
# Welcome to CCRI Webinar!
# Updates on X-ray imaging dosimetry practices

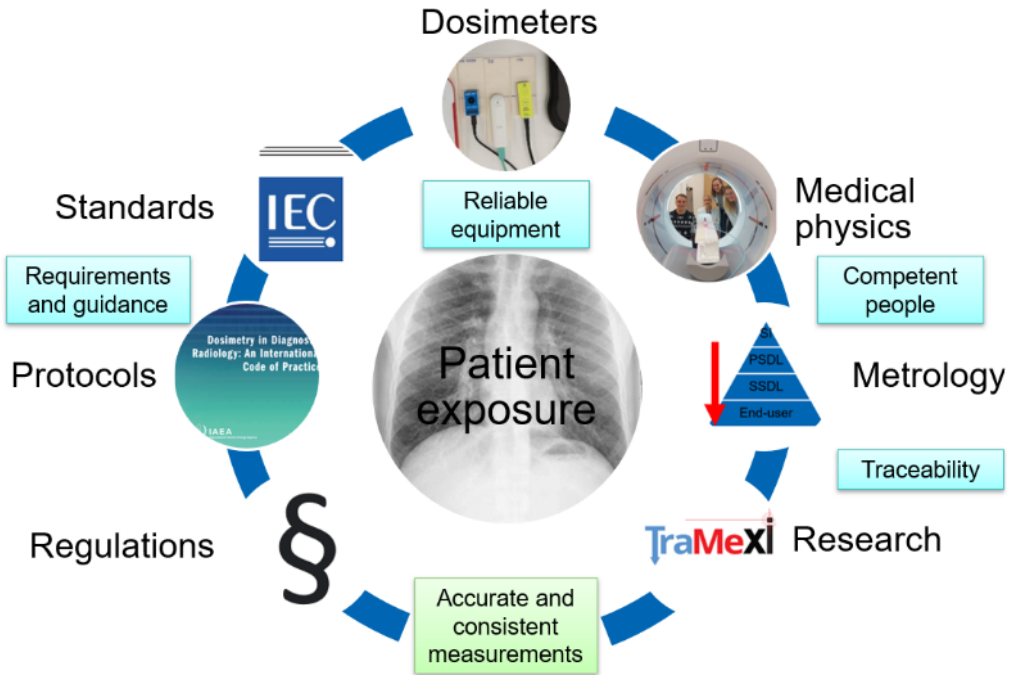
24 April 2025

Chair: Paula Toroi, STUK, Finland

# Continuation to previous CCRI webinar


https://www.bipm.org/en/committees/cc/ccri/wg/ccri-webinar/2024-05-28

- The CCRI webinar in 2024 gave on overview of the challenges in X-ray imaging dosimetry.




- Today the CCRI webinar responds to some of those challenges that have been identified.

# Continuation to previous CCRI webinar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- The CCRI webinar in 2024 gave on overview of the challenges in X-ray imaging dosimetry.


Our deepest condolences to the family of Helen Khoury, who passed away earlier this year.

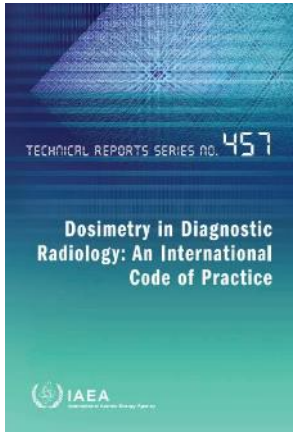
- Today the CCRI webinar responds to some of those challenges that have been identified.

# IAEA CRP (E24024)

- Evaluation of the Dosimetry Needs and Practices for the Update of the Code of Practice for Dosimetry in Diagnostic Radiology (TRS-457).

  - Review and testing of reference instruments
  - Capabilities of X-ray multimeters (XMMs)
  - KAP- and CT-measurements

  = > data to support the update of TRS-457 (2007)





# EURAMET 22NRM01 TraMeXI

TraMeXI 6/2023 – 5/2026

www.tramexi.com

- Traceability in Medical X-ray Imaging dosimetry
  - Normative call: “Metrology support for Regulations and Standards”.

1. Coverage of clinical **radiation qualities** in calibrations.
2. Understanding the **performance of dosimeters** => estimation of related uncertainties.
3. Harmonized **calibration and measurement procedures**
   - **Support to the IAEA CRP E24024**


14 Beneficiaries

3 Collaborators

**Stakeholder committee** (22 members):

- Chief stakeholder: Wesley Culberson (IEC SC62C WG3)
- IEC, IAEA, Herca, EFOMP
- Manufacturers: - IBA, PTW, Radcal, Raysafe, RTI, Quart, Planmed
- Calibration laboratories: CEA, CIEMAT, IRB, INTE
- Medical physics associations:DGMP, AIFM, CHUV, SF, NVKF, APT

EUROPEAN PARTNERSHIP

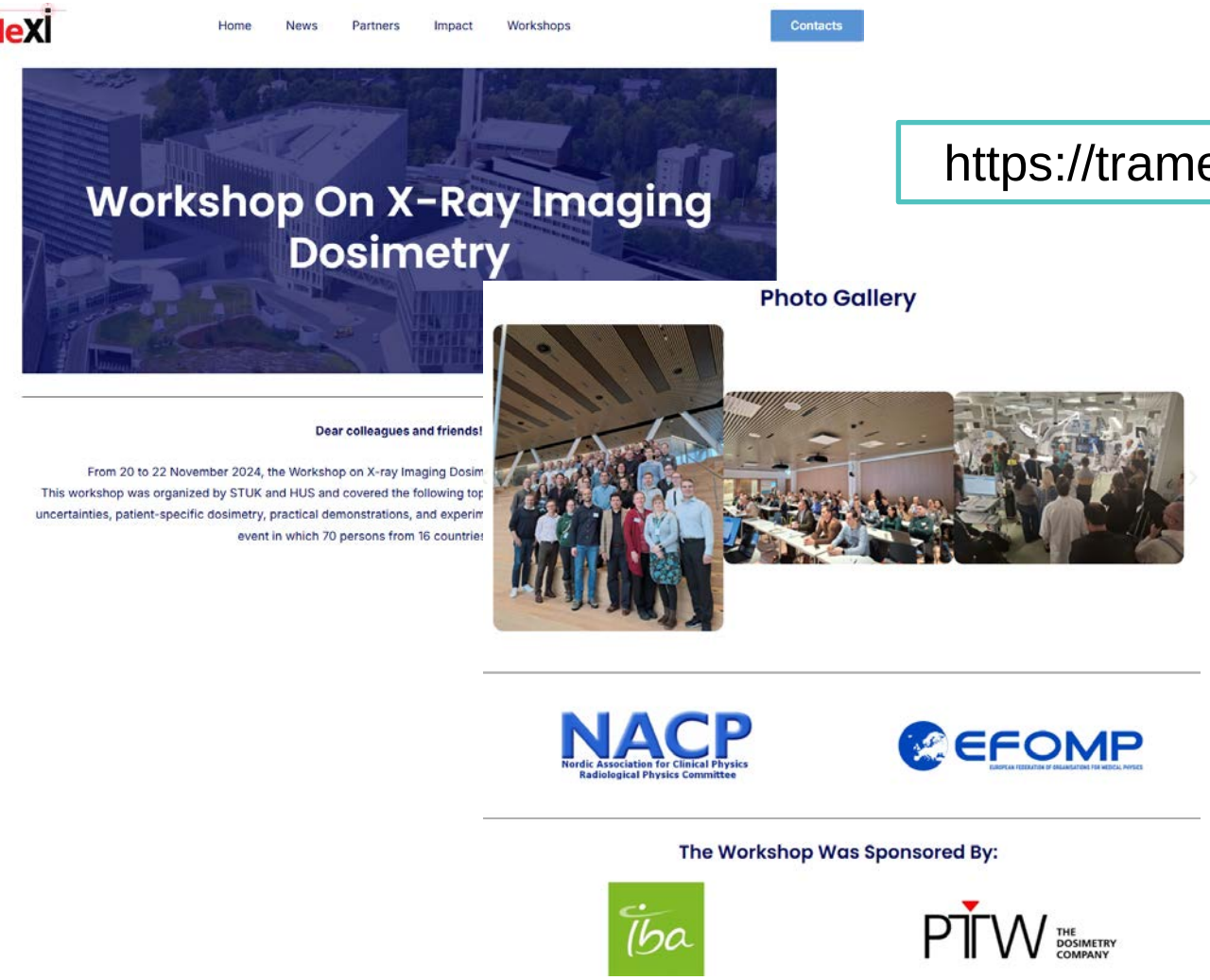
Co-funded by the European Union

METROLOGY PARTNERSHIP

EURAMET

The project (22NRM01 TraMeXI) has received funding from the European Partnership on Metrology, co-financed from the European Union’s Horizon Europe Research and Innovation Programme and by the Participating States. Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or EURAMET. Neither the European Union nor the granting authority can be held responsible for them.

# Workshop on X-ray imaging dosimetry



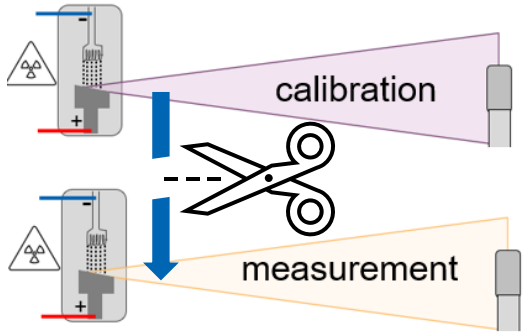

https://tramexi.com/workshops/workshop/

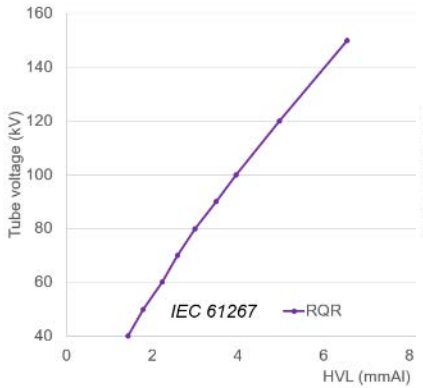
## Presentations

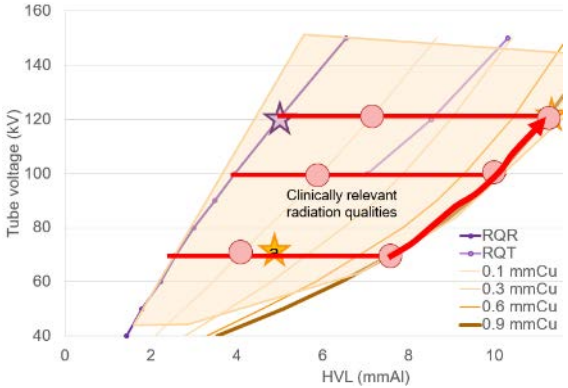
- 20 November 2024. Wednesday
- 21 November 2024. Thursday
- 22 November 2024. Friday
- Final Programme

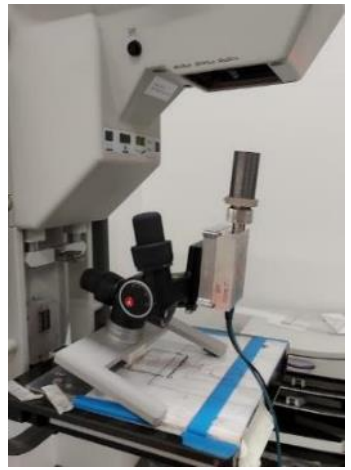
# Challenges covered today

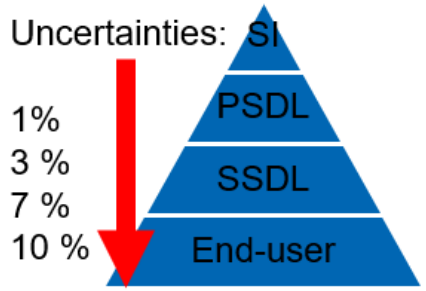
1. Gap between reference and clinical radiation qualities
2. Traceability for the “other” quantities measured by XMMs
3. Need for updated procedures

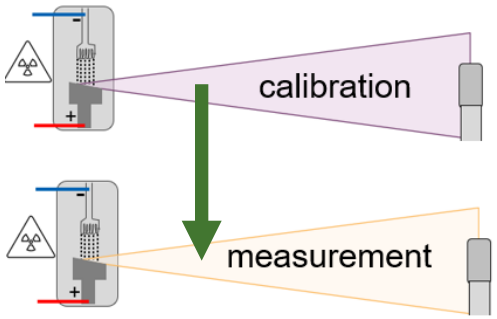


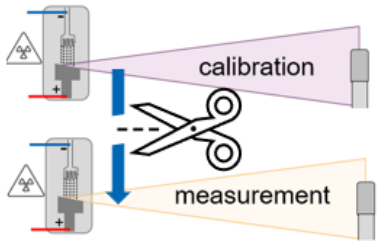



# Update of reference radiation qualities

## Stefan Pojtinger, PTB, Germany

Stefan is head of the working group “Dosimetry for diagnostic radiology" at the German national metrology institute PTB. Project leader for IEC 61627 and IEC 61674. Currently involved in IAEA and EURAMET research projects.




*Challenge: gap between reference and clinical radiation qualities*

Response:

- Introduction to ionisation chamber (IC) and X-ray multimeter (XMM) technology
- Differences in their energy dependence of the response
- Comparison of calibration and clinical radiation qualities
- Proposal for new reference radiation qualities
- Guidance how to use them.

# Definition of XMM measurement quantities

## Miloš Živanović, VINS, Serbia

Milos is head of the Secondary Standards Dosimetry Laboratory of the Vinca Institute of Nuclear Sciences. He has 15 years of experience in ionizing radiation metrology and dosimetry. He is a senior research associate and is currently involved in several IAEA and EURAMET research projects.

*Challenge: traceability for the "other" quantities measured by XMMs*

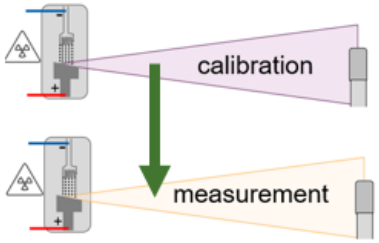
Response:

- Definitions for the "XMM quantities" (in addition to air kerma)
  - tube voltage-related quantities, HVL, total filtration, and exposure time
- XMM performance for these quantities
- Current plans to provide traceability and standardization for these quantities.

# Clinical implementation of new procedures

## Olivera Ciraj Bjelac, IAEA

Olivera is Imaging Medical Physicist of the Dosimetry and Medical Radiation physics Section at the IAEA and the alternate project officer of the CRP E24024. She joined the IAEA from the position of full professor of University of Belgrade, after 25 years of experience in diagnostic radiology medical physics, dosimetry and radiation protection.




*Challenge: need for updated procedures*

Response:

- How to use XMMs in clinical measurements
- How to use calibration certificates
- How to achieve target uncertainties.