



RLI Power Hour Webinar Series

Creating Value



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AMERICAN COLLEGE OF RADIOLOGY

Moderators



Geoffrey D. Rubin, MD, MBA, FACR
Professor of Radiology and
Bioengineering, Duke University



Jennifer E. Nathan, MD
Assistant Professor of Neuroradiology
Johns Hopkins Health System

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Faculty



Samir B. Patel, MD, FACR
Radiology, Inc. Value Management Program Director
Beacon Health System Board of Directors
Black Belt Certification Lean Healthcare



Learning Objectives

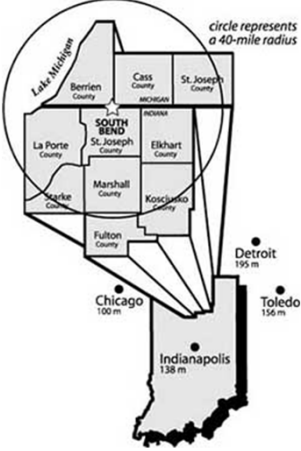

- Describe a radiology value-added matrix to define, categorize, and quantify value-added non-interpretative activities
- Utilize a radiology value-added matrix strategically for providing value to multiple stakeholders
- Understand how radiology groups can add value in their practice environment that goes above and beyond image interpretation and reporting.

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RADIOLOGY
Serving North Central Indiana since 1904




circle represents a 40-mile radius

Chicago 100 m
Detroit 195 m
Toledo 156 m
Indianapolis 138 m

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Maximum Force Readiness

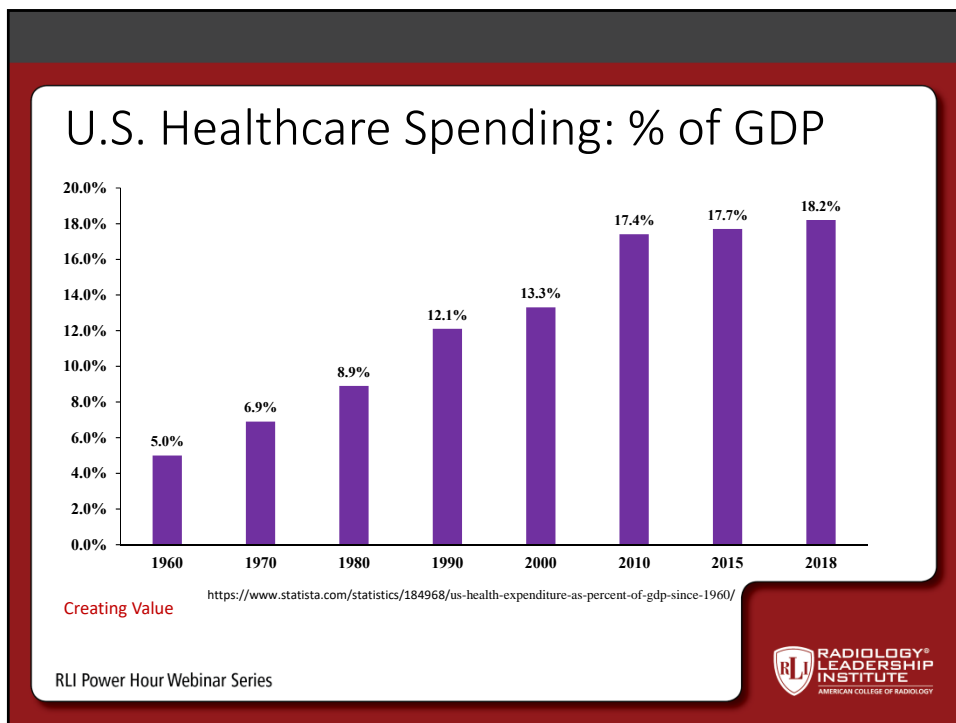
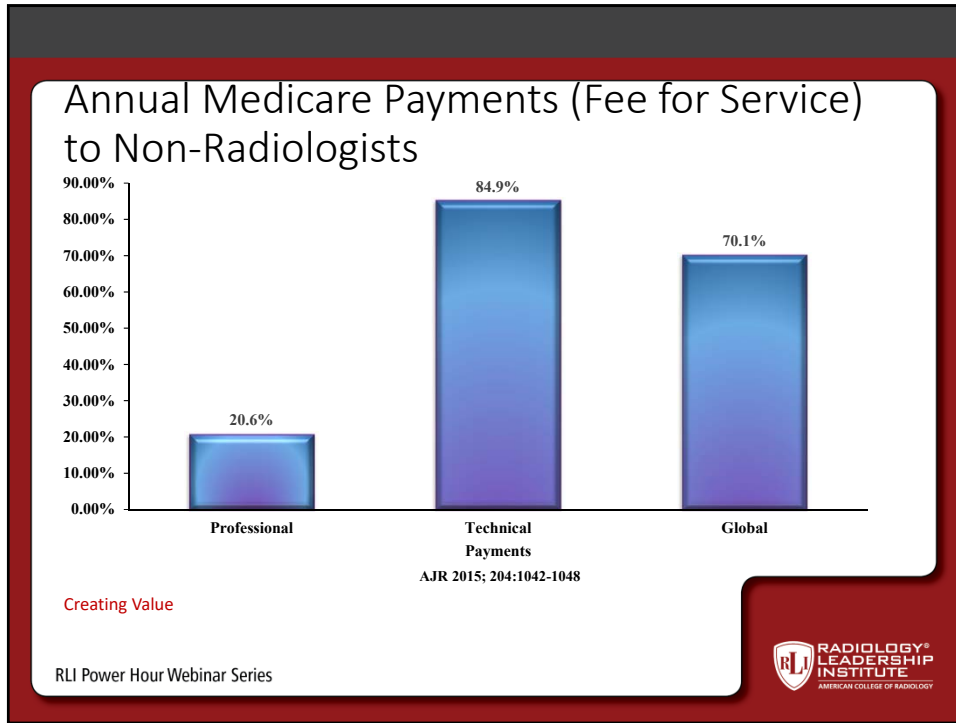
DEFCON One! Imaging Under Attack
John J. Cronan, MD

J Am Coll Radiol 2005; 2:207-210

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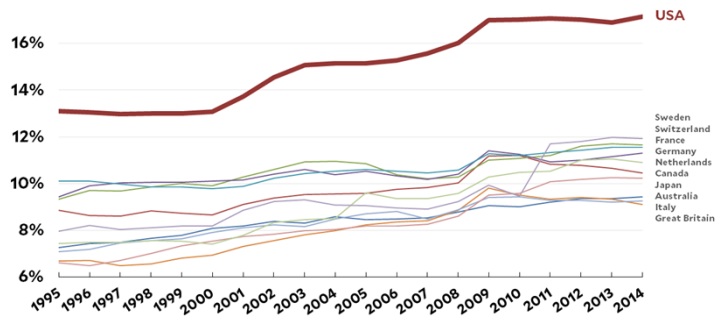
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World Healthcare Spending as % of GDP

Health Care Spending as % of GDP
1995-2014



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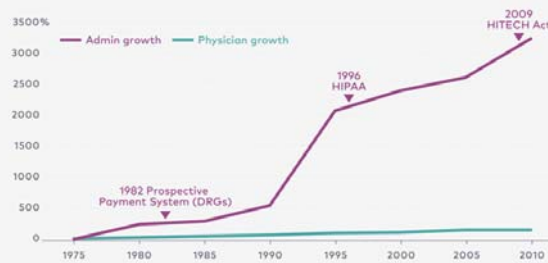
World Bank

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3200% Growth of Healthcare Administrators 1975-2010

Healthcare administrators far outpace physicians in growth



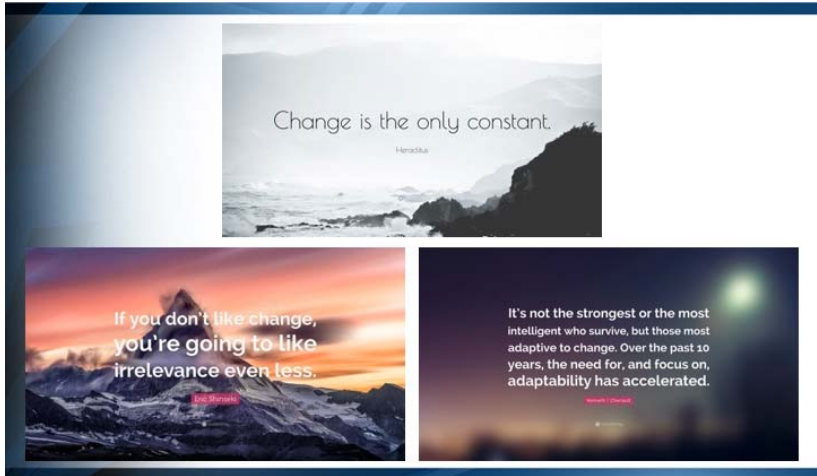
Source: athenahealth analysis of data from the Bureau of Labor Statistics, the National Center for Health Statistics, and the United States Census Bureau's Current Population Survey

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<https://www.beckershospitalreview.com/hospital-physician-relationships/growth-of-healthcare-administrators-outpaced-physicians-increasing-3-200-between-1975-2010.html>

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Change is the only constant.
Heraclitus

If you don't like change,
you're going to like
irrelevance even less.
Richard Schonberger

It's not the strongest or the most
intelligent who survive, but those most
adaptive to change. Over the past 10
years, the need for, and focus on,
adaptability has accelerated.
Henry David Thoreau

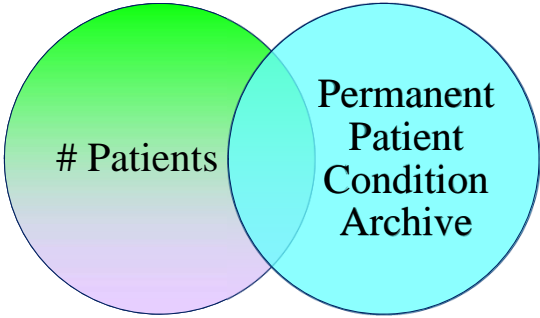
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Radiology Opportunity in Value-Based Care




Patients

Permanent
Patient
Condition
Archive

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No. of Medicare Beneficiaries Served by Medical Specialty (JACR 2018; 15:734-739)

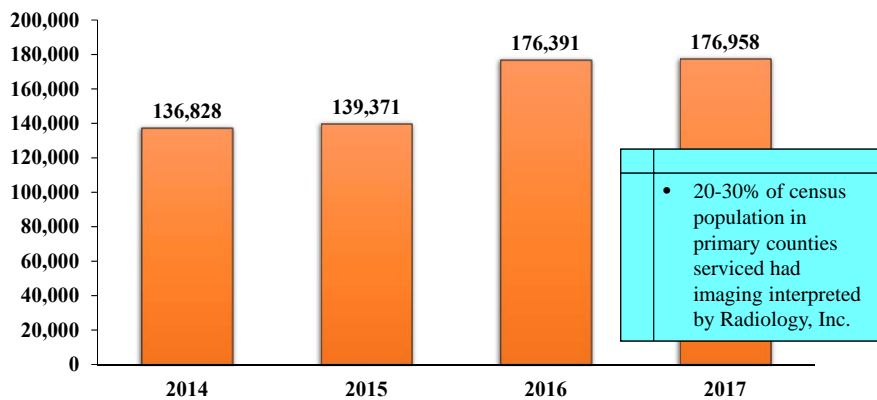
SPECIALTY	# of Beneficiaries per Provider
Diagnostic Radiology	3,150 ± 2,344
Cardiologists	2,511 ± 2,000
Cardiac Electrophysiologists	2,279 ± 1,604
Dermatologists	2,164 ± 2,023
Urologists	2,061 ± 1,711

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Unique Patients

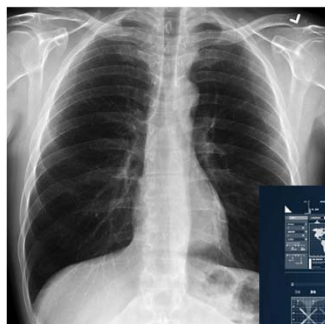


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Permanent Patient Archive



TYPE/EXAM
RAD/CHEST PA/AP & LATERAL

INDICATION:
Cough.

FINDINGS:
Compared with the previous examination of [REDACTED]. The cardiac silhouette has long tubular configuration with tortuous and ectatic dorsal aorta. Both lungs shows severe chronic obstructive pulmonary emphysematic changes, otherwise the left lung is clear. There are interstitial infiltrates in the right mid and lower lung zones, consistent with pneumonia. The pulmonary vascularity shows pruning effect.



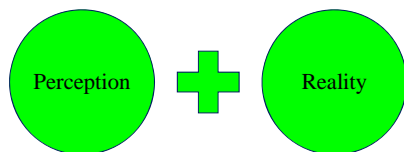
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What is Value?

the regard that something is held to deserve;
the importance, worth, or usefulness of something

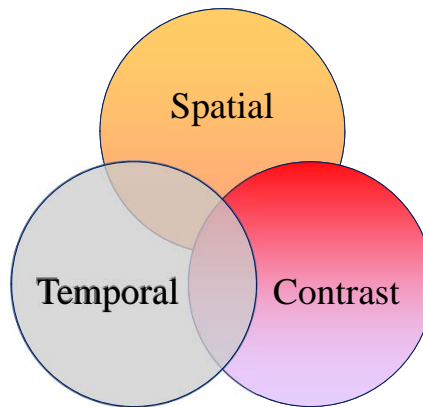


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What is Value?



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What is Value?

$$\text{Value} = \frac{\text{Outcomes}}{\text{Cost}}$$

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Standing Out From the Crowd



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IMAGING 3.0
Blueprint for High Value Care

- Beyond Interpretations
- System Integration
- Empowered Patients

2013 and Beyond

Courtesy of American College of Radiology

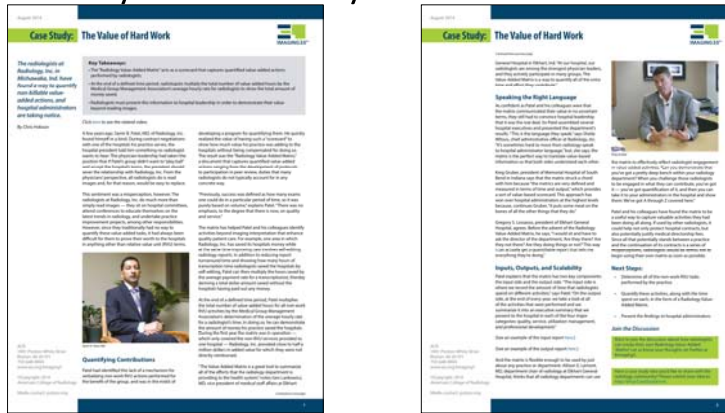
A man in a white lab coat pointing at a glowing blue square on a screen, representing imaging technology.

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Security & Stability



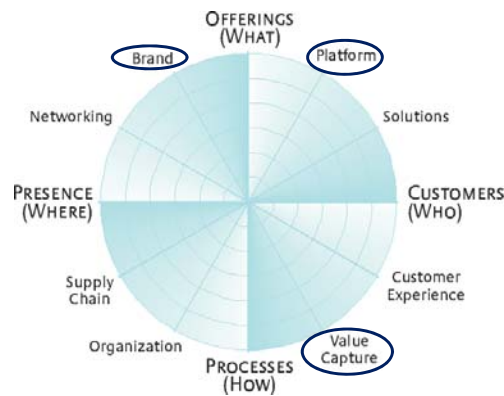
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<https://www.acr.org/Practice-Management-Quality-Informatics/Imaging-3/Case-Studies/Strategic-Planning/The-Value-of-Hard-Work>

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Innovation Radar: 12 Different Ways for Companies to Innovate (MIT Sloan Management Review 2006)



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Radiology Value

V = Radiology Value
 Q = Quality
 S = Service
 RM = Resource Management
 PD = Professional Development
 C = Cost
 W = Waste

Radiology Value-Added Matrix

$V = (Q+S+RM+PD)$

- Client(s)
- Radiologist Team

C x W

LEAN HEALTHCARE

- Motion
- Inventory
- Defect
- Waiting
- Evenness
- Skill Set
- Transport
- Overproduction
- Overprocessing
- Overburden

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Radiology Value-Added Matrix → Indispensable

Quality	Service	Resource Management	Professional Development
Accreditation Requirement	Committee	Outcomes Measurement	Executive Meeting
Adverse Event Analysis	Community Service	Physician Well-Being	Leadership
Conference	Critical Test Result Management	Radiologist Scheduling	Leadership CME
Peer Learning	Customer Experience	Revenue Cycle Management	National/ State Radiology
Physician Quality Reporting	Marketing	Utilization Management	Practice Improvement Project (e.g. LEAN A3)
Protocol Management	Patient Supervision & Monitoring	Utilization Review	Presentation
Radiation Dose Management	Recruiting	Vendor Interaction	Publication
Radiology-Pathology Correlation	Referring Provider Communication		Research
Structured Reporting	Subspecialization		Teaching
Technologist & Staff Engagement	Turnaround Time		

- Goal: Invest time and demonstrate an outcome in each category/year

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Capturing Radiologist Value-Added Activities

- Physician Name: _____
- Date of Activity: _____
- Hour(s) Spent on Activity: _____
- Location (check one): Site A Site B
- Description: _____

Image Matrix Time Entry

Physician: Patel

Date: Wednesday, April 20, 2016

Category: Select Category...

Location: Select Location...

Time: 0 hrs 00 min

Description: _____

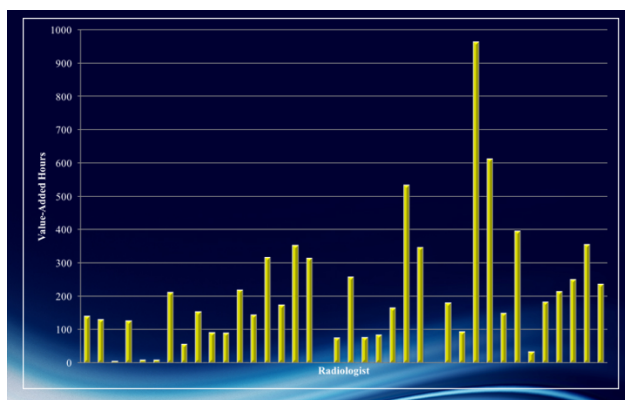
Submit Time Entry

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Individual Radiologist Value-Added Hours

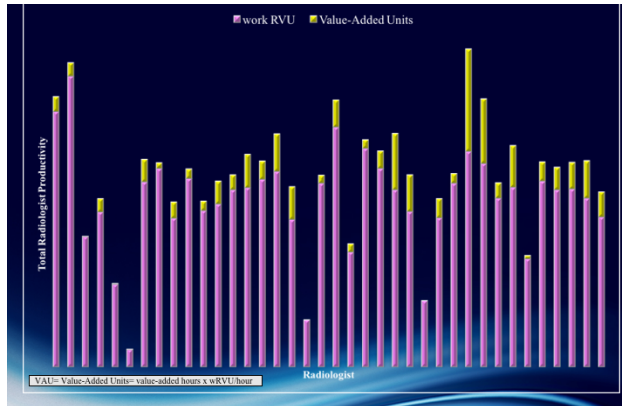


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Individual Total Radiologist Productivity



- More Accurate Reality
- Symbiotic
- “Deep Bench”

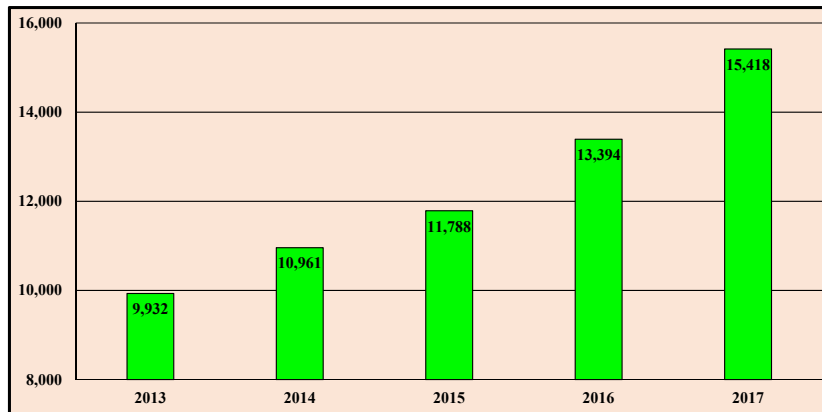
- Monitor, manage, but not mandate (no minimum targets)
- Complementary heterogeneity
- Team, NOT Group

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Annual Value-Added Hours

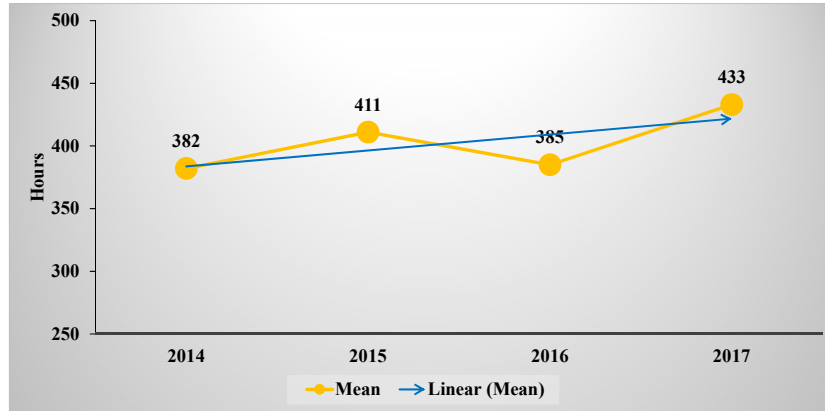


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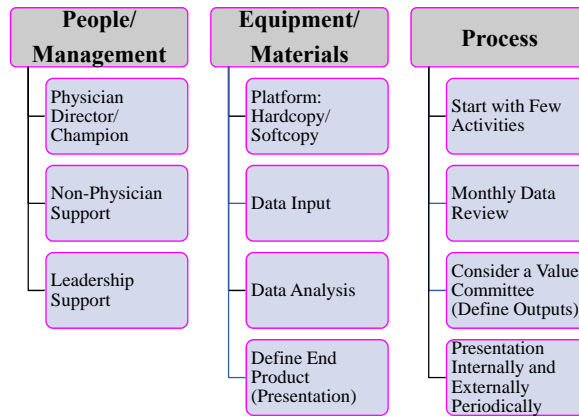
Mean Radiologist Value-Added Hours per FTE



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Radiology, Inc. Value Management Program Components



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Value Management Program Guidance

Category	Activity	Notes
Conference	Conference Name	1.5 hours each; Includes 0.5 hour preparation
Leadership	Medical Executive Committee or Board of Directors	2.5 hours each; Includes 1 hour preparation
Accreditation Requirement	Annual CME	1 hour/CME
National/State Radiology	RADPAC Donation	1 hour/\$100
Community Service	Client Charitable Contribution	1 hour/\$24.14 (https://www.independentsector.org/volunteer-time)
Leadership	Committee Chair	5-10 hours/month depending on committee
National/State Radiology	Society Membership	1 hour/\$100
Peer Review	Individual Exam Peer Review	1 minute/exam; built into PACS

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Published Papers on non-wRVU Activities

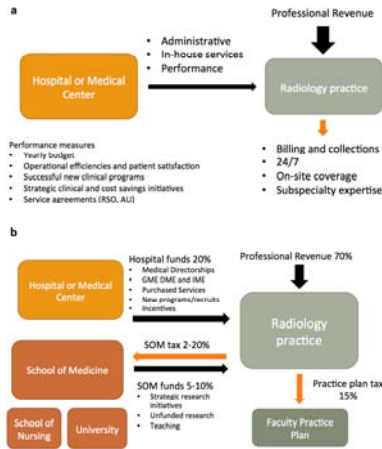
	AJNR 2016	JACR 2018	JACR 2015	2016
Author(s)	Wintermark, et al	Kovacs, et al	Patel	Patel
# Faculty	4	39	28	38
Time Frame	3 months	4 months	12 months	12 months
Practice Type	Academic	Academic	Private Practice	Private
Tracking Mechanism	Web-Based	Web-Based	Paper/Internal App	Internal App
Value Hours	-	1,223	9,932	13,394
# Categories	2	4	35	35
% of Total Work	19%	6%	15%	18%

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Radiology Value-Added Matrix & Academic Practices



- “Funds flow describes the financial arrangements between various entities in an academic health system to support research, teaching and clinical missions.”
 - Acad Med 2003; 78:119-24
- “The radiology value-added matrix provides a framework that can be used to establish funds flow support for performance, as well as negotiate incentive payments for exceeding performance targets.”
 - J Am Coll Radiol 2017; 14:818-824

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Value of Non-Financial Reporting Internally & Externally

- 1) Communication tool to build relationships
- 2) Improve thinking and strategic decision-making
- 3) Meeting needs and expectations of clients
- 4) Perception of the quality of a company’s reporting impacts perception of quality of its management
- 5) Help organization succeed

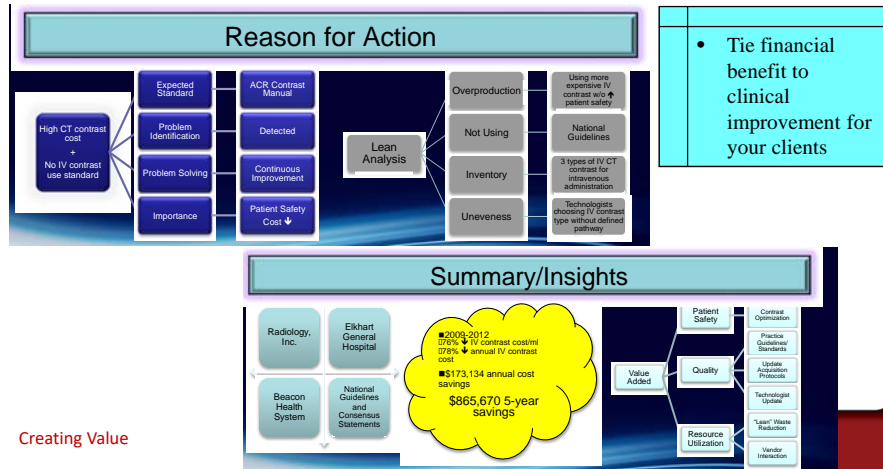
<https://www.cgma.org/content/dam/cgma/resources/reports/downloadabledocuments/purpose-beyond-profit.pdf>

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LEAN Performance Improvement Project: CT Contrast Standardization

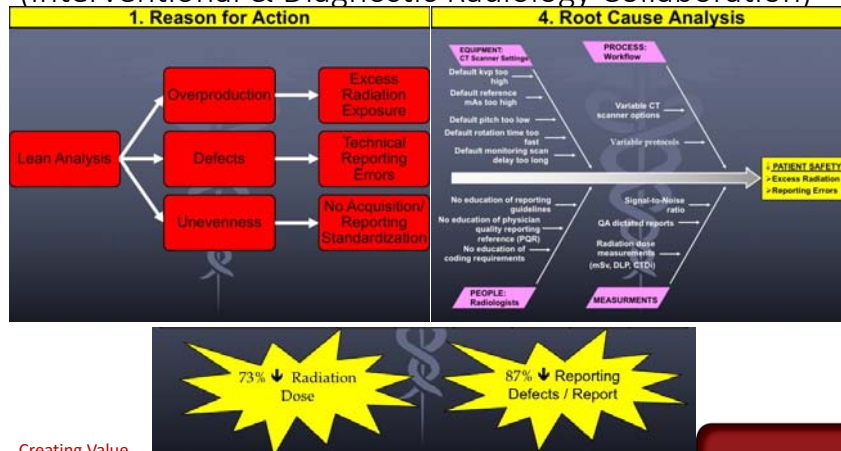


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Carotid CTA Optimization: Improved Patient Safety (Interventional & Diagnostic Radiology Collaboration)



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Collaborating w/ Other Specialties

Appropriate Reduction in Oral Contrast Utilization for Emergency Department Adult Patients Undergoing CT Abdomen/Pelvis by Implementing a Decision Support Algorithm

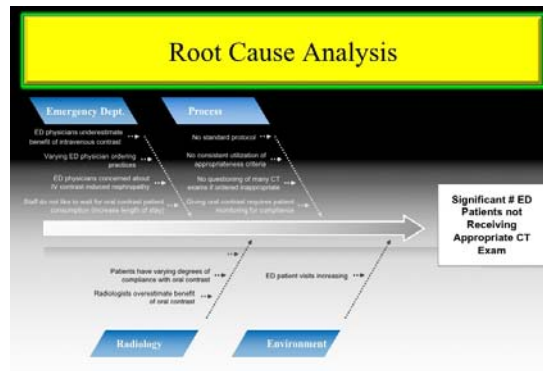
- | | |
|---|---|
| <ul style="list-style-type: none"> • Radiology, Inc. Physicians <ul style="list-style-type: none"> ▪ Operations Committee ▪ Executive Board • Radiology Department <ul style="list-style-type: none"> ▪ Director of Radiology ▪ Manager of CT ▪ PACS Coordinator ▪ CT Lead Technologist | <ul style="list-style-type: none"> • Elkhart General Hospital <ul style="list-style-type: none"> ▪ Total Value Management Department (LEAN) Facilitators ▪ Advanced Practice Nurse • Emergency Department <ul style="list-style-type: none"> ▪ Physician Chair ▪ Director of ED |
|---|---|

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Collaborating w/ Other Specialties



- Increased appropriateness of oral and IV CT contrast utilization based on ACR Appropriateness Criteria
- Reduced variation in ordering practices
- Reduced ED patient length of stay

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Institute of Healthcare Improvement: Triple Aim

Patient Experience

Health of Populations Reducing Per Capita Cost

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Model to Evaluate the Professional Component Imaging Cost per Stage 0/1 Breast Cancers Diagnosed: Case Study for Future Outcomes Cost-Effectiveness Comparison

Metric	2004 Cost	2014 Cost	% Change
PC Imaging Costs / # of Breast Cancers Diagnosed	\$6,480	\$4,803	26% ↓
PC Imaging Costs / (# Breast Cancers x Mean Estimated 5-Year Survival Based on Stage at Diagnosis)	\$6,919	\$5,153	26% ↓
PC Imaging Costs / (# Breast Cancers x % Stage 0/1)	\$10,458	\$7,122	32% ↓

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- ↑ cancer detection rate
- ↑ % Stage 0+1 cancers
- ↓ recall rate
- ↓ short term follow-ups
- ↓ inappropriate diagnostics
- ↑ subspecialization

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Increasing Visibility to Patients

<https://www.acr.org/Practice-Management-Quality-Informatics/Imaging-3/Case-Studies/Patient-Engagement>



26 Patient
Engagement
Case Studies!

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Imaging 3.0 Case Study: Patient Forward

<https://www.acr.org/Practice-Management-Quality-Informatics/Imaging-3/Case-Studies/Patient-Engagement/Patient-Forward>



Doctors, nurses, and other hospital representatives meet weekly with lung cancer patients who are at the center of the Thoracic Oncology Clinic. They review CT scans, discuss treatment options, and study treatment effectiveness.

- **AHA-ACR Webinar:**
<https://www.aha.org/physicians/webinars/library/Patient-forward>

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Interventional and Diagnostic Radiology Collaboration

Value of Interventional Radiology in a Community Hospital Lung Cancer Screening Program

Nazar Golewale, MD¹, Samir Patel¹, Alphonse Harding, MD² and Jackie Lenfestey²

1. Radiology-Inc, Elkhart General Hospital 2. Thoracic Oncology Clinic, Elkhart General Hospital

Abstract

Learning Objective:
To study the value of implementing a community hospital lung cancer screening program on an interventional radiology practice.

Background:
Elkhart County's (Indiana) population of 286,000 is among the most rapidly growing in the United States. Elkhart General Hospital's (EGH) cancer center has over 20 years of experience. 50% of lung cancer diagnoses were stage IV. A multidisciplinary Thoracic Oncology Clinic (TOC) was developed in June, 2012. Unique to our program was, consultation to the patients and their families to TOC, to discuss their imaging findings and management. Interventional Radiologists are critical members of the TOC.

Material and Methods

Retrospective analysis of lung cancer screening studies since 8/1/2012 to 12/31/2014 were performed. We looked at number of screening CT scans, radiation dose reduction for screening and CT guided biopsies and technical success of CT guided biopsies. Risk of pneumothorax in this patient population was analyzed. Perception of Interventional Radiology among patients and other clinicians attending TOC was assessed.

Results

Since the inception of the program, 989 low dose CT (LDCT) were performed of which 95 biopsy requests were made. Of the biopsies, 70% were small, but the technical success of biopsies was 100%, with a complication rate of 70% and a pneumothorax rate of 5%. Four referrals for percutaneous thermal ablations were made through TOC. Many patients were diagnosed at earlier stage with an estimated 5 year mortality reduction of approximately 20%. Radiation dose for CT guided lung biopsies was reduced by 63%. The perception of IR as a clinical specialty improved significantly among patients attending TOC and other clinicians who are part of lung cancer screening program.



Conclusion

At the authors institution before the inception of lung cancer screening program and TOC in 2012, the cancer registry over 20 years showed that 50% of lung cancer diagnosed were stage IV. After the inception of the program, Interventional Radiologists became critical members of the TOC. This resulted in increased referral to IR Department for biopsies and ablations of the lesions. CT guided biopsy radiation dose was reduced and patients were diagnosed with lung cancer at an earlier stage, allowing for less invasive therapies, such as radiofrequency ablation.

The perception of IR as a clinical specialty improved significantly among other clinicians and patient's appreciation of all IR physician as an essential member of the care team increased, which has been the subject of an American College of Radiology (ACR) & ACR Career Development Award (www.acr.org/education/career-development-awards).

Background: American College of Radiology (ACR) Career Development Award (www.acr.org/education/career-development-awards).

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- Better together for patients, communities, health systems



ACR Global Humanitarian Award

<https://www.youtube.com/watch?v=V0znKv7mua4>
<https://www.youtube.com/watch?v=r0hF1YUBQJw>

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- Never know what a kind action could lead to



Ecuador Earthquake 2016

- What has it been like since the earthquake?**

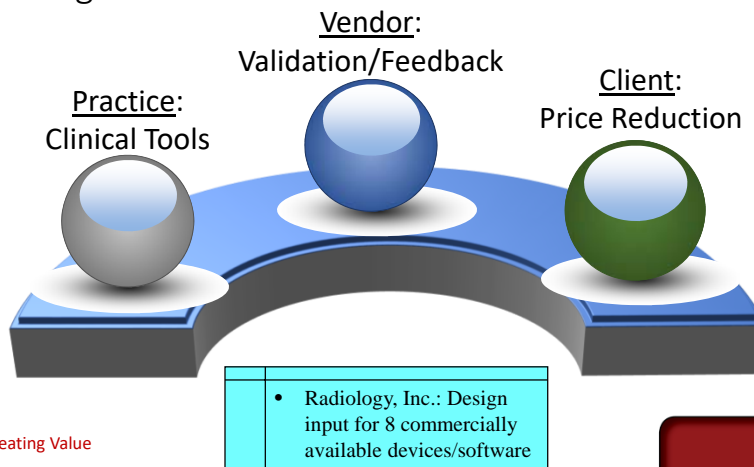
“The initial 12 hours after the earthquake were relatively normal at our hospital since the majority of victims were on the coast. Nevertheless, with the public hospitals filling up in Santo Domingo and victims finally making it out of the coastal region, we began receiving a number of patients arriving in any way possible: cars, ambulances, mattresses, motorcycles. You name it. Transportation has been a huge issue here because of the significant road damage. As a result, many patients went without care for over 12 hours because the hospitals on the coast were destroyed in the earthquake. Since the patients' arrival, we've been in triage mode and just trying to stabilize and quickly assess patients for injuries. Most patients required imaging (which luckily we have access to CT and XR here), a few went to surgery and then the rest went to the inpatient wards once stabilized. Everyone has been working so hard and collaborating beautifully...you can really sense the morale and desire to care for these victims and their families.”

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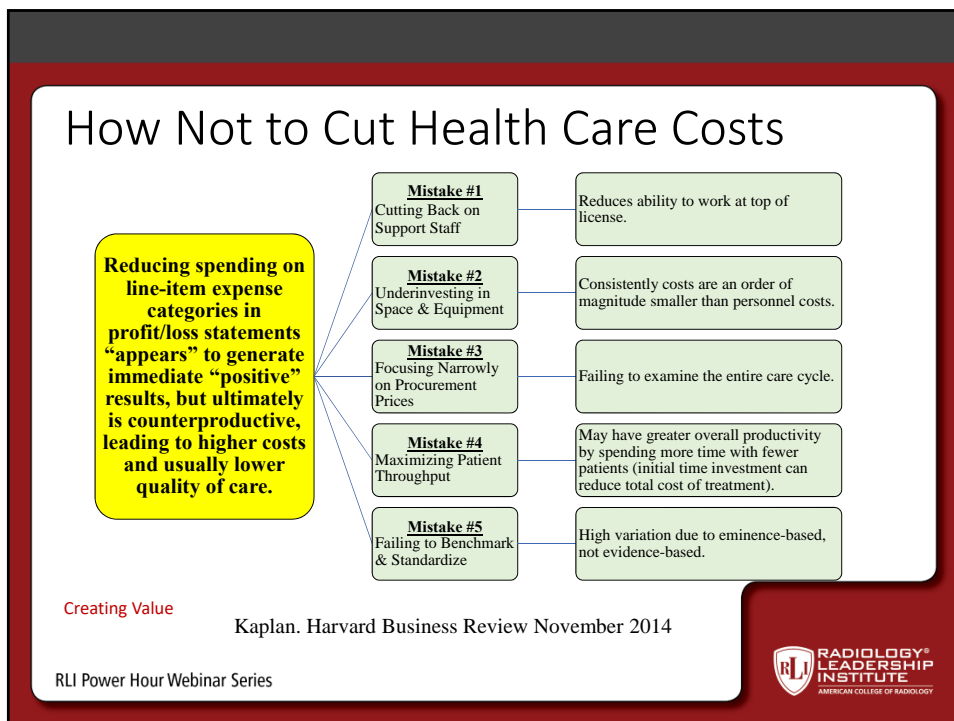
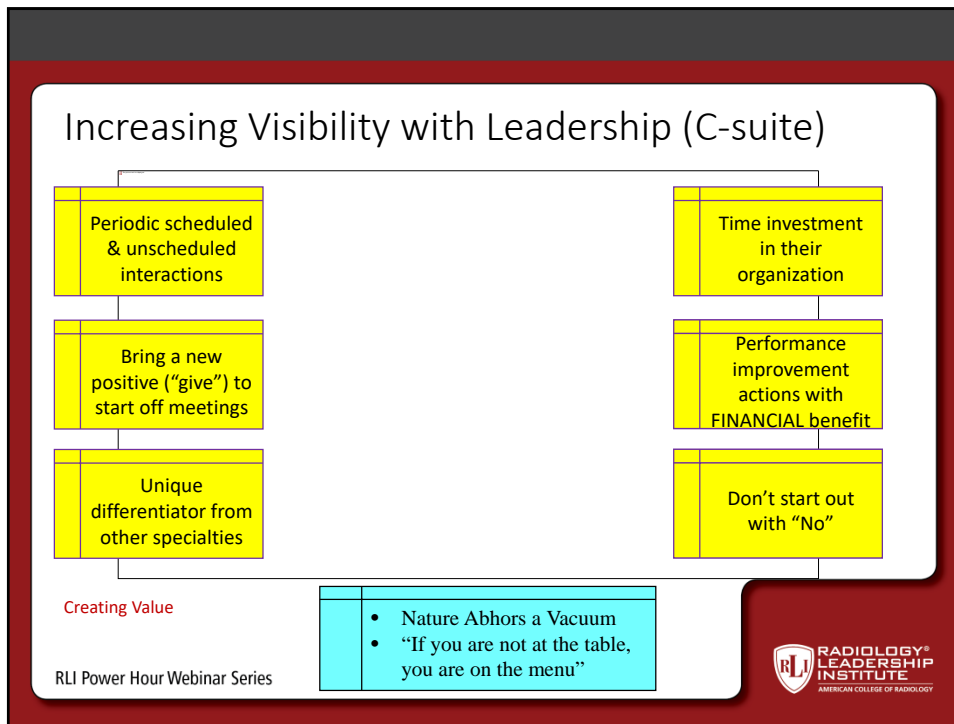
Interaction with Vendors: Product Development/ Testing



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Summary:

1. Acknowledge, quantify, and invest in non-image interpretation activities
2. Be involved with continuous innovation and improvement
3. Collaborate with others (within and outside of radiology)

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