

Use of a Novel Web-based Tool to Improve Communication Between the Emergency Department and Radiology

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- Dr. Volintzig as, Sun, Chating, between, Gradology and other departments is critical for ensuring timely and appropriate care.
- Dr. Delman discloses being a consultant for Bayer AG
- With increasing radiologic subspecialization, radiology physicians may work in geographically disparate parts of the department.
- At our hospital, we anecdotally observed that a significant portion of incoming phone calls were misdirected to incorrect destinations.
 - This resulted in wasted time, increased interruptions, and delays in care because the referring clinicians could not efficiently navigate the radiology department staffing structure.

- Surveys were sent to both the radiology residents and ED clinicians (attending, residents, physician assistants) to assess how frequently phone calls were misdirected.
 - Radiology attendings and fellows were not included as they do not answer the phone as often and only sit at a limited number of workstations, so they would have little reference to compare if their station is being more frequently called than others
- The purpose of our quality improvement project was to create a web-based tool that:
 - Would allow the emergency department (ED) to more efficiently contact the appropriate radiology workstation in a timely manner
- Radiology residents were asked a series of multiple choice questions concerning misdirected phone calls and which stations were most often affected.
 - Reduce the number of misdirected phone calls
- ED clinicians were also asked a series of multiple choice questions concerning misdirected phone calls and which stations they were most often trying to get in contact with
 - They were also given a series of questions to assess their knowledge of commonly called radiology stations (Plain Film, CT Body, Ultrasound, Neuroradiology, Pediatrics, and Overnight).

- After collection of the survey results, ED and radiology physicians worked together to design an easy-to-use, intranet-based tool informing ED clinicians about the appropriate destination based on radiology subspecialty and hour of the day.
 - Please indicate your level of training.
 - How often do you receive phone calls that require you to give the caller a different phone number because they called the wrong radiology desk?
 - What time of day do you normally receive phone calls asking for other radiology desks?
- After the tool was implemented for six months, surveys were again sent to radiology residents and ED clinicians asking the same questions as before in order to assess for any significant change in response.
 - Which rotation do you receive the most calls asking for a different radiology desk?
 - How often do you receive phone calls asking for someone who is not on your rotation to answer the phone because someone calls the wrong radiology desk?
- Questions included in the follow up survey only:
 - Additional questions were added to the ED survey to assess awareness of the new tool.
 - Since October 2017, you feel the number of times the ED calls the wrong radiology desk has...

- Quiz questions for the emergency department:
 - When you need a plain film read, what number do you call?
 - How often do you call radiology and are you called the wrong number and given a different number to call?
 - During normal radiology work hours (8 am to 5 pm), what number do you call to get a Body CT read?
 - When you are told that you called the wrong number, what type of study are you trying to get a read for?
 - During normal radiology work hours (8 am to 5 pm), what number do you call to get a Neuro study read?
 - Please add any comments, issues, or concerns you have in contacting the radiology department you may have
- Questions included in the follow up survey only:
 - Are you aware of the radiology contact list available on the ED intranet, which was updated in October of 2017?
 - During normal radiology work hours (8 am to 5 pm), what number do you call to get a Pediatrics study read?
 - Do you use the Radiology contact list available on the ED intranet to contact radiology?
 - Overnight (8 pm to 8 am), what number do you call to get a radiology study read?
 - Regarding the Radiology contact list on the ED intranet, please select the statement that most reflects your feeling about it

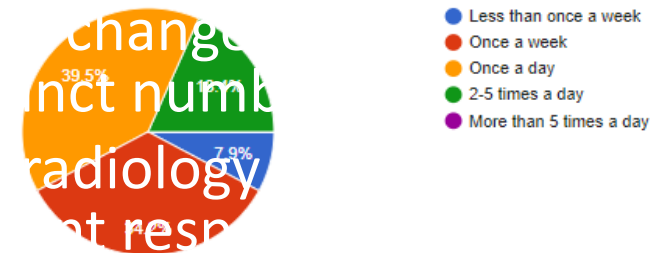
Results: Pre-Intervention

- An interactive, editable schedule with phone extensions (and pagers when appropriate) was made available through the ED intranet, allowing for flexibility with changes in reading room numbers

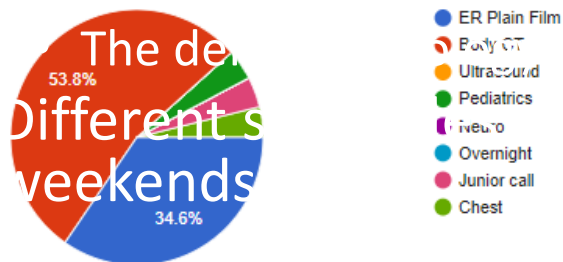
How often do you receive phone calls that require you to give the caller a different phone number because they called the wrong radiology desk?



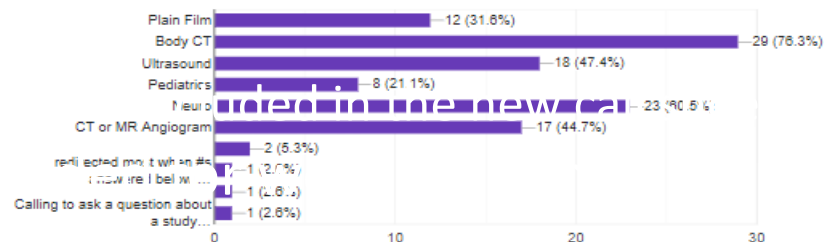
How often do you call radiology and are told you called the wrong number and given a different number to call?



Which rotation do you receive the most calls asking for a different radiology desk?



When you are told that you called the wrong number, what type of study are you trying to get a reader for? (select all that apply)





RADIOLOGISTS (FOR READS AND PROTOCOLS) - WEEKDAY

RADIOLOGISTS (FOR READS AND PROTOCOLS) - WEEKENDS

	8am	5pm	8pm	10pm	12am	8am
Adult Plain Films			41861			
Adult Body CT and PE Studies		47928				41861
Adult Ultrasound	46509	47928				41861
CTA and MRA (except PE Studies)	46647	47928				41861
Pediatric Plain Films	46509					41861
Pediatric CT & Ultrasound	46053	47928				41861
NEURO CT & MRI (All Ages)	41261	41251	41111	41111	41111	41861
Nuclear Medicine	33609		Dial 0*			
Body MRI (All Ages)	46509	47928				41861
IR Consults	Page 7237					
MSK (All Ages)	46681	47928				41861
Adult GI Fluoro	Page 0472		41861			
Pediatric GI Fluoro	46053		41861			
Cardiac CT/MR, Coronary CTA	41861					

	8am	5pm	8pm	10pm	12am	8am
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Adult Body CT and PE Studies		47928				41861
Adult Ultrasound	46509	47928				41861
CTA and MRA (except PE Studies)	47928					41861
Pediatric Plain Films	46509					41861
Pediatric CT & Ultrasound	47928					41861
NEURO CT & MRI (All Ages)	41261	41251	41111	41111	41111	41861
Nuclear Medicine	Dial 0, ask for Nuclear Medicine Resident on Call					
Body MRI (All Ages)	46509	47928				41861
IR Consults	Page 7237					
MSK CT and MRI	47928		41861			
GI Fluoro	47928		41861			

*ask for Nuclear Medicine Resident on call

TECHS & RECEPTIONISTS TO EXPERTISES - WEEKDAY

TECHS & RECEPTIONISTS TO EXPERTISES - WEEKENDS

	8am	5pm	8pm	10pm	12am	8am
How often do you receive misdirected phone calls?	Radiology Resident Responses					
	Pre-Intervention		Post Intervention			
Less than once a week	0%		8.3%			
Once a week	3.7%		8.3%			
Once a day	22.3%		25%			
Two to five times a day	40.7%		41.7%			
More than five times a day	33.3%		16.7%			
Two or more times a day (aggregate)	74%		58.4% (p=0.37)			

	8am	5pm	8pm	10pm	12am	8am
How often are you told you called the incorrect radiology desk?	Emergency Department Responses					
	Pre-Intervention		Post Intervention			
Less than once a week	7.9%		53.6%			
Once a week	34.2%		28.6%			
Once a day	39.5%		14.3%			
Two to five times a day	18.4%		3.6%			
More than five times a day	0%		0%			
One or more times a day (aggregate)	57.9%		17.9% (p<0.01)			

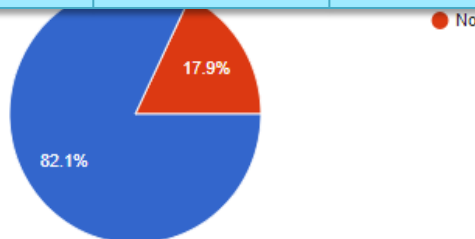
*Or pager #0978. Tues-Fri only. EXCLUDES Mon.

Initial survey results showed that prior to the intervention, 74% of radiology residents said they received misdirected phone calls at least twice a day, compared to 57.9% of ED respondents who experienced this problem at least once a day. As staffing parameters change, the following sections can be updated

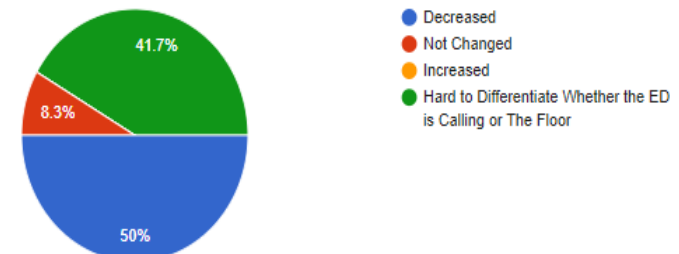
Results: Post-Intervention

- After the series of questions that assessed the ED residents' knowledge of radiology numbers, after the intervention, over 50% of respondents were aware of the new intranet contact tool and used it to contact radiology. This resulted in statistically significant increases in accuracy for Body, Neuroradiology, and Pediatric radiology stations.
- The same 17.9% of the ED clinicians who were not aware of misdirected phone calls from the ED also responded that they dealt with misdirected phone calls one or more times a day. On follow up quiz, this same 17.9% believed the radiology desk to contact the radiology

Workstation	Pre-Intervention	Post-Intervention	p value
Plain Film	60.5%	64.3%	0.76
Body CT	36.9%	64.3%	0.03
Neuro-radiology	36.9%	64.3%	0.03
Ultrasound	39.5%	53.5%	0.26
Pediatrics	37.6%	74%	<0.01
Overnight	52.6%	71.4%	0.12



Since October 2017, you feel the number of times the ED calls the wrong radiology desk has...



Discussion Limitations



- Unfortunately, our project is affected by certain limitations within the tool itself, and in assessing response to the tool
 - Within the tool, certain workstations were not included due to discussions between the radiologists and ED physicians who helped put the tool together in order to avoid confusion
 - Our department has a specific workstation for ENT radiology that is separate from Neuroradiology. The decision was made not to include this station as it was thought it may be confusing to ED referrers to determine which study would qualify as ENT and may cause frustration with the tool
 - We were able to gain acceptance of the new tool by over 80% of ED respondents.
 - We were able to reduce the number of misdirected phone calls based on the subjective perception of ED respondents and radiology residents.
 - ED residents already provide a call station for patients who were not assessed in either survey pool, but may contribute to misdirected phone calls and wasted time!
 - It is unclear if these rotators were informed of the tool and they may be contributing to a better response from the ED staff, but may mitigate the perception of the radiology residents.
 - We objectively improved the ED respondents' behavior pattern in contacting the radiology department by either calling the correct number or using the call tool, based on the quiz results.
 - Additionally, we do not know if the same individuals who responded to the initial survey also answered the follow up one

- Thank you for reviewing my presentation concerning radiology and ED communication, which raised additional concerns that can be addressed in the future.
- Radiology attendings and fellows were not included in our cohort
- Feel free to email me with any questions through; however, their opinions may be valuable in assessing if there are any particular stations that are still being over burdened with misdirected phone calls
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- Going forward, we hope to be able to expand use of this tool throughout the hospital in order to provide more timely and efficient care by reducing wasted time on the phone.
 - This will have its own challenges as there are a multitude of departments with thousands of attendings, residents, physician assistants, nurse practitioners, and medical students who would need to be educated on the use of the tool
 - Furthermore our referral pattern for inpatients and outpatients is slightly more complex than for the ED, and may not be as easy to simplify
- We are considering repeating the surveys to ensure the tool's continued effectiveness.