

**INTERNATIONAL  
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**International Day of Radiology 2017  
Interview on Emergency Radiology  
Ecuador/Dr. Juan Carlos Guerra**

**Dr. Juan Carlos Guerra highlights the challenges of providing emergency radiology in Ecuador's public healthcare system, where the large patient load affects quality of care**

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

**Juan Carlos Guerra:** Ecuador has a public and private healthcare system, and emergency care is handled differently in each. There are many more patients in public hospitals, which diminishes the quality of care. This is the first difficulty faced by Ecuador's medical-imaging specialists – numbers. In private hospitals, care is globally unaffected by the number of patients, so the response tends to be more effective.

Additionally, and for the most part, emergency rooms are in charge of both patients with urgencies and proper emergencies. The word 'emergency' implies the imminent risk of loss of life (e.g. a brain stroke or the rupture of an aneurysm). An urgency requires medical attention but does not involve the potential of loss of life (e.g. low back pain or knee trauma).

The role of the radiologist in the emergency room consists of working with the physicians managing the emergency to provide a fast, efficient and reliable response to the situation, as well as providing diagnosis through imaging.

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

**JCG:** Our hospital is a private institution. Radiologists' work is staggered in three daily shifts. This allows for all examinations to be supervised and reviewed by individuals who have different diagnostic specialties.

The majority of cases we process are not emergency related, which allows more time for diagnostic image interpretations. In public hospitals, however, head radiologists only provide care during the morning, and all the examinations they perform during those six hours may not be emergency related.

The rest of the day is managed by training radiologists, who attend most emergency cases, and review and analyse images with residents in other therapeutic or surgical specialties. Training radiologists do not provide definitive diagnoses though, and cases that require review by a more experienced radiologist are resolved the following day by the head radiologist.

Most examinations in the public sector are ultrasounds (e.g. studies of acute abdomen, cholecystitis, urolithiasis, appendicitis and trauma).

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

**JCG:** The imaging service always keeps its doors open for other departments so that they can review the studies necessary for diagnosis and plan patient care. Staff doctors participate in daily meetings, where they respond to the demand generated by the emergency department and maintain direct contact with patients and doctors from other specialties.

The paramedical staff also works with the group of radiology technologists.

In Ecuador, operators of x-ray machines, CT scanners or MRI apparatus hold the academic degree of technologists. Doctors or residents in training perform ultrasound examinations.

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

**JCG:** I think it is important to have a group of radiologists and radiology technologists dedicated to emergency care; it is paramount that they deliver a rapid response. The radiology department should be physically close to the emergency department and have the necessary technological resources for immediate visualisation of images and permanent communication with emergency physicians, such as hospital information systems (HIS), radiological information systems (RIS), and picture archiving and communication systems (PACS).

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

**JCG:** For emergencies we use all diagnostic imaging modalities, and primarily x-rays for the study of the chest, abdomen and musculoskeletal structure.

Ultrasound is a fast and effective method to diagnose trauma and other abdominal procedures. Simple and contrast-enhanced CT is used in patients with more complex cases and specific pathologies (e.g. pulmonary trauma or pulmonary thromboembolism).

We also use MRI to assess and manage stroke or spinal-cord injuries. Angiography is used mainly for neurovascular or abdominal diagnosis and treatment.

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

**JCG:** Public hospitals in Ecuador do not use teleradiology. In private hospitals, a teleradiology consultation network is available, which enables physician specialists to evaluate specific pathologies. This is an open system, so it is frequently busy.

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

**JCG:** In Ecuador, there are no designated emergency radiologists, so general, on-call radiologists respond to all of their hospital's departments. If a patient's case is considered an emergency, the head radiologist must be available for consultation at all times to clarify any issue or diagnostic doubt. Overnight, head radiologists also handle hospitalised patients and possibly some outpatient care.

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

**JCG:** We have direct contact with patients, especially while conducting ultrasound studies and prior to reading CT and MRI studies. This is done directly with patients or their relatives.

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

**JCG:** Usually, radiologists who manage emergency wards are general radiologists who are self-taught in emergency radiology. In Ecuador, this is not a recognised specialty because there is no local formal training available, nor do Ecuadorian universities offer it.

**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?*

**JCG:** My most shocking experience was the case of a young female anaesthesiologist who presented with massive pulmonary thromboembolism that led to cardiorespiratory arrest, followed by seven resuscitation attempts in the angiography department. The last attempt lasted more than 15 minutes, during which we performed ventilatory assistance, pharmacological intervention and cardiac massage. Everything was managed in a multidisciplinary fashion. After resuscitation, the largest thrombi were extracted from the pulmonary artery, and the patient recovered completely after only two weeks.

**Dr. Juan Carlos Guerra** is head radiologist of the imaging department at Hospital de los Valles in Quito, Ecuador. He also is head professor of postgraduate neurosurgery at the school of health sciences at San Francisco University of Quito, where he has been teaching undergraduates for more than twenty years.

His main interest is neuroradiology, especially MRI. He has been invited to lecture at national and international conferences on radiology, ophthalmology, neurology and neurosurgery.

Dr. Guerra co-authored the chapter 'Anatomy of the Central Nervous System' in the book *Diagnostic and Therapeutic Neuroradiology*, which was published by the Pontifical Catholic University of Ecuador.

He was president of the Ecuadorian Society of Radiology of Quito between 2010 and 2012 and the Ecuadorian Federation of Radiology Societies between 2014 and 2016.

Dr. Guerra is a former member and representative of Ecuador in the Sociedad Ibero Latino Americana De Neurorradiología Diagnóstica y Terapéutica (SILAN), as well as a former member of the Ecuadorian Integrated Radiology System for Ibero-American Certification and Accreditation committee of the Colegio Interamericano de Radiología (CIR).