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Reducing Redundant Imaging Orders using a Targeted Best Practice Advisory

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No Disclosures

Introduction

Our Health System has focused on identifying areas to reduce redundant imaging orders by utilizing our electronic medical record (EMR) to reduce cost of care.

Using an interdisciplinary team, we looked at minimizing redundant ordering of neurology studies in the inpatient and emergency room settings.

A recurring scenario was identified where a patient had magnetic resonance angiography(MRA) head and neck ordered within 7 days after having a computed tomography angiography(CTA) head and neck completed.

Goal

Our goal was to educate the ordering providers that a CTA head/neck exam can not only satisfy imaging needs but is also a superior diagnostic test except for a few clinical scenarios where a follow up MRA head/neck is appropriate

Methods

Our team developed a targeted best practice advisory (BPA) to alert the ordering clinicians of an existing CTA that would likely address the diagnostic need.

BPA provided a live link bringing the ordering provider directly to the existing CTA report.

The use of BPA over 1 year was measured and the effectiveness of BPA was calculated.

Methods (continued)

Our 1-year data was compared to 1- year control period

BPA was considered effective with a minimum score of 35-40%

Total labor cost per MRA head and neck was utilized to estimate the potential reduction of the health care costs

Figure 1

Best practice advisory(BPA) effectiveness formula.

Our system neuro MRA BPA effectiveness rate was 58.7% well above any other physician- based BPA in our health system(≤ 10%)

58.7% of the total redundant MRA neuro orders were completely cancelled because of the BPA

BPAs effectiveness = Number of patients with desired action / Total number of patients.

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Results

- Over a 1- year period the neuro BPA fired 247 times.
- For all BPA fires, 58.7 % of orders were completely cancelled and 10.5% of orders were changed to a different study. Only 30.8% of original orders were performed.
- This resulted in potential maximal direct financial impact of $42,834 in one year based on total average cost of MRA.
- MRA studies performed on inpatients (IP) and emergency department (ED) patients with recent CTA decreased from 5.8% to 3.01% ($p<0.009$).
- The calculated neuro MRA BPA effectiveness rate was 58.7% which was well above the standard and well above the average effectiveness rates of the other physician-based BPAs in our health system (≤ 10%).

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STUDY	COST
MRA head w/o contrast material	$167.59
MRA neck w/o contrast material	$163.18
	$330.76

Figure 2

Total average cost per MRA head and MRA neck without contrast

Potential maximal direct financial savings of $42,834 in one year in addition to other downstream effects at the time health care systems seeing increasing imaging volumes.

	2021 (PRE BPA)	2022 (POST BPA)	
	n = 758	n = 731	p
MRA			0.009
Yes	44 (5.8%)	22 (3.01%)	
No	714 (94.2%)	709 (96.9%)	

Figure 3

Comparative data of percentage of neuro MRA studies performed before and after BPA implementation on IP and ED patients with recent CTA studies. (statistically significant p 0.009)

Discussion

Implementation of BPA had a significant impact on reducing redundant MRA head/neck studies in our health system.

A 3-month pre and post BPA implementation analysis demonstrated significant reduction in MRAs performed within 7 days of a completed CTA (p=0.009).

The data shows that a highly targeted “non nuisance” BPA achieved the intended impact and next steps include identifying similar other opportunities in the health system.