Referring physician indication review and evaluation process to assess justification: both radiologists and primary physicians at work!

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The increase in requests for diagnostic imaging studies has grown exponentially in the last decade, especially those of computed tomography (CT) and interventional and hemodynamic processes that deliver doses considered threshold for deterministic effects regarding the damage caused by X radiation.

Referring physician medical indication of imaging studies (in paper or digital) represents the key element for the care of a patient in a diagnostic imaging service.

It is therefore essential to have a process to evaluate the appropriate criteria to decide the performance of a study. It is essential for the success of the process that radiologists, referrals and all the paramedical team have in mind the culture of radioprotection.

The International Radiation Protection Association (IRPA) expressed in 2008 "The concept of culture relates to the ideas, beliefs and customs that are shared and accepted by people in a society, there are no differences between sectors (medical, nuclear, industry), whereby radiation protection culture can be understood as a combination of habits and knowledge of radioprotection in all its aspects for workers, patients, population and the environment, and in all situations, combining scientific and social dimensions ".

The aim of our work is to show our referring physician indication review and evaluation process to assess justification of X radiation examinations.
Description of activity and work performed

Profile of the institution

Each year, the Hospital attends 2,800,000 consultations, manages 46,500 discharges and performs 52,000 surgical procedures in its 41 operating theaters. It has a capacity of 785 beds, of which 200 are for critical care, and 800 beds of home medicine. Its work team is made up of 9237 people: 3400 medical doctors, 3337 members of the health staff and 2,500 people from the administrative sectors.

As for the assistance it provides, the Italian Hospital has more than 40 medical specialties, a complete diagnostic and treatment equipment, and a recognized professional staff. In addition, it has its own university that dictates careers in Nursing, Medicine, Biochemistry and Pharmacy, and the Institute of Basic Sciences and Experimental Medicine.

The imaging department staffing is detailed in Table 1.

During 2018, 583,455 patients were attended. The patient distribution per area is described in Table 2.

Global political actions

1.- From the Head of the Imaging Department arose the idea for applying to become an EuroSafe Imaging Star institution.

2.- This idea was submitted as a major improvement in health care safety and quality to the main authorities of the Hospital (Medical Director, Dean, CEO, etc).

3.- Approval of the hospital directory was obtained. A task force was constituted (Head of the Imaging Department, a radiologist specialized in quality and safety (Q&S) and two medical physicists) and started working on the first steps to proceed with the accreditation of the Hospital in the EuroSafe Imaging Stars program.

4.- A strategic decision of creating a Radioprotection Committee (RPC) was decided institutionally, which included the members of the aforementioned taskforce.

Operative actions

1.- The quality manual was written by the RPC. One of the main tasks was education, training in radiation protection, appropriateness criteria and justification and use of written protocols.
2.- It was decided give priority to the most sensitive areas: neonatology, pediatrics and women in childbearing age. Therefore we especially worked with family medicine, pediatric, clinical and neonatology departments.

3.- A training educational plan was established for: referring physician, administrative personnel granting the shift, the nursing department, the technicians and physicians.

4.- Clinical practice guidelines were uploaded to the Hospital’s internal network and a clinical decision support assistance was included in the electronic medical record of the institution (Figure 1 and 2).

5.- A clinical referring physician was sent to the: "Regional Meeting on the Justification in Radiodiagnostic for Health Care Authorities Aiming to Create Awareness to use IAEA Referral Guidelines to Avoid Unnecessary Exposure to Patients" organised by the International Atomic Energy Agency (IAEA) in El Salvador in July 2018 (Figure 3).

6.- A series of meetings were also organized in different medical huddles where the clinician talked to his colleagues about the experience of the meeting and the importance of justification.
Table 1: Hospital Italiano Imaging Department staffing.

<table>
<thead>
<tr>
<th>Imaging Department Staff</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Technicians</td>
<td>218</td>
</tr>
<tr>
<td>Radiologists</td>
<td>169</td>
</tr>
<tr>
<td>Administratives</td>
<td>105</td>
</tr>
<tr>
<td>Nurses</td>
<td>32</td>
</tr>
<tr>
<td>Scrub nurses</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>529</strong></td>
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</tbody>
</table>

Table 1: Hospital Italiano Imaging Department Staff

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Table 2: Hospital Italiano Imaging Department distribution of patients during 2018

<table>
<thead>
<tr>
<th>Number of Patients</th>
<th>2018</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiology</td>
<td>222,950</td>
<td>38.21%</td>
</tr>
<tr>
<td>Ultrasound</td>
<td>190,532</td>
<td>32.66%</td>
</tr>
<tr>
<td>Computed Tomography</td>
<td>59,558</td>
<td>10.21%</td>
</tr>
<tr>
<td>Magnetic Resonance</td>
<td>46,591</td>
<td>7.99%</td>
</tr>
<tr>
<td>Mammography</td>
<td>37,661</td>
<td>6.45%</td>
</tr>
<tr>
<td>Interventional Radiology</td>
<td>17,394</td>
<td>2.98%</td>
</tr>
<tr>
<td>Digital Angiography</td>
<td>4,730</td>
<td>0.81%</td>
</tr>
<tr>
<td>PET CT</td>
<td>2,664</td>
<td>0.46%</td>
</tr>
<tr>
<td>Fetal Medicine Unit</td>
<td>1,375</td>
<td>0.24%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>583,455</strong></td>
<td><strong>100.00%</strong></td>
</tr>
</tbody>
</table>

Table 2: Hospital Italiano distribution per area during 2018

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Table 2: Hospital Italiano Imaging Department distribution of patients during 2018
**Fig. 1:** Screen Capture of the Hospital Italiano Intranet with the uploaded radioprotection information (clinical guidelines)

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Fig. 2: Clinical Decision Support screen capture of the alert

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Fig. 3: Referring physician certificate to the: "Regional Meeting on the Justification in Radiodiagnostic for Health Care Authorities Aiming to Create Awareness to use IAEA Referral Guidelines to Avoid Unnecessary Exposure to Patients" organised by the International Atomic Energy Agency (IAEA) in El Salvador in July 2018

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Conclusion and recommendations

Our referring physician indication review and evaluation process to assess justification of X radiation examinations needed a team work. A change of culture and awareness process is necessary. The first steps were taken to create a culture of justification of imaging studies through educational actions, meetings and information tools. This plan is a long-term or ongoing activity implying change in uses and habits in the entire medical community.
Personal/organisational information

**M. Ulla**: chief quality officer of the Imaging department of Hospital Italiano de Buenos Aires, coordinating activities of the audit team in the radiology department.

**D. A. Dafouz**: resident of the Imaging department of Hospital Italiano de Buenos Aires

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References

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http://www.eurosafeimaging.org/about/call-for-action