The Seven Deadly Sins of EMR Implementation in Radiology

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Background

The implementation of the Patient Protection and Affordable Care Act (PPACA) saw many immediate and long-term changes with respect to healthcare and reimbursements. These include the mandate for electronic medical records (EMR) and Appropriate Use Criteria, for which reporting must begin in 2018. In an era when radiologists are increasingly scrutinized with respect to the value they are providing in the clinical arena – with salary adjustments on the horizon for levels of care deviating from the chosen mean – seamless integration with the EMR is crucial.

Evaluation

In this presentation, we provide a brief account of our own experience with the transition from a home-grown, in-house electronic medical record (EMR) to a commercial EMR at one of America’s largest safety net health systems. Throughout the months following implementation of this commercial EMR, we attended myriad meetings to identify problems, troubleshoot issues, and choose the course for future innovations. As a result, we have identified seven key elements that should be avoided from the radiologist perspective in advance of any EMR change, as well as general strategies for how these issues are being overcome at our institution.

Discussion

1. Failure of Communication – Hardware and Software:
Radiology is uniquely positioned within the world of medicine due to the high degree of technical components required for the quality and throughput currently necessary to remain competitive in the medical marketplace. This levies an additional degree of complexity in the design and implementation of a new EMR. Considerations must include not only the end user software that the reading radiologists will use to facilitate their dictations, but also the image viewing and storage software, as well as the modality-specific interfaces. Several of the issues we faced were due to the mapping – or mismapping – of the fields providing key information to the interpreting physicians; whereas these had been hammered out in the previous version of the EMR, new data entry field options were present in the commercial product that created difficulties in displaying all the pertinent information due to character constraints and a limited number of fields.

Ultimately, our in-house IT support staff collaborated with representatives from all of the companies providing our image management software and dictation software, with iterative testing until the issue was resolved. This ‘inter-interface’ team were in constant communication, providing examples of patients and/or studies that were failing to meet the standard required by the radiology providers.

2. Failure of Communication – Intradepartmentally:
It is crucial to utilize the full scope of resources and expertise within your department – including technologists, nurses, IT support staff, and other radiologists – in developing and vetting the planned path forward. What may be an advantageous decision for the workflow of the radiologists may severely hinder the technologists and overall be harmful to the department.
During the first two weeks after the transition, representatives from each section of our department met daily to review issues with workflow and clarify the roles that each member of the team was to play; as things settled down, meetings were decreased to biweekly. This provided the opportunity to identify trends in problems, recognize issues that were larger than just a single sub-department, and discuss the implications of proposed solutions from the perspective of each representative’s workflow.

3. Failure of Communication – Interdepartmentally:
Again, at the end of the day, Radiology is a burgeoning consultant service; to do our jobs successfully requires that others are able to do theirs. In optimizing the efficiency and workflow in Radiology, it is key to avoid complicating the workflow of our referring physicians. Many of the issues that arose initially with respect to interdepartmental interactions stemmed from the ordering format and what pieces of information were required. In advance of the Appropriate Use Criteria mandate, the ordering interface was equipped with ACR Select functionality, with the intent of helping guide users toward more appropriate exams via the ACR Appropriateness Criteria. However, given the requirement to populate the fields to allow the ACR Select programming to fire, the physician users were reticent to require additional fields as hard stops, to minimize the burden placed on the ordering providers. For those exams to which the ACR Select criteria would not apply, such as plain radiographs and ultrasounds, no reason for exam was required when placing an order. This resulted in many studies coming across to the radiologists with minimal – if any – indication of why the exam was ordered, complicating professional reimbursement for the reading physician. Additionally, exams could be ordered as ‘inpatient’ status versus ‘outpatient’ status; those that were ordered as ‘inpatient’ would be discontinued when the patient was discharged. This generated several issues, such as when an emergency room patient was admitted after the first portion of their stat V/Q scan, at which point the techs were no longer able to complete the exam and the radiopharmaceutical for the perfusion portion of the study was canceled.

Again, communicating with the departments in question allowed for slow but steady redress of these issues. At a time where the prior era of face-to-face clinical interactions of radiologists with ordering providers is increasingly diminishing, the implementation of a more robust EMR ironically has introduced more communication between these entities. By clearly delineating the goals for a given task from both the ordering and performing sides of an imaging study, it was possible to come to a consensus regarding the most reasonable course of action, which helped to optimize efficiency in both departments.

4. Embracing Ambivalence:
The options for implementation are endless – there will be multiple variables or manifestations for how to provide each requested function. The danger therein is failing to choose a direction. Given the multiple layers of interwoven hardware, software, and personnel, any ambivalence or change of direction will propagate outward like ripples in a pond. Ultimately, this leads to confusion regarding the plan, frustration for those dealing with the minutiae of the proposed changes, and a lack of faith in the success of such a transition. After a reasonable course of investigating possibilities – including the pros and cons of each – a decision must be made and adhered to for the sake of all involved parties.

For example, the linking of multiple exams was a lengthy discussion – while the radiologists thought that some of the exams should always be bundled together, they also felt that there were several that should not. Within the confines of how the EMR could handle linking, this presented a binary decision – to link or not to link (that was the question). From a purely radiologist perspective, these two options were fairly even. Our daily-turned-biweekly meetings served as the best venue for discussion and resolution of this problem. They provided a background to examine the impact on all involved parties in the department, which ultimately allowed for determination of how to proceed.

5. Feigning Flexibility:
Of equal importance, it is paramount to realize that there will often be limitations on integration of an ‘ideal’ solution, likely for several reasons: software constraints, burden on other providers or staff, or
simply time. Being flexible in accommodating the preferences and capabilities of others will make the overall transition go more smoothly and likely facilitate later collaborations to further optimize things.

Several of our providers were staunchly holding out for all imaging information to come across in the PACS system, which all testing indicated would not be possible. The information would be present in our EMR, but many of the studies read within the organization are read remotely and it would not be feasible for those radiologists to look up each and every patient/study; therefore, some of the providers were pushing for integration of the EMR at all reading stations, including those off-site. Ultimately, the most feasible choice was to have the information available in the dictation software, with which the providers were amenable despite the fact that this had not been their originally proposed solutions.

6. Betraying Buy-In:
One of the largest hindrances to a smooth transition to the commercial EMR in our institution resulted from a lack of buy-in by the radiologists and residents. If it is difficult for the providers to conceptualize how they will use the EMR, it is very likely that they will not want to put in the time and effort to learn the system. Such was the case in our situation. During the phase prior to Go-Live, members of the radiology department were assigned to training consisting of online modules and additional in-classroom training for those providers who would be directly interacting with patients. However, the notion of day-to-day utility of the EMR was not clearly presented and therefore the radiologists failed to get what they needed to function on day one. Expectations must be clearly tempered for how exactly the physicians will need to interact with the EMR to provide the motivation to learn the system proactively, rather than trial by fire.

7. Being Blind-Sided by Speed Bumps:
Regardless of the preparations, the odds are high that some things will not go according to plan. And this is likely a good thing – it allows for an iterative process of refinement along the way.

Conclusion
Implementation of a new EMR in a radiology department can present additional challenges stemming from increased hardware and software requirements, which allows for a plethora of options, each with their own pitfalls. We have presented here seven mistakes to avoid during the transition and planning stages to facilitate a smoother switch. While these are conclusions from a single-site case study of sorts, we anticipate similar themes and issues would be encountered for any radiology department or organization under the jurisdiction of PPACA mandates.

References

Keywords
electronic medical record, EMR, implementation, radiology