

**INTERNATIONAL
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**International Day of Radiology 2017
Interview on Emergency Radiology
Brazil/Dr. Shri Krishna Jayanthi**

Dr. Shri Krishna Jayanthi says that although radiology has been an important part of emergency care for years in Brazil, today it is a work in progress that lacks uniformity and has some workflow challenges

***European Society of Radiology:** Could you please describe the role of the radiologist in a typical emergency department in your country?*

Shri Krishna Jayanthi: When on site, the emergency radiologist works with the emergency physicians. The radiologist discusses clinical cases, shares advice on which examinations are needed, and performs and reads examinations.

Radiology has long been part of emergency care; only the modalities, support and interaction have changed. Still, there is no uniform pattern, and it is a work in progress.

Historically, we have experienced two scenarios. First, when a radiologist is on site, the emergency physician often has to walk to the radiology department, which, depending on the institution, can be located on another floor. Or, when no radiologist is present, the physician has to wait for the next radiology shift to have the examinations read. If staff radiologists find anything unusual, they have to contact one of the physicians working in the emergency ward at that time. Then, administrative officials have to call and ask the patient to return to the hospital for further investigation or treatment.

About 25 years ago, large private institutions started to rely on CT and ultrasound to help on-call radiologists. A few years later, radiology departments understood that there was an increased need for CT, ultrasound and MRI. All these modalities give valuable information to emergency physicians. CT, ultrasound and MRI also require an onsite radiologist to provide immediate interpretation. Therefore, large- and medium-sized private hospitals started to hire a lot of radiologists.

This radiology support was welcome among emergency physicians, and institutions invested in better structures and trained more radiologists to have enough experienced professionals on site. Hospitals also bought equipment exclusively for the emergency ward.

Public institutions usually don't have a lot of on-duty physicians, and most radiologists who work after hours are linked to university hospitals. But emergency wards are equipped with teleradiology equipment and have started to rely on the technology. Nevertheless, only institutions with very busy emergency wards and the resources to maintain the equipment have dedicated CT or MRI for emergency use.

I work for a public, university-linked institution, which is unusual in that we have a dedicated, emergency-radiology team (consisting of staff radiologists, junior fellows and residents) that works on site to provide radiological support around the clock.

***ESR:** What does a typical day in the emergency department look like for a radiologist?*

SKJ: We work inside the emergency ward, so our workplace is always messy, with many people passing through. It is a continuous flow; we order, discuss and prescribe examinations, and at the same time, we have to view and comment the images with physicians – even before writing our reports.

We make special arrangements for critical cases, such as stroke and trauma patients. In these cases, we reserve the CT scanner to quickly perform the examination and dictate the report as soon as possible. Usually, we provide a verbal report in advance of writing anything down to facilitate immediate treatment.

As a result, we are far from a quiet setting. Interruptions are constant, but they are justified by the high demand. The payback for this mess is that usually we get immediate feedback on the cases we report, which improves our performance on similar cases in the future.

ESR: *Teamwork is crucial in an emergency department. How is this accomplished in your department and who is involved?*

SKJ: Teamwork has been the cornerstone since we started our department. We decided that emergency radiologists should be a part of the emergency ward. Therefore, we set up a reading room and equipment in the ward, and, most importantly, we always have onsite radiologists. From the beginning, we decided that radiologists always would be available for direct interaction with the physicians, and it works really well. Contact is direct, usually face-to-face, since we are right there; and when we are not around, we always are available by phone. Emergency care is everyone's job: radiologists, technicians, nurses, administration and communication staff.

ESR: *How satisfied are you with the workflow and your role in your department? How do you think it could be improved?*

SKJ: We still have a lot to do to improve our workflow, but we are doing a little better than before. I think satisfaction is not the correct word. I would say we are 'overcrowded', since our major problem is the high demand in relation to our workforce; we perform about 100 CTs, 50 ultrasounds and many x-ray examinations every day.

Our picture archiving and communication system (PACS) and radiological information system (RIS) had a major impact in sorting out workflow, and we decided to go semipaperless – although some legal paperwork still is required. We are working with our IT department on ways reduce paper use and the number of unnecessary interruptions.

ESR: *Which modalities are used for different emergencies? Could you please give an overview sorted by modalities?*

SKJ: Mainly we rely on x-rays, CT and ultrasound. Usually x-rays are the first modality we use to assess chest, trauma and abdominal emergencies.

Ultrasound is used in abdominal, and obstetrics and gynaecology emergencies, and in musculoskeletal and superficial structures evaluation. Colour Doppler is used for carotid, deep-venous thrombosis and peripheral arterial disease (PAD) evaluation. Together with x-rays, ultrasound can also be used to perform examinations in ICU patients.

CT plays a major role in assessing almost everything from neurology to PAD, and it is the gold standard in many situations. MRI is essential in spine trauma or cord compression, neurology, and some biliary emergencies.

We try to make the diagnosis using only one modality to avoid multiple examinations. To accomplish that, we often rely on case discussions with emergency physicians. We work together in choosing the best modality to rule out the clinical hypothesis.

ESR: *Is teleradiology an issue in emergency radiology? If yes, how so, and how often is it used?*

SKJ: We do not use it in our department, but it seems very common in other public institutions. On the one hand, teleradiology is useful to increase the capacity of radiology services to meet the demand for imaging examinations. On the other hand, not having a local radiologist doesn't give the necessary bond between the emergency physicians and the radiology team. Sometimes the physicians don't trust the teleradiology report, and the patient is sent to another service, where the examination is repeated.

It would help a lot to have a repository for the images of the performed exams. We could at least discuss the case with the physicians and avoid repeating examinations that can increase radiation risk, such as CT exams.

ESR: Are emergency radiologists active anywhere other than emergency departments? Do they have other non-emergency roles, or other emergency roles in other departments?

SKJ: Certainly they have other roles; some emergency radiologists may work in our service, but they usually examine less urgent patients – inpatients and outpatients – in other departments. For example, many radiologists work in their subspecialty field, and that’s good because they can incorporate recent knowledge of their area to our team.

ESR: Do you have direct contact with patients and if yes, what does it entail?

SKJ: Yes, we do, mainly when we perform ultrasound, and sometimes when we are reading CT studies and have to ask questions to the patient. For example, we talk to patients in cases where previous surgeries or conditions could affect the interpretation of findings. During ultrasound examinations, talking with the patients about the details of symptoms such as duration, location etc. is essential for us to try to focus the exam around some of the hypothesis. Then our major concern is to decide whether to share the examination results with patients. We have to evaluate when we can tell something obvious or avoid to when we do not have the full conclusion of that exam. You have to read the patient and try to guess if he or she is prepared to hear the news we have. Many times, we leave it to the emergency physician.

ESR: How are radiologists in your country trained in emergency radiology? Is emergency radiology a recognised specialty in your country?

SKJ: Emergency radiology is not a speciality in Brazil. Radiology training lasts three years; in our department, for each year of training we have a month of emergency-radiology rotation. This is not usual in other training hospitals, since few have dedicated emergency teams.

Apart from this, residents also have assigned shifts at night, as well as on weekends and holidays. Usually, this is a common duty in most services, so for many residents, this is when they have contact with emergency patients.

ESR: Many cases you are faced with in the emergency setting are challenging, but can you remember what was your most impacting experience? What knowledge did you gain from that experience?

SKJ: The one case I can remember was the one of a five-year-old girl, who had been trapped in a wheelchair lift, with a chest blunt trauma. I performed the focused assessment with sonography for trauma (FAST) scan and quickly made the diagnosis of pericardial fluid (haemopericardium in a trauma setting), which led to cardiac tamponade. They were trying to drain it, and I worked with the ultrasound scanner to make a guided drainage, which revealed blood. They immediately took the girl to surgery. Unfortunately, she died because of a right-atrium perforation, which couldn’t be repaired.

Although this story didn’t have a happy ending, I learned that we could be decisive in helping emergency teams, and that coordinated teamwork could benefit patients. That was the basis for a long-lasting, symbiotic relationship with the emergency team.



Dr. Shri Krishna Jayanthi is director of the emergency radiology department at Hospital Universitário (HU) da Universidade de São Paulo in São Paulo, Brazil. He did his training in radiology and diagnostic imaging at the Institute of Radiology (INRAD) in São Paulo.

One of the first exclusive emergency radiology services was implemented at São Paulo University Hospital 20 years ago, during Dr. Jayanthi’s first year of residency, which included an emergency rotation. He started working in this department soon after completing his residency, and in 2008 Dr. Jayanthi became its director.

Dr. Jayanthi completed his doctoral dissertation in trauma, which is one of his fields of interest, among other emergencies. He also works with general and contrast radiography, performing and developing some of these examinations. Dr. Jayanthi is directly involved in training

residents, who still have their monthly emergency rotation. He has given numerous lectures in national congresses and refresher courses, and has written some chapters and a few papers and posters on the topic of emergency radiology.