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The radiologist assistant: the solution to radiology workforce needs

Abstract Since 2003 the radiologist assistant (RA) was introduced in response to the severe shortage of radiologists and the increased demand for medical imaging services. Other non-physician clinicians, such as PAs, currently play an important role in the medical imaging environment. The article discusses the reasons physician assistants have found favor with interventional radiologists, and advocates an increased role for physician extenders in Radiology. It refutes the skeptics who question whether the new profession will alleviate the manpower crisis in Radiology. The authors suggest that RAs are the ideal complement to radiologists; and based on their radiologic technology background, have a vested interest in the field.

Keywords Radiology assistant · Radiologic technologist

The field of Radiology is grappling with a manpower crisis. Rapid advances in technology, especially during the past two decades, have resulted in a dramatic expansion of Radiology services. With the emergence of new imaging modalities and innovative applications of traditional ones, the number of tools available to radiologists for patient diagnosis and treatment has increased. The practice of defensive medicine, coupled with increased public awareness of the range of services available has resulted in greater demand.

The number of procedures performed continues to skyrocket along with the volumes of digital information that have to be processed, interpreted, and managed. Ironically, as the workload increases the number of radiologists is declining. Reductions in Medicare reimbursement and federal support for graduate medical education have limited the number of residency positions [1]. The challenge, therefore, is to alleviate the workload of the overburdened radiologists in a fiscal climate that restricts the influx of new practitioners via the preferred residency pipeline.

Shortage and employment projections

It would seem that the advent of the radiologist assistant could not have occurred at a more opportune time—demand for Radiology services is high and the supply of qualified personnel is low. The problem faced by the radiologist community is that not enough people are entering the specialty and too many are leaving. The number of radiology residents declined steadily in the 1990s, dropping from 4,236 in 1994 to 3,600 in 1999 [2]. In addition, many radiologists are retiring early or nearing typical retirement age. While radiologists are joining the workforce at a rate of 2% each year, their workload is increasing by 6% [3]. Furthermore, projections for the next two decades point to increased demand for radiology services based on demographic changes [4]. Over the next 15 years, 77 million Americans will turn 50. By the year 2020, the number of citizens over 50 will increase by nearly 50% from 70 million to 116 million. At the same time, people over 50 will comprise a higher percentage of the population—up to 35% in 2020 [4, 5].

The radiologic technologist (RT) shortage is also critical. The US Bureau of Labor Statistics projects that the nation will require an additional 76,000 radiologic technologists between 2004 and 2014 [6]. The current trend indicates that there will not be enough personnel to keep up with this increasing demand. Based on their annual survey of enrollment in Radiography programs, the American Society of Radiologic Technologists (ASRT) estimates that there will be a 6.75% shortfall in the supply of radiographers nationwide [7]. Therefore, despite an uptrend in enrollees since 2001, the number of students...
admitted to Radiography programs still has to increase and be sustained over several years in order to meet the Bureau of Labor Statistics projections.

**Impact on patient care**

The shortage of RTs and radiologists has a negative impact on the quality of patient care. The ASRT compared their annual Radiology department surveys done in 2003 and 2004 and found that the number of respondents reporting increased wait times for procedures, cancelled procedures, decreased patient satisfaction, and increased patient complaints as a consequence of insufficient personnel had increased from 22 to 36% [8].

**The radiologist assistant as a solution to workforce needs**

Historically, Radiologic Technology has offered its practitioners few opportunities for career advancement. Typically, RTs seeking to advance their career educate themselves in a direction that leads them away from the clinical setting. With the introduction of the radiologist assistant, RTs now have a career option that keeps them within Radiology. This career pathway benefits the profession in several ways. First, it fosters continued professional development. Second, it retains the highly motivated and ambitious technologists by providing tangible rewards for pursuing additional education or credentialing. Finally, it makes Radiologic Technology a more attractive career option.

**Rebuttal to contrarians’ views**

The introduction of a new profession into the radiology environment, while embraced by many, has its skeptics. Baker and Merkulov [9] express caution regarding the introduction of a new job category in medical imaging. They contend that “actions taken in the past to alleviate a putative shortage or an apparent surplus have brought with them unintended consequences that, in turn, have warranted additional corrective action” (p. 187). The “unintended consequences” cited by Baker and Merkulov refer to increased competition from physician extenders and the gradual erosion of physician autonomy. They worry about the possibility of losing turf to RAs rather than the potential to improve patient care, reduce costs, and alleviate radiologist workload.

Other branches of medicine have faced similar manpower crises to that now being experienced in Radiology. To alleviate the cost and time-related demands placed on physicians in all specialties of practice, tasks that do not require the specialized training of physicians have been delegated to nonphysician providers. Ironically, even the contrarians Baker and Merkulov are quite enamored by the role of physician assistants (PA) in interventional Radiology. They provide this glowing endorsement: “In our institution we have benefited from the services of a physician assistant in interventional radiology and will soon recruit another one. Her daily contributions have been invaluable, allowing us to extend our services smoothly and promptly to meet the demands of referring physicians and patients” ([9], p. 188).

When PA programs were introduced in the mid 1960s, no one could have predicted that their role would become so significant. Dr. Stead, who established the first PA program at Duke University in 1965, stated that “nurses and physicians at Duke Hospital were not overly enthusiastic about our idea” (the establishment of a PA program; see p. 19 of [10]). Their consensus was, “they won’t be doctors, but you’re trying to train them to be doctors—you’re just going to produce a poor imitation.” Four decades later, physician assistants are well-established and are significant contributors to patient care.

The acceptance of PAs by Drs. Baker and Merkulov, however, is quite puzzling since they are so wary of losing turf to other physician extenders. They declare that “for almost every allied healthcare category, the record has been one of increasing encroachment on the perquisites of the physician supervisor” ([9], p.192). They further state that “if the position of radiologist assistant gains popularity it will eventually intrude into the radiologist’s traditional duties” (p. 192). Is there no fear of this gradual intrusion by PAs? Why are Drs. Baker and Merkulov making an exception?

Interventional radiology requires a much higher degree of patient care and treatment than other Radiology specialties [11, 12]. According to Stecker et al. ([11], p.221) “many of the newly emphasized clinical aspects of IR, including consultations and office visits and their associated evaluation and management coding, pre-approval of physician services and other communication with insurance companies, scheduling of adjunctive procedures, telephone follow-up, and database management, are not part of the traditional radiologist’s training and interest.” Interventional Radiology is a fairly new specialty and has changed its emphasis from diagnosis to treatment [11]. The PAs’ training and scope of practice make them ideal for this specialty where there is a substantial need for pre- and post-procedure patient care. This is especially true when Stecker et al.’s assertion that Radiology department culture is “not suited for, or interested in, front-line clinical care” ([11], p. 221) is taken into account.

There is obviously a role for non-physician clinicians in Radiology. Baker and Merkulov stated that their primary concern was that the RA would not alleviate Radiologist workload sufficiently since their clinical role was narrowly defined. To frame our response to this criticism, let us recount how the list of RA responsibilities was established. The clinical role and responsibilities of the radiologist assistant were initially defined in a consensus document issued in March 2002. The following came out of a meeting of the various stakeholders, including representatives from the American College of Radiology, ASRT, American...
Registry of Radiologic Technologists (ARRT), state agencies responsible for RT licensure, and RT training programs: “With radiologist supervision, the radiologist assistant performs patient assessment, patient management, fluoroscopy and other radiology procedures. The radiologist assistant also makes initial observations of diagnostic images, but does not provide an official interpretation (final written report) as defined by the ACR Standard for communication: diagnostic radiology” ([3], p. 2). The clinical role was further clarified in a press release issued by the American College of Rheumatology (ACR) in May, 2003. The PR document stated that: “In addition to the radiologist-supervised patient assessment and management, the radiologist assistant would perform selected exams, including:

1. Obtaining consent for and injecting agents that facilitate or enable diagnostic imaging
2. Obtaining clinical history from patient or medical record
3. Performing pre- and post-procedure evaluation of patients undergoing invasive procedures
4. Assisting radiologists with invasive procedures
5. Performing fluoroscopy for noninvasive procedures with the radiologist providing direct supervision of the service
6. Monitoring and tailoring selected exams under direct supervision (e.g., IVU, CT urogram, GI studies, VCIG, and retrograde urethrogram)
7. Communicating the reports of the radiologist’s findings to the referring physicians or an appropriate representative with appropriate documentation
8. Providing naso-enteric and oro-enteric feeding tube placement in uncomplicated patients
9. Performing selected peripheral venous diagnostic procedures.

The ACR approved the establishment of the RA profession and agreed to the general statement of their role in May 2003.

The original list of responsibilities was compiled during the preliminary phases in the establishment of the RA. When we examine the nine duties listed in the ACR policy statement, the most notable feature is that some of the functions are fairly specific, whereas others are quite broad. Role delineation and development of clinical competencies were more clearly defined as the RA curriculum took shape.

The ARRT surveyed radiologists and radiology practitioner assistants in 2004 to draft a preliminary RA role delineation. “Radiologists were asked to rate each of 80 possible clinical activities as to whether the activity should be considered as an R.A. responsibility and, if so, under what level of radiologist supervision the activity should be performed. R.P.A.s were asked to indicate if they performed the activities and, if so, what level of supervision they received. Approximately 30% of the 1,000 radiologists contacted responded to the survey. About 56% of the R.P.A.s responded” ([13], p. 5).

The performance of fluoroscopic procedures is just one (number 21) of the 35 activities listed by the ARRT in their Radiologist Assistant Job Analysis. Also, in its development of a certification examination for radiologist assistants, the ARRT conducted a role delineation survey that identified the specific activities that would be conducted by the RA.

Baker and Merkulov assert that the performance of fluoroscopic procedures is the key aspect of the RA clinical role. They also do an analysis of GI studies, arguing that the performance of such procedures was a miniscule part of Radiology practice and delegation of that responsibility to RAs would not make an appreciable dent in the radiologist workload. The ACR and ASRT documents refer to the performance of fluoroscopic procedures of which GI examinations is but a subset. Furthermore, the ACR/ASRT joint policy statement that is used by Baker and Merkulov in their analysis was tabled very early in the RA development process. To focus on GI studies based on this preliminary document was premature; furthermore, the two physicians have lost sight of the big picture. The general intent is what’s relevant—the RA was conceived as a means to relieve radiologists of their workload. The premise is that some tasks currently being performed by radiologists do not require their specialized knowledge or skills. As the process unfolds, the entire scope of Radiology practice should be examined continuously to identify those tasks that could be delegated to RAs.

The complexity and variety of interventional procedures have expanded to such an extent that roles have been updated and redefined. PAs and anesthetists, for example, are now vital members of the interventional Radiology team that once was primarily staffed by radiologists, radiology nurses, and special procedures technologists. Undoubtedly, job analyses should be conducted to ascertain staffing inefficiencies. If the aim is to minimize redundancy of job responsibilities then an upgrade in the skills of the technologists and radiology nurses is an option that should also be considered.

According to Baker, the ACR agreed to the establishment of the RA for defensive reasons. The authors suggest that the ACR had resigned itself to the inevitability of these programs. So much so that they acted promptly to safeguard quality, and ensure that they had some input in the decision making process. Baker and Merkulov’s suppositions are in stark contrast to the public position taken by the ACR. In a press release dated May 27, 2003, E. Stephen Amis Jr., MD, chairman of the ACR Board of Chancellors, is quoted as saying: “The ACR accepted the challenge of being a leader on this issue and effecting a positive outcome rather than continuing to allow economic and political pressures to control this critical aspect of radiology. We feel that this will produce a worthwhile outcome that will allow us to address our critical workforce needs while ensuring the highest level of care for patient.” The ACR was under no obligation to sanction the establishment of the RA, yet they did so within one year of being petitioned by the ASRT. The prompt and collaborative manner of their actions and their public pronouncements removes all need for conjecture regarding
their motives. The ACR is unequivocal in their assertion that RAs will alleviate the manpower shortage in Radiology.

**Discussion and conclusion**

Radiologists should be at the forefront of any effort to alleviate their workload. The quest for an assistant must be spearheaded by the persons who will ultimately be assisted. Opinions such as those expressed by Baker and Merkulov are therefore extremely important; since without the support from radiologists, the establishment of RAs as viable members of the health care team will fail. Baker sounded a cautionary note to radiologists speculating that similar to nurse anesthetists and dental hygienists RAs could become so well-established that they challenge radiologists for autonomy and power. In the face of encroachment of nonradiology specialties into medical imaging, the skittishness about RAs seems misdirected. Overworked radiologists will be unable to effectively manage their caseload. This will provide numerous openings for various non-Radiology physicians and other clinical personnel to fill the demand. We are already witnessing the proliferation of private imaging centers in many urban and suburban settings due to the inability of traditional hospital-based Radiology departments to offer imaging services expeditiously. There is an increased competition among specialties and lines of demarcation between them are blurred. In much the same way as Interventional Radiology has encroached on what was traditionally the surgeon’s domain, many procedures once considered the sole purview of Radiology will be annexed by other branches of medicine. Hillman and Neiman project that “a greater share of medical imaging may be done by other specialists tied to specific technologies” ([14], p. 11). Chiropractors, physical therapists, physician assistants, and nurse practitioners are becoming quite adept at making preliminary imaging assessments. Delays in the provision of image interpretation, especially in emergency situations, will encourage non-Radiology physicians to encroach on this, the primary domain of Radiologists. It has been demonstrated in the UK that nonphysicians, given the proper training, are able to provide image interpretation services. Many non-Radiology specialties such as pain management and orthopedics routinely utilize fluoroscopic equipment in conjunction with contrast agents without any input from radiologists. Bone densitometry and medical sonography have migrated beyond the Radiology environment. This was highlighted in the broadcast media recently when a popular Hollywood actor was reported to have purchased an ultrasound machine and was using it to view images of his baby.

Fear of losing turf to RAs is unfounded. The RA would function solely under the supervision of the radiologist in a Radiology environment. This limited scope of practice will help keep imaging services, the proverbial “genie”, securely in the Radiology “bottle.” In alleviating radiologist workload and being limited to a clearly defined jurisdiction, RAs may well be the ideal accomplices in the effort to prevent further migration of imaging to other specialties.

It is said that the physician should delegate those aspects of his/her job that do not require their specialized skills and knowledge. Increasingly, it is being revealed that with the proper training, persons with the right attitude and interest can acquire patient care skills and apply them proficiently. With the advent of the RA, radiologists have an opportunity to select, educate, and evaluate prospective nonphysician practitioners. RA training should be based on the needs of radiologists and the physicians’ concept of the duties and responsibilities that should be delegated. By mutual agreement the radiologist and radiologist assistant can function synergistically in the medical imaging environment to optimize patient care.

**References**