Radiology – CT Scan – Request to Report QI

1 author:

Michael Czok

2 PUBLICATIONS **15** CITATIONS

Some of the authors of this publication are also working on these related projects:

Radiology - CT Scan - Request to Report QI View project

Radiology - CT Scan - Request to Report QI

Dr. Michael Czok - GIM SHO, Dr A. Hunter - Consultant Radiologist, RAH, Paisley

January 23, 2017

Aim:

To determine if a discrepancy exists between different CT requests to report based on their urgency score at time of request vetting.

Introduction:

The urgency score is determined following the input of patient history, their symptoms, past medical history and referring physicians query requiring radiology.

1. Patients are allocated an urgency score by the administrators in the radiology booking score depending on clinical urgency and risk of cancer ie.

1-Routine
3-Urgent
5-Emergency
7-Lung or Gi cancer
8-Other specified cancer
9-Unspecified cancer

2. Is there is a significant difference between time of request to report per different urgency score.

3. Is there is a significant difference in the results and proportion of cancers or life threatening emergencies per urgency score.

Data Analysis:

The individual analysis was taken of 4167 CT scans Table 1 with subclasses - No Pathology (815), Medical Conditions (2116), New Malignancy (569).

The compared average for all CT scans Table 5. Request to event 31.28 days, event to verify 4.01 days, 35.29 days from request to verify. This being used as the overall average. When broken down into urgency scores.

Average Urgency Level 1, Request to event 43.41 days, event to request 5.00 days, request to event 48.67 days.
Average urgency level 3, request to event is 23.21 days. Event to verify 3.17 days, request to verify 26.38 days.

Average urgency level 5 request to event 13.93 days, event to verify 1.72 days, request to verify 15.66.

Average urgency level 7, request to event 14.82 days, event to verify 2.54 days, request to verify 17.35 days.

Average urgency level 8, request to event 9.13 days, event to verify 1.78 days, request to verify 10.91 days.

Average urgency level 9, request to event 17.71 days, event to verify 2.66 days, request to verify 20.37 days.

Data is Taken from Table 2, 3, and 4 respectively for the following:

Urgency Level 1 and reporting of new malignancy Table-2 Req to Event took 45.09 days, 4.7 days from event to verify for a total of 49.79. In comparison other medical conditions took 36.98 days from request to event, 5.69 days to report for a total of 42.67. No Pathology request to event 36.98 days, 4.03 days to report for a total of 36.09 days.

Urgency Level 3 and reporting of new malignancy. Request to event 19.6 days. 4.9 days from event to verify for a total fo 24.5 days. For other medical conditions 25.4 days from request to event, 3.64 days from event to report for a total fo 22.42. No pathology 21.02 days from request to event, 1.4 days to report for a total of 22.42 days from request to verify.

Urgency Level 5 and reporting of new malignancy. Request to Event took 17.4 days, 2.1 days from event to report for a total of 19.5 days from request to verify. Other medical conditions took 13.99 days from request to event, 1.87 days from event to report for a total of 15.86 days from request to report. No pathology took 15.5 days from request to event 1.45 days from event to report for a total of 16.95 days from request to report.

Urgency Level 7 and reporting of new malignancy. From request to event took 12.86 days, event to report 2.39 days for a total of 15.25 days from request to report. Other medical conditions 14.69 days from request to event, event to request took 2.86 days for a total of 17.55 days. No pathology from request to event 14.69 days, event to report 2.75 days, for a total of 17.44 days.

Urgency Level 8 and reporting of new malignancy. Request to event took 7.88 days, 1.76 days from event to report for a total of 9.64 days. Other medical conditions 9.81 days from request to event, event to report 1.89 days, for a total of 11.7 days. No pathology took 7.77 days from request to event, event to report took 1.43 days for a total of 9.2 days.

Urgency Level 9 and reporting of new malignancy. Request to event 16.84 days, event to report 2.0 days, from request to report 18.84 days. Other medical conditions from request to event 17.11 days, from event to report 3.04 days for a total fo 20.15 days. No pathology 16.62 days from request to event, event to report 2.73 days and request to report took 19.35 days

Discussion:

Event to verify removes the bias of follow up malignancy scans which showed disease progression or malignancy return.
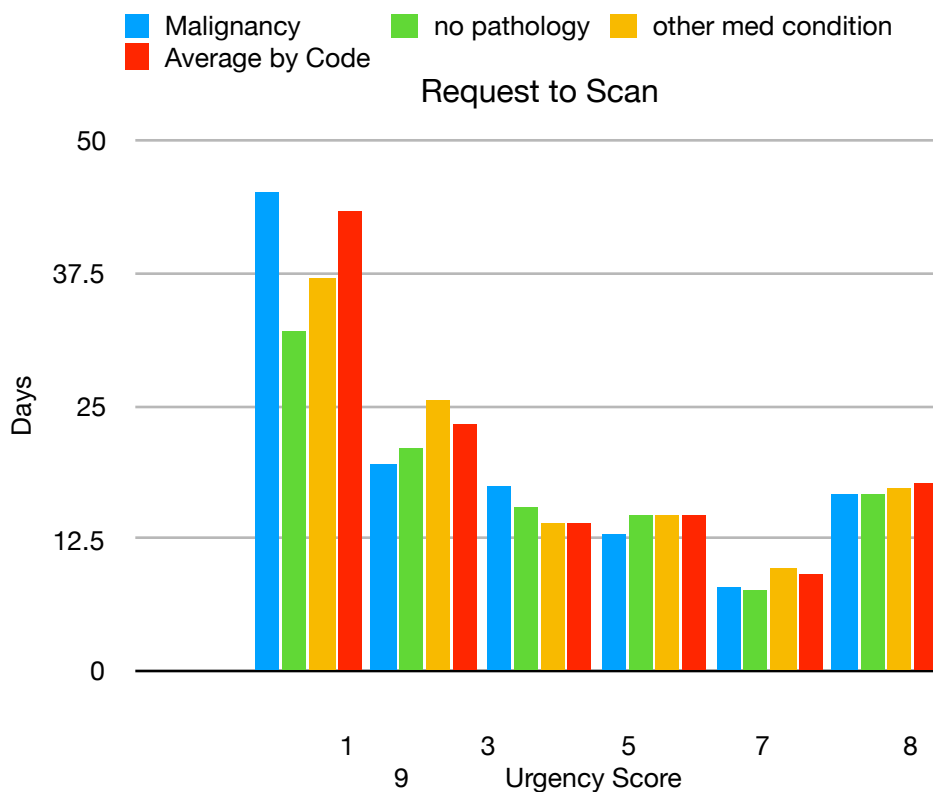
There exists a trend that new malignancy on CT scan to wait longer from request to scan and from event to report than the medical conditions or no pathology. This could be in fact due in part by the complexity and potential variability when reporting malignancy. Additional secondary verification, expertise of another radiologist and clinical correlation.
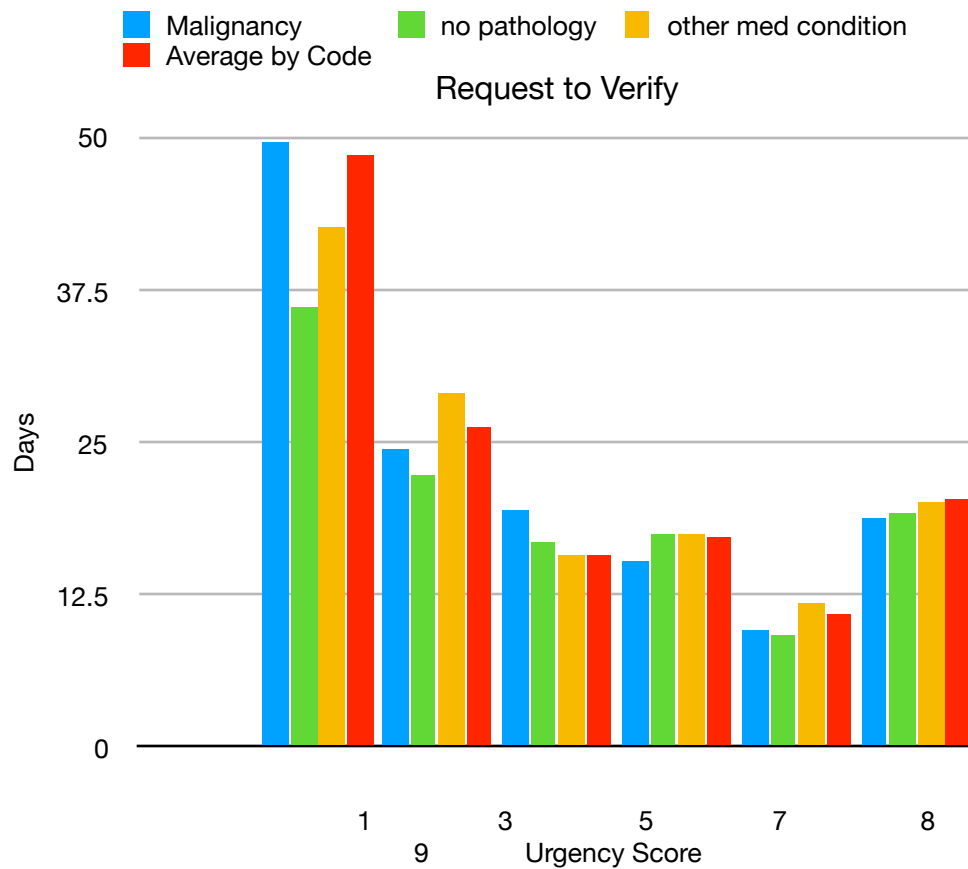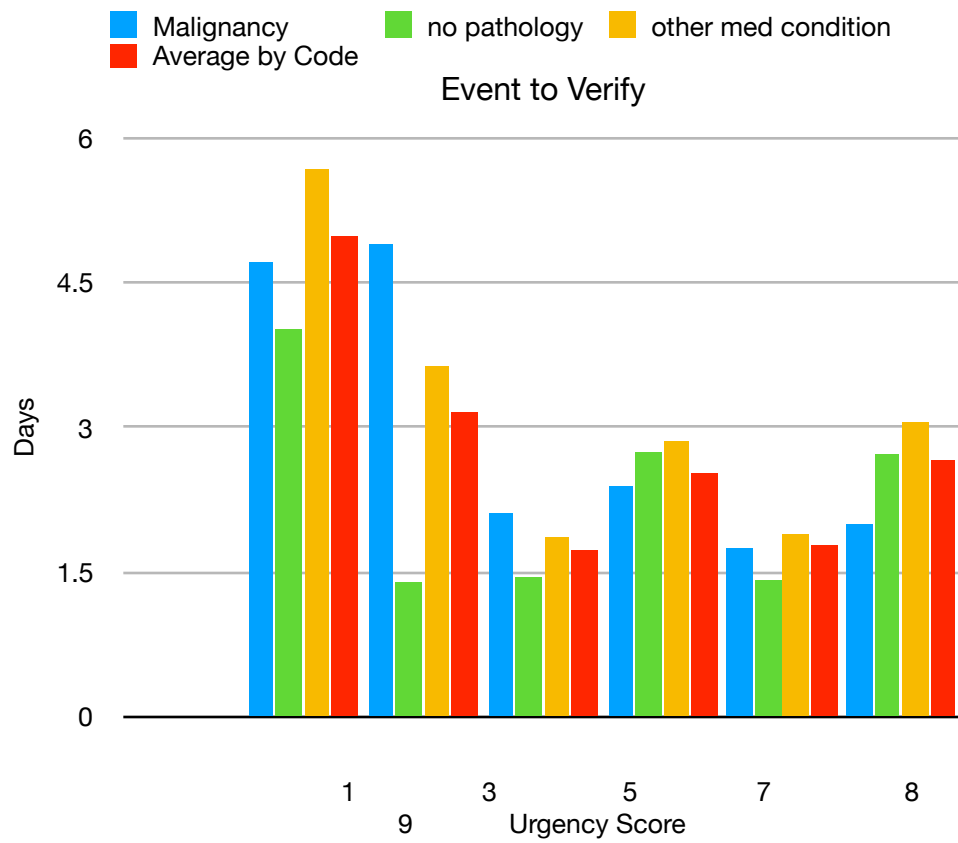
Routine request level 1 on average took 13.7 days longer to report a malignancy than to report no pathology. When compared to other medical pathology it still took 7.12 days longer to report a new malignancy. There was ~ 1 day difference when compared to the grand average.

As urgency scores rose the difference became less significant and malignancy appeared to be reported either faster or on par with no pathology.

There does not appear to be an immediate reason as to why routine requests malignancy finding are reported with a delay. However it is suspected that outpatient scans may be in a cue till someone reports them.

Follow up of these patients will be undertaken to evaluate if it changed outcome.

Event to Verify

Legend: Malignancy, no pathology, other med condition, Average by Code

Urgency Score

Request to Verify

Legend: Malignancy, no pathology, other med condition, Average by Code

Urgency Score

Req to Event   **Event to Verify**   **Req to Verify**
(0) Total Average to Coded Average (1-9)
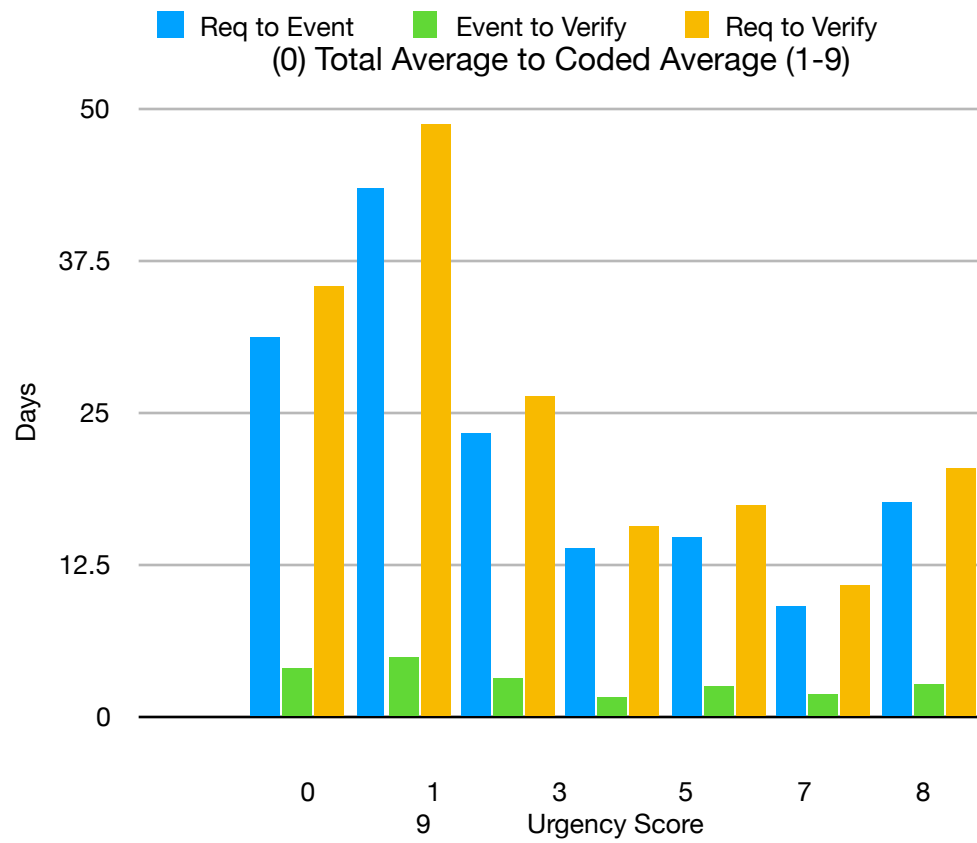
Table 1				
Sample Size				
	Events	Malignancy	Medical	No pathology
n =	4167.5	569	2116	815

Table 2

	Events	Malignancy	Medical	No pathology			
			Request to Event				
n =	4167.5	569	2116	815			
Time = Days	**Request to Event**						
Urgency	1	3	5	7	8	9
Malignancy	45.09	19.6	17.4	12.86	7.88	16.84
no pathology	32.06	21.02	15.5	14.69	7.77	16.62
other med condition	36.98	25.4	13.99	14.69	9.81	17.11
Average by Code	43.41	23.21	13.93	14.82	9.13	17.71

Table 3

	Events	Malignancy	Medical	No pathology			
			Event to Verify				
n =	4167.5	569	2116	815			
Time = Days	**Event to Verify**						
Urgency	1	3	5	7	8	9
Malignancy	4.7	4.9	2.1	2.39	1.76	2.0
no pathology	4.03	1.4	1.45	2.75	1.43	2.73
other med condition	5.69	3.64	1.87	2.86	1.89	3.04
Average by Code	5.00	3.17	1.72	2.54	1.78	2.66

Table 4 — Req to Report

	Events	Malignancy	Medical	No pathology		
n =	4167.5	569	2116	815		
Time = Days	Req to Report					
Urgency	1	3	5	7	8	9
Malignancy	49.79	24.5	19.5	15.25	9.64	18.84
no pathology	36.09	22.42	16.95	17.44	9.2	19.35
other med condition	42.67	29.04	15.86	17.55	11.7	20.15
Average by Code	48.67	26.38	15.66	17.35	10.91	20.37

Table 5

	Events	Malignancy	Medical	No pathology			
n =	4167.5	569	2116	815			
Time = Days	0 = All average	Average by Code	Average by Code	Average by Code	Average by Code	Average by Code	Average by Code
	0	1	3	5	7	8	9
Req to Event	31.28	43.41	23.21	13.93	14.82	9.13	17.71
Event to Verify	4.01	5.00	3.17	1.72	2.54	1.78	2.66
Req to Verify	35.29	48.67	26.38	15.66	17.35	10.91	20.37