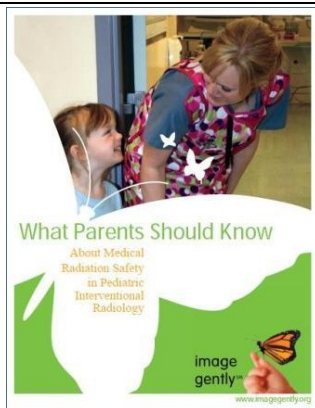


十大要诀：介入放射学程序中对儿童的放射防护

1. 切记：相比于成人来说发育期儿童的一些组织对辐射更加敏感

儿童有较长的生存期，可以显现出辐射效应



2. 在对儿童实施介入程序前与家长讨论•

- 询问以前受照射的情况
- 回答她们所关心的有关辐射安全问题

image gently

Patient's Name _____ MR# _____ Date of exam _____

Step Lightly Checklist

Review steps below before starting the procedure.

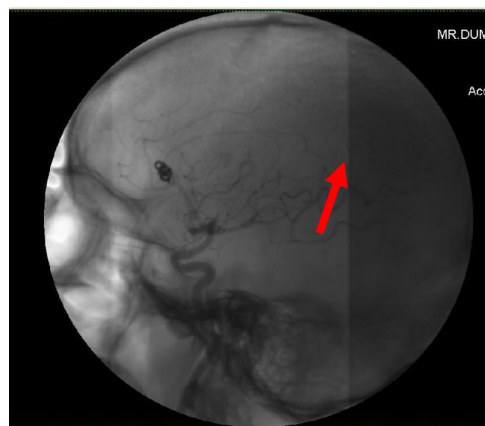
Safety is a team effort; don't be afraid to ask the necessary questions to ensure you are working as a team to keep radiation dose to patients and staff as low as possible.

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 ([record card 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 reminders during the case as needed.
- ☐ Operators 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 live fluoroscopy when possible; minimize live 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, lower 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 unintended 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. 通过使用术前介入程序安全核查表 提高团队中成员的 安全意识

4. 详细地计划手术程序从而预先避免不当手术或手术中断，以及其他一些重复性照射。



5. 尽可能保护儿童患者的甲状腺、乳腺、眼睛以及性腺



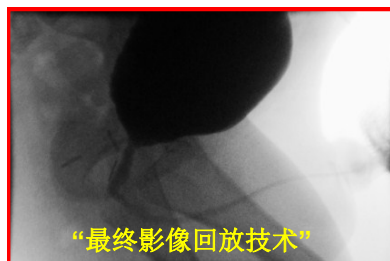
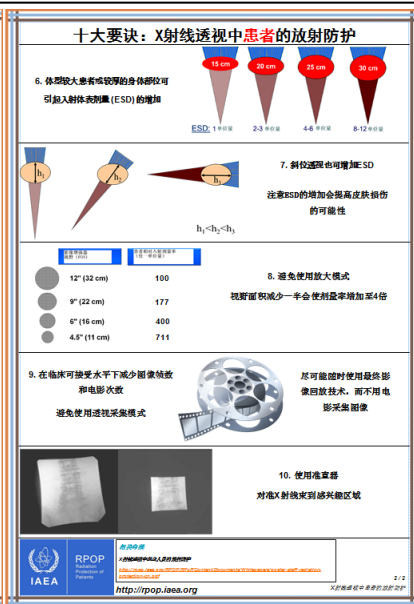
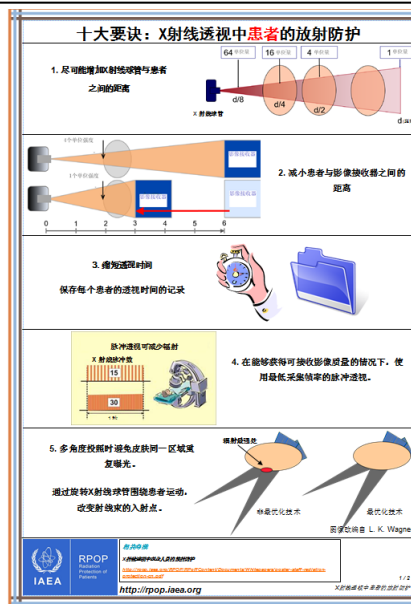
海报网页!

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

十大要诀：介入放射学程序中对儿童的放射防护

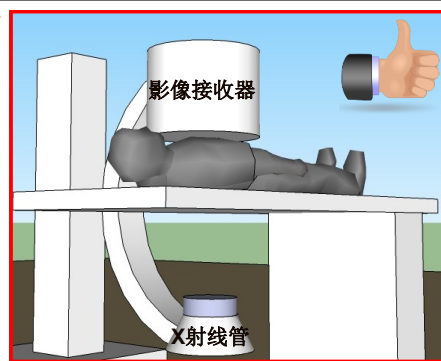
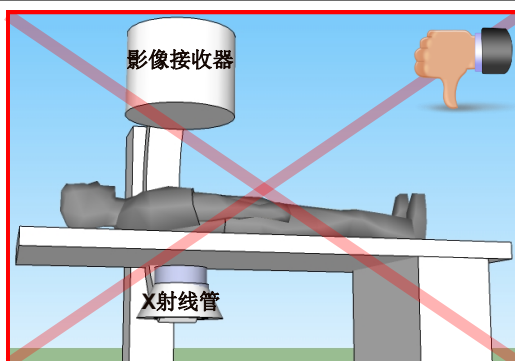
6. 使用最优化技术:

- 采用较低的采集帧率。在可能情况下使每秒脉冲数从7.5降低到3。
- 对于体重低于20 kg的婴儿尽可能移去滤线栅，改用气隙技术。
- 缩短成像时间
- 在重复采集时减少射野重叠
- 使用更加严格的准直
- 尽量少用放大技术

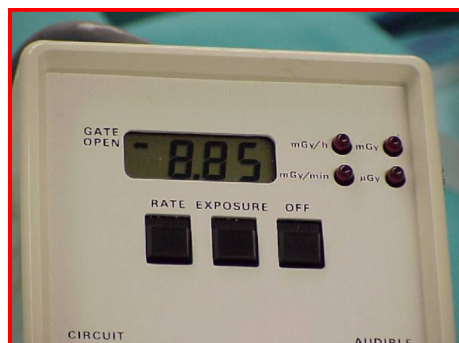


7. 适当使用“最终影像回放技术”而不产生额外曝光

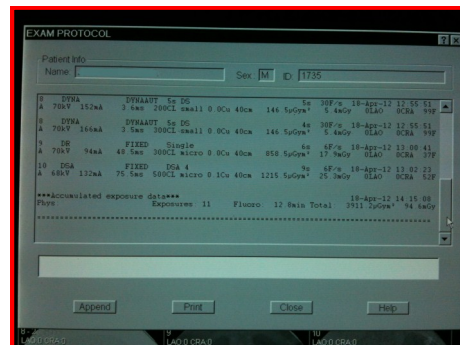
8. 增加患者和X射线球管之间的距离，减少患者和影像接收器之间的距离。



9. 在设备中采用记录剂量和降低剂量的技术



10. 在介入放射学程序结束后评估和记录辐射剂量



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