EUROPEAN SOCIETY OF RADIOLOGY

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Progress in the optimization of radiation protection in paediatric interventional radiology and cardiology in Latin America and the Caribbean (OPRIPALC project)

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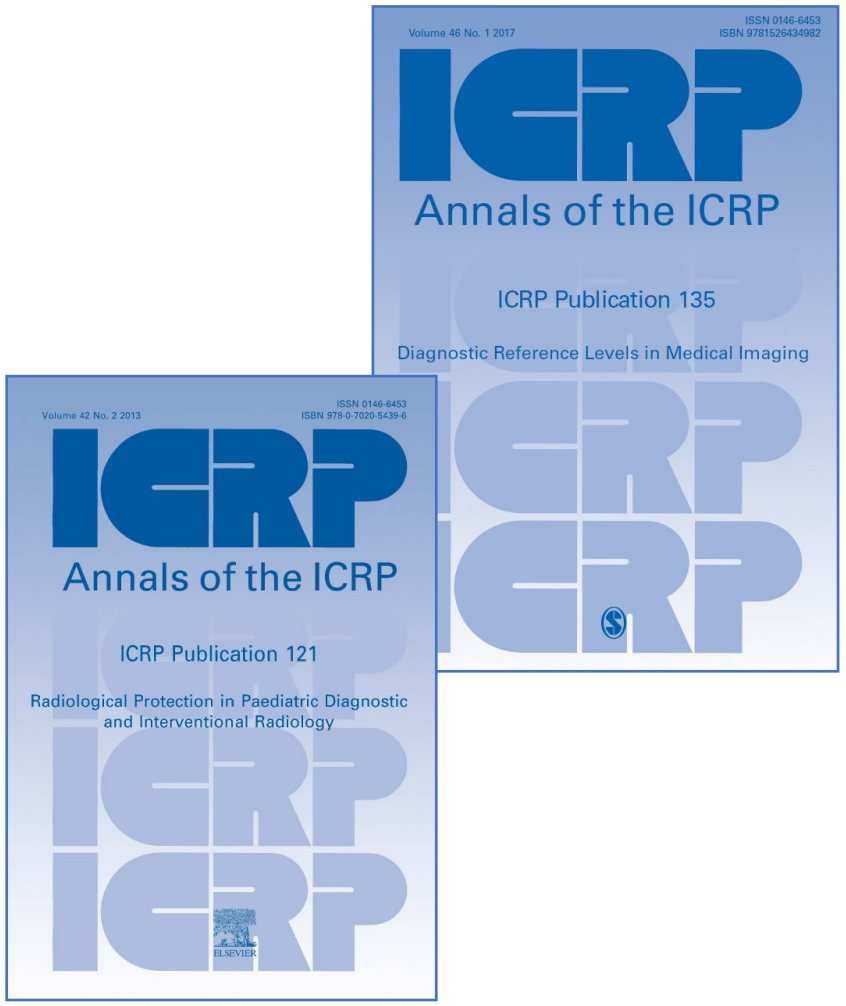
Purpose – Intoduction (1)

- The International Basic Safety Standards have requirements for the protection in medical exposures of patients including the establishment of diagnostic reference levels (DRLs).
- The World Health Organization (WHO), the Pan American Health Organization (PAHO) and the International Atomic Energy Agency (IAEA) initiated in 2019 a project for enhancing optimization in **paediatric interventional radiology** in Latin American and Caribbean countries through the use of DRLs (OPRIPALC project).

Purpose – Intoduction (2)

- When interventional radiology and interventional cardiology procedures are performed in children, radiation doses may be relatively high.
- For some complex cases, it is important to avoid high doses considering if:
  - The X-ray systems are under strict quality control programs;
  - The operational protocols are properly supervised, and
  - Staff is trained in radiation protection

Purpose – Intoduction (3)



- The ICRP has issued new recommendations on Diagnostic Reference Levels (DRLs) including advice for paediatric interventions.
- The new technology in X-ray systems and post-processing of the images should be implemented with the appropriate training (including the radiation protection aspects) and a regular audit of patient doses and image quality.

Objectives of the OPRIPALC project

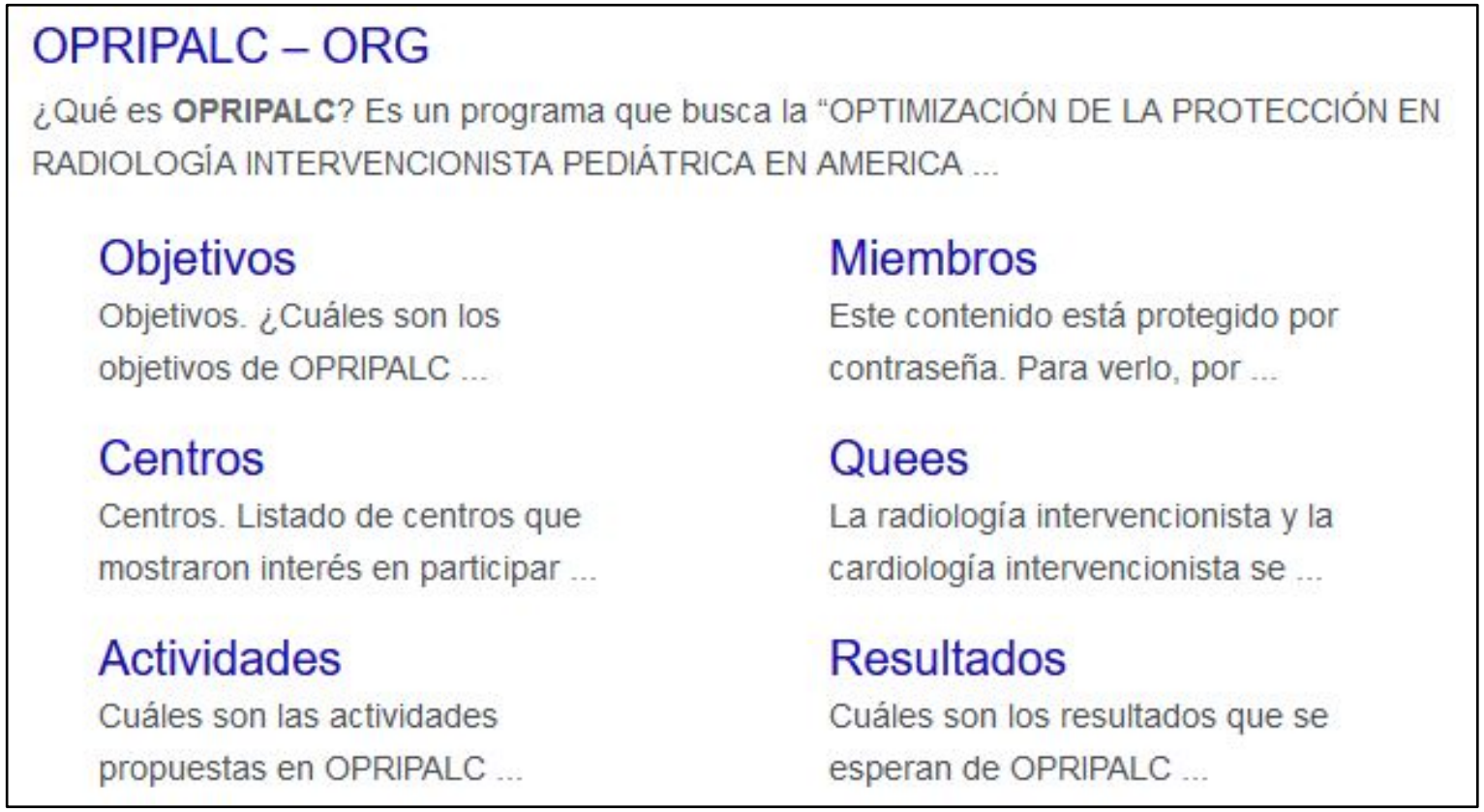
- The main objectives of the project refer to:
  - a) Promote radiation safety culture in paediatric interventional radiology,
  - b) Improve radiation safety and quality of care in the participating centres,
  - c) Define optimization strategies based on DRLs and an auditing patient doses and
  - d) Produce a regional consensus document offering guidance on optimization.

Methods

- Only a few patient dose values have been collected from the initial group of 36 paediatric hospitals from 10 different countries that initially declared their interest in the programme.
- By the end of 2020 and during 2021, the efforts will be concentrated in establishing direct contacts with the practitioners performing paediatric fluoroscopy-guided interventions at the centres involved, to identify the difficulties and help in managing patient dose reports.
- Actions include engagement of manufacturers to help in finding technological solutions for dose management and launching of an OPRIPAL web site.

The OPRIPAL website

- A website (in Spanish) for the OPRIPALC project has been launched: opripalc.org



Preliminary version of the OPRIPALC website (in Spanish)

Current actions

- Identification of the existing basic quality controls for the interventional X-ray systems in the different involved hospitals.
- Identification of the existing calibration / validation for the dosimetric values reported for patient dosimetry.
- Revisit the criteria for the initial classification of interventional procedures for cardiac and non cardiac procedures performed in the different hospitals.
- Identify and suggest solutions, for the problems encountered in some hospitals to contribute with patient dose values to the central database to derive Diagnostic Reference Levels (DRLs).

Methodology for the data collection

- Centralised data base at the Tarapaca University in Arica, Chile.
- Approaches to select the most frequent procedures and establish groups of similar interventional procedures for the initial proposal of DRLs (in addition to diagnostic and therapeutic procedures).
- Analysis of the existing experiences in the scientific literature and in the European Guidelines.
- Contacts with the radiology industry to facilitate the automatic collection and processing of dosimetric data in the different hospitals.
- Consider a pilot action to evaluate image quality and diagnostic information for the interventional procedures at the different involved hospitals.

Initial selection of the most frequent procedures.
To be updated

OPRIPALC Project

INITIAL SELECTED CARDIAC INTERVENTIONS

- Patent ductus arteriosus closure
- Angioplasty of pulmonary arteries
- Cardiac diagnostic catheterisation

INITIAL SELECTED RADIOLOGY (NON CARDIAC) INTERVENTIONS

- Cerebral angiography (diagnostic and therapeutic parts)
- Arteriography (systemic)
- Esophageal dilation

Recent actions in the OPRIPALC data collection

- **10 Countries and 21 hospitals active in he answers during the last year:** Argentina, Brasil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Peru, Uruguay and Venezuela.
- **Two questionnaires**
  1. To update data on X-ray systems, number of procedures, number of interventionists involved in paediatrics and support of medical physicists and/or technologists.
  2. Dosimetric data for at least 5 frequent paediatric interventional procedures.

Identified problems during the data collection

1) Some of the hospitals declaring their initial interest in the project were not able to confirm their involvement.

2) Lack of details on the initial collection of dosimetric data.

3) Not defined in all the hospitals the most common interventional procedures.

4) Lack of information on the needs of training in radiation protection and in quality control of the X-ray systems and the existing local support for these issues.

Conclusions and next steps

- Expand the patient dose data collection and identify the range of dose values at the different hospitals.
- Verify the existing basic quality controls of the X-ray systems involved in the programme and identify the needs in radiation protection training.
- Improve de collaboration with the radiology industry for the use of automatic patient dose registries,
- Expand the use and the content of the website.

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Thank you