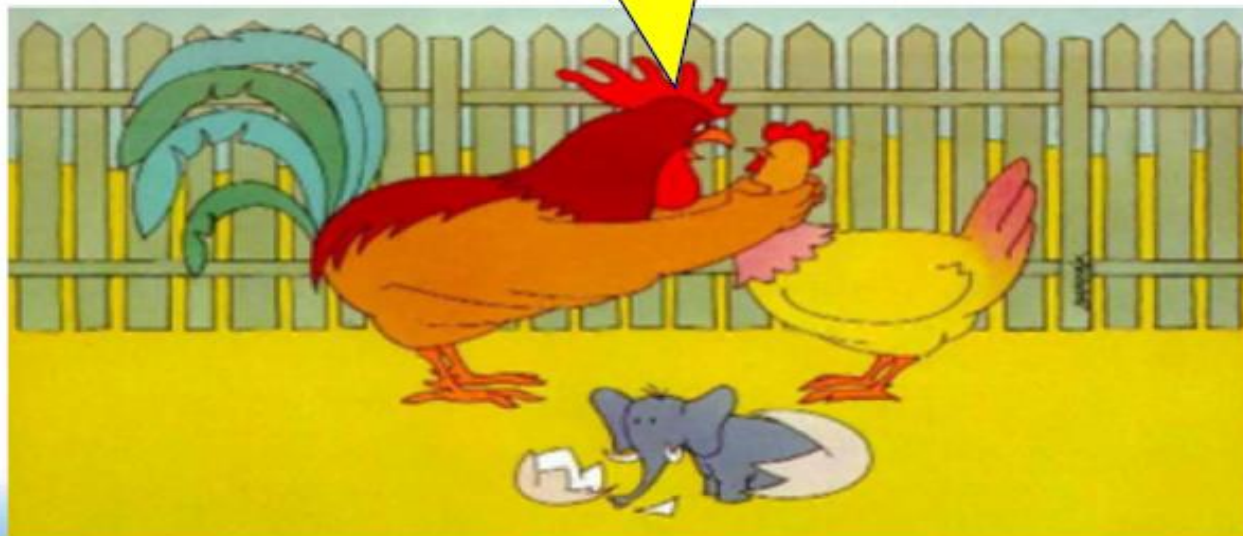
Our job is not to prevent errors, but to keep the errors from injuring the patients.

Lucian Leape

It is useful to report all accidents before consequences appear

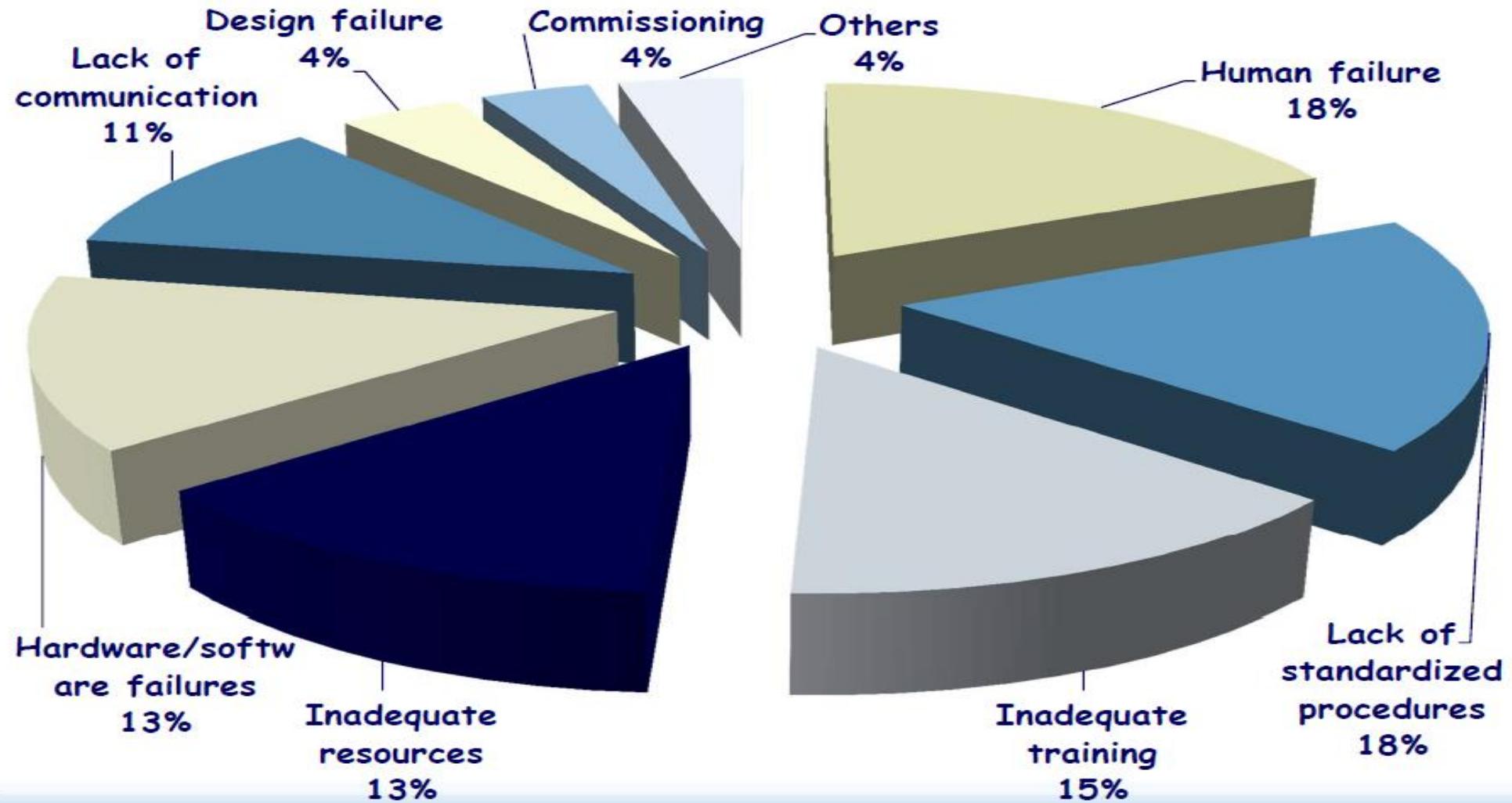
It is impossible to make anything foolproof because fools are so ingenious.

Artur Bloch, Murphy's law



Courtesy: Josef Novotny

Causes of failure



IAEA | Human Health Campus

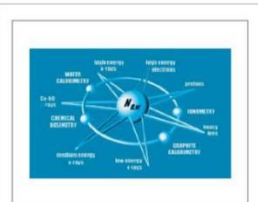
IAEA TRS No. 398
High Energy Photon Beams

Outline Search

- ▶ 1. INTRODUCTION
- ▶ 2. WHEN TO MEASURE
- ▶ 3. BEFORE YOU START
- ▶ 4. REFERENCE CONDITIONS
- ▶ 5. CHAMBER AND ELECTROMETER
- ▶ 6. MEASUREMENTS
- ▶ 7. DOSE AT Z_{ref}
- ▶ 8. DOSE AT Z_{max}
- ▶ 9. QC BASELINE MEASUREMENTS
- ▼ 10. REFERENCES
- ▼ 11. DEFINITIONS
- ▶ APPENDIX 1. PDD, TPR and TMR
- ▶ APPENDIX 2. POLARITY AND RECOMBINATI

IAEA TRS 398 dose determination High Energy Photons

This presentation will help you use **TRS 398** to determine the absorbed dose to water for high energy photon beams.



TECHNICAL REPORTS SERIES No. 398

Absorbed Dose Determination in External Beam Radiotherapy
An International Code of Practice for Dosimetry Based on Standards of Absorbed Dose to Water
Sponsored by the IAEA, WHO, WHO and ESTRO

INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, 2000

SLIDE 1 OF 57 PAUSED 00:02 / 00:09

Imaging for Radiation Therapy (ACR Guidelines/AAPM TG 142)

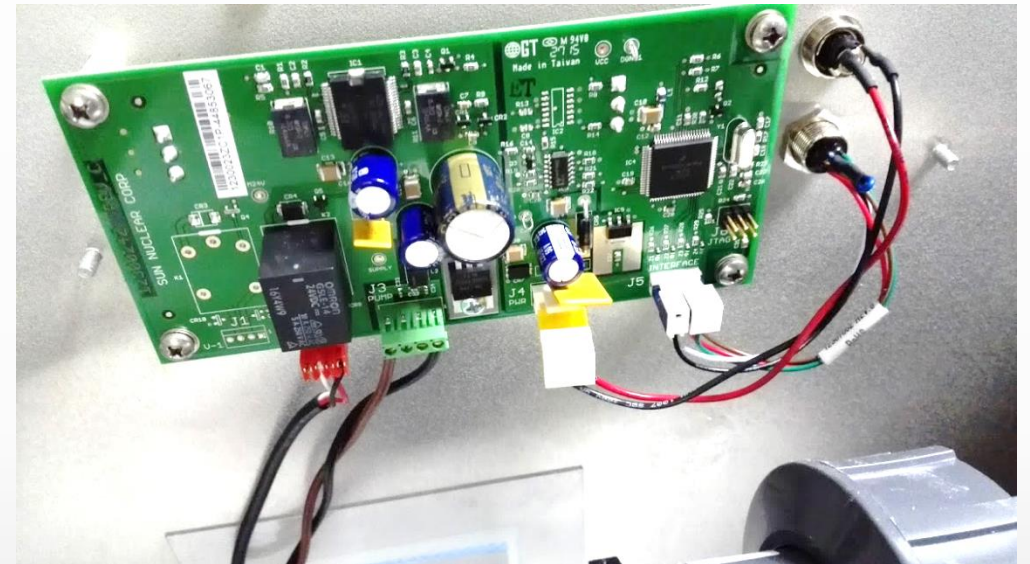
Fang-Fang Yin, PhD
Duke University Medical Center
Ying Xiao, PhD
Thomas Jefferson University

ACMP, May 22-25 2010

DukeMedicine



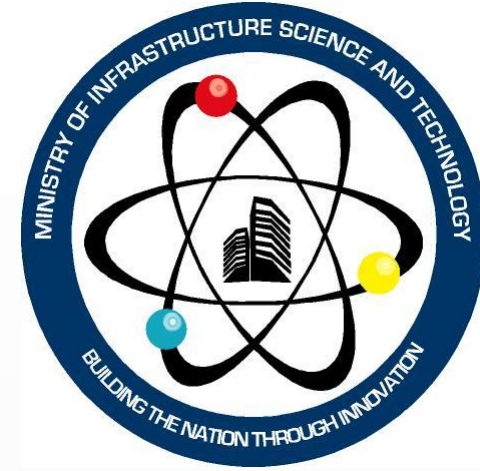
Problem with water reservoir control board





IAEA/WHO SSDL

PTIW



SABS

South African Bureau of Standards

MGH Dosimetry Lab

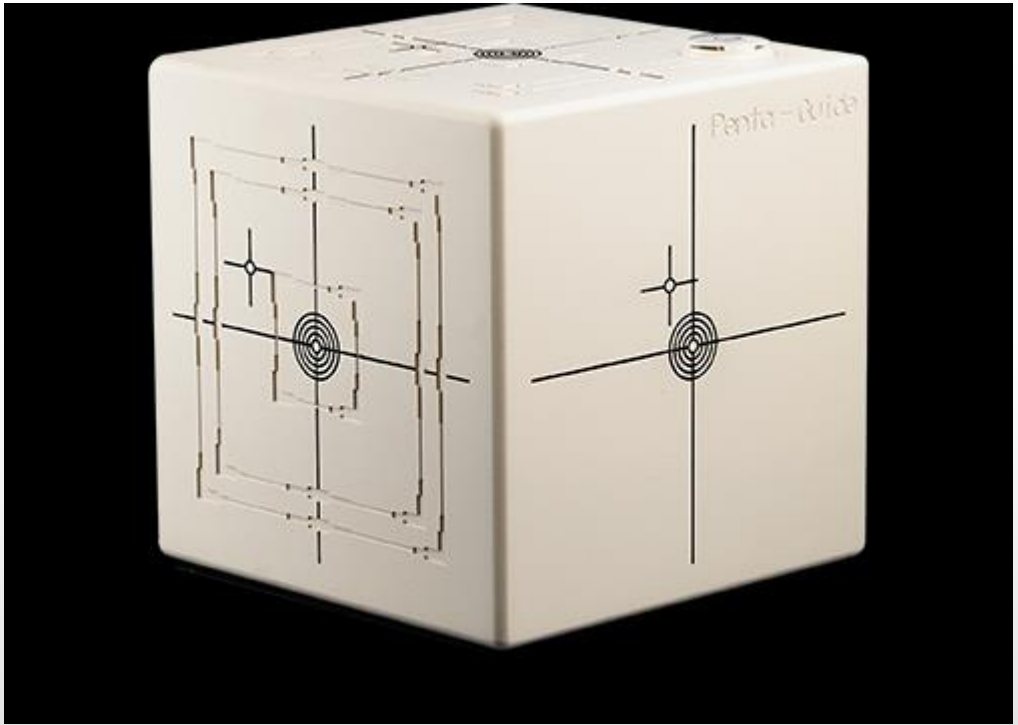
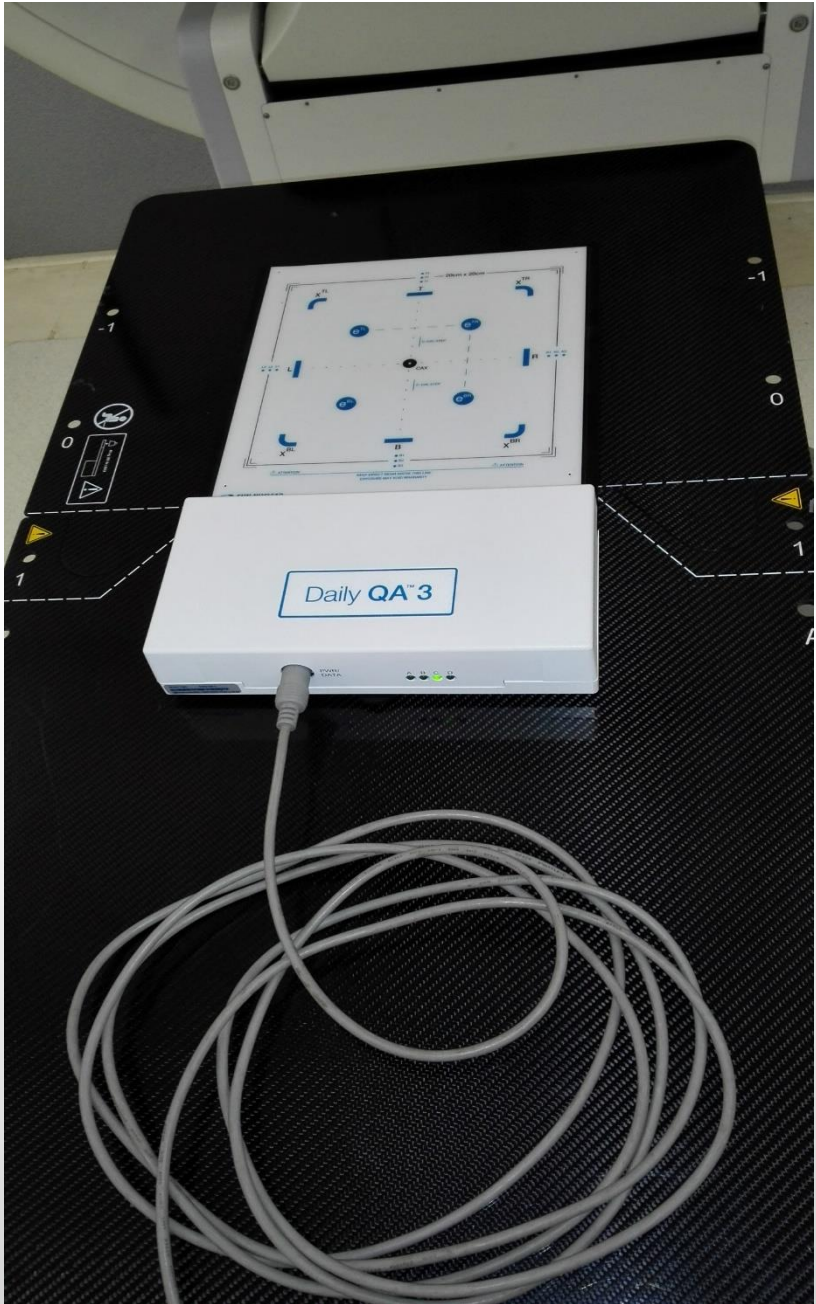


Monaco® 5.11

Oncentra® Brachy

MOSAIQ 2.64





IVD™2 & rf-IVD™2

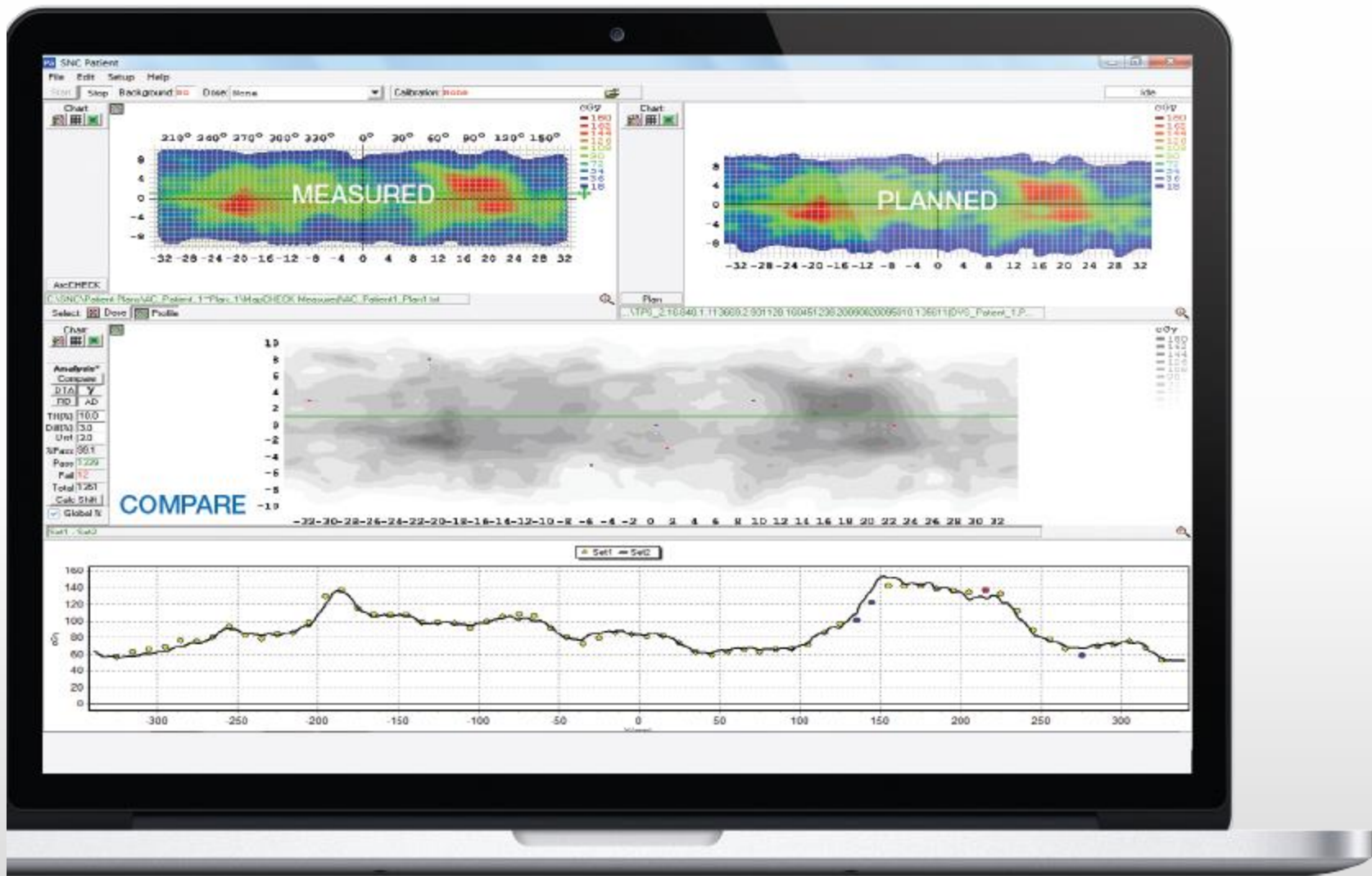
Therapist Friendly - Physicist Approved



Where are we going from here?

IMRT

VMAT



Thank you