



## #RSNA14: “Getting Scans Faster” by Entering Erroneous Information Puts Patients at Risk

**WRONG!**

An Irish hospital that evaluated clinical information in electronic radiology requests found erroneous information in nearly half the electronic radiology requests analysed. Although the study supports the implementation and use of an electronic ordering system, said presenter Maria Twomey, MB ChB, Cork University Hospital, clinicians should be aware of the consequences of inputting incorrect information into this essential communication tool in terms of how radiologists protocol, prioritise and report the study, especially as electronic systems mean less face-to-face consultation time between referring physicians and radiologists.

The study was conducted at Cork University Hospital (CUH), the second largest hospital in Ireland and a level 1 trauma centre. Although electronic requests are thought to be efficient, legible and traceable and conducive to improved workflow, there was anecdotal evidence of incorrect electronic information at CUH. Radiologists suspected that clinical colleagues were entering erroneous data in order to "get scans faster".

Their study set out to see how common this was by formally assessing and quantifying the problem. They investigated the rate of erroneous biochemical and haematological parameters, as detailed on 250 randomly selected electronic requests - for CT pulmonary angiogram (CTPA) (n=100), CT Thorax (n=70) and abdominopelvic CT (n=80), submitted on the Radiology Information System (RIS) over a 6 month period. The creatinine level, haemoglobin level, CRP and WCC levels supplied for each patient by the referring clinician were compared to the reported levels on the hospital's biochemical and haematology electronic reporting system, which is not linked to the RIS. In the CTPA subgroup d-dimer levels and pO<sub>2</sub> levels were also compared. The level of experience of the referring clinician and the referring department were also recorded.

### Results

Overall 45 percent of the total 250 requests contained erroneous information about creatinine, haemoglobin, white cell count and C-reactive protein levels. CTPA requests had a significant number of erroneous D-dimer and pO<sub>2</sub> levels; 15 percent reported an abnormal D-dimer result when the actual reported result was normal. A further 25 percent had reported hypoxia when the reported pO<sub>2</sub> was normal. Ten percent of all requests contained an incorrect normal creatinine level. Thirty percent of abdominopelvic CT requests detailed a low haemoglobin with iron deficiency anaemia; however, the formal reported results were normal or revealed a normochromic normocytic anaemia in 75 percent. Elevated CRP and/or WCC were reported in 70 percent of acute abdominopelvic CT requests; 20 percent of the formal results in this subgroup were normal.

Forty-five percent of requests were completed by interns. Ninety percent of incorrect lab results were entered by

internal medical physicians, mostly junior residents. In addition, a significantly higher incidence of erroneous lab results were supplied by medical physician referrals compared to surgeons.

Noted Twomey, "Clinicians must be aware that providing incorrect clinical information may result in inappropriate prioritisation, protocolling and administration of IV contrast, with an impact on the accuracy of the consequent radiology report and engagement with referrers.

### **Recommended Solution**

Twomey recommended that ideally all biochemical and haematological results would be double-checked with the lab system. In practice, however, this would be laborious and would affect workflow. Dr. Twomey's team instead recommends the implementation of an electronic ordering system linked directly to patients' laboratory reports and, ideally, the electronic patient chart. "The software exists and is in use, but it is not available in our and many other institutions," Dr. Twomey said. "Budgetary constraints are prevalent throughout radiology; however, these findings would support capital input into this software."

*Claire Pillar*  
*Managing Editor, HealthManagement*

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