Rethink the Night:
An Evidence-Based Discussion on Teleradiology Partnerships

How to Ensure Exceptional Service Levels, Economic Growth and Clinical Performance with Certainty in an Uncertain Healthcare Landscape

This white paper is for radiology groups that wish to:

- Build an effective operating plan to drive and manage growth in an ever-changing healthcare marketplace.
- Understand how economic realities and hospital service-level requirements affect a practice’s value and performance.
- Make thoughtful and data-driven decisions about coverage and service-level commitments in order to become indispensable and better aligned with client hospitals and the patients they collectively serve.
Executive Summary

Radiology groups are rethinking how to better position themselves to build a strong business and clinical foundation for their practices to survive and thrive in these changing times. Strategic discussions include the topic of “taking back the night” from teleradiology service providers. Common reasons offered as to why reclaiming nighttime reads for the local practice are twofold: 1) hospitals demanding 24/7 continuity of care by providing final interpretations after hours, and 2) economics, which posits that “taking back the night” would serve to increase revenues – an attractive prospect when facing continually declining reimbursements.

Before undertaking such strategies to better position themselves, radiology groups must first understand how the economic realities and service-level requirements vary throughout the day. All radiology shifts are not created equal (see Figure 1 - left), and the differences are particularly striking during the traditional night shift (midnight until 7:00 AM) during which coverage requirements are disproportionately high relative to the RVUs generated. In fact, during the Deephawk shift, radiology groups must cover 47% of all hours, yet benefit from only 11% of total RVUs.

Teleradiology critics argue that outsourcing nighttime reads is largely a lifestyle decision that enables radiology groups to perpetuate high incomes and generous vacation schedules with no requirement to take call during off hours. In reality, the type of work performed during nighttime shifts is radically different from what happens during the daytime and early evening; each shift has distinct characteristics impacting optimal workflow and operating plan design. At issue is not the dedication or work ethic of radiologists, but rather it is the different type of scale, expertise and technology needed to provide high-quality services around the clock – especially after midnight and on weekends.

Before committing the substantial resources necessary to cover the traditional after-midnight and weekend shifts, radiology groups should rethink and reconsider how their finite resources can be put to better use meeting other important needs of their hospital clients – and of their own growth-based operating plan. To succeed in the era of accountable care, it is essential for hospitals to manage utilization, increase efficiency and improve quality. There is a commonly held view by hospital thought leaders that physician employment is the most effective way to achieve these objectives; radiology groups wishing to maintain their independence and safeguard their contracts must deliver exceptional levels of service while still devoting practice resources to assist the hospital in other critical areas.

The bottom line: Data shows that taking back the traditional nighttime shift places enormous economic strain on a local radiology group with little upside. To meet a hospital’s changing requirements as healthcare reform unfolds, radiology groups must make thoughtful and data-driven decisions about coverage and service-level commitments. They must also support their hospital’s goals for future growth, making clinically and economically sound decisions that will enable both participants in the partnership to thrive in the new healthcare environment. Furthermore, they must make careful choices about how best to deploy their human capital.

![Figure 1: “Day in the Life” of a radiology group: Three distinct shifts emerge, each with distinct characteristics impacting optimal workflow and operating plan design and management.](http://www.vrad.com/#/life-of-radiology)
– their physicians – so that they make the right decisions for their practice’s future economic stability and growth, while also becoming indispensable to their client hospitals and the patients they serve.

Radiology’s Fundamental Requirements in the Era of Accountable Care

Hospital expectations of all physician groups, including radiology, have shifted in preparation for new market realities under healthcare reform. Accountable care organizations and other risk-based payment models reward value instead of volume. Value can be defined as the synthesis of safety, quality and efficiency; futurist Ian Morrison identified value-based healthcare as the “second curve” of healthcare. (see Figure 2 - left)

Since 2011 the American Hospital Association has been educating its membership on four critical priorities they must accomplish to succeed during the second curve of healthcare. The need for implementation of these four “must-do strategies” is continually reinforced in the literature, at national meetings and in other professional forums as essential to an organization’s viability under healthcare reform. Hospitals have in essence created a new scorecard that defines their organizational success. (see Figure 3 - below)
How Is Healthcare Reform Impacting Local Radiology Groups?

The impact to radiology groups has been a shifting landscape with significant uncertainty about the future of hospital contracts. Efforts to employ radiologists are underway at hospitals and health systems across the country, with many making no distinction between “alignment” and employment.

Case in point, many hospital executives believe physician employment is crucial to success under healthcare reform, but that strategy comes at a high cost to their health systems: the median annual loss for employing a physician was estimated at more than $175,000 per year (Source: MGMA). For more fiscally conservative hospitals where the high cost of physician employment is off the table, administrators are looking hard at other options to get their radiology needs met. Another strategy to reduce stipends, increase collaboration and improve quality is to outsource the whole radiology contract to a national radiology group that offers both onsite and teleradiology services. In many instances the deal to outsource is struck quietly behind the scenes, with the local group unaware their contract is in jeopardy until it is too late.

Concern about this possible scenario has prompted the “take back the night” movement, causing some practices to terminate their entire relationships with teleradiology providers as a means to increase a hospital’s reliance on the local group. While this approach may offer some protection from a predatory group, it does not address the hospital’s second curve needs for lowered costs, improved service levels and increased quality. Additionally, it does nothing to promote growth or expansion of other crucial high visibility and high-value service areas like breast imaging or interventional radiology, which generate significant revenue streams for both the hospital and the radiology group while bringing the two closer together and better aligning their mutual interests. Instead of leading by fear, groups should embrace a partner who will empower them with innovative solutions to do all of the above by helping them make better decisions for the health of their patients and for the practice of radiology.

Why Efficiencies of Scale Are Needed at Night

<table>
<thead>
<tr>
<th>Name of Shift</th>
<th>Coverage Hours</th>
<th>Study Volume</th>
<th>RVU Value</th>
<th>Shift Characteristics</th>
</tr>
</thead>
</table>
| “Onsite” shift | 35%            | 61%          | 70%       | • Volume peak and greatest modality mix  
                          • 96% of Functional IR procedures and 97% of Women’s Imaging occur during this shift  
                          • Most challenging of the 3 shifts due to constant interruptions and volatility caused by intermingling Outpatient, Inpatient and ED imaging demands |
| “Midhawk” shift | 18%            | 16%          | 19%       | • Shift dominated by acute ED imaging  
                          • 87% of CTs ordered during this shift are STAT  
                          • Constant need to communicate critical findings |
| “Deephawk” shift | 47%            | 23%          | 11%       | • Lowest RVU-to-Study Ratio of all 3 shifts  
                          • Much higher % of Inpatient studies (including priors) vs. Midhawk shift  
                          • 58% of volume during this shift is X-ray  
                          • ED volume prevents radiologists from getting to inpatient X-rays – impacts morning rounds, Inpatient length of stay and Onsite shift scheduling |

Figure 4: vRad has defined three distinct radiology shifts over 24 hours, each with clear implications for operational efficiency, cost control and quality of patient care.
Radiology groups contemplating providing coverage 24 hours a day, 7 days a week must take into consideration that the demands and economics of all three radiology shifts are not created equal. Recent research by vRad, the nation’s largest radiology practice with over 450 physicians, confirms what most local radiology groups have always known intuitively: In the absence of a large-scale operation, it is not economically feasible to read cases on nights and weekends. vRad’s analysis of normalized 24/7 data from their database of over 24 million studies, has yielded important insights into the characteristics of interpretations performed during all three shifts, including the “Deephawk” shift, which is after midnight to 7:00 AM on weekdays, plus the majority of weekend hours. (see Figure 4 - previous page)

Because more than half of Deephawk reads are X-rays, RVU (Relative Value Units) production per hour worked is much lower. (see Figure 5 - below) For a local group, covering their own Deephawk shift means they are:

- Staffing for 47% of the weekly hours
- Reading 23% of the weekly volume
- Generating only 11% of the weekly RVU value

The implications of these findings are significant as radiology groups contemplate the Midhawk and Deephawk shift coverage, and they must first understand that in order to maintain service levels, the staffing plan must address the peaks in utilization, not the average.

To address variations in volume, modality mix and vacation coverage, the group will likely conclude that it needs two or more FTEs to cover the volume that one FTE might otherwise be able to interpret. At a time when hospitals are pressing hard for the elimination of stipends, hiring additional radiologists to “take back the night” either increases the group’s dependence on staffing subsidies or results in significantly reduced income for the group. Even worse, covering the Deephawk shift with a skeleton crew of existing radiologists inevitably leads to slower turnaround times and reduced quality when radiologists are forced to interpret cases outside their specialty.

Covering the Deephawk shift requires a substantial investment of practice resources; however it does nothing to address the hospital’s important needs to manage utilization, conduct real-time analytics and improve quality. To safeguard the radiology contract from termination in favor of employment, and to meet the demands of 24/7 continuity of care, practices should still leverage benefits of an outsourced teleradiology solution where it makes economic sense to do so, freeing resources to address other important elements of the radiology operating plan, including availability for more Onsite shift coverage where the RVU-to-Study ratio is most attractive.

Supporting the Second Curve in Radiology

Another important economic and clinical decision is whether to continue or eliminate preliminary interpretations. At issue is the total cost of radiology services, ED throughput and patient safety. (see Figure 6 - next page)
Local radiology groups reading 24/7 often hold nighttime X-rays for interpretation for the Onsite shift to control for volume and the number of FTEs needed during the Deephawk shift. But for ED cases, this strategy diminishes the value of the radiologist’s interpretation because it comes long after the fact, forcing ED physicians to rely on their preliminary interpretation of studies (with a potential for increased error rates) in order to make timely treatment decisions and facilitate workflow. Preliminary interpretations also seriously undermine hospital requirements for efficiency – for patient care and cost containment – all of which will become more urgent in the near future as better analytics expose delays and overruns in the care cycle. Preliminary reads by teleradiologists often do not involve the complete patient medical history due to workflow and the expectations associated with this type of reading service, which can increase risk as it potentially reduces quality.

In addition, holding over inpatient X-rays for reading during the Onsite shift delays accurate diagnosis and clinical decision making for the patient. Holding over studies may control the number of FTEs needed to cover less desirable hours, but it adversely affects a practice’s ability to engage in procedures with high RVU value. Holding over studies diverts resources from critical activities that only take place during the Onsite shift, such as elective interventional radiology procedures and mammography, as well as educational and leadership activities such as tumor boards, hospital committee work and grand rounds.

Radiology groups should carefully consider whether it is best to manage or to be managed, a topic healthcare analytics may be able to address. Greater use of healthcare analytics will happen, but until hospitals have solutions in place, there is a unique opportunity for radiology groups to provide their hospital clients with these tools to influence utilization and eliminate variations in how radiology care is provided. Unfortunately, few local radiology groups have the resources to effectively address this opportunity today because the challenge is twofold: (1) they don’t have an operating platform that captures the essential data, and (2) they lack access to the comparative data needed to put their hospital’s information into context. Partnership with a large-scale teleradiology provider for Deephawk shift reading can serve as a solution to the analytics dilemma because these organizations rely on robust analytics tools to

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**Figure 6:**
An important economic and clinical decision in the “second curve” is to continue or eliminate preliminary interpretations.

<table>
<thead>
<tr>
<th>Preliminary Interpretations from ED Physicians</th>
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</thead>
<tbody>
<tr>
<td>• Inefficient workflow - involves overread by radiologists</td>
</tr>
<tr>
<td>• Potential diagnostic errors in the ED prelims</td>
</tr>
<tr>
<td>• Errors not detected until after treatment has been initiated and the patient has left the ED, requiring more rework</td>
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<table>
<thead>
<tr>
<th>Preliminary Interpretations from Teleradiology Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Inefficient workflow - involves overread by local radiologists</td>
</tr>
<tr>
<td>• Prelim costs are passed on to the hospital, subsidized through stipends or assumed by the group</td>
</tr>
<tr>
<td>• Low rate of diagnostic errors</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Final Interpretations</th>
</tr>
</thead>
<tbody>
<tr>
<td>• May be performed by teleradiologists or local group</td>
</tr>
<tr>
<td>• Most efficient workflow</td>
</tr>
<tr>
<td>• No added costs</td>
</tr>
<tr>
<td>• Low rate of diagnostic errors</td>
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drive their own staffing models and workflow, and these tools should be available to you as a byproduct of your teleradiology partner providing you final reads.

*VRad’s RPC Indices provide radiology imaging providers with actionable insights that are ideally suited to help them benchmark the performance of their imaging facility and radiology group. The datasets have the unique ability to help providers identify potential areas of weaknesses and shed light on any workflow bottlenecks in their clinical, operational and business processes.*

_Frost & Sullivan Visionary Innovation Award_
_Medical Imaging Analytics_
_North America, 2014_
_Presented to vRad, March 2014_

**The Benefits of Partnership**

Healthcare reform has created a new imperative for all radiologists to become more efficient, improve quality and gain as much insight as possible into their practices. Only by truly understanding performance can local radiology groups improve and increase the value of services delivered to their patients and hospital clients – their future survival depends on achieving this. To maintain independence and security, local radiology groups must become indispensable strategic partners rather than cost centers to be managed.

In light of these considerations, many local radiology groups are taking a fresh look at their coverage models and service levels. The range of options at their disposal include maintaining the status quo, assuming responsibility for all coverage or outsourcing lower-margin volume to a partner who can enable them to provide 24/7 continuity of care at night. Small and mid-sized groups should not assume that “taking back the night” is a simple solution to boost decreasing revenues and eliminate competitive threats, and must carefully look at the data from each of the three distinct radiology shifts -- Onsite, Midhawk and Deephawk -- and use that data to make informed decisions.

vRad’s extensive data suggests that, for local radiology groups looking to expand their hours of coverage, taking back the traditional night shift places an enormous economic strain, with little upside, serving as a distraction from the crucial imperatives to manage costs and improve quality.

To succeed in the future, most local radiology groups should not rush to “take back the night”, but rather, they should carefully analyze their options, maximizing efficiency and ensuring that service levels and quality are not diminished when the day shift is over.

**Data is Knowledge and Knowledge is Power**

Radiology groups must rethink and reconsider how they operate so they are better positioned to thrive in an ever-changing healthcare marketplace. Radiology analytics can help a group make thoughtful and data-driven decisions about coverage and service-level commitments in order to become indispensable and better aligned with client hospitals and the patients they collectively serve. (see Figure 7 - next page) This approach allows radiology to take control and be the strategic valued service radiology deserves to be.
Sample Questions to Answer When Developing Your Radiology Operating Plan

- What staffing levels are needed to cover call 24 hours a day, 7 days a week with final reports?
- Will providing 24/7 final reports add value to the relationship with our hospital partners?
- Does our current staffing model ensure adequate specialization during all shifts?
- When are the peaks in volume during the Deephawk shift? Also, what is the modality and patient type mix?
- What is the RVU-to-Study Ratio of our Deephawk shift as compared to our Onsite and Midhawk shifts?
- What will be the level of investment in FTEs, including physicians and support to manage the volume and non-clinical administrative tasks critical to the Deephawk shift?
- Do I have access to the right analytic insights to measure and track my operating performance?

About vRad:

vRad (Virtual Radiologic) is a global telemedicine company and the nation’s largest radiology practice with over 450 physicians. Our patented software, data, and clinical processes allow referring physicians to quickly and securely pass patient imaging and information to specialists in order to improve the speed, accuracy, and cost of clinical diagnosis. vRad’s physicians and operational platform serve 2,000+ hospitals, reading over 7 million patient radiology reports annually. vRad is also a leader in healthcare informatics: its RPC<sup>SM</sup> (Radiology Patient Care) Indices are the first findings-based national and peer group benchmarking metrics for the use of radiology imaging. Our analytics platform includes over 24 million imaging studies, growing at 600,000 per month. vRad’s clinical expertise and evidence-based insight help clients make better decisions for the health of their patients and their practices. For more information, visit www.vrad.com.