

**International Day of Radiology 2015**  
**Interview on paediatric imaging**  
**Belgium / Profs. Brigitte Desprechins &**  
**Luc Breyssem**



**INTERNATIONAL  
DAY OF  
RADIOLOGY**  
AN INITIATIVE OF THE ESR, ACR AND RSNA

**Paediatric imaging in Belgium**

**An interview with Brigitte Desprechins, head of the department of paediatric radiology of the University Hospital Liège, and Luc Breyssem, staff radiologist at the department of radiology and paediatric radiology, University Hospital Leuven.**

**European Society of Radiology: What is paediatric imaging? What age are the patients, and how is it different from regular imaging?**

**Brigitte Desprechins and Luc Breyssem:** Paediatric imaging is a subspecialty of radiology because a child is not a little adult. As a matter of fact, children suffer from specific pathologies that do not occur in adults. The paediatric radiologist has to cover all organ systems and be familiar with all imaging modalities. To acquire this knowledge, regular appropriate training is necessary.

Since the age of patients ranges between 24 weeks gestational age to 16 years, the paediatric radiology department has to be customised with all kinds of child friendly accessories and appropriate toys.

We try to avoid irradiating examinations as much as possible and when irradiating modalities are used, the radiation dose is set according to the 'ALARA principle', i.e. 'As Low As Reasonably Achievable'.

Another significant difference with standard radiology is the importance of having a good relationship with the child's parents and being aware of their concern for their child in sometimes difficult and anxious circumstances.

**ESR: Which imaging modalities are usually used to examine paediatric patients? Does this change depending on the age of the patients?**

**BD & LB:** The choice of imaging modality is mostly directed by the pathology and medical information assigned by the paediatrician. The tools available to the paediatric radiologist include conventional radiography, ultrasonography, computed tomography (CT), magnetic resonance imaging (MRI) and, most recently, hybrid imaging – radiological imaging complemented with medical nuclear imaging. Depending on the specific symptoms of the child and potentially affected organ system, a lot of questions can be answered with ultrasonography, which is non-invasive, easily accessible and applicable, and does not use ionising radiation. The role of conventional radiography and CT remains important primarily in the field of lung and bone pathology. During the last decade, however, the use of CT – the modality that uses the most radiation – has dramatically decreased and been replaced by MR whenever possible.

**ESR: What risk does the radiation from x-ray and CT examinations pose to paediatric patients? What kind of safety measures are in place to protect children?**

**BD & LB:** Radioprotection is essential in paediatric radiology because radiation effects are four to ten times higher in children than in adults. Moreover, consideration of accumulated radiation is more important in the case of children because of their longer remaining lifespan, so this needs to be monitored carefully.

Avoiding unnecessary irradiating examinations remains the best protection. When these examinations need to be performed, always keep the As Low As Reasonably Achievable (ALARA) principle in mind, meaning that the examination has to be performed with appropriate patient-tailored techniques and technical settings.

**ESR: Do general radiologists always use lower radiation doses when imaging children; are there any guidelines to follow?**

**BD & LB:** In Belgium, every radiologist is obliged to acquire an official certification in radioprotection, which is delivered by the FANC (Federal Agency in Nuclear Control). FANC experts check the radiological equipment on an annual basis. When available, European guidelines have to be implemented.

**ESR: How aware are parents and relatives about the risks of radiation exposure? How do you address the issue with them?**

**BD & LB:** The Belgian population has become increasingly well informed by the media about the side effects of radiation used in medical imaging. In particular, paediatric radiologists have to justify the examination and they have to pay special attention to carefully informing the parents and the child about the chosen imaging technique.

**ESR: Undergoing an imaging examination, especially a long procedure like MRI, can be an uncomfortable and sometimes frightening experience for some children. How can it be made more bearable?**

**BD & LB:** Feeding is usually sufficient to keep babies calm and peaceful during a non-invasive radiological examination.

However, in young children under the age of six or seven, techniques that may be affected by breathing and movement, like an MRI examination, can only be performed under general anaesthesia, preferably guided by dedicated paediatric anaesthesiologists.

Last but not least, friendly communication and clear information provided to the child and the parents about the procedure remain of the utmost importance.

**ESR: How many imaging exams are performed on paediatric patients in Belgium each year?**

**BD & LB:** In Belgium, approximately 250,000 examinations are performed every year.

**ESR: Access to modern imaging equipment is important for paediatric imaging. Are hospitals in Belgium equipped to provide the necessary exams?**

**BD & LB:** In our country, the departments of radiology in second and third line healthcare hospitals are equipped with modern imaging apparatus. There is also easy access to hospitals with dedicated paediatric radiology departments.

**ESR: What has changed in paediatric radiology during your lifetime?**

**BD & LB:** For the past two decades, we have experienced a lot of changes in our daily practice due to drastic technological evolution, and increased concern about radioprotection.

**ESR: Where do you see the next developments in your field?**

**BD & LB:** Improvement of low-dose technology in conventional radiography and computed tomography will continue. Faster imaging with MRI will allow shorter examinations and easier access to this radiation-free technology.

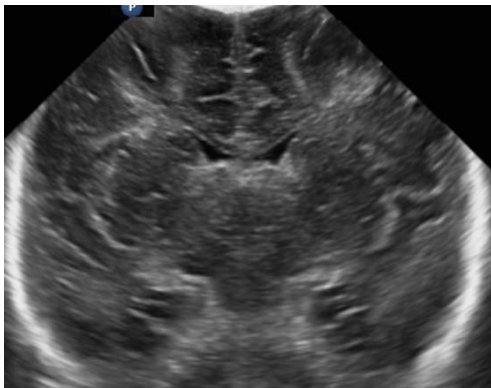


**Brigitte Desprechins** is head of the department of paediatric radiology of the University Hospital Liège and previously headed the paediatric radiology department at the University Hospital Brussels. She is responsible for the national paediatric radiology section of the Belgian Society of Radiology (BSR), and is a member of the society's scientific board. She was president of the BSR in 2010–2011 and served as president and organiser of its annual congress in 2011.

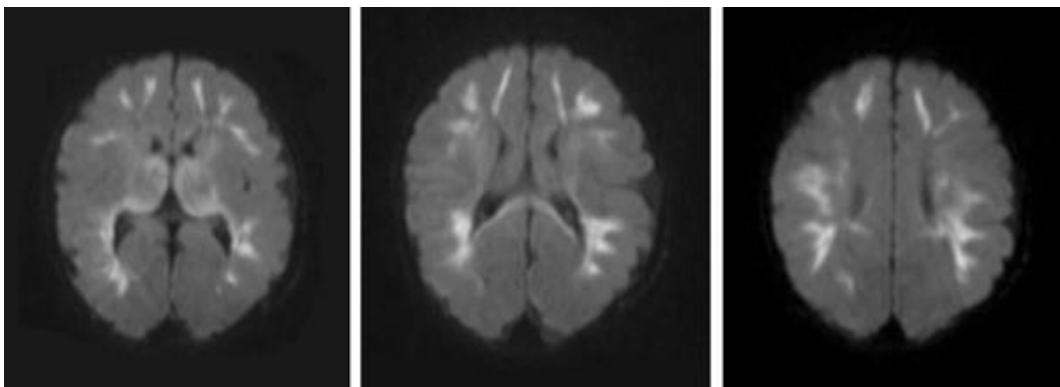
Dr. Desprechins is in charge of delivering radio-paediatrics courses to post-graduate medical doctors and radiologists. She is a member of the European Society of Radiology and the French Society of Radiology.

**Luc Breysem** is a staff radiologist at the department of paediatric radiology of the University Hospitals Leuven. He obtained his medical degree in 1987 and did his postgraduate training in radiology at the department of radiology of University Hospitals Leuven, under the chairmanship of Prof. Albert L. Baert.

Dr. Breysem is secretary of the section of paediatric radiology of the Belgian Society of Radiology (BSR). He is a member of the European Society of Radiology, the European Society of Paediatric Radiology (ESPR) and a titular member of the BSR. Last but not least, he serves as a reviewer for European Radiology and the Belgian Journal of Radiology.



This is an ultrasound image of the brain (coronal view) of a 3-weeks-old infant with viral encephalitis. We recognise the bilateral fronto-parietal white matter lesions with triangular like, sharply delineated subcortical involvement.



Axial diffusion-weighted images (DWI) of the same 3-weeks-old infant with viral encephalitis, demonstrating the extensive white matter pathology with areas of restricted diffusion in the periventricular white matter, deep white matter, optic radiation, internal capsule and both thalami.