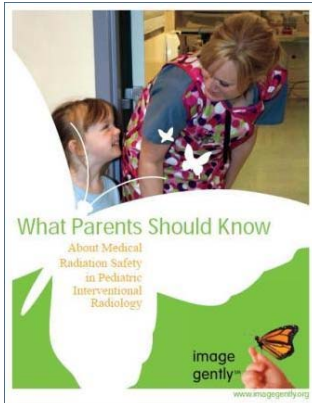


10 zlatih pravil: Varstvo pred sevanji pri **pediatričnih** interventnih preiskavah

1. **Ne pozabite: Nekatera tkiva odraščajočega otroka so na ionizirajoče sevanje bolj občutljiva kot pri odraslih.**
2. **Pričakovana življenjska doba otroka je dolga, zato je več možnosti za pojav učinkov ionizirajočega sevanja.**



2. Pred preiskavo se pogovorite s starši

- Vprašajte jih o predhodnih preiskavah.
- Odgovorite na njihove skrbi glede varstva pred ionizirajočimi sevanji.

image gently

Parent's Name _____ SIB# _____ Date of exam _____

Step Lightly Checklist

Review steps before entering the procedure.

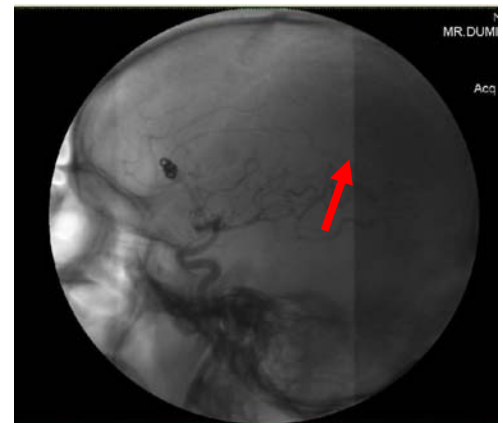
Safety is a team effort: don't be afraid to ask the necessary questions to ensure you are working as a team to keep radiation dose to patients and staff as low as possible.

Reducing radiation dose must be balanced with safe, accurate and effective completion of the procedure. Not all the steps below may be possible in each case, depending on patient size, technical challenge and critical nature of the procedure. Overall patient safety is most important. The goal is to minimize the dose to the patient while providing important and necessary medical care.

- Ask patient or family about previous radiation [\(card and downloadable at this link\)](#). Answer questions about radiation safety [\(parent patient brochure downloadable here\)](#).
- Use ultrasound when possible.
- Position hanging table shields and overhead lead shields prior to procedure with remainder during the case as needed.
- Operator and personnel wear well fitted lead aprons, thyroid shield and leaded eye wear.
- Use pulse rather than continuous fluoroscopy when possible, and with as low a pulse as possible.
- Position and collimate with fluoroscopy off, tapping on the pedal to check position.
- Collimate tightly. Exclude eyes, thyroid, breast, gonads when possible.
- Operator and personnel hands out of beam.
- Step lightly: tap on pedal and review anatomy on last image hold rather than with low fluoroscopy when possible, minimize low fluoroscopy time.
- Minimize use of electronic magnification, use digital zoom whenever possible.
- Acknowledge fluoroscopy timing alerts during procedure.
- Use last image hold whenever possible instead of exposures.
- Adjust acquisition parameters to achieve lowest dose necessary to accomplish procedure: use lowest dose protocol possible for patient size, lowest frame rate, minimize magnification, reduce length of run.
- Plan and communicate number and timing of acquisitions, contrast parameters, patient positioning and suspension of respiration with radiology and sedation team in advance to minimize improper or unwanted runs.
- Move table away from X-ray tube in both planes. Move patient as close to detector in both planes.
- Use a power injector, or extension tubing if injected by hand.
- Move personnel away from table or behind protective shields during acquisitions.
- Minimize overlap of fields on subsequent acquisitions.
- After procedure: record and review dose.

3. Povečajte ozaveščenost članov vaše ekipe z uporabo kontrolnega seznama pred preiskavo

4. Preiskavo podrobno načrtujte vnaprej, da se izognete neustreznim ali prekinjenim slikovnim serijam ter drugi nepotrebni izpostavljenosti.



http://www.pedrad.org/associations/5364/files/ImGen_StpLight_Chcklst.pdf



5. Če le mogoče, zaščitite pacientovo ščitnico, dojke, oči in spolne žleze



RPOP spletna stran!

<https://rpop.iaea.org/RPOP/RPoP/Content/AdditionalResources/Posters/index.htm>

10 zlatih pravil: Varstvo pred sevanji pri **pediatričnih** interventnih preiskavah

6. Uporabite optimalno tehniko:

- Znižajte pogostost pulzov, kadar mogoče s 7,5 na 3 pulze na sekundo.
- Pri otrocih do 20 kg odstranite radiografske rešetke, če je to mogoče. Uporabite lahko tehniko zračne vrzeli (air-gap).
- Zmanjšajte čas slikanja.
- Zmanjšajte prekrivanje polj pri ponovljenih slikovnih serijah.
- Uporabite čim manjše polje (zaslanjanje).
- Izogibajte se uporabi povečave.

10 Pearls: Radiation protection of patients in fluoroscopy

1. Maximize distance between the X ray tube and the patient to the extent possible.
2. Minimize distance between the patient and the image receptor.
3. Minimize fluoroscopy time. Keep records of fluoroscopy time for every patient.
4. Use pulsed fluoroscopy with the lowest frame rate possible to obtain images of acceptable quality.
5. Avoid exposing the same area of the skin in different projections. Vary the beam entrance port by rotating the tube around the patient.
6. Larger patients or thicker body parts trigger an increase in entrance surface dose (ESD).
7. Oblique projections also increase ESD. Be aware that increased ESD increases the probability of skin injury.
8. Avoid the use of magnification. Decreasing the field of view by a factor of two increases dose rate by a factor of four.
9. Minimize number of frames and cine runs to clinically acceptable level. Avoid using the acquisition mode for fluoroscopy.
10. Use collimation. Collimate the X ray beam to the area of interest.

10 Pearls: Radiation protection of patients in fluoroscopy

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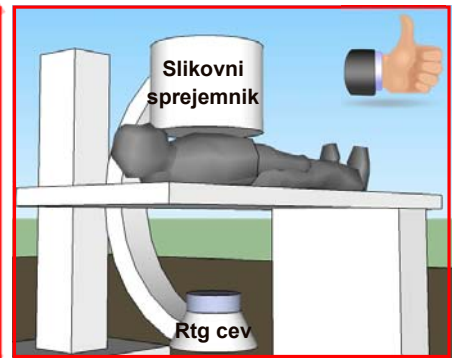
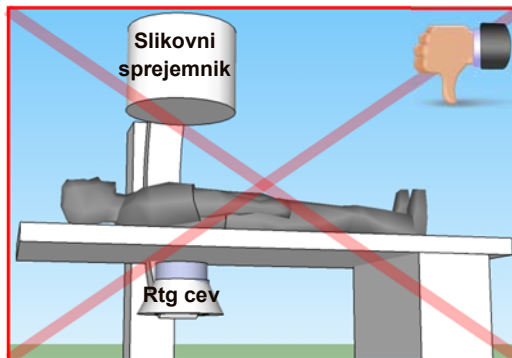
Diaskopska slika
"last image hold"



"kino tehnika"
10x doza v primerjavi z diaskopijo

7. Kadar mogoče uporabite "last image hold" funkcijo namesto dodatne slikovne serije v "kino tehniki".

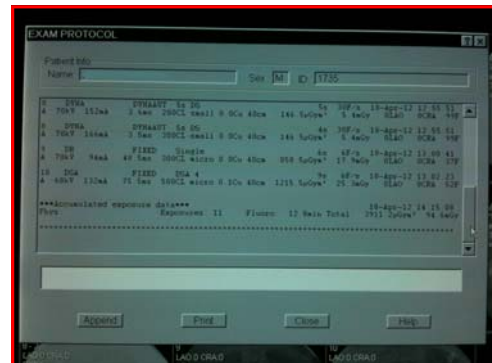
8. Povečajte razdaljo med pacientom in rentgensko cevjo ter zmanjšajte razdaljo med pacientom in slikovnim sprejemnikom.



9. Beležite dozo sevanja in uporabite tehnologijo in opremo za zniževanje doze.



10. Po preiskavi pregledajte in zabeležite dozo sevanja, ki jo je prejel pacient.



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