Using STAT Properly

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The credit earned from the Quick Credit test accompanying this article may be applied to the AHRA certified radiology administrator (CRA) operations management domain.

EXECUTIVE SUMMARY

- *The misuse of the term STAT has long been a problem in many hospitals. Instead of being the universal word for "immediate," it has become a convenient phrase used, in some cases, to get what the physician wants now. Although the principles of this article may be applied to many modalities in the healthcare field, this article deals solely with portable chest x-rays performed at the University of Minnesota Medical Center, Fairview in Minneapolis.*
- *The diagnostic radiology department performed a 2-week analysis of orders in August 2004. The results showed that 74% of all portable chest x-rays were ordered as STAT. The manager, along with a staff radiologist, then created a list of clinical reasons that were appropriate for STAT, ASAP, or Routine orders. Then, there was a 2-week period of time delegated for education, during which the list was brought to the nurse managers of several patient care areas as well as some chief residents at the university's medical school. These individuals then shared the list with their staff. A second analysis conducted in November 2004 showed that an 11% decrease had been achieved. Given that 20,000 portable chest x-rays are performed at the medical center annually, the figure represents a 2,200 reduction in STAT portables per year.*
- *With the success of this endeavor, the radiology department piloted a second program to further decrease the number of STAT orders.*
- *Since the radiology department was using computed radiography (CR) and a picture archiving and communication system (PACS), research began to unearth the response times. The idea was to advertise to physicians how fast they could get their images, using the theory that if the times were quick enough, perhaps there would less of a tendency to order STATs. The results showed that a STAT order could be completed and viewable on PACS in an average of 17 minutes, and an ASAP in 28 minutes.*
- *A poster advertising these response times was generated and distributed to the nurse managers and residents to post in the inpatient units. The poster was well received. A two-week survey conducted in March 2005 showed that STATs now accounted for 54% of the portable chest x-rays. With this two-pronged approach, the radiology department was able to decrease the number of portable chest X-rays by 20%.*
- *Another 2-week survey conducted in May 2005 showed that number of portable chest x-rays ordered as STAT declined further to 52%.*

In a large radiology department, many imaging exams are ordered STAT. This term, which is synonymous with "immediately," is supposed to be reserved for potentially life-threatening circumstances. Instead, healthcare professionals continually see the priority of STAT misunderstood, even abused. This is especially an issue with portable chest x-rays. Technologists return from STAT exams, only to complain that the patient was not in his or her room, was in the shower, or was eating breakfast.

When the priorities of STAT, ASAP, and Routine become imbalanced, the technologist is unable to respond to a true STAT in a timely manner because of the high number of inappropriate STAT exams. In the author's experience, a number of physicians (and residents in a teaching hospital) order what this organization refers to as "administrative" STATS. These are orders for which the patient may not be in any distress, but the ordering physician wants the x-ray immediately. This may be due to any number of reasons, including, but not limited to:

- the doctor or nurse forgot to order the x-ray previously
- the doctor is leaving soon for the day
- the doctor wants to see the x-ray before morning rounds

The physician may not want to order an x-ray as an ASAP, or Routine, for fear that he or she will not get the image for an hour. As a result, he or she orders it STAT. This becomes a self-fulfilling prophecy. The ordering physicians are correct assuming that they may not see a technologist in a timely manner, but this is because the technologists are busy doing the inappropriate STAT orders.

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Background

Fairview Health Services is comprised of 7 hospitals and 31 primary care clinics throughout Minnesota. The University of Minnesota Medical Center, Fairview is among the most respected teaching institutions in the nation. Located on 2 campuses, one on the east bank and on one the west bank of the Mississippi River near downtown Minneapolis, the medical center includes inpatient and outpatient facilities with services ranging from primary care to emergency care to care of patients with the most complex conditions. Areas of specialization include organ and blood and marrow transplantation, heart disease, cancer, neurosciences, pediatrics, and behavioral illnesses.

Milestones at the University of Minnesota Medical Center include:

- 1952—World's first successful open-heart surgery
- 1968—World's first successful human bone marrow transplant
- 1977—World-renowned multiple sclerosis treatment program launched
- 1998—Vaccine for Lyme disease developed and patented
- 2004—Transplant services celebrated 500th heart transplant and 6,000th kidney transplant

The hospital was also recognized as one of the nation's best hospitals by *U.S. News and World Report magazine*.

The general diagnostic radiology department at the medical center performs 46,000 diagnostic x-rays and fluoroscopy exams each year. This includes service to a 23-bed emergency department and 22 operating rooms. The diagnostic radiology department consists of 7 rooms including 3 fluoroscopy suites, 3 radiographic rooms, and a digital radiography (DR) chest unit. The portable exams are covered by 5 portable machines and 4 C-arms.

The issue with STAT portable exams is significant due to the fact that portable exams are almost 50% of the workload. Specifically, almost 20,000 exams each year are portable chest x-rays. A total of 18.5 full-time equivalent employees (FTEs) staff the department 24 hours a day.

The radiology department uses a computed radiography (CR) system, which uses a plate that electronically stores the image, much like a film-screen system. This imaging plate, which is housed in a cassette, is then put through a digitizer where the plate is removed, wrapped around a drum where a laser "reads" it, and is then erased by a bright white light. The plate is then automatically placed back into the cassette and ejected, ready for the next exposure. The image then appears on a quality assurance monitor where the technologist is able to adjust the contrast, brightness, add annotation, change the orientation, or manipulate the image in a number of ways. The image is then transmitted to the picture archiving and communication system (PACS).

In 2004, the medical center purchased a PACS that stores the images and makes them viewable any time at any computer connected to the network. One of the greatest advantages of a PACS is that multiple people can view the image at once. No one needs to look for that one piece of film or wait for to be delivered. This system is much faster and more efficient than conventional film-screen processes. Film storage and chemicals are also eliminated with the PACS.

Analysis

In August 2004, the general radiology department was having a difficult time keeping up with the number of portable chest x-rays ordered as STAT. It seemed that as soon as a technologist took the portable machine on a STAT, there would be 3 more STAT orders. An analysis was undertaken to determine what could be done to reduce the number of STAT portable chest x-rays.

The department conducted a 2-week survey to actually determine the percentage of portable chest x-rays that were ordered STAT. The result were compiled and found to be 74% (Figure 1).

The decision was then made to try to reduce this number. A list of clinical reasons for ordering STAT, ASAP, and Routine exams was generated with the help of staff radiologists. This list was appropriate for all portable radiology exams, not just portable chest x-rays. It should be noted, however, that the numbers associated with the surveys pertained only to portable chest exams.

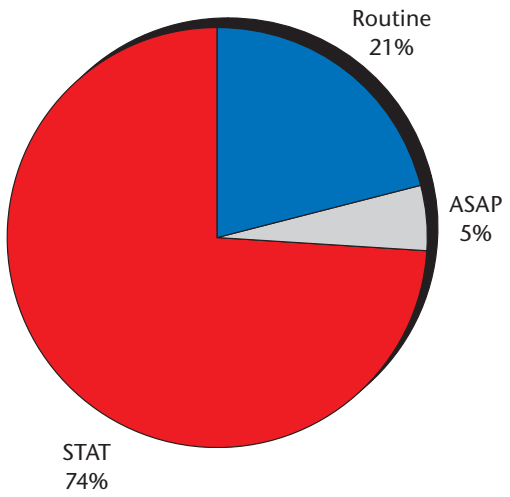

Figure 1. Percentages of chest x-rays ordered STAT, ASAP, and Routine, August 2004.

STAT
- post-op
- code
- operating room (OR)
- evaluate for FX
- evaluate for aspiration
- ET tube placement
- Swan placement
- PICC line placement
- SOB, SOA, respiratory distress
- evaluate for pnuemothorax

ASAP
- S/P shunt revision/placement
- evaluate for pleural effusion
- check line placement
- evaluate for bleed
- evaluate for free air
- chest tube pulled
- S/P intubation/extubation
- localized pain

Routine
- temperature spike
- check lung status
- evaluate for obstruction
- evaluate for infiltrates
- evaluate for CHF
- evaluate for pneumonia
- feeding tube placement
- weakness
- abdominal distention
- ileus
- pulmonary edema
- follow up (F/U) fracture

The radiology manager set up educational meetings with 4 intensive care unit nurse managers, and presented the information. The nurse managers in turn shared the concern with the nurses providing direct patient care. The health unit coordinators (HUCS) were also educated to ask the ordering physicians to clarify the reason for the x-ray order. The list of clinical reasons was also posted in the work areas of the nurses and doctors.

One of the chief medical residents also met weekly with the other University of Minnesota residents and educated them about the STAT issue and clinical reasons for writing STAT on their orders.

In November 2004, another 2-week survey was done to see if a change had occurred. Figure 2 depicts the results.

The percentage of portable chest X-rays ordered as STAT dropped to 63%. At first glance, an 11% drop did not seem to be a major improvement; however, in the context of total exams performed, it is significant. The department completes approximately 20,000 portable chest x-rays per year. An 11% decrease equates to 2,200 exams that would not be ordered as STAT.

Alternative Solution

The results of the project were than brought to the Joint Practice Council of the University of Minnesota Medical Center, Fairvew. It was after this presentation that the vice president of nursing suggested that it might be worthwhile to look at the radiology department's response times to the different priorities of STAT, ASAP, and Routine. If the numbers were impressive, then perhaps advertising them might be another approach instead of simply listing the clinical reasons for each priority.

Taking this idea, the research began to find the average response times. Using the same patient data that the percentage of STATs was generated from, each exam was researched in order to find the time that the x-ray was ordered in the computer, and the time that the exam was completed and the image sent to PACS. After compiling the minutes each exam took, the total number of minutes was divided by the number of patients to calculate the average. Once these 3 figures were found, it was decided to create a poster to hang on the walls of the patient care units (Figure 3). The posters contained the 3 figures associated with STAT, ASAP, and Routine response times, but also advertised the clin-

ical reasons for the 3 priorities. Below that remained the pie graph shown in Figure 2, which illustrated why the misuse of STAT was an issue.

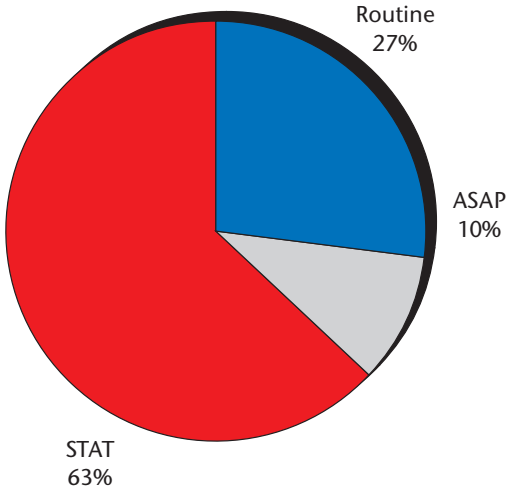

Figure 2. Percentages of chest x-rays ordered STAT, ASAP, and Routine, November 2004.

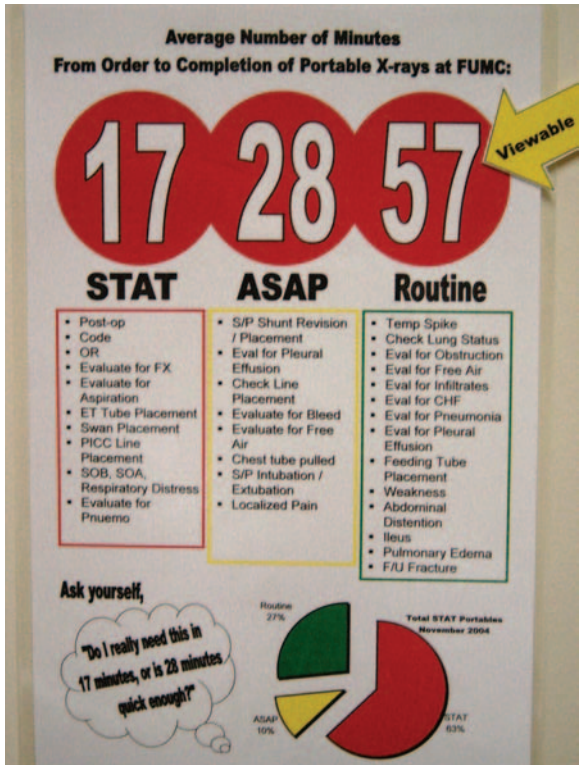

Figure 1. Percentages of chest x-rays ordered STAT, ASAP, and Routine, August 2004.

It is important to note that the advertised response times is the time from order entry to completion. In other words, it takes an average of 17 minutes from the time the radiology department gets the order until it is viewable on PACS.

The same approach used to advertise the clinical reasons for STAT was implemented for the poster. The radiology manager met with the nurse managers of the floors in the hospital that generated the most portable exams. The nurse manages in turn, brought the information to staff and displayed the posters in their areas. The chief medical resident also continued to meet and educate the medical students.

In March 2005, after a 2-week period, another 2-week survey was conducted. The results came back with a further reduction in the amount of portable exams ordered as STAT—54%. This was encouraging in that the percentage had decreased 20% since the beginning of the project. At the medical center, this would mean a reduction of 4,000 STATs per year.

Another survey was conducted in May 2005 to see if the numbers would change. The results returned at 52%.

Conditions

There are several barriers to the success of this project. One is the willingness of the individuals ordering the exams to recognize the problems that can be created when too many x-ray exams are ordered as STAT at once. For example, At the University of Minnesota Medical Center, Fairview, the post anesthesia recovery unit staff insisted that every time they need an X-ray it must be done immediately. When asked, "So, every time you need an x-ray, you must have it within 17 minutes?" The answer was, "Yes." The same hurdle occurred with the emergency department.

The percentage of portable chest X-rays ordered as STAT dropped to 63%. At first glance, an 11% drop did not seem to be a major improvement; however, in the context of total exams performed, it is significant.

This attitude can be overcome by 2 methods. First, the radiology department must advertise the problem aggressively. The employees and doctors within the organization need to know that the abuse of STAT is a problem and why. Second, education needs to be ongoing concerning the clinical reasons appropriate to ordering a STAT, ASAP, or Routine portable chest x-ray.

Looking Forward

The chief medical resident has been showing the poster to the other residents in the hospital, and continues to educate them on the issue of ordering too many STATs. She also continues to educate them on the clinical reasons for the 3 priorities when ordering exams. She has reported back positive comments about the process thus far. The author looks forward to the future surveys and results.

The 11% reduction in STAT accomplished with the first suggestion was encouraging. The additional approach with the STAT poster dropped the percentage even more. In the author's opinion, however, it would be unrealistic to expect the percentage of portable chest x-rays ordered as STAT to fall below 50%.

The misuse of the term STAT has been a problem at many facilities. This is true of many modalities, and is not specific to radiology. For example, the author has already been contacted by the EKG lab at the center to discuss what radiology has done to decrease the number of STATs. Perhaps many different services can create improvement using the methods outlined in this article. Through advertising the problem, ongoing education of the staff, and the speed of new imaging technology, the University of Minnesota Medical Center, Fairview continues to work toward future improvements in patient care and properly using STAT.

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AHRA Home-Study Resources

Using STAT Properly

Home-Study Test

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Carefully read the following multiple choice questions. Mark your answers on the answer sheet found on page 33 and mail or fax the answer sheet to:

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Questions

Instructions: Choose the answer that is most correct.

1. **Instead of the correct meaning of the term, STAT has become a convenient phrase used to get what the physician wants:**
   a. Immediately
   b. Now
   c. ASAP
   d. None of the above

2. **For the radiology department in this article, what percent of portable chest x-rays were ordered STAT before a corrective program was instituted?**
   a. 52%
   b. 74%
   c. 93%
   d. 97.5%

3. **In the first phase of the corrective program, the radiology department manager and a staff radiologist created a list of clinical reasons that were appropriate for:**
   a. STAT order only
   b. STAT and Routine orders only
   c. STAT, ASAP, and Routine order
   d. None of the above

4. **The list was used initially to educate the nurse managers and chief resident.**
   a. True
   b. False

5. **Following this initial phase of the program, a second analysis was done and showed an:**
   a. 11% increase in STAT portable chests
   b. 11% decrease in STAT portable chests
   c. 20% increase in STAT portable chests
   d. 20% decrease in STAT portable chests

6. **A second phase of the program involved a poster advertising the response times for STAT, ASAP, and Routine orders.**
   a. True
   b. False

7. **A survey conducted following the poster phase of the program, indicated that the number of portable chest x-rays order STAT had:**
   a. Increased by 11%
   b. Decreased by 11%
   c. Increased by 20%
   d. Decreased by 20%

8. **The term that is suppose to be reserved for potentially life-threatening circumstances is:**
   a. STAT
   b. ASAP
   c. NOW
   d. All of the above

9. **When a high number of inappropriate STAT exams are ordered, the technologist is unable to respond to a true STAT in a timely manner.**
   a. True
   b. False

10. **Administrative STATs include orders based on:**
   a. The doctor or nurse forgot to order the x-ray previously
   b. The doctor is leaving soon for the day
   c. The doctor wants to see the x-ray before morning rounds
   c. All of the above

11. **STAT portable exams was significant for the radiology department in this article because:**
   a. They represent 74% of the workload
   b. They represent 90% of the workload
   c. They represent 50% of the workload
   d. None of the above

12. **One of the greatest advantages of a PACS is that multiple people can view the image at once.**
   a. True
   b. False

13. **Clinical reasons for ordering STAT chest x-rays are:**
   a. Code
   b. Evaluate for aspiration
   c. ET tube placement
   d. All of the above

14. **Clinical reasons for ordering ASAP chest x-rays may include:**
   a. Localized pain
   b. Check line placement
   c. Evaluate for free air
   d. All of the above

15. **After compiling the minutes each exam took, the total number of minutes was divided by the number of patient to calculate the average response time for the different priorities of STAT, ASAP, and Routine.**
   a. True
   b. False

16. **The average response time for portable chest x-rays ordered ASAP was:**
   a. 17 minutes
   b. 28 minutes
   c. 57 minutes
   d. None of the above

17. **The posters used to inform patient and staff on the differences between STAT, ASAP, and Routine x-rays included:**
   a. Response time and clinical reasons for the order
   b. Clinical reasons for the order only
   c. Response time only
   d. None of the above

18. **The advertised response times for each procedure is the time from order entry to:**
   a. The technologist's arrival at the patient's bedside
   b. The patient's arrival in the department
   c. The viewable image on PACS
   d. None of the above

19. **What two departments insisted that all portable chest x-rays were STAT?**
   a. Obstetrics and orthopedics
   b. Recovery and surgery
   c. Emergency and recovery
   d. Nursing and recovery

20. **This same procedures used in this article for portable chest x-rays may be used for many different services to improve efficiency.**
   a. True
   b. False

ANSWER SHEET

AHRA Home-Study Resources

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1.0 Category A credit • Expiration date 1-31-08

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Indicate your answers to the post-test questions by entering the correct letter(s) on the lines provided.

Using STAT Properly

1. _____	11. _____
2. _____	12. _____
3. _____	13. _____
4. _____	14. _____
5. _____	15. _____
6. _____	16. _____
7. _____	17. _____
8. _____	18. _____
9. _____	19. _____
10. _____	20. _____

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