ACR Introduction to the ACR Imaging IT Reference Guide

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Reading stacks of films, as well as battling alternators and tape recorders, is but a distant memory to most radiologists. Instead, we are all challenged by voice recognition, application interfaces, managing PACS infrastructure, and connecting all of these tools in an ever more complex universe of IT systems in our professional environments. Radiologists, referring clinicians, and patients have grown accustomed to the incredible efficiencies that have resulted from incremental use of these technologies in our practices. Clinical office visits to discuss the results of an examination within an hour of an elective imaging test are the new normal in many places. Teleradiology has enabled many practices to deliver near real-time interpretations and consultations to support the contemporaneous clinical decision making that is expected today. Administrations often demand quality and productivity metrics from imaging practices. As a result of all these trends, radiologists have become completely dependent on IT. Because there has been no formal informatics training in most radiology residencies, solid knowledge of the many intertwined subspecialty areas of imaging IT is hard to come by, and practice leaders are often in the position to make important and long-range purchase decisions for critical practice infrastructure with little guidance. Some are blessed with talented radiology IT managers, while others have to rely on hospital IT staff members who are even more removed from the imaging domain. When we examined the body of ACR guidelines for corresponding IT content, we found a total of 8 guidelines that either were dedicated to imaging IT or at least contained some IT content. Unfortunately, this content was not widely dispersed and, by our estimation, not readily consumable by the average practicing radiologist. Thus, the idea was born to create a more comprehensive body of work, an ACR Imaging IT Reference Guide, which is written for the practicing radiologist and published in this special issue of JACR. It provides a wealth of knowledge useful in daily practice and for long-range planning. We would like to acknowledge the wise counsel and encouragement provided by Drs Paul Chang and Khan Siddiqui during the formative stage of this project and the invaluable support of ACR staff members Margaret Tsai and Raina Keefer for the many editorial tasks required to make this project reality. It should be explicitly mentioned that the creation of this reference guide would not have been possible without the generous contribution of valuable time and considerable knowledge from our outstanding writing team of many experts in the field, who provided 12 rich manuscripts for inclusion in this special issue and to whom we are truly indebted. Given the fluid and rapidly evolving nature of the subject, we plan to maintain this compendium of work on a dedicated online portal. This format will facilitate future updates to the content as appropriate, and we invite readers to visit back frequently.

Our journey through this reference guide begins with an article by McGinty et al [1] relating the new ACR Imaging 3.0 framework of value-based delivery of integrated imaging care to the requisite IT underpinning that enables it. This piece references many of the later contributions in this guide and communicates the transformational power of technology in support of the overarching strategic goal. Modern imaging practices can create a sustainable competitive advantage by clever combination of the many concepts and insights introduced in this guide.

Meaningful use, as cumbersome as it may seem to radiology practices, paves the way for an ever increasing number of novel reimbursement and credentialing approaches. Krishnaraj et al [2] explain how participation in meaningful use can help drive infrastructural readiness of imaging groups for more integrated care models of the future.

Next, we visit the struggle to balance our duties as guardians of large amounts of protected health information with the increasing need to exchange and aggregate this information in delivering more time- and cost-efficient patient care. Andriole [3] discusses HIPAA, the Health Information Technology for Economic and Clinical Health Act, and other relevant legislation and the responsibilities and opportunities for radiologists in this context.

We then switch gears and examine even more carefully the integration of the radiology practice with the clinical enterprise: McEnery [4] describes the convergence of radiology-centric IT with hospital- and enterprise-level information systems (eg, electronic health records). Readers will gain insight on how to better manage the increasing integration of imaging-centric systems with enterprise-level IT to drive better combined workflows, clinical excellence, and more efficient billing.

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Weiss et al [5] examine the effective creation and communication of the work product of the imaging department, spanning from electronic order entry, through report creation, to timely report delivery, with an emphasis on the role of voice recognition technology and interoperable system architecture. At this point in the reference guide, it should be clear to the reader that contemporary practice systems generate rich sets of business data ideally suited for advanced analytics long in use in other professions. Cook and Nagy [6] provide an overview of business analytics in imaging and explain how practices can leverage these data to measure and improve outcomes, process analysis, efficiency, evidence-based quality, safety, and patient satisfaction.

Wang et al [7] provide an overview of relevant technology standards in imaging. Readers can gain an informed perspective on the role of standards, which is a critical prerequisite to planning equipment purchases, managing relationships with hospital IT departments, optimizing imaging workflow, and developing strategies in the era of meaningful use. Ever more mobile patients and increasing frequency of patient transfers between different care settings necessitate simultaneous transfer of health information, embodied by effective image sharing. Mendelson et al [8] discuss all aspects of imaging sharing and explain how it can improve the quality of current study interpretation, reduce duplicate examinations (thereby decreasing radiation exposure), and expedite decision making at the point of care.

Displays represent the primary interface between an expert radiologist and the images subject to interpretation. The article by Hirschorn et al [9] demystifies medical-grade imaging displays and discusses important equipment selection and maintenance considerations. Increasingly, radiologists and clinicians do not just interact with images on such dedicated medical-grade displays but also on a range of consumer grade mobile devices. Hirschorn et al [10] therefore dedicated a report to the topic of mobile devices in imaging. Readers are made aware of a range of issues to consider, including optical performance of and data security on mobile devices, before embracing this incredibly versatile and useful technology.

The best choice of technology and the efficient implementation and ongoing operation thereof would not be possible without the right interdisciplinary team of professionals supporting a comprehensive approach to imaging IT. Morgan et al [11] discuss the role of informatics leaders in radiology, what type of expertise is available in the marketplace, and what best practices exist when it comes to proper staffing and training in this context.

Last, we visit a topic that has recently gained much attention in the press and public: radiation dose and safety. Morin et al [12] explain what technologies exist to accomplish dose tracking and reporting and prepare imaging departments to meet the demands for personalized patient exposure profiles and global repositories such as the ACR Dose Index Registry.

In summary, we sincerely hope that readers of this special issue will find their baseline knowledge of imaging IT improved to the point that they can begin to put some of these information and IT strategies into good use in their daily practice. Furthermore, we believe that it sheds light on the potential transformational power of imaging IT, which provides those practices who master it and optimize its use with a sustained strategic and competitive advantage in an increasingly challenging health care environment. Readers who recognize the central role of imaging IT to the practice of radiology will be motivated to continue building their skills in this essential domain, ultimately having a positive impact on their practice efficiency and the quality and safety of care they provide to their patients.

REFERENCES