The Radiology Industry
Radiology represents nearly 8% or $200 billion of US healthcare spending,¹ and over the next five years, hi-tech imaging is expected to grow at 18%.² Beyond its direct economic impact, radiology touches nearly every patient, service line and disease category. In a fee-for-service world, it is therefore a leading driver of direct costs as well as critical hospital metrics such as patient safety, ED throughput, inpatient length of stay, and patient experience. As we move toward value and population health, radiology is one of the most important drivers of excess utilization and downstream medical costs. However, radiology’s largely fragmented, subscale delivery model and lack of performance transparency creates structural limitations that foster clinical variation and hamper its ability to appropriately manage outcomes.

Quality and Patient Outcomes
Radiology has become heavily specialized over the last 20 years; however, local delivery model limitations make access to subspecialty radiologists impossible for the vast majority of patients. Scott W. Atlas, a professor of radiology and chief of neuroradiology at Stanford University School of Medicine, has stated: “To continue having non-subspecialty-trained radiologists interpreting sophisticated, complex imaging studies on patients with diseases that are virtually always cared for by subspecialist-referring doctors is unacceptable patient care.”³ Various studies have revealed clinically significant error rates of 51% on MRI of the lumbar spine, 44% on high-tech imaging and 29% on CT of the abdomen/pelvis.⁴ Solving this requires a full complement of subspecialists available 24x7. However, radiology is typically delivered by small or medium sized independent groups which have insufficient scale to consistently deliver subspecialty care. Our research shows workflow challenges drive remarkably low actual subspecialization rates even in groups with 40-100 radiologists across all subspecialties. Radisphere recently analyzed the subspecialty performance of 15 hospitals in a for-profit system (including multiple larger independent radiology groups) and found that only 50% of pediatric cases and 40% of mammograms were read by the appropriate subspecialist.⁵ In order to maintain subspecialty expertise, most experts cite greater than 50 percent of a radiologist’s work should be dedicated within that subspecialty.

Hospital Core Metrics
Sub-optimized radiology operations can directly increase ED visit length of stay, increase inpatient length of stay, drive outpatient leakage, create workflow inefficiencies (e.g., costly, duplicative and latent work from preliminary overnight reads), and cost up to $1 million in lost contribution margin per facility (including stipends from subsidizing subscale radiology groups).⁶ With the exception of ED turnaround times, radiologists are rarely held accountable to performance standards. Systems and radiology providers have not invested in the workflow or transparency tools to manage performance and variation across highly distributed environments, let alone meaningfully integrate throughout the entire patient care continuum and episode. In a world where providers are becoming more accountable for population health (including their own as large, self-insured employers), the benefits of more specialized radiology multiply.
Utilization
Results from Radiology Benefit Managers and industry research have shown that unmanaged utilization can create up to $5.50 Per Member Per Month (PMPM) in unnecessary costs for a commercial population. The issue is prevalent as it is widely acknowledged that 20-50% of imaging is clinically unnecessary. Today’s Fee-For-Service (FFS) reimbursement model contributes to the overutilization challenge by paying radiologists for each study they interpret. And while most of today’s focus is on ordering physicians, lack of appropriate specialization can also lead to radiologists ordering additional unnecessary imaging. Industry studies have shown radiologists recommending follow-up imaging for 15-20% of studies, more than 400% above the appropriate level compared to a benchmark of radiologists with appropriate subspecialization and incentives. More imaging also impacts the patient experience through longer wait times and excess radiation, an increasingly acute safety issue.

Downstream Medical Costs
Industry research indicates that radiology misdiagnosis can result in up to $8.50 PMPM in unnecessary downstream medical costs for a commercial population. As mentioned above, the subscale nature of most groups can lead to higher error rates. One common example is lower back pain because the MRI of the lumbar spine is a highly complex study, with very high error rates and a high prevalence of non-surgical abnormalities. Mis- or inconclusive diagnosis by a general radiologist can quickly lead to a $50,000 back surgery with questionable efficacy for the patient.

Beyond the direct cost and quality implications, these issues also impact total system healthcare costs through their own self-insured population, employer owned health plans, emerging ACO, shared savings, and commercial risk contracts, DRG-based inpatient populations and heavily self-pay ED environments. In any scenario, the pace of our healthcare system transformation will require greater transparency into performance of key service lines.

The Future Delivery Model for Radiology is Standards-Based Care
In order to reduce clinical variation in the delivery of radiology across facilities and populations, health systems are transitioning to standards-based care models so they can effectively monitor and manage performance.

The first and most fundamental component of a standards-based care delivery model is a common set of system-wide radiology performance standards. This implies a formal and consistent commitment across all facilities to comprehensive, measurable standards for clinical quality (interpretive accuracy, appropriate utilization, subspecialization, and concurrence review) and timeliness (turnaround times for final reports, consultations, and critical findings).

Simply asserting the standards is not sufficient. A standards-based care model includes measured and transparent performance – real-time, double-blind peer review on a statistically significant sample of cases and system-wide dashboard views into performance and utilization by hospital, radiologist, referring physician, modality, and site of care.

Finally, a standards-based radiology care model must include workflow technology to enable consistent performance against the standards. Sophisticated workflow management software, advanced routing algorithms, and 24x7 service center support teams are required to enable systems to “hard code” compliance to performance standards and radiologists to achieve them.
Enterprise Management Solutions for Radiology: The Value for Health Systems

Radisphere began as a standards-based national radiology group. Our foundational belief has always been that radiology must evolve to be accountable to defined standards that improve patient outcomes and lower the cost of care by eliminating errors, variation and waste across the health system. Over the past 12 years, we built a set of software enabled services to help our practice achieve high compliance against standards and deliver care to geographically distributed regions. We are now delivering these services to health systems and radiologists, as they shift towards value, to enable them to identify and eliminate clinical variation in radiology.

Radisphere’s Radiology Enterprise Management (REM) solutions enable health systems that are thinking about the shift towards value to measure and improve their enterprise-wide radiology performance. They allow systems to establish a common set of radiology standards, gain transparency into performance, and ensure compliance. As a result, health systems are able to eliminate errors, variation, and waste across the enterprise, improving the overall quality and cost of patient care.

Our REM solutions include cloud-based technology and are packaged as two distinct service offerings, RadVision and RadPerform.

RadVision services enable systems to:
- Create complete transparency into performance against enterprise-wide standards
- Establish statistically significant, unbiased quality data for true comparisons
- Establish internal and national benchmarking and analytics
- Identify clinical variation across the system and opportunities for optimization

Better Care Across the System

- Reduce clinical variation
- Eliminate errors
- Manage utilization
- Lower total cost of care

“Radisphere is unique in its ability to provide complete transparency into the performance of radiology. The detail within its quality and productivity metrics are unlike anything I’ve seen in the industry. With Radisphere’s sophisticated dashboards, I can now quickly assess how we are performing relative to industry standards and our own benchmarks.”

Bill Lawrence
President & CEO
McLaren Central Michigan
RadPerform services enable systems to:

- Actively manage performance and leverage scale to eliminate clinical variation
- Reduce labor costs through prospective capacity planning and resource allocation
- Reduce unnecessary utilization with real-time decision support by place of service
- Reduce downstream cost in a population health environment
- Facilitate the timely communication of critical findings and consultations
- Access national teleradiology networks as needed to optimize compliance to standards

These services are built upon a cloud-based workflow management technology platform that enables a common worklist and reporting structure across all system facilities and providers. They are delivered on top of and agnostic to existing technology (i.e., PACS, RIS, EMR) and radiology groups. Systems can manage their radiology enterprise in an integrated fashion and optimize performance to improve quality of care in identified opportunity areas, manage unnecessary utilization, and reduce downstream medical costs.

The Value for Radiologists

Like all specialties and arguably more than most, radiology needs to re-establish its role in creating value for the patient and system. This can only be achieved with performance standards, greater transparency and subspecialization. Radisphere’s REM solutions provide radiologists, whether employed by the health system or an independent radiology group, with technology and services to deliver highly specialized care and measure performance against clearly defined standards. The goal is to help radiologists demonstrate the value they are creating to expand and sustain their relevance.

Our REM solutions enable radiologists to collaborate across the system and focus on the services on which they specialize, spending more time on the work they are good at and enjoy. As part of a more integrated radiology network, radiology groups can establish greater longevity by expanding the reach of their practice, accessing new profit pools, and easing into part time roles. They can also access radiology dashboards for complete visibility into their performance, with the ability to benchmark against other providers across the system and nation.

With the tools to effectively integrate across the enterprise and into the patient care continuum, radiologists and provider groups can re-establish their value in delivering higher quality and lower cost care for the system.

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Radisphere’s REM solutions enable health systems to leverage their own scale across their network of hospitals, imaging centers and independent radiology groups. By adopting a standards-based care delivery model, health systems and their integrated provider network can reduce clinical variation and lower costs while delivering better and safer patient care. As providers and patients share more risk in healthcare delivery, the value of radiology services that are accountable to standards for improving quality and reducing costs will only intensify.

1. CMS National Health Expenditures Data (based on $2.7 trillion US healthcare market spend in 2011); Ensuring Quality through Appropriate Use of Diagnostic Imaging, Association of Health Insurance Plans, July 2008
2. The Advisory Board Company Outpatient Imaging Market Estimator, 2012 (forecasted for 2011-2016)
5. Radisphere diagnostic analysis of a for profit health system division, October 2013
6. Radisphere analysis from diagnostic research across multiple health systems
7. Radiology Quality Institute extrapolation of data from the Premerus study, Missdiagnosis in America 2008: A Persistent Problem with a Promising Solution
8. Data analysis across Radisphere’s 30 hospital clients
9. Radiology Quality Institute extrapolation of data from the Premerus study, Missdiagnosis in America 2008: A Persistent Problem with a Promising Solution.