Tests, treatments and procedures at risk of inappropriateness in Italy
that Physicians and Patients should talk about

Five Recommendations from the Italian Society of Medical and Interventional Radiology (SIRM) – Second list: infants and children

1	**In children, do not prescribe or perform routine X-rays of the contralateral limb in trauma.** The radiological examination after trauma in a limb is prescribed in the clinical suspicion of a fracture and must be routinely performed only on the traumatized side and segment, including at least one of the two adjacent joints. Only in cases in which the radiologist has a well-founded diagnostic doubt due to the presence of a non-univocal radiological sign, can it be indicated to perform a comparison with the healthy contralateral side, only in the projection in which the doubtful sign is present rather than an X-ray in targeted projection on the site of suspected injury. In this case, the additional exposure of the patient is justified in accordance with the Legislative Decree 101/2020. The routine execution of both sides, even if performed with a single exposure and much more if performed in two successive exposures (1 per side and per projection), however, leads to an increase in the dose of ionizing radiation to the single, superfluous very often for diagnosis, especially if already evident without the need for comparison. The individual dose increase, specifically concerning the paediatric patient, refers to the age group with the greatest radiosensitivity of the tissues and with a long-life expectancy. Inappropriate exposure also leads to an increase in the dose to the population. The use of additional projections on the affected side or on the healthy side may be indicated but only in cases selected by the radiologist to resolve diagnostic doubts, especially when the suspected fracture is close to or involves the growth plate. In certain types of fractures, particularly in younger patients, ultrasound examination of the affected side can also be considered to resolve a diagnostic doubt, as a first-line alternative to repeating radiographic imaging, whether for an additional view of the affected side or for assessment of the contralateral side.
2	**In infants and children with epilepsy do not perform routine CT of the skull and brain.** The diagnosis of epilepsy is clinical and requires integration with electroencephalographic (EEG) data. The CT examination is commonly prescribed, on an emergency basis, to rule out other pathologies that may have triggered an epileptic episode; however, it has a limited role due to its low sensitivity in identifying small neoplasms, cortical developmental abnormalities and some vascular lesions. Studies on the role of CT in determining the etiology of epilepsy in children have not been identified in the scientific literature. Imaging is only required in cases of drug-resistant epilepsy, while it is not indicated in children with generalized genetic epilepsy and childhood benign epilepsy with rolandic (centrotemporal) spikes (BECRS) that responds to drug treatment. When necessary, the imaging of choice is MRI; the use of CT should be limited in the presence of contraindications to the MRI examination (medical devices, pacemakers, etc.). The X-ray examination of the skull does not find any indication in the patient with epilepsy as it can only identify skeletal anomalies not related to the disease. Unnecessary TC and X-rays expose patients to ionizing radiation, including high costs for society and environmental harm.
3	**In infants and children younger than 6 years of age with suspected sinusitis, do not perform X-rays of the sinuses.** The diagnosis of sinusitis is clinical while the evaluation with X-ray is not indicated for the low sensitivity and specificity as the maxillary sinuses before the age of 6 are small and poorly pneumatized. The cavities are commonly opaque, even in healthy children, because the mucosa is physiologically thick and redundant, so as to occupy all the air space. Therefore, a dull appearance of the sinuses in a child under 6 years of age does not indicate sinusitis but is a normal appearance. The radiography could show a hydro-air level in acute sinusitis, but the necessary examination technique (standing position, immobility) can be difficult to carry out in the small child, with the risk of radiogenic exposures useless for diagnosis. According to the appropriateness criteria of the ACR (American College of Radiology), the X-ray of the paranasal sinuses is never appropriate. Unnecessary X-rays expose patients to ionizing radiation, including high costs for society and environmental harm. In selected cases, based on precise clinical indications (for example if the symptoms are worsening and medical therapy is not effective or if surgery is expected to be performed), CT is the gold standard for optimal evaluation in detail. The CT sign of thickening of the mucosa alone is not sufficient for the diagnosis of chronic sinusitis but must be associated with reduced sinus volume, sclerosis and thickening of the surrounding bone. CT is also used for the differential diagnosis with tumours, but in these cases, MRI is preferable for the best delimitation of the mass and the absence of ionizing radiation.
4	**In children less than 3 years of age, do not perform X-rays of the nasal bones if a fracture is suspected.** Although nasal fractures represent about half of facial fractures in paediatric age, the frequency is much lower in children under 3 years of age, in whom the cartilage component of the nasal skeleton prevails (with poor development of the cortical bone component) and there is reduced emergence from the facial profile of the nasal pyramid. In trauma the septum is mainly injured, fractured longitudinally in the anterior portion or displaced, as is common in neonatal fractures. The diagnosis is clinical while the evaluation with an X-ray is not very reliable due to the absence or incomplete ossification and the prevalence of cartilage and soft tissues, with paranasal sinuses that are often small and poorly pneumatized. Unnecessary X-rays expose patients to ionizing radiation, including high costs for society and environmental harm. In recent years, ultrasound has been used as a complementary tool in cases of uncertain clinical presentation, showing a high negative predictive value for identifying nasal fractures in children. Although CT remains the optimal imaging method for detailed assessment, it is not used routinely due to factors such as radiation exposure and the need for cooperation or sedation in younger patients.
5	**In infants and children with torticollis without trauma, do not perform X-rays of the cervical spine.** The diagnosis of torticollis is clinical. Congenital torticollis is usually diagnosed within the first month of life; diagnosis after 6 months is rare and other causes must be considered. In the newborn or suckling infant, the main cause is muscular and the imaging method of first choice is ultrasound. In older children, the onset of torticollis without trauma recognizes various causes (headache, muscle spasm, infections, autoimmune disease, neoplasms, dystonic syndromes, ocular dysfunctions) and therefore requires an adequate clinical framework and possible further investigation and a possible further investigation with different imaging depending on the etiology. Unnecessary X-rays expose patients to ionizing radiation, including high costs for society and environmental harm. The acronym PINCH serves as a new clinical tool to identify the cause: P = physical (e.g., mass); I = intracranial (e.g., hypertension); N = neural causes; C = cervical spine abnormalities; H = hematologic/infectious causes. Depending on the cause, imaging modalities — ultrasound, X-ray, CT, or MRI — can be used as definitive or complementary techniques.

Please note that these items are provided only for information and are not intended as a substitute for consultation with a clinician. Patients with any specific questions about the items on this list or their individual situation should consult their clinician.

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How this list was created

In occasion of the Executive Board meeting on 8 July 2013 the **Italian Society of Medical Radiology – SIRM** – has officially published 5 high-risk practices of inappropriateness identified by Slow Medicine under the project "Doing more does not mean doing better."
The Executive Board meeting on 24 June 2021 identified these additional 5 practices in the field of instrumental imaging on children and infants, given the particular peculiarity and significance of the need for appropriateness in paediatric x-ray exposure.
A review of the literature was carried out based on common clinical practices that do not, in most cases, determine a clinical decision. The practices selected were chosen based on lack of efficacy, risk of damage from exposure to ionizing radiation, risk of over-diagnosis and over-treatment, and high diffusion in Italy; also inherently characterized by high costs. The identification of the procedures took into account the ACR appropriateness criteria https://www.acr.org/Clinical-Resources/Clinical-Tools-and-Reference/Appropriateness-Criteria and the agreement between the Italian Minister of Health, the Italian Regions and Autonomous Provinces of Trento and Bolzano on the document entitled "Guidelines for diagnostic imaging" based on art. 4 of Legislative Decree of the 28th of August 1997, n.281.
The document was further updated in January 2026, with approval by the SIRM Executive Board.
Although the "legge 101/ 2020" states that the justification of these practices is a responsibility of the MD Radiologist together with the prescriber, the case law and the daily practice make it difficult to consistently reject these requests in the absence of an appropriate awareness of prescribing doctors and general population.

Sources

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Slow Medicine ETS, an Italian Third Sector organization of health professionals, patients and citizens promoting a Measured, Respectful and Equitable Medicine, launched the campaign "Doing more does not mean doing better- Choosing Wisely Italy" in Italy at the end of 2012, similar to Choosing Wisely in the USA. The campaign aims to help physicians, other health professionals, patients and citizens engage in conversations about tests, treatments and procedures at risk of inappropriateness in Italy, for informed and shared choices. The campaign is part of the Choosing Wisely International movement. Partners of the campaign are the National Federation of Medical Doctors' and Dentists' Orders (FNOMCeO), that of Registered Nurses' Orders (FNOPI), the Academy of Nursing Sciences (ASI), National Union of Radiologists (SNR), Tuscany regional health agency, Altroconsumo, the Federation for Social Services and Healthcare of Aut. Prov. of Bolzano, Zadig.
www.choosingwiselyitaly.org
www.slowmedicine.it

The **Italian Society of Medical and Interventional Radiology – SIRM** – was founded in 1913 and counts over 12,000 members. Its purpose is scientific research, cultural updating and training in the study of biomedical imaging, in its physical, biological, diagnostic, radiation protection and IT aspects.
The President remains in office for two years and the twelve councillors for four years. The organization is present throughout Italy and is divided into 18 Regional Groups and 20 Subspecialty Sections (e.g. Breast Care, Thoracic Radiology, Musculoskeletal Radiology, Urgency, Ethics, MRI, Radiology Informatics and AI etc.). The official media branch is the "La Radiologia Medica" the professional scientific journal published in English with IF 4.8. Other radiological open access publication is: Journal of Medical Imaging and Interventional Radiology. The National Congress is held every two years and is attended by around 4,500 members.
The official site: www.sirm.org can provide further details.