The Future Interventional Radiologist: Clinician or Hired Gun?

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The field of interventional radiology is currently at a crossroads. The position and role of the future interventionalist will be defined by the direction taken by the current generation of practitioners. There are four key issues that must be dealt with: (i) the dichotomous relationship between diagnostic and interventional radiology, (ii) the idea of the “hired gun” interventionalist versus that of the clinician interventionalist, (iii) the public’s image of the interventional radiologist, and (iv) “turf wars” with other specialties.


Abstract: UAE = uterine artery embolization

PICTURE this: it is now 5 pm Friday, and you have just completed a renal angioplasty procedure on your patient. You had hoped to finish earlier; however, the patient’s artery was particularly narrow and difficult to access. After speaking with the patient and informing her that she will spend the next 12 hours in the surgery recovery room while her blood pressure stabilizes, you walk out the door, on the way grabbing your lab coat. You are off to the interventional radiology inpatient ward for supper rounds!

As you arrive, you see one of the radiology residents speaking with the nurse. Apparently, two angioplasty patients are of immediate concern: a patient from the day before who has developed fever, shortness of breath, and decreased oxygen saturation, and a patient from 2 days ago who has developed contrast medium–induced nephropathy. To deal with the first patient, you auscultate his lungs, review the chest radiograph ordered previously by your resident, and concur with your resident’s management plan (levofloxacin 500 mg intravenously four times daily). For the second patient, you decide that a nephrology consultation would be best.

BIRTH OF A NEW SPECIALTY

By many accounts, the field of interventional radiology was born in a 1963 speech at the Czechoslovak Radiological Congress in Karlovy Vary by Charles Dotter, a radiologist trained at Cornell University and, at the time, practicing and teaching at the University of Oregon. In his speech, he considered the therapeutic possibilities of the catheter, until then a device used solely for diagnostic purposes. As Rosch et al (1) put it, it was as though “a bomb had been dropped” for those in attendance. Shortly thereafter, he began modifying the Seldinger technique for therapeutic purposes. After Dotter’s first successful “intervention”—dilation of a stenosed superficial femoral artery in an elderly patient who refused amputation (2)—his experience and reputation quickly increased, until Alexander Margulis formally gave the rapidly developing field the name of “interventional radiology” (3).

The field of interventional radiology has since blossomed, and is currently a rapidly evolving and important field of medicine with a vast array of therapeutic procedures available. Indeed, it has led one of the major drives in medicine today, the push to treat and cure with minimal invasion of body habitus. And that it is leading this field should not be surprising: without the benefit of direct visualization of the inner body and the area of interest, one must have an alternate method of visualization. This alternate method is clearly in the domain of radiology.

CROSSROADS

Despite all the past and current successes, interventional radiology is currently at a crossroads, with many interventionalists (appropriately) reassessing how they think of themselves and their role in patient care. Indeed, professional radiology societies are actively supporting role development, including such groups as the College of Radiographers (4). In addition, many prominent and well-respected interventional radiologists are speculating on the future of the field and its subspecialties (5).

The potential for the interventional radiologist is vast, as the number of image-guided procedures of all types continues to increase (6). However, there are a number of issues that must be dealt with and questions that must be answered to help better define the future interventionalist. There are four specific issues pertinent to the future
role of the interventional radiologist that we wish to discuss in this article:
1. The dichotomous relationship between diagnostic and interventional radiology;
2. The idea of the “hired gun” interventionalist versus that of the clinician interventionalist;
3. The public’s image of the interventional radiologist; and
4. “Turf wars” with other specialties.

BRANCHING OF DIAGNOSTIC RADIOLOGY AND INTERVENTIONAL RADIOLOGY

Many have criticized the inclusion of diagnostic and interventional radiologists under the same umbrella department. The roles and (ideal) job descriptions of the two are significantly different. The interventionalist requires clinic time, clinic space, and additional procedure time their counterparts do not. Indeed, interventional radiologists must have maximum freedom from the reading room to best be able to build their practice, determine their future role, and not be burdened by expectations of a diagnostic radiologist’s view of productivity (7). Many of the advertised interventional radiology positions in the United States, for example, still proclaim that the interventionalist can spend as much as 30%–50% of his or her time performing interventions, indicating their belief that this is as good as it gets. This dilemma has led some prominent interventionalists to suggest a division between the two fields, citing the successful example of radiology and radiation oncology (8).

Such “fragmentation” comes with considerable dangers (9). Separation from diagnostic radiologists separates interventionalists from general advances in imaging on which their past, present, and future practice so critically depend. In addition, separation could potentially endanger the current culture of cooperation between the two groups, not only in terms of patient care, but also research. Diagnostic and interventional radiology are intimately entwined, such that a formal separation would turn out to be a horrendous loss for both fields. Separating interventional radiology from diagnostic radiology would be very much like separating interventional cardiology from cardiology. In fact, the distinction between diagnostic and interventional radiologists is even ambiguous when the more fundamental procedures that both diagnostic and interventional radiologists perform are considered, which some have predicted will experience the greatest increase in the future (10). In this case, so-called turf wars may break out even among the two types of radiologists. Separation would also greatly impede the interventionalist’s ability to perform many procedures, as there is often a necessity to perform an unplanned imaging study before and/or during a procedure; if diagnostic radiology was a stand-alone department, such a study could take hours at least. (Conversely, some would argue that if interventional radiology was a stand-alone department, it would therefore be considered a “referring” department and may in some hospitals in fact receive better service. Still, in hospitals with such a circumstance, this almost suggests a lack of respect by the particular diagnostic radiologists for their interventional radiology colleagues and an internal problem that must be worked out between the two groups.) In addition, a separation between diagnostic and interventional radiology would likely have important implications in terms of training that would be much greater than the recent adoption by the American Board of Radiology of the pilot 6-year Diagnostic and Interventional Radiology Enhanced Clinical Training Pathway or the 6-year Clinical Pathway. Finally, separation would certainly lead to a substantial decrease in the bargaining and political power of each respective group (11), which is very important when dealing with various governmental and regulatory organizations including the American Medical Association, the American Board of Medical Specialties, and the Centers for Medicaid and Medicare Services.

The solution, as Becker (12) noted, may simply be a better understanding of the two specialties by each other, and acceptance of the 1999 American College of Radiology policy statement, “Support of Clinical Patient Management by Vascular and Interventional Radiologists” (13), which states the importance of clinical patient care in the realm of interventional radiology. Becker (12) listed the key elements of the policy statement:
1. Recognized importance of clinical service development;
2. Opposed attempts to prohibit clinical privileges;
3. Affirmed importance of physician/patient relationships; and
4. Encouraged/supported establishment of clinical services, including the clinical team, clinic space, time, admitting service, noninvasive laboratory, and other services.

Despite the American College of Radiology policy statement, the subsequent 2000–2001 Society of Interventional Radiology (SIR) socioeconomic survey found that most interventional radiologists still did not believe they had support within their groups to develop their clinical practice. The policy statement was largely ignored. The SIR then turned to creating clinical practice guidelines (14): it would be more difficult to ignore an accepted set of standards detailing the necessary conditions for the optimal care of interventional patients.

We may find that the dominant force in the near future is the common drive of the medical community and the public toward noninvasive procedures: assuming interventional radiologists will retain at least some of their “turf” (a fair assumption), greater demand will translate into more opportunity for the interventional radiologist to practice closer to 100% interventional radiology. Although this may still depend to some extent on the degree of support from the general radiology community, such a situation will create a tremendous amount of pressure for change from the current model.

THE INTERVENTIONAL RADIOLOGIST: CLINICIAN OR HIRED GUN?

The opening of this commentary began with a scenario describing the potential future interventional radiologist. Whether the future interventional radiologist is to be a full-fledged clinician or one of the most important questions currently facing the field. In the past, the role of the interventional radiologist has been more of a hired gun: other clinicians requested an intervention to be performed on their
patient, and if the interventionalist was agreeable, (s)he came in, did the job, and left. Traditionally and currently, most interventional radiologists answer primarily to the ordering physician (15), even though a majority currently at least have admitting privileges (6). Will the future of interventional radiology include inpatient wards with greater patient contact and follow-up, or will it remain status quo?

In fact, the idea of an inpatient interventional radiology ward is far from new. Kinnison et al (16) reported on their experience with such a ward, admitting 133 patients to a cardiovascular radiology admitting service under the care of a cardiovascular radiology fellow and a staff physician. The ward was part of the general surgical inpatient unit, but otherwise was set up much as any other ward, with 24-hour call coverage, twice-daily rounds, and review of physical findings and laboratory results.

The results of Kinnison and colleagues (16) were very interesting. They noted that, by increasing their responsibility for clinical patient management with an inpatient and outpatient clinic, several advantages were appreciated:

1. The referral base was broadened. Community physicians were more likely to refer their patients. Previously, they would need to refer (and in the process, lose control of) their patients to another physician first, who would then refer them to the interventional radiologist. This may also mediate the ever-mentioned turf wars between interventional radiologists and other specialists.

2. Greater opportunity for patients to ask questions.

3. Enhanced rapport with surgical staff and house officers.

Those in surgical specialties were more likely to appreciate the work of the interventional radiologist, as much of the common "dirty work" was shared. In addition, the interventional radiologist became a referral source for the surgeon. This could also apply to other specialties (eg, an interventional radiologist would surely consult a nephrologist in the case of acute renal failure secondary to contrast nephropathy).

4. A greater sense of camaraderie among other specialties.

Similar to the aforementioned, there was a sense of sharing much of the less-desirable work.

5. Increased contact and consequent improved rapport with patients.

The authors (16) note that this increased patient and physician satisfaction, as well as decreasing the likelihood of medicolegal issues.

6. More consistent follow-up: increased patient contact increased the opportunity and probability of follow-up.

7. Learning experience.

Interventional radiologists often pride themselves as being masters of the whole body, with extensive knowledge not only of anatomy but also of pathology and physiology. With increased patient contact before and after a procedure, there is potential for the learning opportunities to be vastly increased.

Of course, there were also disadvantages:

1. The additional time requirement. Interventional radiologists, particularly in today's environment of ever-increasing workloads, do not have much time to spare. This may be the greatest disadvantage to interventional radiology inpatient wards and the greatest advantage to the current hired-gun approach. In the study of Kinnison et al (16), this was not much of a problem, as the ward responsibilities were incorporated into the schedule of the cardiovascular fellowship training program. Indeed, inpatient wards may be a reasonable option only for larger radiology training programs with a full complement of residents and fellows.

2. Lack of monetary remuneration.

Interventional radiologists must be fairly compensated for ward duties if interventional radiology inpatient wards are to become a reality. However, this is a technicality and not an intrinsic disadvantage of inpatient wards.

Katz et al (17) discussed the logistics and optimal environment for setting up a community interventional radiology practice. They believe in an equal role in patient care, including the advocacy of interventional procedures and their benefits as well as the value in offering outpatient visits and admissions.

Murphy (15) recently published an excellent commentary in JVIR in which he discusses the issue. He notes that, typically, the interventionalist believes that his/her primary responsibility is to the ordering physician and his/her secondary responsibility is to the patient, such that the interventionalist will often defer the ultimate treatment decision and "permission" to perform the procedure to the ordering physician, a habit learned from training grounded in diagnostic radiology. This occurs even after the procedure has been explained to the patient and consent obtained: if the ordering physician disagrees with the plan, the procedure will often be canceled, in part because the interventionalist depends on the referring doctor for access to patients, and therefore his/her livelihood.

As Murphy (15) argues, this is, of course, a conflict of interest and therefore unethical. The interventionalist has a duty of care to the patient, and in such cases in which the interventionalist and patient agree on a treatment and the referring physician disagrees, the procedure should be performed; any considerations of a future quid pro quo are irrelevant. As Murphy (15) goes on to say, all patients undergoing an interventional radiologic procedure should be seen as being under the care of an interventional radiologist, who should consider himself or herself the primary physician for that patient.

Clinically based interventional radiology is the obvious progression for the field. However, it may be of particular interest to note that papers such as those of Kinnison et al (16) and Katz et al (17), the former of which was published nearly 20 years ago, have received very little follow-up. There are several possible explanations for this. As Kinnison et al (16) mentioned, the additional time requirement and lack of remuneration are obvious disadvantages. Diagnostic radiologists often have fewer years of training, are remunerated as much or more than their interventional radiologist counterparts, and generally work fewer hours with lighter workloads. Devoting additional time to an interventional radiology ward without receiving fair financial remuneration is a sacrifice many staff interventional radiologists may be unwilling to make. For a clinically based interventional radiology model to be successfully adopted by the interventional radiol-
ogy community, these issues must be addressed at the level of the various radiology organizations. Indeed, SIR currently has a very strong role as a catalyst for change and in the active endorsement of this model.

A clinically based interventional radiology practice model may also attract a greater number and/or a more diverse group of medical students to the field, as many do not enter or even apply for a radiology residency simply for the fact that there is thought to be no patient contact (although many do enter for the same reason). Perhaps radiology departments need to attract a different type of medical student.

THE PUBLIC’S PERCEPTION OF THE INTERVENTIONAL RADIOLOGIST

Both issues mentioned thus far are more internal to medicine. What may prove to be the greatest external problem facing interventional radiologists is the public’s view of interventional radiology, and it is perhaps the public’s view that will be the most influential. In both his 1999 Charles T. Dotter Lecture and his 2000 Radiological Society of North America Annual Oration in Diagnostic Radiology, Becker (7,12) pondered what the term “interventional radiologist” meant to the general public. His conclusion is not surprising:

If you say the word “surgeon” to a lay person, (s)he conjures a mental image of a doctor with a green scrub suit on, a cap, a surgical mask, scalpel in hand. If you say the word “cardiologist,” one may conjure an image of the heart. If you say the word “interventional radiologist” to the same person, (s)he conjures nothing (7).

Dotter himself had reservations about the term “interventional radiology” for many of the same reasons (1). The general public associates radiology with x rays, and perhaps computed tomography and magnetic resonance imaging, not with disease treatment and cure. Even many medical students, particularly in their preclerkship years, often do not understand the role of the interventional radiologist.

To this end then, there has been much talk of a name change. In the 2000 Charles T. Dotter Lecture (8), Keller suggested the terms “minimally invasive surgery” and “image-guided surgery.” Other suggestions include “radiological surgery” (12), “image-guided microsurgery” (18), and “image-guided intervention” (6). Some interventional radiology departments have begun to act on this realization: for example, the interventional radiology department at The Hospital for Sick Children in Toronto launched the Centre for Image-Guided Therapy in 1998.

The risks of a name change are obvious, however. Several years ago, before the name of the Society of Cardiovascular and Interventional Radiology was changed to the SIR, the issue was hotly debated, and several strong arguments in favor of maintaining the term “interventional radiology” in the Society’s name were made. The first was that the majority of primary care referring physicians were already familiar with the term “interventional radiology,” and a name change would be confusing. The same would apply to physician residents and trainees. In addition, interventional radiology, although still a young field, is becoming more widely known by the public. Changing the name at this point would also surely lead to some confusion among the public. If there is to be a name change, therefore, it must be followed by an intensive advertising campaign geared toward the public.

If the name is to be changed, the new name should include within it some reference to radiology and/or intervention and no mention of the word “surgery”: changing the name to one that does not include “radiology” and/or one that includes “surgery” may further isolate interventional radiology from the broader field of diagnostic radiology and, in the process, open the door to additional loss of “turf.” In addition, the word “surgery” carries with it many negative connotations among the public, such as large incisions and scars and high risk, precisely what interventional radiology hopes to avoid. And finally, there are legal aspects that must be also considered in adopting a name that includes “surgery,” as interventional radiologists are not regulated by a surgical board.

Still, the larger issue is not being addressed. The public simply does not know much about the field. The solution, simply, is intensive public relations campaigns. As one of the patients in a uterine artery embolization (UAE) study we are conducting recently pointed out to us, a prime-time commercial by a movie star who has undergone successful UAE could do wonders for the field. Imagine it: a celebrity talking about how she noticed abdominal bloating, urinary frequency, and heavy periods a year ago, later diagnosed with fibroids, and given the “option” of a hysterectomy, only to find out later about a new branch of radiology, interventional radiology, which can perform a minimally invasive UAE procedure. There would then be a brief description and explanation of the process, followed by some statistics. Or imagine an “Oprah” episode on UAE in which women who have undergone UAE procedure are interviewed, along with others who have had a hysterectomy (in fact, this seems like something that may be of interest to the show). Not only would the public be educated, but medical caregivers and colleagues from other specialties would be educated as well.

The public’s view may well be our largest ally.

TURF WARS

There is little doubt in our minds that current interventional procedures and future similar procedures will dominate medicine. This is a result of the aforementioned intrinsic advantage of the specialty over the surgical specialties: noninvasive procedures. Whereas the basis of interventional radiology in the future is not in question, the domain of the procedures may be: will interventional radiologists continue to perform the majority of interventional radiology procedures? There has been a huge amount of discussion of turf wars by and among many specialties, and interventional radiology is especially at risk, with many of our procedures being increasingly performed by non-radiologists (eg, noncoronary angioplasty and stent placement). There has even been talk by some of merging specialties, particularly vascular surgery and vascular and interventional radiology (19).
From the view of the public, turf wars among specialties are likely beneficial if there is an acceptable level of care maintained and mandated by the respective institutions. In nearly all business models, competition benefits the buyer and essentially creates a market economy: those who can provide the best and quickest service will win the competition with other sellers. In this sense, medicine is not all that much different. If a town has a gynecologist but not a vascular interventional radiologist, and both fields perform UAE procedures with acceptable expertise, a woman with a fibroid can stay within her own town for the procedure rather than travel to a larger center that does have an interventionalist. The same reasoning applies if the town has a specialist from both fields, but one can perform the service sooner than the other. The key for the seller, then, is how to optimize the procedures offered by them, ie, how to provide the best product.

Rather than using the Neanderthal logic that procedures discovered by interventionalists should be performed by only interventionalists, we will instead make the assumption that the interventional radiologist is the best trained to perform these procedures as a result of a strong foundation in diagnostic radiology, and therefore can potentially offer the best product, if this is not the case already. We should therefore focus on how to protect our turf in the interest of protecting or best serving the public.

So why, then, do others want to perform “our” procedures, and what can be done to protect our turf? The first question is relatively straightforward to answer. Others want to perform our procedures for all the same reasons we do: they are effective, efficient, and noninvasive, and lead to high degrees of patient satisfaction. In addition, they may view our procedures as major income sources. Those in other specialties also surely realize they represent the future of much of procedural/interventional medicine, and indeed, those in some specialties may feel threatened. As Dorfman (6) pointed out in his 2002 Dotter Lecture, “[Charles Dotter] would be pleased to know that the practitioners from other specialties that once decried our procedures as not durable and clinically defensible now not only accept those procedures as valuable, but covet them for themselves” (6).

The second question is not as simple to answer; however, the issue must be dealt with. As Becker (7) said, a wait-and-see strategy will prove fruitless and dangerous. There is no magic solution. Becker (7) suggested four key approaches to insure our future:

1. Active clinical involvement;
2. Strong relationships with hospital administration;
3. Creative partnerships with other disciplines, including revenue sharing; and

Dorfman (6) argued that SIR should consider actively recruiting membership from other specialties that perform image-guiding therapies and focus on increasing the minimally invasive market in toto rather than fortifying our ground. After all, interventional radiologists have a history of teaching procedures to other specialists: Dotter himself used to enthusiastically teach cardiologists. As Dorfman (6) pointed out, this coalition-building would increase the bargaining power of interventionalists in terms of remuneration, clinic space, etc. However, this may also lead to further erosion. We would argue that there is little risk of a shrinkage of the minimally invasive market, only of the interventional radiologist’s share.

The best approach, in our view, is to tackle the issue at every level possible. We must get involved in studies of developing interventions and stake our claim early. We must encourage research among ourselves and collaborate with other radiology departments. We must foster resident interest in interventional radiology. We must fight for fair compensation. When a new procedure is “invented” by the interventional radiologist, that department has a responsibility to actively and aggressively teach and train other interventional radiologists—this is a critical time when a procedure can be “fortified.”

We believe that perhaps the two single most effective strategies we can use are (i) increase the number of interventional radiologists, and in the process increase the energy in the field, and (ii) to undertake a massive public relations campaign among medical students, colleagues of other specialties, and the public. The method by which to carry out these two strategies is less clear. However, we would like to make two points regarding this.

First, do not underestimate the power of educating medical students. Medical students are the physicians of the future and are at their most impressionable time during medical school. Educating them about the field of interventional radiology may (i) boost the number interested in the field, and therefore the number of future trainees and (ii) increase awareness of the field and the solutions it has to offer among these future referring physicians. There are numerous ways in which interventional radiologists can interest and educate medical students about the field; however, for the sake of brevity, we will not discuss these here (we are about to submit a lengthy manuscript on this topic). Actively involving students with offers of research and/or shadowing/ elective opportunities and interventional radiology–based seminars and tutorials by lively staff interventional radiologists or fellows are two such examples.

Second, we acknowledge that the issue of funding for a massive public relations campaign is difficult, and we cannot offer any miracle solutions or new suggestions. Funding from industry is more easily obtained when it is directed at promoting specific products as opposed to general interventional radiology advertising. Although every bit helps, it may not be as effective as a general interventional radiology public relations campaign. Perhaps some sort of SIR public relations fund to which private citizens can make donations can be created. Members of the public who have undergone a successful interventional radiology procedure are often aware that much of the public does not realize such minimally invasive solutions exist (eg, UAE as opposed to hysterectomy), and may therefore be willing to help spread the word via financial contributions.

Above all else, we must be willing to become actively involved, outspoken, and willing to stand up for our specialty and hold our ground: a passive role will easily lead to our relegation to the sidelines.
CONCLUSION

There is little doubt that the future roles of the interventional radiologist will include those determined by the CanMEDS 2000 project: medical expert/clinical decision-maker, communicator, collaborator, manager, health advocate, scholar, and professional (20). However, because there is significant room for interpretation of the definitions of these roles, the specific model of the future interventional radiologist is not as clear. Whether interventional radiologists are to become clinicians in the future is a decision the field must make now.

We believe that adoption of the clinically based interventional radiology practice model is an inevitable and necessary step for the continued successful evolution and growth of interventional radiology. Although many interventional radiologists have already taken this step, the vast majority have not. To convince the greater interventional radiology community to become full-fledged clinicians, issues such as fair remuneration and time devotion must be addressed. SIR must also continue its active encouragement of this model, and training institutions should consider adopting and promoting the Diagnostic and Interventional Radiology Enhanced Clinical Training Pathway to increase the number of interventional radiologists in the future.

Whether this decision ultimately remains predominantly in the jurisdiction of the interventional radiologist, diagnostic radiologist, competing specialist—or whether the public has the ultimate say—remains to be seen.

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References