

commitment to the highest clinical and process standards.

No one said that competition would be easy—but it sure is fun if you have a plan, train properly, and learn to execute. You should only represent to your institution what you are sure you can deliver. Otherwise, you will certainly lose credibility and in the long run you will lose the competition.

**2:25 p.m.**

**So, You Think That Procedure Is a Money Loser? Wrong—Value Assessment for the Private Practitioner**

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Interventional radiology has evolved dramatically and continues on its course of rapid change. In addition to growth in the procedural aspects of the specialty, ongoing strategic planning calls for interventionalists to develop more clinically oriented practices (1). As interventional radiology thus evolves as a distinct specialty from its parent diagnostic radiology (2), radiology groups will need to assess the clinical, political, and economic impact of how interventional radiology is practiced in their communities.

With the implementation of interventional radiology's new strategic vision (1), the potential for conflict will undoubtedly exist as many increasingly clinically oriented interventionalists continue to practice under the umbrella of traditional diagnostic radiology practices. Those groups will appropriately scrutinize the plethora of implications of such arrangements. With regard to such issues, interventional radiologists may be forced to defend the value of their services—and their new vision—to the practice at large.

Many of these issues will be difficult to completely address in a quantitative manner. The economic implications, fortunately, lend themselves to more objective analysis. With the appropriate tools, interventional radiologists will be able to demonstrate not only the direct economic value of the services they offer, but also the indirect value of their work with respect to subsequently generated services—services provided by both the interventional radiology section and the radiology group as a whole.

**Direct Economic Impact of Interventional Services**

Because of their intensity and complexity, interventional radiology services have a disproportionately high impact on the total relative value units (RVUs) of service generated by a radiology group (3,4). The direct economic impact of any service is measured relatively easily.

For a rudimentary and quick analysis, interventionalists can compare the revenue they generate with the revenue of the average physician in their practice. Unless interventionalists practice full-time interventional radiol-

ogy (at the exclusion of diagnostic radiology), however, such an analysis is unable to separate the actual revenue generated by interventional work compared with that generated from other subspecialty work that the interventionalist may perform, such as body imaging. This is more than just a theoretical limitation of such an analysis: a recent Society of Interventional Radiology (SIR) survey revealed that the typical SIR member spends less than half of his professional time performing interventional radiology procedures (5). Of the typical interventionalist's time,  $49.8 \pm 21.6\%$  (range, 5%–95%) was spent performing interventional procedures,  $36.6 \pm 23.3\%$  (range, 0%–90%) providing diagnostic radiology services, and  $6.6 \pm 5.4\%$  (range, 0%–30%) providing clinical evaluation and management patient services. The balance was spent in activities such as administration and research.

Utilizing practice billing records, the direct economic impact of interventional radiology services can be calculated, regardless of physician provider. If a list of Current Procedural Terminology (CPT) codes utilized in the interventional lab and their frequency can be extracted from the entire practice's billing system, these can be converted into either dollars or relative value units (RVUs) using spreadsheet software and electronic databases available from a local Medicare carrier or the Centers for Medicare and Medicaid Services (6), respectively. The composite RVU economic impact of all those services can then easily be calculated (7):

$$\text{RVU impact} = (\text{frequency of code}) \times (\text{RVU of code}).$$

If one's billing system allows for line-item posting, then actual service revenue may be extracted from that system. If not, a similar calculation could be performed for revenue, utilizing a local carrier's fee schedule. Since lesser-valued components of a complex multi-component interventional procedure are discounted by 50%, however, limitations exist on using such a calculation to compare revenue from interventional services with that from non-interventional parts of a practice. Unlike procedural services, subsequent diagnostic radiology services on the same day are rarely discounted.

**Indirect Economic Impact of Interventional Services**

In addition to their obvious and direct economic impact, interventional radiology services generate an indirect impact on a practice as well. That impact, however, is much more difficult to quantify. When a patient undergoes aortic endograft placement, for example, he will undoubtedly receive several follow-up CT scans and possibly undergo additional angiographic evaluation or endovascular intervention. Such services constitute the indirect economic impact of the initial procedure. For aortic endograft placement, the value of such subsequent radiology services greatly exceeds the value of those services when a patient undergoes open surgical repair (8).

For more basic interventional radiology procedures, the indirect economic impact of the service can far outweigh its initial direct impact. For percutaneous abscess drainage, the initial drainage procedure accounts for  $11.50 \pm 5.07$  RVUs, but all related services during the subsequent 90 days total an additional  $18.85 \pm 16.83$  RVUs (9). These subsequent services include additional interventional procedures ( $10.71 \pm 12.78$  RVUs), diagnostic radiology procedures ( $4.70 \pm 4.63$  RVUs), and clinical evaluation and management services ( $3.45 \pm 2.94$  RVUs). Such calculations are rather labor intensive, and probably not practical for every interventional service provided by a group. Nonetheless, they powerfully illustrate the contribution of an interventional radiologist to his practice. Aside from occasional recommendations for follow-up imaging for equivocal radiographic findings, diagnostic radiologists rarely generate this indirect economic impact on a practice.

Using a model such as this, one can calculate an economic impact factor for any service:

$$\text{EIF} = \frac{(\text{total RVU of initial and subsequent services})}{(\text{RVU of initial services})}$$

For percutaneous abscess drainage, the EIF = 2.64. Using the outlined methodology, a similar ratio can be generated for other interventional radiology procedures. For services such as percutaneous gastrostomy tube placement, where subsequent related radiology services are uncommon (10,11), the predicted EIF would be small. For services such as tunneled hemodialysis catheter salvage procedures, where post-procedural device patency is often limited (12–14), the EIF would likely be much higher. While this ratio would vary greatly for different procedures, and even for the same procedure performed in different communities, it may serve as a benchmark to help practices assess the financial impact of specific types of interventional radiology services.

Many interventional radiologists developing clinical services have met with some criticism from their diagnostic radiology partners. In addition to offering services that have not been traditionally offered by radiologists, outpatient clinic visits and inpatient admission services would seem—by mere direct economic impact analysis—to have little positive economic impact on a practice. A 1-hour patient consultation about possible chemoembolization, for example, would generate only about \$129 based on the Medicare fee schedule—an amount comparable to interpreting about a dozen chest x-rays. Interventionalists meeting such criticism need to be prepared to discuss the more important indirect economic impact of their clinical services. A patient undergoing three chemoembolization procedures, with associated hospital admissions and CT imaging, would generate over \$4,200 in Medicare revenue to a radiology practice—revenue that would never come to the practice if the patient received his outpatient consultation at another center. The take-home point for interventionalists

meeting with resistance developing a clinical service is that consultations on patients with processes such as peripheral vascular disease, uterine fibroids, and hepatic malignancies generate little direct economic impact on a practice, but are necessary prerequisites to appropriate complex interventional procedures—procedures that, because of their high value, result in substantial economic impact on the practice.

Currently, the indirect economic impact of most interventional radiology services is unknown, but worth calculating for at least the most common families of services. Such utilization impact data would be particularly useful to groups making decisions regarding the feasibility of expanding interventional services—such as beginning to offer new services or extending existing services to a new hospital. In addition, such information is critical for practices negotiating capitated contracts that do not permit “carve-outs” for interventional radiology services.

### Less Quantifiable Impact of Interventional Services

Aside from the important and positive clinical ramifications of subspecialized interventional radiology expertise, practices supporting such subspecialization gain significant political and administrative benefits as well. Although these benefits do not easily lend themselves to quantification, they are nonetheless important and should be considered in any discussion within a radiology group addressing the value interventional services bring to the practice.

Any radiology practice's efficiency and reputation is enhanced greatly by members with recognized subspecialty expertise. Dedicated interventionalists may perform procedures with greater efficiency than general radiologists who less commonly provide such services. This may result in better patient care while, at the same time, improving efficient patient through-put in a busy department. Additionally, practices with fellowship trained interventional radiologists will much more likely secure referrals for complex procedures from physicians in their own and neighboring communities than casual angiographers, who may provide such interventional services reluctantly, and only when compelled. Short of comparing a practice's interventional radiology referrals before and after hiring a dedicated interventionalist, however, the impact of changes in referral patterns related to subspecialty expertise is most difficult to measure.

The radiologist workforce availability is at an all-time low, with radiologists working harder than in the recent past (15) and many groups unsuccessfully expanding their recruiting efforts (5). The presence of dedicated interventional radiologists in a practice—with their own separate call pool—may be used to the advantage of a radiology group recruiting diagnostic radiologists. The promise of no interventional call and no requirement to perform invasive procedures may make a job quite at-

tractive to some procedure-averse diagnostic radiologists. Such separate interventional radiology call arrangements, however, are not without problems, and may result in acrimonious discussions between diagnostic and interventional radiologists until an equitable apportionment of call is achieved (16). Nonetheless, if successful, such separate call arrangements may allow subspecialty trained interventional and diagnostic radiologists to spend more time in their chosen areas of interest, and lead to greater operational efficiency in both the interventional and non-interventional portions of a practice.

### Summary

Interventional radiologists know that the services they offer bring immense value to their practices. In addition to improving patient care in their communities, services by subspecialty trained interventional radiologists result in important economic, political, and administrative benefits to radiology practices. As interventional radiology continues to evolve from its historical procedural model toward a more clinical model, interventionalists may need to demonstrate the benefits of their work to their practices. They will be most successful in this regard if their analysis is as objective and quantifiable as possible.

### References

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**2:40 p.m.**

### What Really Matters Is What Gets Results: A Message from the Other Side of the Desk

*Curtis A. Lewis, MD, MBA  
Manuel Maloof Imaging Center  
Atlanta, GA*

**2:55 p.m.**

### Understanding the Competition: IR vs. Vascular Surgery

*Katharine L. Krol, MD  
St. Vincent Hospital  
Indianapolis, IN*

**3:05 p.m.**

### Understanding the Competition: IR vs. Cardiology

*Andrew S. Blum, MD  
Midwest Heart Specialists  
Elmhurst, IL*

**3:15 p.m.**

### Understanding the Competition: IR vs. Nephrology

*Aubrey M. Palestrant, MD  
Vascular & Interventional Physicians  
Phoenix, AZ*