Value of Interventional Radiology: Past, Present, and Future

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Abstract

Interventional radiology (IR) has had immense growth in importance and value over the last several decades from its founding in the mid-20th century. IR procedures have been widely adopted and an era of IR clinical expertise is upon us. Despite this, there is a perception that IR is simply an imaging study to be ordered and that IR physicians are expendable. This article attempts to explore that. Questionnaires were sent to other specialties and administrators asking key questions regarding the value of IR as a specialty, both for procedural and consultative expertise as well as their thoughts on the future of IR. Answers varied, but consistent opinions were observed that IR is extremely valuable, both procedurally and consultatively, and that expansion of IR services is likely. IR is extremely valuable given its impact on healthcare (lessening morbidity, decreasing length of stay, improving cost) and although there is some misperception of this value, other specialties and administrators understand it well. Newer generations of IR physicians are poised to become even more impactful if they continue to expand their clinical presence.

Keywords

- interventional radiology
- value
- economic impact

Interventional radiology (IR) is a relatively new subspecialty existing for only approximately half a century. Despite this, IR has grown in importance and indeed is a vital component of any major healthcare delivery system or major medical center. Percutaneous, image-guided intervention began with Dr. Seldinger's pioneering technique for safe reproducible vascular access in 1953.¹ The beginning of IR was heralded by the expansion of this technique into diagnosis and intervention. Transluminal angioplasty for vascular stenosis/occlusion and purposeful pharmacomechanical vascular occlusion for bleeding were the two procedures most seminal for the development of IR as a subspecialty and its expansion.² Since that time, IR has continually been at the forefront of pioneering innovation in healthcare and has therefore expanded exponentially. These techniques expanded to outside the vascular system in the 1970s and 1980s and by the mid-1980s, IR had entered a golden era in which there was transition from a diagnostic model to an interventional/therapeutic one.³ Now IR physicians use these techniques in all organ systems and body cavities. These procedures include percutaneous biliary intervention

and nephrostomy catheter placement as well as image-guided abscess/fluid drainage to name a few. With this advent, the era of radiologists being in the background was ending and a new era of radiologists administering consultation and direct patient care was upon us.

Initially these procedures were regarded by other specialties as unsafe, unjustified, or unsuitable, but they rapidly proved to be so safe and effective that they began to be enthusiastically adopted (and in some cases even performed) by other specialties that originally derided them.³ Because of the sheer volume of procedures performed and the fact that patient morbidity has been lessened substantially by them, some of the "value" of IR is inherently understood.

By the "less is more" concept of achieving outcomes through IR's minimally invasive techniques, IR enables healthcare delivery systems to better achieve the "triple aim" of healthcare: improved patient experience, improved community/population health, and reduced per capita cost. It does this by shifting care to outpatient settings and increasing patient throughput while at the same time decreasing risk and shortening recovery times.

Despite the obvious value that IR provides health care delivery systems and referrers, there is some misperception of a lack of value. Indeed in many ways, the perception of IR is more similar to that of common laboratory tests or other imaging studies and IR physicians or groups are thought of as replaceable or expendable. Evidence for this misperception includes adversarial attitudes from hospital systems, confrontational discussions with referrers when honest IR opinions are offered, and declining reimbursements for procedures provided by governmental agencies and insurance providers.

This article explores this disconnect and attempts to understand it. I am part of a physician owned, subspecialized, interventional/diagnostic radiology group with 144 total physicians and 18 IR physicians located in the Midwest. Our IR physicians offer full service body IR from minor procedures such as paracentesis/thoracentesis to major procedures like Interventional Oncology (IO) and transjugular intrahepatic portosystemic shunts (TIPS). We are not employed by any hospital system, but we contract independently with seven different systems and offer IR at 11 sites, 9 of which have full-service IR.

Misperceptions of our value as an IR group are both internal and external. Internally, increased pressure regarding relative value unit (RVU) productivity at the expense of teaching, research, administrative time, etc., hampers our ability to practice build and develop relationships. Although our group is supportive on the whole, these pressures exist and seem to have increased as reimbursement has decreased. Externally, all hospital systems with which we contract continually ask for more and more physician coverage, most of the time without evidence for the need or introspection regarding efficiency concerns. Also, governmental agencies and insurance companies continually decrease reimbursement for our procedures despite the evidence that hospital stays are lessened, risks are mitigated, and therefore overall healthcare costs are decreased by our minimally invasive, efficient care.

For this article, a series of questions was asked of practitioners of multiple specialties including acute care/trauma surgery, surgical oncology, emergency medicine, hospital-based medicine, and palliative care medicine. These questions were also asked of an administrator of a large hospital system and a large radiology group. These questions were aimed at discovering their perceptions of the value of IR for their practices and patients as well as the value of IR for the hospital/system.

These questions are as follows:

1. What makes IR essential to you/your practice/your patients?
2. Do you value IR physicians as clinical experts similar to other services (cardiovascular surgery, vascular surgery, etc.)? Why or why not?
3. How do you see evolution of IR in 5 to 10 years? How will you be using us?

Answers to these questions varied, but general themes were noted. All of those surveyed agreed that IR is essential to their patients. Dr. Mathew Chung, oncologic surgery,

responded: "Quite frankly, I could not adequately care for my patients, preoperatively or postoperatively, with IR help/collaboration." He also stated that the role of IR in consultation is as important as that for procedural expertise, specifically stating that he and his patients are "blessed" to have highly skilled IR physicians with good communication skills. Darryl Elmouchi, president, Spectrum Health Medical Group, and CMO, Spectrum Health System, wrote "IR is somewhat of a connector. There are many services/specialties we offer that rely upon the expertise of our IR team. If we didn't have highly functioning IR, we couldn't offer these other services."

All responders valued IR as not only procedural experts but also as consultative experts on complex patients. Dr. Alistair Chapman, Acute Care and Trauma Surgery, Spectrum Health, stated, "Our team truly values the IR contribution to patient care and respects the opinion of our IR colleagues like any other specialty." This was the general consensus of the responses.

All responders also agreed that the role of IR will continue to expand over the next decade. Dr. Chapman wrote that "there is no doubt that IR will continue to become more robust" over the next 5 to 10 years. Dr. Jeremiah Johns, emergency medicine, responded, "I would expect that IR capabilities will increase as minimally invasive technology advances. As capabilities increase, we will be using IR more and more." Dr. Gretchen Roe, palliative care medicine wrote: "I foresee increased utilization of our IR team as we gain experience with procedures that help with cancer related pain" including "nerve blocks, nerve ablation, RFA," and fluid drainage.

Discussion

Responses to this questionnaire varied but some general themes were apparent. All specialties and administration agree that IR is extremely valuable to their patients and their practices. Indeed, most respondents stated that IR is "invaluable." All respondents stated that the clinical expertise from IR physicians was as important as the procedural expertise and that they considered IR physicians similar to other specialty physicians. All of those surveyed agreed that the role of IR is likely to expand in the future as new, minimally invasive, targeted therapies are developed and anticipated that their use of IR will expand in the future.

Although these are the facts of this analysis, there is a perception of lack of value manifest by hospital administrators' attitudes, adversarial interactions with referrers, radiology practice focus on RVU production, and decreases in reimbursement. Reasons for this perception are complex and likely multifactorial, but it remains a reality for most IR practices.

There is a clear disconnect to the described immense value of IR and the perception that IR is simply a laboratory test or imaging study. Some of this misperception is historical, based on the early days of IR during which IR procedures were ordered and performed without consultative expertise. This was also an era during which "IR physicians" were less clinical, satisfied with not being involved in longitudinal

patient care, and frankly sometimes even resistant to consultation/clinical involvement.

Thankfully in most practices this is no longer the case. The newer generations of IR physicians demand clinical involvement. This is important to both hospital systems (for improved patient care) and radiology practices (because they will be tasked with providing time for practice development and financial resources to allow for it). Although there will likely be some resistance to this concept, it is essential and will be an investment that pays future dividends.

IR remains poised for continued growth. We have an aging population with cardiovascular, venous, and renal disease on the rise. Major advances in cancer therapy have resulted in improved longevity and organ- and patient-specific targeted therapies for which IR has become integral in development and delivery. IR physicians are “connectors” bridging the gap between diagnosis and therapy, procedurally and consultatively. IR works with almost every other specialty in some fashion, developing relationships and delivering innovative solutions to complex medical problems.

Conclusion

Interventional radiology has exploded in the depth and the breadth of the services it provides and in its overall importance despite being a separate specialty for only half a century. During the last three to four decades, IR physicians have left the reading rooms and become more and more clinical, providing both consultative and procedural expertise. IR has transitioned from diagnosis to treatment, performing a wide variety of minimally invasive therapeutic procedures ranging from vascular intervention to oncologic

therapy to fluid/abscess drainage, and these procedures have significantly lessened the morbidity of patients across the inpatient and outpatient spectrum.

Along with this development, the value of a fully equipped IR practice has also grown, but this value is difficult to define and perceptions of it vary. IR provides care to patients referred from every specialty from medicine to surgical oncology, from orthopedics to palliative care, making its value immense but variable.

Although IR physicians do not always feel appreciated for their amazing contributions to healthcare, this survey suggests that this is also a misperception. All of those asked value IR immensely. Newer generations of IR physicians realize that to foster this, a robust clinical practice is mandatory and desired. Even though there will be continued discussion about level of support from hospitals and radiology practices, that investment will pay future dividends as IR continues to innovate, minimize risk, improve patient outcomes, and decrease the overall cost of care.

Conflict of Interest

None.

References

- 1 Seldinger SI. Catheter replacement of the needle in percutaneous arteriography; a new technique. *Acta Radiol* 1953;39(05): 368–376
- 2 Baum RA, Baum S. Interventional radiology: a half century of innovation. *Radiology* 2014;273(2, Suppl):S75–S91
- 3 Murphy TP, Soares GM. The evolution of interventional radiology. *Semin Intervent Radiol* 2005;22(01):6–9