WELCOME
TO THE
Imaging Performance Partnership
2019 National Meeting Series
2019 Imaging Market Update

Disruptions coming to imaging
1. Imaging market dynamics

2. Determining your strategy

3. The future of steerage
Flying high in 1975

Airline travel was a bit different 40 years ago…

Source: Imaging Performance Partnership interviews and analysis.

Flickr.com / James Vaughn.
Deregulation leads to bumpy ride

However, consumers benefit from rise of low-cost competition

### Airline Deregulation Act of 1978
- Removed federal control of fares, routes, and entry of new airlines
- Led to more flights, lower fares, and airline mergers

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>PEOPLEExpress, Spirit, Sun Country</td>
</tr>
<tr>
<td>1985</td>
<td>Continental</td>
</tr>
<tr>
<td>1985</td>
<td>Delta/Western, TWA/Ozark, Continental/Texas Air, American/AirCal</td>
</tr>
<tr>
<td>1990</td>
<td>Pan Am</td>
</tr>
<tr>
<td>1995</td>
<td>Frontier</td>
</tr>
<tr>
<td>2000</td>
<td>jetBlue, Allegiant</td>
</tr>
<tr>
<td>2005</td>
<td>US Airways, United, TWA, Delta, Northwest</td>
</tr>
</tbody>
</table>

Average round-trip fare:
- **$575**
  - Average round-trip fare, 1979 (inflation adjusted)
- **$350**
  - Average round-trip fare, 2011

Legacy carriers strike back

Cyclic nature of competition means carriers flying high once again

Airline competitive development cycle

Market inefficiency

Disruption
- Airline Deregulation Act of 1978
- Airlines no longer insulated from price and route competition

Consolidation
- Surviving carriers merge to prevent further erosion
- Larger players gain market power, control over prices

Margin compression
- Emergence of low-cost carriers leads to strong price competition
- Legacy carriers experience bankruptcies, must adapt to survive

Source: Imaging Performance Partnership interviews and analysis.
Is imaging facing similar turbulence?

Price inefficiencies gain attention of industry insiders and disruptors alike

**Price variation, lower-limb MRIs**

*25th-75th percentile range, mean*

$n = 50,484$ MRI scans

<table>
<thead>
<tr>
<th>Hospital-based MRIs</th>
<th>Non-hospital-based MRIs</th>
</tr>
</thead>
<tbody>
<tr>
<td>$2,000</td>
<td></td>
</tr>
<tr>
<td>$1,750</td>
<td></td>
</tr>
<tr>
<td>$1,500</td>
<td></td>
</tr>
<tr>
<td>$1,250</td>
<td></td>
</tr>
<tr>
<td>$1,000</td>
<td></td>
</tr>
<tr>
<td>$750</td>
<td></td>
</tr>
<tr>
<td>$500</td>
<td></td>
</tr>
<tr>
<td>$250</td>
<td></td>
</tr>
<tr>
<td>$0</td>
<td></td>
</tr>
</tbody>
</table>

12x

MRI price variation nationally

5x

Within-market MRI price variation

$468

Average total savings\(^1\) per MRI if patients went to cheapest provider within 60-minute drive from their home

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1) Combined insurer payments and patient copayments.
The potential path ahead for imaging

Imaging competitive development cycle

- Market inefficiency
- Disruption
- Margin compression
- Consolidation

YOU ARE HERE

Source: Imaging Performance Partnership interviews and analysis.
Modest growth expected for imaging

Chronic disease burden, aging population drive utilization

National outpatient radiology projections

*Estimated volumes, 2018-2023*

- **X-ray**
  - 2018: 122.2M
  - 2023: 129.5M
  - Growth: +6%

- **Ultrasound**
  - 2018: 56.7M
  - 2023: 65.8M
  - Growth: +16%

- **CT**
  - 2018: 39.8M
  - 2023: 41.4M
  - Growth: +4%

- **Mammography**
  - 2018: 28.0M
  - 2023: 28.8M
  - Growth: +3%

- **MRI**
  - 2018: 25.3M
  - 2023: 26.0M
  - Growth: +3%

- **Nuclear Medicine**
  - 2018: 6.0M
  - 2023: 6.0M
  - Growth: -1%

- **PET**
  - 2018: 2.3M
  - 2023: 2.6M
  - Growth: +9%

Overall growth projected for outpatient radiology from 2018 to 2023: 7%
# Modality Drivers and Barriers

<table>
<thead>
<tr>
<th>Modality</th>
<th>Drivers increasing utilization</th>
<th>Drivers decreasing utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT</td>
<td>• Cardiac imaging technology</td>
<td>• Clinical decision support</td>
</tr>
<tr>
<td></td>
<td>• Chronic conditions (cancer, ischemia)</td>
<td>• Radiation dose concerns</td>
</tr>
<tr>
<td>MRI</td>
<td>• Preference for non-irradiating modalities</td>
<td>• High-deductible health plans</td>
</tr>
<tr>
<td>PET</td>
<td>• Potential for new radiotracers</td>
<td>• Medicare reimbursement limits</td>
</tr>
<tr>
<td>Nuclear medicine</td>
<td>• Chronic diseases</td>
<td>• Radiotracer supply challenges</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Cost</td>
</tr>
<tr>
<td>Ultrasound</td>
<td>• Preference for non-irradiating modalities</td>
<td>• Use by non-radiologists</td>
</tr>
<tr>
<td></td>
<td>• Breast density reporting requirements</td>
<td></td>
</tr>
<tr>
<td>Mammo</td>
<td>• Population health initiatives</td>
<td>• Demographics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Alternative screening modalities</td>
</tr>
<tr>
<td>X-ray</td>
<td>• Digital x-ray adoption</td>
<td>• Improving alternatives (CT, nuclear medicine)</td>
</tr>
<tr>
<td></td>
<td>• Interventional radiology</td>
<td></td>
</tr>
</tbody>
</table>

Source: Imaging Performance Partnership interviews and analysis.
Utilization growth won’t save imaging revenue

Demographic shifts, utilization controls may cap revenue growth

Utilization by generation

<table>
<thead>
<tr>
<th>Generation</th>
<th>Population</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baby Boomers</td>
<td>~75.5M</td>
<td>• High utilizers, but reimbursed at lower Medicare rates</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Increasingly choosing Medicare Advantage, associated with lower imaging utilization</td>
</tr>
<tr>
<td>Gen X</td>
<td>~65.7M</td>
<td>• Commercially-insured high utilizers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• However, absolute numbers much smaller than Baby Boomers or Millennials</td>
</tr>
<tr>
<td>Millennials</td>
<td>~79.4M</td>
<td>• Price sensitive due to high use of HDHPs¹</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Imaging needs mostly for emergent conditions</td>
</tr>
</tbody>
</table>

Projected imaging volume growth by age cohort,² 2018-2023

- 5.1% ages 20-39
- -1.5% ages 40-59
- 11.5% ages 60-79

¹ High deductible health plans
² Age cohorts refer to ages of Millennials, Gen X, and Baby Boomers in 2023.

Price disruptions coming in multiple forms

<table>
<thead>
<tr>
<th>Approach</th>
<th>Medicare</th>
<th>Employers</th>
<th>Private payers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandate</td>
<td>CMS has power to implement site neutral payment, limited only by public pushback</td>
<td>Employers use high deductibles to control benefits costs, encourage patients to shop for lower-cost care</td>
<td>Private payers steer patients to cheaper freestanding imaging instead of hospitals</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Public backlash</th>
<th>Industry influence</th>
<th>Political shifts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barriers</td>
<td>Employee pushback</td>
<td>Lack of price shopping behavior</td>
<td>Member pushback</td>
</tr>
<tr>
<td>Barriers</td>
<td>Decision power</td>
<td></td>
<td>Availability of low-cost capacity</td>
</tr>
</tbody>
</table>

~$3B
Potential annual all-payer savings from equalizing hospital and freestanding imaging pricing

1) Total non-ED hospital-based OP imaging payments estimated at $5.1B. Estimated by assuming 36% Medicare, 64% commercial payer mix, and commercial payments 293% of Medicare rates.

CMS uses weight to level payment across sites

Site-neutral payment extended to all clinic visits in 2019

The path to site-neutral payment

June 2013
MedPac estimates equalizing payments for 66 APCs would save Medicare $900 million annually

November 2015
SNP implemented as part of Bipartisan Budget Act. Only impacts hospital-owned facilities built or acquired after November 2, 2015

January 2018
CMS lowers the site-neutral rate to 40% from 50% of HOPPS

January 2019
CMS extends SNP cuts to all off-campus HOPDs for clinic visits (CPT G0463), reducing spending by
- $380 million in 2019
- $800 million in 2020


1) Ambulatory Procedure Classification
2) Site-neutral payments
3) Hospital Outpatient Prospective Payment
4) Includes services beyond radiology
Employers use deductibles to contain benefits costs

As deductibles rise, patients find it difficult to cover costs

Growth of deductible size
Percent increase from 2008 baseline

<table>
<thead>
<tr>
<th>Year</th>
<th>Overall inflation</th>
<th>Worker's earnings</th>
<th>Deductible size</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>0%</td>
<td>17%</td>
<td>1%</td>
</tr>
<tr>
<td>2010</td>
<td>50%</td>
<td>40%</td>
<td>26%</td>
</tr>
<tr>
<td>2012</td>
<td>100%</td>
<td>63%</td>
<td>212%</td>
</tr>
<tr>
<td>2014</td>
<td>150%</td>
<td>83%</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>200%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>250%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$1,573
Average deductible for single coverage, 2018

40%
of Americans cannot cover a $500 emergency expense


1) High-deductible health plan
Price growth continues unabated

HDHP utilization reductions outweighed by price increases

Outpatient radiology prices, utilization

Commercial payers, percent increase from 2013 baseline

Prices paid to hospitals by private health plans are high relative to Medicare and vary widely
Chapin White, Christopher Whaley

- Using resources from self-insured employers, state-based all-payer claims databases, and health plans, researchers analyzed $13 billion in hospital spending from 2015 to 2017

- **Key findings:**
  - Relative prices varied three-fold among hospital systems, ranging from 150 percent of Medicare on the low end to 350-400+ percent of Medicare on the high end
  - Relative prices for hospital outpatient services were 293 percent of Medicare rates on average, much higher than the relative price for inpatient care (204 percent of Medicare)

Patients on HDHPs apparently not shopping for care

They are following referring providers’ recommendations

Patient MRI pathway

Physician refers patient to affiliated hospital for MRI

Low-priced imaging center

Patient receives MRI at much higher price

“Patients, on average bypassed six lower-priced providers between their home and the location where they received their scan.”

Chernew, Cooper, Larsen-Hallock, and Morton

Are health care services shoppable? Evidence from the consumption of lower-limb MRI scans

Michael Chernew, Zack Cooper, et al

- Researchers analyzed 2013 claims data for non-contrast lower-limb MRIs from a large national insurer that has coverage in all 50 states (sample size: 50,484 MRI scans)

- Key findings:
  - Despite significant out-of-pocket costs and little variation in quality, patients often received MRIs at high-priced locations when lower-priced options were available
  - Less than 1 percent of patients in the study used a freely-available price transparency tool
  - The key determinant of where a patient received her MRI was referring physician recommendation
  - MRI prices varied by a factor of 5 within markets and 12 across markets

Patients clearly prefer low costs…

Importance of price factors when choosing imaging provider

Mean utility scores (4 = highest, 0 = lowest)

n=2,040

- Out-of-pocket costs will be less than $30: 3.39
- Provider is in-network: 3.15
- I will know the exact price I will pay before my exam: 2.50
- I can get a price estimate, but my final bill may be more or less: 0.87
- Provider is out-of-network: 0.40
- I won’t know how much the exam will cost me until I receive the bill: 0.38
- My out of pocket costs will be between $200 and $1000: 0.28
- My out of pocket costs will be over $1000: 0.17

...But health care hardly a functional market

### Necessary conditions for shopping

<table>
<thead>
<tr>
<th>Condition</th>
<th>Description</th>
<th>Current state in health care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Differentiation</td>
<td>Meaningful variation in price and quality</td>
<td>Price variation exists, but unclear quality differentiation</td>
</tr>
<tr>
<td>Incentive</td>
<td>Consumer has financial stake in purchasing process</td>
<td>Incentive to shop limited to services like imaging that fall below deductibles</td>
</tr>
<tr>
<td>Transparency</td>
<td>Ability to compare among different providers</td>
<td>Price often not available until after service rendered</td>
</tr>
</tbody>
</table>

*Source: Imaging Performance Partnership interviews and analysis.*
Price transparency is the new mandate

Several different initiatives underway

Addressing barriers to transparency

Transparency mandate
Federal, state governments preparing rules to mandate disclosure of provider (and potentially payer) negotiated rates

Potential impact: Greater price competition among providers may lead to a race to the bottom in some markets

Competitive disruption
Some providers such as Smart Choice MRI use flat, transparent pricing to disrupt referral networks and gain market share

Potential impact: Disruption of existing hospital referral networks where physicians and patients prefer lower-cost options

Surprise billing
Federal and state legislators preparing legislation to limit or forbid “balance billing” for out-of-network services

Potential impact: Increased bad debt for radiologists due to uncollected professional fees, loss of leverage in payer negotiations

Source: Imaging Performance Partnership interviews and analysis.
Payers double down on steerage

Anthem, UHC deny HOPD imaging

Private payer steerage policies growing in scale

40 million lives

UnitedHealthcare conducts site-of-care reviews for CT, MRs in HOPDs for 42 states

BCBS MA to offer lower co-insurance, co-pays at freestanding centers, higher at HOPD

4.5 million lives

Anthem considers care setting in CT, MR, denies hospital-based exams not meeting criteria in 13 states

4.0 million lives

BCBS MA rewards $250 when patients shop, get care at lower-cost sites (MRIs, mammograms)

172K lives

Anthem begins offering $50–$200 if patient chooses lower cost provider in NH, CT, IN

1) The timeline addresses only major steerage initiatives and may not capture all covered lives impacted by other payer policies.
2) Includes BCBS MA 45,190 enrollees.
3) Advisory Board is a subsidiary of UnitedHealth Group, the parent company of UnitedHealthcare. All Advisory Board research, expert perspectives, and recommendations remain independent.
4) Blue Cross Blue Shield.

**Paying patients to switch: impact of a rewards program on choice of providers, prices, and utilization**

Christopher Whaley, Lan Vu, Neeraj Sood, et al

- Researchers analyzed a Blue Cross Blue Shield rewards program offered in IL, MT, NM, OK, and TX that included 270,000 enrollees and 29 employers
- Patients received awards ranging from $41 for ultrasounds to $409 for surgeries for using lower-cost provider options

**Key findings:**

- Despite only 8% of patients using a price transparency tool to compare prices, the program decreased MRI payments by 4.7%, ultrasound payments by 2.5%, and mammogram payments by 1.7%
- The strategy may be appealing to employers as it encourages price shopping without placing penalties on patients, which could cause pushback among employees

Plenty of unknowns on site-of-care policies

Major questions that will influence policy success

1. **Is there sufficient freestanding capacity?**
   - Due to historical reimbursement cuts and hospital acquisitions, many markets lack low-cost capacity
   - **Our take:** New entrants will absorb steered demand over time

2. **Will there be patient and employer pushback?**
   - Patients may be inconvenienced or, at worst, charged for uncompensated hospital-based MRIs and CTs
   - **Our take:** Patient and employer pushback may scuttle policies

3. **Do insurers have enough market power?**
   - Hospital consolidation has significantly limited insurers’ negotiating power in many markets
   - **Our take:** Dominant providers in fragmented insurer markets may effectively resist policies

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Risk to payer for site-of-care policy effectiveness

- **Low**
- **Medium**
- **High**

Source: Imaging Performance Partnership interviews and analysis.
Physicians becoming more aggressive shoppers

New CMS Primary Care Initiative likely to accelerate trend

Physician VBP\(^1\) today

- APMs\(^4\) begin receiving 5% annual bonus payments in 2019, increased MIPS\(^5\) risk
- MACRA
- Bundled payment initiatives
- Commercial ACOs
- MSSP\(^2\)
- PCMHs\(^3\)

Time

Physician VBP\(^1\) tomorrow

- CMS Primary Care Initiative
- CMS estimates 25% of PCPs will participate

Time

Price sensitivity

The net impact of price disruptions

Pleasantville Hospital’s not-so-pleasant experience

Impact of price disruptions on Pleasantville Hospital imaging

*Model health system that includes both on-campus HOPD and off-campus HOPD*

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<table>
<thead>
<tr>
<th>Impact of Price Disruptions</th>
<th>Revenue Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starting imaging revenue</td>
<td>$30.0M</td>
</tr>
<tr>
<td>Anthem CT/MRI steerage</td>
<td>($2.0M)</td>
</tr>
<tr>
<td>UHC CT/MRI steerage</td>
<td>($2.9M)</td>
</tr>
<tr>
<td>&quot;Soft&quot; steerage¹</td>
<td>($1.0M)</td>
</tr>
<tr>
<td>Site-neutral payment²</td>
<td>($1.7M)</td>
</tr>
<tr>
<td>Ending imaging revenue</td>
<td>$22.4M</td>
</tr>
</tbody>
</table>

1) Refers to payer incentives for patients to go to lower cost sites and physician-based steerage. Assumed 10% reduction in revenue from non-Anthem and non-UHC commercial payers
2) Off-campus HOPD Medicare revenue reduced by 60% to account for SNP rate (40% of Medicare HOPPS)

Source: Imaging Performance Partnership interviews and analysis; Hospital Benchmark Generator, 2019, Advisory Board; Imaging Productivity and Efficiency Benchmark Generator, 2018, Advisory Board.
# Pleasantville Hospital

- 250-bed community hospital, Somewhere, USA

## Payer Share

<table>
<thead>
<tr>
<th>Payer</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicare/Medicaid</td>
<td>50%</td>
</tr>
<tr>
<td>UHC</td>
<td>15%</td>
</tr>
<tr>
<td>Anthem</td>
<td>10%</td>
</tr>
<tr>
<td>Other commercial(^1)</td>
<td>25%</td>
</tr>
</tbody>
</table>

## Modality

<table>
<thead>
<tr>
<th>Modality</th>
<th>On-campus HOPD</th>
<th>Off-campus HOPD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Volumes(^1)</td>
<td>Medicare price(^2)</td>
</tr>
<tr>
<td>CT</td>
<td>12,000</td>
<td>$296</td>
</tr>
<tr>
<td>MRI</td>
<td>3,500</td>
<td>$332</td>
</tr>
<tr>
<td>PET</td>
<td>1,000</td>
<td>$1,300</td>
</tr>
<tr>
<td>NM</td>
<td>2,200</td>
<td>$412</td>
</tr>
<tr>
<td>US</td>
<td>6,000</td>
<td>$163</td>
</tr>
<tr>
<td>X-ray</td>
<td>25,000</td>
<td>$140</td>
</tr>
</tbody>
</table>

\(^1\) Across all commercial payers (non-UHC, non-Anhem), 10% losses are assumed due to soft steerage.

\(^2\) Volumes based on median values from Imaging Performance Partnership’s Productivity and Efficiency Benchmarks, whose data is based on a 2017 survey of ~200 providers.

\(^1\) Average price benchmarks based on Advisory Board’s Hospital Benchmark Generator tool, which using MedPAR data among other sources.

250% commercial prices as percent of Medicare.
Non-hospital providers headed for a field day?

Freestanding imaging appeals to price-sensitive players

Lower-limb MRI average prices

<table>
<thead>
<tr>
<th></th>
<th>Hospital providers</th>
<th>Non-hospital providers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average prices paid to providers</td>
<td>$1,474</td>
<td>$643</td>
</tr>
</tbody>
</table>

Additional advantages of non-hospital providers

Access
- Shorter wait times, flexible scheduling stemming from freestanding centers’ lower-acuity case mix

Convenience
- Often located in accessible commercial areas with plentiful parking

Facilities
- Waiting areas, exam rooms often more updated than hospitals’, and patients don’t need to navigate hospital corridors

Customer service
- Predictable patient flow allows non-hospital providers to focus on service touches

But many markets lack freestanding capacity

Reimbursement cuts led to significant shakeout, acquisitions by hospitals

**MPFS** total diagnostic radiology spend

*In Billions (USD), 2002-2015*

- Global
- TC
- IDTF/Multi

**Estimated number of IDTFs** nationally

- 2008: 7,080
- 2015: 6,598

IDTF reimbursement decline continues

- 2018 final
- 2019 final

Impact due to changes in practice expense inputs


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1) Medicare Physician Fee Schedule.
2) US Dollars.
3) Technical component.
4) Independent Diagnostic Testing Facilities.
Dominant health systems still hold keys

Consolidation led to even greater market power

**Acquiring Competitors**
- Purchasing radiology-owned imaging centers, IDTFs

**Employing Providers**
- Employment increasing proportion of referring physicians
  - 44% of physicians are employed by systems
  - Increase in employment from 2012-2018: 70%

**Merging Hospital Networks**
- Expanding capital, geographic footprint through consolidation
  - 94% of Imaging Performance Partnership members are part of multi-hospital systems
  - 20% Growth in number of hospitals in health systems from 2004-2014

Consolidation drives price increases

Market concentration limits payer power

Average prices by hospital market consolidation

*California, 2014*

<table>
<thead>
<tr>
<th>Procedure group</th>
<th>Less consolidated markets¹</th>
<th>More consolidated markets¹</th>
<th>Price difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>OP orthopedist procedure</td>
<td>$311</td>
<td>$577</td>
<td>+85%</td>
</tr>
<tr>
<td>Heart attack</td>
<td>$108,483</td>
<td>$165,119</td>
<td>+52%</td>
</tr>
<tr>
<td>OP primary care</td>
<td>$472</td>
<td>$622</td>
<td>+32%</td>
</tr>
<tr>
<td>OP oncology procedure</td>
<td>$10,370</td>
<td>$13,269</td>
<td>+28%</td>
</tr>
</tbody>
</table>

Price increases associated with hospital-physician consolidation

- 12% Higher ACA premiums
- 9% Higher specialist prices
- 5% Higher primary care prices

¹ Consolidation defined by Herfindahl-Hirschmann Index (HHI), a common definition of market concentration. Low consolidation = HHI < 1,500; high consolidation = HHI > 1,500.

IDTFs increasingly consolidated

Independent centers seek safety in scale

Large imaging center chains getting larger

Number of owned outpatient imaging centers, 2015-2018

<table>
<thead>
<tr>
<th>Chain</th>
<th>2015</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>RadNet</td>
<td>289</td>
<td>323</td>
</tr>
<tr>
<td>CDI</td>
<td>100</td>
<td>107</td>
</tr>
<tr>
<td>SimonMed</td>
<td>63</td>
<td>112</td>
</tr>
<tr>
<td>Akumin</td>
<td>15</td>
<td>95</td>
</tr>
<tr>
<td>Touchstone Imaging</td>
<td>37</td>
<td>63</td>
</tr>
<tr>
<td>MedQuest¹</td>
<td>74</td>
<td>46</td>
</tr>
<tr>
<td>Outpatient Imaging Affiliates</td>
<td>34</td>
<td>37</td>
</tr>
</tbody>
</table>

Radiology groups consolidating in step

Capital, capabilities expansion among top reasons

Radiology practices by number of radiologists

Percent of all radiology practices, 2014-2018

Drivers of consolidation

- Increasing service demands from hospitals
- Reimbursement cuts
- Lack of available capital
- Increased competition, especially from national groups
- IT investment
- Reporting requirements
- Pending radiologist retirements

One thing is certain: imaging is ripe for disruption

Imaging competitive development cycle

- **Market inefficiency**
- **Disruption**
  - Full price transparency
  - New low-cost competitors
  - Steerage

- **Consolidation**
  - Radiology group M&A
  - Imaging center joint ventures, national chain purchases
  - Further hospital-based consolidation

- **Margin compression**
  - Site-neutral payments
  - Downward pressure on commercial price
  - Activated consumers

Source: Imaging Performance Partnership interviews and analysis.
1. Imaging market dynamics

2. Determining your strategy

3. The future of steerage
Hospitals’ “obvious” strategy not so simple

Misreading market may result in needless revenue losses

Griffin Hospital\(^1\) misreads the market

- **Build outpatient center**
  - Outpatient center near hospital planned
  - Goal to attract price sensitive patients

- **Lower prices**
  - MRIs steeply discounted to $650
  - Flat price offered transparently

- **No new patients seen as result of price discounts, leading to revenue losses**

- **OP center cannibalized higher-priced on-campus HOPD volumes**

---

1) Pseudonym.

Source: Imaging Performance Partnership interviews and analysis.
Market dynamics dictated by two competing forces

**Price-sensitive** markets characterized by:
- Younger, more educated patient base
- Strong presence of Anthem, UHC, and/or other payers implementing steerage
- Presence of ACOs and Medicare Advantage plans

**Consolidated** markets defined by:
- Few (or single) dominant health systems
- High degree of hospital-physician employment, alignment
- Fragmented payer market, many small employers

Source: Imaging Performance Partnership interviews and analysis.
Match strategy to market scenario

Critical to consider current and future market situation

Imaging market strategy matrix

- **Price competition**
  - **Price sensitivity**: Price sensitive consumers have many options to shop around
  - **Service competition**: Providers compete on service, convenience rather than price in a fragmented market

- **Stalemate**
  - **Price sensitivity**: Steerage blunted by dominant health systems; consumers have few options
  - **Service competition**: Providers have strong market power, meaning payer steerage will be less successful

Source: Imaging Performance Partnership interviews and analysis.
Degree of consolidation determines response

Hospital strategy: high price sensitivity

Market consolidation

Fragmented
Hospitals should compete on price
- Offer strategic price cuts
- Create joint ventures to expand freestanding capacity
- Change billing status of HOPD to freestanding
- Build new hospital-owned freestanding centers

Consolidated
Hospitals should compete on market power
- Negotiate for mutually beneficial deals with payers
- Push back against policies in media and other channels
- Trade price cuts on HOPD services for price increases on IP services

Potential tactics

Source: Imaging Performance Partnership interviews and analysis.
As price matters less, service matters more

Non-price-sensitive markets may still be fiercely competitive

When deciding where to go for your imaging exam, what factors are most important?

*Top 10 factors*

<table>
<thead>
<tr>
<th>Rank</th>
<th>Factor</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Out-of-pocket costs will be less than $30</td>
<td>Cost</td>
</tr>
<tr>
<td>2</td>
<td>Same-day results</td>
<td>Access</td>
</tr>
<tr>
<td>3</td>
<td>Provider is in-network</td>
<td>Cost</td>
</tr>
<tr>
<td>4</td>
<td>Imaging facility has most advanced level of technology</td>
<td>Quality</td>
</tr>
<tr>
<td>5</td>
<td>A radiologist who is subspecialized in this type of MRI will interpret my scan</td>
<td>Quality</td>
</tr>
<tr>
<td>6</td>
<td>Once I arrive, I will wait 5 minutes or less</td>
<td>Access</td>
</tr>
<tr>
<td>7</td>
<td>Doctor recommendation</td>
<td>Service</td>
</tr>
<tr>
<td>8</td>
<td>Facility provider comprehensive understanding of procedure, diagnosis</td>
<td>Service</td>
</tr>
<tr>
<td>9</td>
<td>Quality scores far above industry average</td>
<td>Quality</td>
</tr>
<tr>
<td>10</td>
<td>Patient satisfaction scores far above industry average</td>
<td>Service</td>
</tr>
</tbody>
</table>

When deciding where to go for your imaging exam, what factors are most important?

*Top 10 factors*

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<td>Patient satisfaction scores far above industry average</td>
<td>Service</td>
</tr>
</tbody>
</table>

Source: “Imaging consumer preferences survey results,” 2015, Advisory Board, 
Non-hospital providers must consider options too

Joint ventures, M&A among possibilities

**Yesterday’s JV incentives**
- Lower-risk means of entering new markets
- Competition mitigation
- Care coordination

**Today’s JV incentives**
- Lower-risk means of attracting price-sensitive volumes
- Capital infusion
- Protection from steerage

**M&A still on the table**
- Despite SNP\(^1\) policy making M&A less attractive, health systems may still be interested in purchasing centers to create low-cost capacity
- M&A may be particularly well-suited to low-growth markets as a means to neutralize competition without creating excess capacity

---

1) Site neutral payment.

Source: Imaging Performance Partnership interviews and analysis.
Price sensitivity offers expansion opportunity

Many options for radiology groups to gain market share

Place new imaging facility away from hospital-owned sites, closer to systems’ competitors to capture new market share

Acquire or merge with radiology groups outside current market to grow into mature site with market presence

Create **agreement for specific services** where competitors own more market share than system partners

Partner with referrer group to expand services with strong referral base

**RAF¹ Outpatient Expansion Strategies**

<table>
<thead>
<tr>
<th>5</th>
<th>Number of RAF joint ventures with health systems or other independent groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Number of RAF wholly-owned freestanding imaging facilities</td>
</tr>
</tbody>
</table>

Source: Radiologic Associates of Fredericksburg, Fredericksburg, VA; Imaging Performance Partnership interviews and analysis.

1) Radiologic Associates of Fredericksburg.
Is bigger better for radiology groups?

If you can’t beat the competition, get bigger

### Range of integration options for radiology groups

<table>
<thead>
<tr>
<th>Less integrated</th>
<th>More integrated</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>National service providers</strong></td>
<td><strong>Corporate practices</strong></td>
</tr>
<tr>
<td>A la carte services</td>
<td>Employed radiologists</td>
</tr>
<tr>
<td>No integration required among practices</td>
<td>Goal of complete integration (benefits, RCM2, telerad)</td>
</tr>
<tr>
<td><strong>Independent affiliation</strong></td>
<td><strong>MSOs(^1), private equity ownership</strong></td>
</tr>
<tr>
<td>Integration focused on strategic objective (e.g., RCM(^2))</td>
<td>Varying practice ownership</td>
</tr>
<tr>
<td>Participating groups own MSO(^1)</td>
<td>Objective to build value for sale</td>
</tr>
<tr>
<td><strong>Examples</strong></td>
<td><strong>Nationally owned practices</strong></td>
</tr>
<tr>
<td>Strategic Radiology</td>
<td>Purchase made of cash and stock; 100% ownership of local practices</td>
</tr>
<tr>
<td>Canopy Partners</td>
<td>Objective to build value and sell</td>
</tr>
<tr>
<td>Unified Radiology</td>
<td>Radiology partners</td>
</tr>
<tr>
<td>Covalent</td>
<td><strong>Welsh Carson</strong></td>
</tr>
<tr>
<td></td>
<td>Collaborative Radiology</td>
</tr>
<tr>
<td></td>
<td>Exellere Partners</td>
</tr>
</tbody>
</table>

1. Management service organization.
2. Revenue cycle management.

Source: MBMS; Imaging Performance Partnership interviews and analysis.
DEALS REQUIRE AMPLE DUE DILIGENCE

DRIVERS OF PRIVATE EQUITY INVESTMENT IN RADIOLOGY GROUPS

PE drivers
- Fragmented market
- Increasing technology investment needs
- Potential for back-office efficiencies

Shared incentives
- Capital to invest in IT products for additional income
- Stronger leverage for price negotiations
- Capabilities enhancement
- Increased long-term gains from additional contracts, market expansion

Rad group drivers
- Monetize equity in practice
- Reduce administrative burden
- Gain capital for equipment investment
- Large number of radiologist retirements on horizon

Guidelines for radiology group competition

Aggregation, PE investment should support value creation

**IT, data ownership**
Build ownership of PACS, VNA, intelligent worklist to streamline work across multiple facilities, improve productivity, data collection

**Quality improvement**
Drive radiologist and patient compliance with evidence-based care, enhance peer review, develop new quality assurance processes

**Expanded service portfolio**
Offer subspecialty, off-hours coverage support and grow service offerings, such as interventional radiology

**Outpatient center strategy**
Develop, operate outpatient facilities – wholly owned or in joint venture arrangements – in an increasingly outpatient-driven market

Source: Imaging Performance Partnership interviews and analysis.
1. Imaging market dynamics

2. Determining your strategy

3. The future of steerage
Purchasing decisions require price and quality

Efficient consumer shopping behavior

Source: Imaging Performance Partnership interviews and analysis.
Is radiology a commodity?

“At this point, [radiologists’] value is indeterminate… [radiologists] are hard-pressed to explain to society, consumers, and referring physicians the true value of radiology processes.”

Alexander Norbash, Radiologist
BOSTON MEDICAL CENTER

Danger inherent in commoditization

“If radiologists can’t figure out a way to save the health care system money while providing good patient care, the only thing we’ll be competing on is price”

Bibb Allen Jr, MD
Vice Chair of ACR Board of Chancellors, June 2013

Quality: the next frontier of steerage

Significant imaging variation on a single patient

63-year-old patient with history of low back pain

Patient receives MRI at 10 different centers in New York City

Patient receives different diagnoses with 10 different treatment plans

30%
Potential number of CT, MRI exams that have diagnostic errors

Introducing Walmart’s new steerage strategy

Using Covera Health to steer based on diagnostic accuracy, not cost

Walmart charts new course by steering workers to high-quality imaging centers
Kaiser Health News

Walmart steering employees to 800 imaging centers to avoid misdiagnoses
Becker’s Hospital Review

Imaging center A
Quality: ■

Hospital A
Quality: ■ ■ ■

Imaging center B
Quality: ■ ■ ■ ■

Covera-designated center of excellence

Local Walmart employees requiring imaging

CASE EXAMPLE

Covera Health

• Health analytics startup based in New York, NY

► Using independent radiologists to evaluate samples of patient care data combined with machine learning algorithms to determine facilities’ error rates, Covera developed a list of 800 high-quality imaging centers across the country

► To be included, facilities must agree to submit regular samples of patient images and reports

► Signed agreement with Walmart, which will now steer patients towards centers based on quality, not just cost

► Solution could fill current gap in quality information regarding imaging centers for consumers

Imaging isn’t the only cost that matters

Purchasers finding high-quality imaging means lower downstream costs

“In fact, if it is structured correctly, a competitive marketplace can, and often does, create a ‘race to the top’. Under such a model, individuals and groups cannot expect their practices to perpetually thrive if they consistently provide mediocre expertise or poor service”

David Larson, Radiologist
CINNCINATI CHILDREN’S HOSPITAL MEDICAL CENTER

$1,000
Price of high-quality MRI

$27,220
Savings from avoiding unnecessary spine surgery¹


¹ Median Medicare cost of spinal fusion, Advisory Board Hospital Benchmark Generator.
Break the wheel

Imaging competitive development cycle

- Market inefficiency
- Breakthrough
- Price and quality transparency-enabled competition
- Disruption
- Consolidation
- Margin compression

Source: Imaging Performance Partnership interviews and analysis.
Key takeaways for imaging leaders

1. Hospitals’ outpatient imaging pricing advantage is eroding and may become a liability under more price transparency.

2. Non-hospital providers may benefit from steerage, but years of reimbursement cuts have caused significant shakeout and consolidation in the sector.

3. While demographic growth will drive modest gains, utilization won’t save imaging from pricing pressure.

4. Two competing forces, **price sensitivity** and **consolidation**, determine what strategy to pursue in a given market.

5. For imaging providers, the next frontier of competition may be quality as means to prevent further commoditization.

Partnership resources

- Price shift calculator
- Imaging pricing toolkit
- The top 5 questions on site-neutral payments, answered
- Growing Outpatient Imaging
- Outpatient imaging market estimator
- Imaging leaders’ margin management toolkit
- Imaging leader’s guide to quality improvement
How to navigate a challenging environment

Combination of market-specific and evergreen actions needed

1. Make data-driven decisions
   - *Imaging’s Analytics Advantage*, 11:30am tomorrow

2. Maximize efficiency
   - *Top Attributes of Highly Efficient Imaging Programs*, 1:30pm today

3. Maximize revenue potential
   - *Enhancing Imaging Revenue Capture*, 4:15pm today

4. Define your growth strategy
   - *Retaining Market Share in an Age of Steerage*, 8am tomorrow
   - *Choosing Your Steerage Response Strategy*, 9am tomorrow
   - *Winning Referring Physicians and Patients*, 10am tomorrow

Source: Imaging Performance Partnership interviews and analysis.

Table stakes
- Evergreen priorities
- Risk mitigation and future-proofing
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Top Attributes of Highly Efficient Imaging Programs

Lessons to maximize imaging capacity
Driving for speed

Has the obsession with efficiency gone too far?

Source: King Gayle, “Rare look inside Tesla’s Model 3 factory,” CBS THIS MORNING,
https://www.cbs.com/shows/cbs_this_morning/video/FMN4XL5kYziyI0Qgz_QcKAR07NWm0Gsf/tesla-ceo-elon-
musk-offers-rare-look-inside-model-3-factory/; Imaging Performance Partnership interviews and analysis.
1. Challenging core efficiency assumptions

2. Attributes of highly efficient imaging programs
Imaging’s longstanding focus on efficiency

Operational efficiency is a key component of the imaging leader’s job

98%
Of imaging leaders reported that operational efficiency “very or extremely important” to departments’ success
2014, n=96

#1
Efficiency ranked as highest importance priority for imaging leaders
2018, n=42

“As we move more toward things like bundles, imaging will become a cost center and efficiency will be critical”
Imaging director, rural hospital

“To stay competitive, our [radiology] group must continue to invest in efficiency.”
Executive, large independent radiology group

“Imaging is often a diagnostic service. We need to get patients in and out quickly. We never want to cause a breakdown in patient care.”
Imaging director, large health system

Benchmarks provide insight into performance

Imaging Productivity and Efficiency Benchmarks
Powered by survey of health system, radiology group leaders

Includes data from nearly 200 facilities, categories include:
• Imaging volumes
• Order and turnaround times
• Staff, equipment numbers
• Outpatient access

Access the benchmarks at advisory.com/ipp/productivity

New survey launches January 2020, submit your facilities’ data

Customize cohort to generate accurate peer comparisons; includes type of facility, trauma center designation, etc.

View benchmarks in deciles

Historical data reveal mixed results

ED provides evidence of uneven performance across time

**ED Report Turnaround Time**¹
*By modality, in minutes, 2009–2017*

**ED Order Response Time**²
*By modality, in minutes, 2009–2017*

---

**SURVEY INSIGHT**

Report turnaround times are the most significant and consistent improvement across time. This holds true across all care setting and modalities.

---

¹ Exam complete to final report signed.
² Order placed to scan complete.
³ Only CT without contrast.
Above all, overwhelming variation across the board

Coefficient of variation (CV): a (unitless) measure of variation within a data set, calculated as:

\[
CV = \frac{\text{Standard deviation}}{\text{Mean}} \times (100\%)
\]

The more variation within a data set, the higher a CV; examples:
- If all data points within a series are identical, \( CV = 0\% \)
- Data set with \( CV > 100\% \) is considered highly variable, meaning the data set contains points significantly above and below the mean

Depicting variation with the imaging patient journey

**Coefficient of variation for emergency department (ED) CT, outpatient (OP) MRI**

<table>
<thead>
<tr>
<th>Patient arrives, exam ordered</th>
<th>Scan begins</th>
<th>Scan ends</th>
<th>Ready to read</th>
<th>Report signed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ED CT</strong></td>
<td><strong>OP MRI</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order response time, wait time</td>
<td>Exam time(^1)</td>
<td>Post procedure time(^1)</td>
<td>Report turnaround time</td>
<td></td>
</tr>
<tr>
<td>67(^2)%</td>
<td>82%</td>
<td>176%</td>
<td>183%</td>
<td></td>
</tr>
<tr>
<td>72%</td>
<td>54%</td>
<td>168%</td>
<td>121%</td>
<td></td>
</tr>
</tbody>
</table>

1) All care settings.
2) Without contrast.

# Additional variation data analysis

## Variation for Select Modalities by Care Setting

Coefficient of variation (percentage), median time, standard deviation

<table>
<thead>
<tr>
<th>Modality</th>
<th>Outpatient wait times</th>
<th>Order Response Time</th>
<th>Exam time Median</th>
<th>Post Procedure Time</th>
<th>Report Turnaround Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>OP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ED</td>
<td>IP STAT</td>
<td></td>
<td>ED</td>
</tr>
<tr>
<td>CT w/o contrast</td>
<td>102% 17.8 min (18.2)</td>
<td>67% 36 min (24)</td>
<td>100% 68 min (68)</td>
<td>(all CT): 82% 20 min (16)</td>
<td>(all CT): 105% 5.4 h (5.6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MRI</td>
<td>72% 23.3 min (16.7)</td>
<td>158% 160 min (252)</td>
<td>221% 281 min (251)</td>
<td>54% 54 min (30)</td>
<td>168% 61 min (103)</td>
</tr>
<tr>
<td>US</td>
<td>74% 12.6 min (9.3)</td>
<td>222% 67 min (148)</td>
<td>92% 79 min (72)</td>
<td>78% 13 min (9)</td>
<td>171% 26 min (44)</td>
</tr>
<tr>
<td>X-ray</td>
<td>108% 12.0 min (13.0)</td>
<td>226% 37 min (84)</td>
<td>131% 51 min (66)</td>
<td>74% 33 min (26)</td>
<td>207% 16 min (29)</td>
</tr>
<tr>
<td>Mammo</td>
<td>60% 10.1 min (6.1)</td>
<td>--</td>
<td>--</td>
<td>210% 31 min (65)</td>
<td>260% 159 min (414)</td>
</tr>
</tbody>
</table>

Are these high performers?

Success in one area often funded by inefficiency in another

Hodges Hospital\(^1\) MRI throughput

*Inpatient STAT, 2016, by percentile*

<table>
<thead>
<tr>
<th>Order response</th>
<th>Post procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>91(^{st})</td>
<td>30(^{th})</td>
</tr>
</tbody>
</table>

Techs use time to efficiently transport patients, delays sending images to radiologists

Ridgeway Clinic\(^1\) CT access

*Outpatient CT, 2016, by percentile*

<table>
<thead>
<tr>
<th>Wait time</th>
<th>Annual procedures per scanner</th>
</tr>
</thead>
<tbody>
<tr>
<td>97(^{th})</td>
<td>42(^{nd})</td>
</tr>
</tbody>
</table>

Clinic leaves time between appointments to minimize waits, results in patient backlogs, below average volumes

---

**SURVEY INSIGHT**

Organizations with strong performance in only one metric often have poor performance in a related metric. These examples demonstrate how efficiency in one area is often caused by inefficiency in other.
Anchor strategy to holistic efficiency goals

Learning from our efficiency shortcomings to improve future performance

<table>
<thead>
<tr>
<th>Yesterday’s objective</th>
<th>Tomorrow’s goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategy targeted individual operational process metrics</td>
<td>Strategy enables holistic efficiency gains that meet two primary objectives:</td>
</tr>
<tr>
<td>✗ Causes inefficiency in one area to improve in another</td>
<td>✓ Maximize imaging’s capacity</td>
</tr>
<tr>
<td>✗ Creates false sense of confidence in performance</td>
<td>✓ Effectively using patient time</td>
</tr>
</tbody>
</table>

Proxy measures of success

For facilities
Volumes per scanner

For radiologists
Reads per radiologist

Source: Imaging Performance Partnership interviews and analysis.
Imaging efficiency from the patient perspective

What patients view as efficient imaging…

- Ability to schedule quickly
- Short time in waiting room, waiting in hospital for imaging
- Timely radiology results

…comes with financial consequences

**Correlation between time to third next available appointment and cancellations**

_Each plot represents individual outpatient-only facility n=14_

To explore imaging patient preferences in more depth, read “What Really Matters to Your Imaging Patients” available at advisory.com/ipp

2nd Most common reason patients no-show: **scheduling lead time**

In search of (true) high performers

Two criteria for identifying best practices

Step 1:
Identified best practices from organizations with strongest performance

*General rule:* above 80th percentile performance for 25% of reported metrics

- Used survey responses to identify facilities with performance above 80th percentile on at least two related but discrete metrics
- Considered metrics related to:
  - Outpatient access
  - Turnaround times
- Identified non-survey respondents that also met criteria

Step 2:
Vetted practices against benchmarks, modeled impact on volumes, revenue

*General rule:* practice has clear, positive impact on volumes, profit

- Use **Imaging Capacity Modeling Tool** to:
  - Measure impact of practices on volumes, capacity
  - Compare to “average hospital” performance, defined as 50th percentile within benchmarks
- When possible, incorporated investments like staff costs into calculations

Access all tools at advisory.com/ipp/tools

All case studies model out likely financial impact

Source: Imaging Performance Partnership interviews and analysis.
## Time to confront tightly held assumptions

High performers willing to challenge status quo for holistic efficiency gains

<table>
<thead>
<tr>
<th>Assumption</th>
<th>Reality</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> Lean staffing</td>
<td>Lean staffing hinders throughput, limits capacity; lost revenue outpaces staffing costs saved</td>
</tr>
<tr>
<td><strong>2</strong> Scheduling</td>
<td>Precision schedule critical to maximize capacity; imaging investment necessary to realize efficiency gains</td>
</tr>
<tr>
<td><strong>3</strong> Patient should be prioritized</td>
<td>Following order of appointment or arrival often creates unfilled capacity, patient backlogs</td>
</tr>
</tbody>
</table>

*Source: Imaging Performance Partnership interviews and analysis.*
Top attributes of highly efficient imaging programs

Lessons to maximize imaging capacity

1. Throughput-focused staffing model
   - Lesson #1: Add support staff to reduce radiologist interruptions
   - Lesson #2: Account and staff for tech time supporting other departments
   - Lesson #3: Consider adding staff to increase imaging’s daily capacity

2. Schedule aligned with true machine capacity
   - Lesson #4: Encourage adherence to standardized protocols
   - Lesson #5: Design accurate slot times
   - Lesson #6: Provide schedulers tools and training to build effective schedules

3. Dynamic patient prioritization
   - Lesson #7: Equip and empower staff to make real-time prioritization decisions
   - Lesson #8: Leverage intelligent worklists to prioritize patients

Source: Imaging Performance Partnership interviews and analysis.
1. Challenging core efficiency assumptions

2. Attributes of highly efficient imaging programs
Throughput-focused staffing model

• Lesson #1: Add support staff to reduce radiologist interruptions
• Lesson #2: Account and staff for tech time supporting other departments
• Lesson #3: Consider adding staff to increase imaging’s daily capacity
The quest to be lean

Cost concerns decrease imaging staffing levels

“Hospitals target labor costs, layoffs to reduce health care costs”
RevCycle Intelligence

“Redesign staffing models to reduce cost”
Top imaging priority¹

Health care is increasingly trying to do more with less, and imaging has to understand how to succeed under this model.”
Imaging director, Multi-hospital health system

Median change in FTE² technologists per scanner

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT</td>
<td>3.6</td>
<td>2.8</td>
</tr>
<tr>
<td>MRI</td>
<td>3.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Mammography</td>
<td>1.7</td>
<td>1.3</td>
</tr>
</tbody>
</table>

¹ According to 2019 Imaging Performance Partnership Topic Poll.
² Full-time employee, normalized on a 40 hour work week.

Fewer techs means fewer scans

Data reveal significant relationship between imaging staff, volumes

Correlation between FTEs per scanner, volumes per scanner

Each plot represents individual outpatient-only facility

n=20, 30

SURVEY INSIGHT

Data shows direct relationship between increased staffing levels and volumes. This suggests that increased staff per scanner helps organizations maximize capacity.

POTENTIAL ROI

Potential profit from increased staff³

$569K
Annual CT profit

$251K
Annual mammo profit

1) R², or coefficient of determination, measures how close data surrounds regression line; R² of 1 shows regression fits data.
2) Represents 2D and 3D mammography scanners, volumes.
3) Profit estimates based on facilities at 25th and 75th percentile of staff/scanner. Average payment per case as reported in CMS’s Outpatient Standard Analytical File (SAF); reflects Medicare fee-for-service outpatient encounters in 2017 Q4 - 2018 Q3. See slide 19 for calculations.

Source: 2019 Hospital Benchmark Generator, Health Care Advisory Board, Advisory Board; 2017 Imaging Benchmarking Survey, Imaging Performance Partnership, Advisory Board; Imaging Performance Partnership interviews and analysis.
## Analysis: Profit potential from added staff, volumes

### CT

<table>
<thead>
<tr>
<th></th>
<th>FTE/scanner</th>
<th>Annual volumes/scanner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Org. #1 75th percentile</td>
<td>0.5</td>
<td>1,265</td>
</tr>
<tr>
<td>Org. #2 25th percentile</td>
<td>2</td>
<td>3,567</td>
</tr>
<tr>
<td>Diff.</td>
<td>1.5</td>
<td>2,302</td>
</tr>
</tbody>
</table>

### CT revenue
- Median CT HOPD revenue per case: $319.20
- Potential annual revenue: 2,302 volumes x $319.20 revenue per case = $734,798.40

### CT costs
- Average CT tech compensation: $73,859 salary x 1.5 benefits = $110,788.50
- Potential annual staff costs: 1.5 staff x $110,788.50 salary = $166,182.75

$734,798.40 revenue - $166,182.75 costs = $568,615.65 profit

### Mammography

<table>
<thead>
<tr>
<th></th>
<th>FTE/scanner</th>
<th>Annual volumes/scanner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Org. #1 75th percentile</td>
<td>0.875</td>
<td>1,937</td>
</tr>
<tr>
<td>Org. #2 25th percentile</td>
<td>1.5</td>
<td>4,226</td>
</tr>
<tr>
<td>Diff.</td>
<td>0.625</td>
<td>2,289</td>
</tr>
</tbody>
</table>

### Mammography revenue
- Median mammo HOPD revenue per case: $139.94
- Potential annual revenue: 2,289 volumes x $139.94 revenue per case = $320,322.66

### Mammography costs
- Average mammography tech compensation: $74,272 salary x 1.5 benefits = $111,408
- Potential annual staff costs: 0.625 staff x $111,408 salary = $69,630.00

$320,322.66 revenue - $69,630 costs = $250,692.66 profit

Further analysis supports volume, tech correlation

Correlation between FTEs per scanner, volumes per scanner

<table>
<thead>
<tr>
<th>Modality</th>
<th>Care Setting</th>
<th>Correlation</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>PET</td>
<td>Outpatient-only facilities</td>
<td>High</td>
<td>0.93</td>
</tr>
<tr>
<td>X-ray</td>
<td>24/7 hour facilities</td>
<td>High</td>
<td>0.91</td>
</tr>
<tr>
<td>CT</td>
<td>Outpatient-only facilities</td>
<td>High</td>
<td>0.89</td>
</tr>
<tr>
<td>CT</td>
<td>24/7 hour facilities</td>
<td>High</td>
<td>0.86</td>
</tr>
<tr>
<td>Ultrasound</td>
<td>Outpatient-only facilities</td>
<td>High</td>
<td>0.81</td>
</tr>
<tr>
<td>X-ray</td>
<td>Outpatient-only facilities</td>
<td>High</td>
<td>0.67</td>
</tr>
<tr>
<td>Nuclear medicine</td>
<td>Outpatient-only facilities</td>
<td>High</td>
<td>0.62</td>
</tr>
<tr>
<td>Nuclear medicine</td>
<td>24/7 hour facilities</td>
<td>Medium</td>
<td>0.58</td>
</tr>
<tr>
<td>MRI</td>
<td>24/7 hour facilities</td>
<td>Medium</td>
<td>0.51</td>
</tr>
<tr>
<td>Mammography</td>
<td>Outpatient-only facilities</td>
<td>Medium</td>
<td>0.38</td>
</tr>
<tr>
<td>Ultrasound</td>
<td>24/7 hour facilities</td>
<td>Medium</td>
<td>0.34</td>
</tr>
<tr>
<td>MRI</td>
<td>Outpatient-only facilities</td>
<td>Low</td>
<td>0.14</td>
</tr>
</tbody>
</table>

More work for a smaller workforce
Leaner tech workforce increasingly taking on non-traditional roles

Transport, OR\(^1\) two areas requiring tech time

“Transport greatly impacts imaging efficiency in the outpatient and hospital setting, but they’re often cut for cost control.”

Imaging leader
Medium-size health system

15 min. Average time techs spend on one transport case\(^2\)

Five-year growth projections of image-guided OR procedures\(^3\)

- 56% MRI guided procedures
- 30% Ultrasound guided procedures

Additional tasks not taken into account in RVU-based productivity measures, staffing arrangements

1) Operating room.
2) According to Blackburn Hospital, pseudonym, internal analysis.
3) Based on data from Advisory Board’s Market Scenario Planner.
Radiologists, too, facing a staffing challenge

Non-clinical work disrupts radiologist workflow

**Interruptions threaten physician workforce**

- Per hour radiologists experience interruptions\(^1\)
- 42% of calls to radiologists inappropriate\(^2\)

**Key factor contributing to burnout**

- 45% of radiologists report burnout
- #1 Top burnout contributor, bureaucratic tasks (e.g., charting, paperwork)

"We want to minimize unnecessary alerts to radiologists, and are vetting all avenues”

EXECUTIVE, INDEPENDENT RADIOLOGY GROUP

---

1) Experienced by radiologists interpreting chest radiographs at urban academic health system, January – March 2016.

2) Inappropriate calls characterized as requests, inquiries about studies, wrong numbers, returning calls. Study performed over five days at two large teaching hospitals.

Create throughput-focused staffing model

Three opportunities to improve efficiency with redesign staffing

**Lesson #1:**
Add support staff to reduce radiologist interruptions

Hire radiology assistants to streamline, remove radiologist non-clinical work

**Lesson #2:**
Account and staff for tech time supporting other departments

Collaborate with hospital departments to increase transport, allow techs to work top-of-license

Track OR tech time accurately to staff appropriately

**Lesson #3:**
Consider adding staff to increase imaging’s daily capacity

Find areas to increase tech staff ratio to grow volume potential

Increased volumes outweigh staffing costs in all profiled practices

Use **Imaging Capacity Modeling Tool** to analyze tech staffing, volumes, equipment capacity

Source: Imaging Performance Partnership interviews and analysis.
Lesson #1: Add support staff to reduce radiologist interruptions

Use non-clinical staff for critical results reporting

Asheville’s¹ critical results reporting via RadReach

Radiologist
- Identifies critical result
- Sends alert via application in PACS to RadReach staff²

Receptionist
- Receives alert, views critical result, patient, ordering provider info
- Calls ordering provider if prompted by rad.
- Fields calls from order providers

Ordering provider
- Notified of critical result personally or via care team
- Calls receptionist to connect with rad.

Results in significant savings

18 min.
Saved per critical results case with RadReach vs. radiologist

Up to:
25 times
Process occurs daily

and
7.5 hours
Saved daily across practice

Source: Asheville Radiology, Asheville, NC; Imaging Performance Partnership interviews and analysis.

¹ Asheville Radiology.
² Clicks a button in PACS, picture archiving and communication system, enabled by Primordial – Nuance Communications.
Asheville Radiology

44-physician independent radiology group to include five vascular surgeons in Asheville, North Carolina

► RadReach staff manages radiologist critical results to minimize radiologist interruptions
  – Currently employs two RadReach staff members; third staff member trained to provide coverage when needed
  – Operate 8 am–7 pm Monday–Friday; phone transferred to hospital radiology department other times

► Staff primarily responsible for streamlining physician critical results communication; staff also oversee incidental findings tracking, referring physician data management, office administration, other special projects as needed
  – Example: Tracking pulmonologist follow-up compliance for bronchoscopy; ordering providers only adhere to 50% of recommendations

► RadReach monitors 100% of critical results findings, personally manages 60% of calls; radiologists own remaining 40%, sometimes more streamlined for radiologist to call directly
  – Saves radiologists average 18 minutes per case; equates to 450 minutes per day
  – Staff also manages 100% of code stroke alerts

Source: Asheville Radiology, Asheville, NC; Imaging Performance Partnership interviews and analysis.
Financial benefits of streamlined radiologist work

Canopy’s concierge program allows Greensboro rads to maximize workload

Professional radiology assistant — Intelligent worklist

- **Streamlines physician communication** between Greensboro, Cone Health
- **Serves as single contact point**, open 24/7/365
- **Manages critical findings**, communicates important findings to ordering providers
- **Locates referring providers contact** information, inputs in Rad Info Portal
- **Tracks incidental findings**, communicates to ordering providers

Lesson #8: Leverage intelligent worklist to prioritize patients

<table>
<thead>
<tr>
<th>2,143</th>
<th>1.13</th>
<th>$500,250</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours annual time PRAs spend on phone</td>
<td>radiologist equivalent annual time saved</td>
<td>cost savings</td>
</tr>
</tbody>
</table>


---

1) Greensboro Radiology partners with Cone Health.
2) Greensboro PRAs saved time equivalent to 1.125 radiologists. Average radiologist practicing in group salary is $450,000 (Merritt Hawkins).
Canopy Partners, Greensboro Radiology

- Canopy Partners: Health care technology services company headquartered in Greensboro, NC
- Greensboro Radiology: 70-physician radiology group in Greensboro, NC; part of Radiology Partners, a national radiology practice

- Greensboro Radiology and health system partner, Cone Health, sought to improve physician-to-physician access, communication, and workflow; approached Canopy Partners to redesign communication for both radiology practice and hospital to meet physician and patient needs
  - Deployed Canopy concierge program that includes professional radiology assistants (PRAs) and intelligent worklist solution

- PRAs streamline radiologist non-clinical workflow
  - Use Microsoft Sharepoint to store information including hospital, physician, tech, radiologist contact information, assignments; workflows for critical findings, code strokes

- Many calls are to provider about critical results; significant proportion also to contact tech about missing images, worksheets
  - Created new service line agreement with Cone for contacting tech less than 20 min; meets goal in 90% of cases

- PRAs handle 57,400 annual calls; 38,400 inbound, 19,000 outbound; 2,143 annual hours on phone, equates to 1.125 radiologists
  - Answers 98% of practice calls
  - Average speed of answer: 6.5 seconds; call time: 2:24 minutes

Source: Canopy Partners, Greensboro, NC; Greensboro Radiology, Greensboro, NC; Imaging Performance Partnership interviews and analysis.
Poorly staffed transport inhibits imaging efficiency

Challenges when techs take over hospital transport

1. Highly paid tech performs duties ideally suited for less costly staff
2. Equipment, staff sit idle while tech transports patient
3. Patients wait while scanner remains empty, creating backlog

At Blackburn Hospital¹, transport covers only fraction of imaging patients

39% IP imaging patients transported by transport staff
0% ED imaging patients transported by transport staff

Annual imaging tech time lost transporting patients

6.5 techs²

¹ Pseudonym.
² Equivalent to 2.8 tech time lost in ED, 3.7 in inpatient setting.

Source: Imaging Performance Partnership interviews and analysis.
Design staffing mix to advance hospital throughput

Blackburn reallocated staff to boost transport services, reduce delays

Steps to right-size transport staffing levels

1. Analyzed TeleTracking data to pinpoint transport delays, hospital staff assignments

2. Tracked volumes of transport cases performed for nursing, imaging, ED departments

3. Identified additional transport staff needed to accommodate respective departments’ volumes, time

Solution: Increase transport staff by 7.75 FTE

Backfill attrition across three departments with transporters

- 2.78 Imaging
- 3.2 Nursing
- 1.77 ED

$236K
Annual cost savings due to salary differences

1.35 min.
Transport time saved per case given skillset

Next steps
- Obtain buy-in from other departments
- Determine new transport schedule, account for ED cases

Source: Imaging Performance Partnership interviews and analysis.

---

1) Proposed allocation.
2) According to Blackburn Hospital analysis due to staffing shift from higher tech salary to lower transport salary; transport staff paid less than technologists; cost savings estimate doesn’t account for potential savings from other departmental staffing shifts.
3) Cost to increase transport staff minimal compared to potential savings, includes iPhone and software purchases.

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Blackburn Hospital

Large hospital part of multi-hospital health system

► Added centralized transport staff to improve overall hospital, radiology throughput
  – Imaging department under pressure from hospital leadership to increase efficiency, assign staff top-of-license work

► Analyzed TeleTracking data; techs oversee many transport cases
  – Creates delays; transport staff take 13.65 min./case, techs 15 min.

► Plan to reallocate imaging, nursing, ED staff dollars to increase transport staffing levels, account for all transport cases
  – Allocation based on departments’ respective transport volumes

► $236k annual cost savings due to shift from tech to transport salaries
  – Transport staff paid less than techs; saving does not account for nursing, ED salary differences
OR paints inaccurate picture of tech productivity

Techs attributed to imaging department’s staffing pool, costs while assisting image-guided procedures in OR

- Creates insufficient daily coverage
- Leads to long-term tech reductions

**Techs pulled out of imaging** to assist in OR

- Creates imaging patient backlogs, throughput delays
- Strains OR procedure tech coverage

**Techs produce fewer RVUs** in OR than imaging department

- Staff levels cannot keep up with imaging, OR demand
- Negatively impacts imaging department productivity metrics

“Imaging must learn how to track OR tech time. Otherwise, radiology will continually be staffed less and wait times will increase.”

Imaging director, large health system

Source: Imaging Performance Partnership interviews and analysis.
Getting credit for tech time

Centura Health correctly accounts for staff time in imaging, OR

**Centura’s method to fairly measure OR tech time**

1. **Created no-charge EMR code** to quantify tech-assisted OR procedure time; techs clock-in procedure beginning, end

2. **Calculated FTEs required** based on hours, not RVUs, using tracker

3. **Developed three tech rotation** assigned to OR

4. **Flex techs between OR, x-ray** based on need; primarily staff OR due to high volumes

**Sample OR tech productivity tracker**

<table>
<thead>
<tr>
<th>Two-week pay period end</th>
<th>OR volume</th>
<th>Total tech hours in OR</th>
<th>Equivalent tech FTEs</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/24/2019</td>
<td>59</td>
<td>129</td>
<td>1.6</td>
</tr>
<tr>
<td>6/7/2019</td>
<td>54</td>
<td>80</td>
<td>1.0</td>
</tr>
<tr>
<td>6/21/2019</td>
<td>38</td>
<td>55</td>
<td>0.7</td>
</tr>
</tbody>
</table>

**Tech FTE increase resulting from new method**

- **0.32**

**Below labor budget at**

- **-4%** St. Francis Medical Center
- **-5%** Penrose Hospital

Source: Centura Health, Centennial, CO; Imaging Performance Partnership interviews and analysis.
Centura Health

• 17-hospital health system in Colorado, Western Kansas
• Imaging Director oversees Penrose-St. Francis Health Services, includes Penrose Hospital, St. Francis Medical Center

► Imaging director, finance department began tracking OR tech time, not RVUs, to measure productivity; created no-charge code to track procedure length, assign FTE count
  – Relies on tech inputting procedure start, end times in EHR (Epic)
► Previously flexed any x-ray tech to OR as needed; techs manually tracked OR hours, cumbersome, inaccurate practice
► New process gives hospital administration accurate depiction of OR tech needs; adjusted tech FTE standard from 0.77 to 1.09
  – Assigned three techs to rotate OR duties; flex to x-ray when not needed in OR
  – Imaging director regularly pulls OR tech time reports from Epic to pinpoint workload changes, ensure staffing levels remain correct
► Resulted in staff overtime reduction for diagnostic, CT at both facilities between 2016–2018
  – St. Francis: Diagnostic reduced -19.4%; CT reduced -190.3%
  – Penrose: Diagnostic reduced -8.4%, CT reduced -15.7%

Source: Centura Health, Centennial, CO; Imaging Performance Partnership interviews and analysis.
Lesson #3: Consider adding staff to increase imaging’s daily capacity

Additional staff enables increased mammo volumes

Bellin’s mammography facility staff model

- Three techs per scanner
  Average 1.3 per scanner
- Onsite breast radiologist
- Nurse navigator

Potential volume increases offsets staffing costs

Estimated differences compared to average facility

- Volume difference: 22 daily
- Revenue difference: $5K daily
- Staffing costs: $379K annually
- Potential profit: $900K annually

1) Average scan time of 20 minutes (survey 50th percentile).
2) Bellin completes 76 scans/day, equals 19,00 annual volumes normalized on 45 hour work week, 50 week year (accounts for holidays); compared to median organization’s 13,500 annual exams.
3) $5,072.32 daily, $1,268,080.00 annually; $230.56 Medicare reimbursement.
4) Difference in salary required for 6 tech per 2 scanners compared to 2.6 tech per 2 scanner, plus one nurse navigator. Salary multiplied by 1.5 to account for benefits.
5) $1,268,080.00 annual revenue minus $378,787.20 annual costs.

Speeding up mammography with higher staffing

Bellin Hospital’s tech-per-patient staffing streamlines clinic throughput

Sample workflow per tech in one mammography unit

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tech completes pre-arrival review</td>
</tr>
<tr>
<td>2</td>
<td>Tech preps patient</td>
</tr>
<tr>
<td>3</td>
<td>Image patient (15 minutes)</td>
</tr>
<tr>
<td>4</td>
<td>Tech presents radiologist with read</td>
</tr>
<tr>
<td>5</td>
<td>Tech gives patient results</td>
</tr>
</tbody>
</table>

Unit always occupied, processes four patients per hour compared to three

How it works in 30-minute intervals on one scanner

12:00 pm

- Patient 1: Tech A
- Patient 2: Tech B
- Patient 3: Tech C

1:00 pm

- Patient 4
- Patient 5: Tech A
- Patient 6: Tech B

1) According to benchmarking survey median mammography scan time.

Source: Bellin Hospital, Green Bay, WI; Imaging Performance Partnership interviews and analysis.
Move patient along care pathway, not out of facility

Care team provides immediate results, follow up

Increased tech staffing supports real-time radiologist read

On-site radiologist commitment

- 3.8 minutes average report turnaround time
- Radiologist given new exam every 7.5 min across two scanners, read non-mammo exams between

Tech support role

- Answers radiologist questions real-time in reading room
- Delivers pre-templated letter to patient

Immediate abnormal result follow-up in facility

Rad. identifies abnormal mammogram

Tech communicates results, next steps to patient

Options

- Ultrasound tech performs exam; warm handoff
- Tech performs diagnostic mammogram
- Nurse navigator schedules surgeon consultation

Nurse navigator explains follow-up, answers patient questions

76 Patients seen daily across nine hours

Source: Bellin Hospital, Green Bay, WI; Imaging Performance Partnership interviews and analysis.
Bellin Hospital
Two-hospital health care system, thirteen mammography sites in Wisconsin, Michigan

- Redesigned mammogram staffing models to three techs per scanner to maximize throughput
  - Change occurred in 2002; outpatient facility at main hospital
  - Facility contains two DBT¹ units, six prep rooms; six techs per shift
- Techs supported by registrars, on-site rad., one nurse navigator
  - Registrar alerts tech upon patient arrival, facilitates valet parking
  - Rad. reads exam real-time via Hologic worklist
  - PenRad tracking software maintains 10–15 pre-templated patient-friendly letters explaining results; rad. customizes as needed
  - Nurse navigator works with patients receiving abnormal results, explains immediate, long-term next steps
  - Mammo tech, ultrasound tech perform follow-up diagnostic mammogram, ultrasounds immediately
- 76 mammograms completed during nine-hour day; 15 min. scans
  - Additional techs allows parallel process of six patients at once
  - Supports goal to screen 85% of women ages 50–74 biennially; managed by system’s primary care providers

¹) Digital breast tomosynthesis.

Source: Bellin Hospital, Green Bay, WI; Imaging Performance Partnership interviews and analysis.
Lessons from high performers to take home

Key Takeaways

Lessons to take home

1. An overemphasis on lean staffing can negatively impact imaging capacity and throughput.
   Data reveal a direct relationship between techs per scanner and scans per scanner. Often the revenue generated from added staff efficiency outweighs additional staffing costs.

2. Imaging staffing levels and mix should be determined by potential volumes, clinical work needed, and non-clinical support.
   For radiologists, consider adding support staff to prevent unnecessary interruptions. For hospitals, adequately track tech time performing all duties.
   Additional staffing investments are justified if all staff work top-of-license, increase productivity, and maximize capacity.

Source: Imaging Performance Partnership interviews and analysis.
Schedule aligned with true machine capacity

- Lesson #4: Encourage adherence to standardized protocols
- Lesson #5: Design accurate slot times
- Lesson #6: Provide schedulers tools and training to build effective schedules
What’s your $19 million opportunity?

### Impact of decreasing scan times at Average Hospital

$n=13-45$

<table>
<thead>
<tr>
<th>Modality</th>
<th>30\textsuperscript{th} Percentile scan time\textsuperscript{2}</th>
<th>70\textsuperscript{th} Percentile scan time</th>
<th>Potential annual volume change</th>
<th>Potential annual revenue change</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT</td>
<td>20 Minutes</td>
<td>13 Minutes</td>
<td>9,435</td>
<td>$2,122,848</td>
</tr>
<tr>
<td>MRI</td>
<td>60 Minutes</td>
<td>45 Minutes</td>
<td>1,048</td>
<td>$470,696</td>
</tr>
<tr>
<td>US</td>
<td>35 Minutes</td>
<td>22 Minutes</td>
<td>8,626</td>
<td>$1,949,516</td>
</tr>
<tr>
<td>X-Ray</td>
<td>14 Minutes</td>
<td>8 Minutes</td>
<td>37,740</td>
<td>$2,264,371</td>
</tr>
<tr>
<td>NM</td>
<td>175 Minutes</td>
<td>63 Minutes</td>
<td>2,607</td>
<td>$1,712,675</td>
</tr>
<tr>
<td>Mammo</td>
<td>23 Minutes</td>
<td>17 Minutes</td>
<td>7,188</td>
<td>$812,298</td>
</tr>
</tbody>
</table>

### Additional inputs held constant\textsuperscript{3}

- Average number of scanners
- Average weekly operating hours
- 90% uptime assumption
- 80% capacity assumption

\textsuperscript{1} Average hospital created using 50\textsuperscript{th} percentile national cohort performance from Imaging Performance Partnership survey data. Average payment per case as reported in CMS’s Outpatient Standard Analytical File (SAF); reflects Medicare fee-for-service outpatient encounters in 2017 Q4 - 2018 Q3.

\textsuperscript{2} Scan time defines as scan begin to scan end.

\textsuperscript{3} Refer to slides 40-41 for calculations.

Source: 2019 Hospital Benchmark Generator, Health Care Advisory Board, Advisory Board; 2017 Imaging Performance Partnership Benchmarking Survey, Imaging Performance Partnership interviews and analysis.
## What’s your $19 million opportunity? (continued 1)

### Data inputs

<table>
<thead>
<tr>
<th>Modality</th>
<th>Median number of scanners</th>
<th>Median number of scanners</th>
<th>30th percentile of median scan time (Minutes)</th>
<th>70th percentile of median scan time (Minutes)</th>
<th>Uptime assumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT</td>
<td>2</td>
<td>2</td>
<td>20</td>
<td>13</td>
<td>90%</td>
</tr>
<tr>
<td>MRI</td>
<td>1</td>
<td>1</td>
<td>60</td>
<td>45</td>
<td>90%</td>
</tr>
<tr>
<td>US</td>
<td>3</td>
<td>3</td>
<td>35</td>
<td>22</td>
<td>90%</td>
</tr>
<tr>
<td>X-Ray</td>
<td>4</td>
<td>4</td>
<td>14</td>
<td>8</td>
<td>90%</td>
</tr>
<tr>
<td>NM</td>
<td>2</td>
<td>2</td>
<td>175</td>
<td>63</td>
<td>90%</td>
</tr>
<tr>
<td>Mammography</td>
<td>2</td>
<td>2</td>
<td>23</td>
<td>17</td>
<td>90%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Modality</th>
<th>CT</th>
<th>MRI</th>
<th>US</th>
<th>X-Ray</th>
<th>Nuclear Medicine</th>
<th>Mammography</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Machine</td>
<td>Weekly operating hours</td>
<td>Machine</td>
<td>Weekly operating hours</td>
<td>Machine</td>
<td>Weekly operating hours</td>
</tr>
<tr>
<td>Machine 1</td>
<td>168</td>
<td>Machine 1</td>
<td>84</td>
<td>Machine 1</td>
<td>168</td>
<td>Machine 1</td>
</tr>
<tr>
<td>Machine 2</td>
<td>84</td>
<td>--</td>
<td>Machine 2</td>
<td>Machine 2</td>
<td>84</td>
<td>Machine 2</td>
</tr>
<tr>
<td>--</td>
<td>--</td>
<td>--</td>
<td>Machine 3</td>
<td>Machine 3</td>
<td>84</td>
<td>--</td>
</tr>
<tr>
<td>--</td>
<td>--</td>
<td>--</td>
<td>Machine 4</td>
<td>Machine 4</td>
<td>84</td>
<td>--</td>
</tr>
</tbody>
</table>

### What’s your $19 million opportunity? (continued 2)

#### Data outputs

**Annual Capacity Estimate Equation**

\[
\text{Potential annual volume} = \text{Weekly Operating Hours} \times 80\% \times 90\% \times 60 \times 52
\]

- Weekly Operating Hours x 80% x 90% x 60 x 52
- 90% uptime assumption
- Scan time (minutes)
- 60 minutes per hour
- 80% capacity assumption
- 52 weeks per year

#### Table: Annual Capacity Estimates and Revenue Opportunities

<table>
<thead>
<tr>
<th>Modality</th>
<th>Desired capacity utilization</th>
<th>Annual volume at 30th percentile scan time</th>
<th>Annual volume at 70th percentile scan time</th>
<th>Difference in scans</th>
<th>Individual payment estimate(^1)</th>
<th>Potential revenue increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT</td>
<td>80%</td>
<td>28,305</td>
<td>43,546</td>
<td>15,241</td>
<td>$319.20</td>
<td>$4,864,914.43</td>
</tr>
<tr>
<td>MRI</td>
<td>80%</td>
<td>3,145</td>
<td>4,193</td>
<td>1,048</td>
<td>$359.39</td>
<td>$376,755.72</td>
</tr>
<tr>
<td>US</td>
<td>80%</td>
<td>21,565</td>
<td>34,309</td>
<td>12,743</td>
<td>$175.14</td>
<td>$2,231,846.60</td>
</tr>
<tr>
<td>X-Ray</td>
<td>80%</td>
<td>80,870</td>
<td>141,523</td>
<td>60,653</td>
<td>$156.05</td>
<td>$9,464,869.44</td>
</tr>
<tr>
<td>NM</td>
<td>80%</td>
<td>1,540</td>
<td>4,279</td>
<td>2,738</td>
<td>$439.92</td>
<td>$1,204,707.09</td>
</tr>
<tr>
<td>Mammography</td>
<td>80%</td>
<td>10,783</td>
<td>17,971</td>
<td>10,783</td>
<td>$139.94</td>
<td>$1,005,955.89</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>$19,149,049.18</strong></td>
<td></td>
</tr>
</tbody>
</table>

1) Average payment per case as reported in CMS’s Outpatient Standard Analytical File (SAF); reflects Medicare fee-for-service outpatient encounters in 2017 Q4 - 2018 Q3.

To realize opportunity, slots must reflect scan times

Inaccurate slot times undermine efficiency

Example: 30 min. slot for 15 min. scan
Result: Unfilled capacity

<table>
<thead>
<tr>
<th>Exam #1 scheduled</th>
<th>Exam #2 scheduled</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 am</td>
<td>8:15 am</td>
</tr>
<tr>
<td>CT exam #1</td>
<td>Latent capacity</td>
</tr>
<tr>
<td></td>
<td>CT exam #2</td>
</tr>
<tr>
<td>8:30 am</td>
<td>Latent capacity</td>
</tr>
<tr>
<td>8:45 am</td>
<td></td>
</tr>
</tbody>
</table>

Example: 15 min. slot for 30 min. scan
Result: Delayed throughput

<table>
<thead>
<tr>
<th>Exam #1 scheduled</th>
<th>Exam #2 scheduled</th>
<th>Exam #3 scheduled</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 am</td>
<td>8:15 am</td>
<td>8:30 am</td>
</tr>
<tr>
<td>CT exam #1</td>
<td>CT exam #2 begins late</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8:45 am</td>
</tr>
<tr>
<td>CT exam #1 exceeds slot</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

INSIGHT

Inaccurate slot times impact overall imaging efficiency

Poor patient access
- Gaps to 3rd next available appointment
- Increase in no-shows

Delayed patient throughput
- Lengthy outpatient wait
- Slow inpatient, ED order response time

Source: Imaging Performance Partnership interviews and analysis.
Align schedule with machine capacity

Steps to create highly efficient schedule

Lesson #4: Minimize scan times through adherence to standardized protocols

Lesson #5: Design accurate slot times

Lesson #6: Ensure accurate schedules by training and supporting staff

Source: Imaging Performance Partnership interviews and analysis.
Lesson #4: Minimize scan times through adherence to standardized protocols

Create new order protocols to reduce scan time, cost

Charlotte Radiology introduces shorter, less costly spine MRI alternative

PROBLEM:
Inappropriate total spine MRI commonly ordered in ED

- Radiologists identified during reading process, commonly ordered in ED for non-localizable pain
- Conducted data review for evidence, found positivity rate of <1%

SOLUTION:
Develop new MRI spine protocol

- Uses one image capture instead of three; allows radiologists to rule out emergencies
- Radiologists, MRI supervisors led in-person education sessions for ED providers

Reduced average exam time by roughly 40 minutes

Resulted in price reduction of over $1,000 Medicare dollars¹

Shorted three additional ED imaging protocols using similar process

¹ Bill payers for single exam rather than three; estimate calculated by Advisory Board using 2018 Medicare Hospital Outpatient Prospective Payment System rates.

Source: Charlotte Radiology, Charlotte, NC; Imaging Performance Partnership interviews and analysis.
Charlotte Radiology

90-physician independent radiology group in Charlotte, North Carolina

► Developed new protocol for generalized spine MRI screening at one third of cost, time of total spine MRI

► New protocol includes one image capture with wider view instead of traditional three images; reduction in image quality does not affect radiologists’ read; still meet EMTALA\(^1\) requirements of ED providers
  - Providers note “screening” in patient history for this exam order; technologists review order, use standardized protocols for more generalized, wider view images

► Implemented as part of larger discussions with ED group around imaging utilization; radiology leverages exam for additional views, which previously required additional image captures; examples:
  - Brain/eye CT: brain CT captures information on orbits, reducing need for separate eye CT
  - Neck CT: CT cervical spine, CT soft tissue neck, CT angiogram of neck capture full view of neck, reducing need of additional neck imaging
  - Chest, abdomen, pelvis CT: captures entire spine in addition to other areas, reducing need of additional spine imaging

► Reduced average exam time by roughly 40 minutes

\(^1\) Emergency Medical Treatment and Labor Act.

Source: Charlotte Radiology, Charlotte, NC; Imaging Performance Partnership interviews and analysis.
Refresh: Standardize protocols

Reduce unnecessary, redundant sequences to minimize scan time

Keys to successful protocol standardization

► Assemble multi-disciplinary committee, appoint leader
  • Engage clinical, operational viewpoints; i.e. radiologists, technologists, physicists, PI\(^1\) staff
  • Assign leader (e.g., chief, imaging director) to facilitate meetings, take protocol suggestions, input final version into template

► Start with single modality
  • Simplify sum of protocols, standardize language

► Create structure to review annually, make changes
  • Review protocols at least annually
  • Allow smaller changes to be made as needed

Study in brief: “Protocol Standardization Across Large Health System”

• University of Colorado, radiology group partners underwent protocol standardization
• Key components:
  – Established multi-disciplinary committee to review, input changes into equipment
  – Developed standardized protocol template before meetings
  – Created protocol change request form for ongoing management
• Reduced number of CT protocols from 248 to 97, MRI from 168 to 66

For more information on standardized protocols visit advisory.com/ipp/quality

1) Process improvement.

Systematically track protocol changes

1. **Manual request form**
   - Provides template to submit, approve changes
   - Form requires radiologists to provide reason, e.g., clinical evidence
   - Committee regularly reviews requests
   - Organization communicates timely changes to clinicians, staff
   - Technologists input updates manually

2. **Cloud-based network**
   - Use IT software to approve, track changes
   - Software maintains all protocols, tracks changes
   - Clinicians identify best-practice protocols by analyzing data
   - Software sends protocols to scanners remotely, no manual entry required
   - Example vendors: Siemens Healthineers teamplay, GE Health Cloud

---

**Keys to successful protocol management**

- **Submit, approve urgent requests quickly**
- **Process to track changes, update regularly**
- **Allow clinical flexibility without sacrificing throughput**

Balance clinical, efficiency needs

Children’s Mercy¹ avoids protocol creep with real-time management

Process to add sequences during exam

Radiologist wants additional sequence, messages tech via PACS²

MRI tech, patient flow tech, anesthesiologist, review request (~60 sec.)

Additional sequence approved

Request denied, protocol continues as planned

Reasons for approval, denial

► Clinical need, urgency e.g., incidental finding approved, exploratory sequence denied

► Current capacity, upcoming schedule e.g., sequence added on less busy day

► Sequence length e.g., 5 min versus 45 min

► Patient preferences e.g., family unable to wait longer

► Acuity of patient e.g., unable to extend time under general anesthesia

Process also applicable during pre-exam order checks

70% of exams completed within scan time

Source: Children’s Mercy Hospital, Kansas City, MO; Imaging Performance Partnership interviews and analysis.

1) Children’s Mercy Hospital.
2) Children’s Mercy uses Intelerad Medical Solutions.
Children’s Mercy Hospital

366-bed pediatric academic medical center in Kansas City, Missouri

- Requires radiologists to consult with technologist when adding sequences to standardized protocol; decision to add or deny made by all parties: modality tech, patient flow tech, anesthesiologist
  - Ultimately decision to add or not is made by the radiologist
  - First standardized protocols five years ago, recently institutionalized process for radiologist to submit justification to deviate from protocol

- Protocols reviewed annually, radiologists give input during process
  - Ad hoc meetings held when consistent requests for protocol changes occur outside annual review

- 70% of exams completed within scan time
  - Process reduces protocol creep
  - Previously sequence additions, about 5 min. in length, extended scans, contributed to patient wait; average patient wait 30 min. before initiative

Source: Children’s Mercy Hospital, Kansas City, MO; Imaging Performance Partnership interviews and analysis.
Lesson #5: Design accurate slot times

Shorten slots by removing unnecessary tasks

Sutter¹’s four-step process to reduce ultrasound slot times

1. Engaged stakeholders to outline full workflow
   Included ultrasound techs, radiologists, imaging director, PI team, ordering provider offices, lab staff, nurses

2. Reviewed step-by-step
   All clinical, non-clinical tasks that occur within slot time, removed unnecessary actions

3. Standardized exam protocols with radiologist
   Techs, radiologists worked closely to eliminate unnecessary sequences from existing protocols, decreased scan times

4. Streamlined clinical, non-clinical tasks
   Shifted non-scan duties to tech assistant; duties include escorting patient from lobby, prepping patient, cleaning exam room

Repeated process for all modalities

15 min  US slot reduction from 45 to 30 min
10 min  CT slot reduction from 25 to 15 min
20 exams Potential increase of both CT, US exams daily²

Guidance for shortening slots

- Begin with high volume modalities for greatest impact
- Perfect first modality process before starting another
- Engage stakeholders upstream, downstream of exam
- Review slot times annually

Source: Sutter Gould Medical Foundation, Modesto, CA; Imaging Performance Partnership interviews and analysis.

1) Sutter Gould Medical Foundation.
2) Daily capacity increased by 20 exams across four ultrasound units; only one CT unit.
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Lesson #6: Ensure accurate schedules by training and supporting staff

Provide in-the-moment support to schedulers

Matrix enables schedulers to account for nuances, prevent delays

MRI scheduling matrix

Example inputs illustrative

<table>
<thead>
<tr>
<th>Procedure name</th>
<th>Slot time</th>
<th>Prep instructions</th>
<th>CPT code</th>
<th>Location¹, hours</th>
<th>Additional instructions</th>
<th>Preauth required?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdomen w/out contrast</td>
<td>30 min.</td>
<td>No food, drink, metal, jewelry</td>
<td>74181</td>
<td>Dublin outpatient center</td>
<td>Contact tech if scheduling 3+ MRIs</td>
<td>Yes</td>
</tr>
<tr>
<td>Ankle, left or right w/out contrast</td>
<td>30 min.</td>
<td>No food, drink, metal, jewelry; Add 30 min. if hoyer lift required</td>
<td>73721</td>
<td>Dublin outpatient center</td>
<td>Lab work 3 days prior; contact tech if scheduling 3+ MRIs</td>
<td>Yes</td>
</tr>
<tr>
<td>Arthrogram w/ contrast</td>
<td>60 min</td>
<td>Labs needs for 60+ yr. old patient; no food, drink</td>
<td>73222</td>
<td>Sydney clinic</td>
<td>Notify tech if dizziness reported</td>
<td>Yes</td>
</tr>
</tbody>
</table>

1) All locations pseudonym.
2) Body mass index.

Guides scheduler to assign one or two slots depending on patient factors, like mobility, BMI²

CPT code searchable for easy identification

Source: Sutter Gould Medical Foundation, Modesto, CA; Imaging Performance Partnership and analysis.
Prepare schedulers to maximize capacity

Sutter equips schedulers with knowledge, tools to design effective schedule

1 Invest in one-on-one training

- Places new staff offsite with tenured scheduler to learn how to schedule for all modalities
- Assigns continuous improvement champion as mentor once training ends

2 Create easy-to-use step-by-step standards of work

- Lists scheduling tasks for each modality, screenshots show interface details
- Used during training to ingrain core duties
- Incorporates staff-led improvements

Result in improved efficiency, access

6 weeks
Staff onboarding length; reduced from four months

7 days
Average 3rd next available appt.; reduced from six weeks\(^1\)

90%
Of exams begin within five min. of scheduled start time

---

1) Average 3rd next available appointments reduced across all modalities. Source: Sutter Gould Medical Foundation, Modesto, CA; Imaging Performance Partnership interviews and analysis.
Sutter Gould Medical Foundation

- Not-for-profit outpatient health care organization based in CA Central Valley
- 330+ physicians, 39 APP\(^1\) clinicians provide professional medical services for SGMF patients
- Part of 24-hospital health system, Sutter Health

- Used LEAN method to shorten slots, remove unnecessary steps; standardized protocols with radiologists
  - Shorted slots for MRI, mammo, ultrasound; also all STAT, urgent exams
- Exams auto-scheduled in system; schedulers use matrix to identify need for longer slots, provide patient prep instructions
  - Slot times auto-generated from Epic Radiant by CPT code; scheduling template build by health system IT staff
- One scheduler identified as “continuous improvement champion,” oversees onboarding; typically scheduler with strong skills
- Over 100 standards of work saved on share drive, cover each exam
  - “Problem countermeasure board” allows schedulers to suggest, reach consensus on standard of work changes; staff trained on accepted solutions
- Reduced onboarding from four months to six weeks; reduced average 3\(^{rd}\) next available from six weeks to seven days; 90% of exams begin within five min. of start time

Source: Sutter Gould Medical Foundation, Modesto, CA; Imaging Performance Partnership interviews and analysis.
Options for leaders with less scheduler oversight

Equip staff with knowledge to use compressed slots, newfound capacity

“It’s difficult to train centralized schedulers to understand the nuances with exams. I have little control over centralized scheduling, but need them to schedule for highly clinical exams.”

*Imaging Director, Multi-facility health system*

Steps to maximize imaging schedules with centralized staff

1. Identify consistently short, simple exams, like screening or non-contrast exams
2. Embed changes into scheduling template in easy-to-use manner
3. Ensure slots are easily identifiable, e.g. color coded

Source: Imaging Performance Partnership interviews and analysis.
Leverage screening exams to increase capacity

Hightower Health System\(^1\) considered grouping lung cancer screenings

**Option: Lung cancer screening exams blocks**

*Blocks occur twice per week*

<table>
<thead>
<tr>
<th>Slot time</th>
<th>Appointment type</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 am–9:20 am</td>
<td>CT exam</td>
</tr>
<tr>
<td>9:20 am–9:40 am</td>
<td>CT exam</td>
</tr>
<tr>
<td>9:40 am–10:00 am</td>
<td>CT exam</td>
</tr>
<tr>
<td>10:00 am–2:00 pm</td>
<td>Lung cancer screening block</td>
</tr>
<tr>
<td>2:00 pm–2:20 pm</td>
<td>CT exam</td>
</tr>
<tr>
<td>2:20 pm–2:40 pm</td>
<td>CT exam</td>
</tr>
</tbody>
</table>

**Pros**

- Simple for schedulers to identify, schedule
- Eliminates time required to change protocols between patients

**Cons**

- Impacts small percentage of total exams
- Depends on robust lung cancer screening program, volumes
- Limits screening patients to exam on predetermined days

450 Potential annual volume increase\(^3\)  

$85K Potential annual revenue increase\(^4\)

---

1) Pseudonym.
2) Lung cancer screening.
3) Assuming 80% capacity and 90% uptime assumption, one weekly four hour slot with reduced scan times leads to an annual volume increase from 449 to 899 (Source: Imaging Capacity Modeling Tool).
4) Based on CPT Code G0297, low dose CT screening, technical payment rate of $188.49. 450 additional scans equals $84,820.50 in potential new revenue.
Strategically place shorter, non-contrast CTs

Hightower\(^1\) created capacity with regularly scheduled short exams

**Option: Non-contrast CT throughout day**

*Placed once per hour*

<table>
<thead>
<tr>
<th>Slot time</th>
<th>Appointment type</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 am–9:15 am</td>
<td>CT exam</td>
</tr>
<tr>
<td>9:15 am–9:30 am</td>
<td>CT exam</td>
</tr>
<tr>
<td>9:30 am–9:45 am</td>
<td>Non-contrast CT exam</td>
</tr>
<tr>
<td>9:45 am–10 am</td>
<td>CT exam</td>
</tr>
<tr>
<td>10:00 am–10:15 am</td>
<td>CT exam</td>
</tr>
<tr>
<td>10:15 am–10:30 am</td>
<td>Non-contrast CT exam</td>
</tr>
<tr>
<td>10:30 am–10:45 am</td>
<td>CT exam</td>
</tr>
<tr>
<td>10:45 am–11:00 am</td>
<td>CT exam</td>
</tr>
</tbody>
</table>

- **Pros**
  - More significant potential impact on daily schedule
  - Creates additional room each hour should longer exam exceed slot time

- **Cons**
  - Requires more scheduler training, as multiple exams fit definition
  - Must determine where to place exams to fit patient preferences

---

Please note:

1) Hightower Health System.

2) Based on internal health system analysis; 45 more exams per week with shortened slots across 52 weeks per year.

3) Based on internal health system analysis.

Source: 2018 Imaging Capacity Modeling Tool, Imaging Performance Partnership, Advisory Board; Imaging Performance Partnership interviews and analysis.
Hightower Health System

Multi-hospital health system

- Increased CT volume, revenue potential by placing non-contrast CT exams once per hour; explored blocking lung cancer screening exams
- Decided to implement solution for non-contrast CT exams at outpatient-only facility given bigger impact potential
  - Centralized scheduling department changed appointment type in scheduling template
  - Schedulers place non-contrast CT in yellow color-coded “non-contrast slot,” contrast CTs in red “contrast slot”
  - Non-contrast slots scheduled at different times per hour to meet patient preferences
  - Techs assigned single patient during appointment; previously handed off single patient amongst three techs; new process saves time, helps appointments stay in 15 min. range
- Exams shortened to 15 min. increases daily volume potential by 9 CTs
  - Outpatient facility open five days/week, 9 working hours/day
- Next step: implement at HOPD¹, build LCS blocks into schedule

¹ Hospital outpatient department.
Lessons from high performers to take home

Highly efficient imaging programs
Build schedules aligned with true machine capacity

Lessons to take home

1. Protocol standardization is the first, not final, step to right-size slots. Programs must streamline non-clinical tasks, continuously manage protocol changes, and update slot times to maximize schedule and therefore machine capacity.

2. Leaders with scheduling oversight should revamp all slot times and train schedulers to maximize daily capacity.

Imaging programs without dedicated schedulers should strategically build in blocks for easily identifiable, shorter exams to improve capacity without significant scheduler training.
Dynamic patient prioritization

- Lesson #7: Equip and empower staff to make real-time prioritization decisions
- Lesson #8: Leverage intelligent worklists to prioritize patients
When patients break the schedule

An all-too-common scenario

*Typical outpatient imaging day*

Exam #1 scheduled

Two patients arrive

Scanner idle

Mobility issues delay exam #1

Exam #2 scheduled

Exam #1 begins late

Exam #2 begins late after long wait

An alternative reality

*Outpatient imaging day with dynamic patient prioritization*

Exam #1 scheduled

Two patients arrive

Exam #2 begins first

Patient #1 mobility issues addressed

Exam #2 begins first

Exam #1 begins

Lack of prioritization results in unused capacity, delayed patient care

Source: Imaging Performance Partnership interviews and analysis.
Radiologist prioritization necessary during exam surge

Receiving multiple exams at once creates patient bottlenecks

*Example radiologist worklist*

- **CT read**
- **X-ray read**
- **X-ray read**
- **X-ray read**

Creates x-ray patient backlog

But thoughtfully prioritizing reads eases backlog

*Worklist with dynamic patient prioritization*

- **X-ray read**
- **X-ray read**
- **X-ray read**
- **CT read**

Facilitates ED patient throughput

Source: Imaging Performance Partnership interviews and analysis.
Dynamic prioritization required to maximize capacity

Take into account value of machine, radiologist, patient time

Challenges to real-time prioritization

- Staff lack necessary patient information
- Delays due to patient factors, e.g., arrival time, mobility
- Communication breakdowns between departments
- Conflicting, urgent care priorities

Two strategies to overcome challenges

Lesson #7:
Equip and empower staff to make real-time prioritization decisions

Lesson #8:
Leverage intelligent worklists to prioritize patients

“Prioritization of services and communication amongst staff is key to efficiency. We must begin to think beyond first come, first serve.”

Imaging Director, Mid-size health system

Source: Sacred Heart Hospitals on the Emerald Coast, Pensacola, FL; Imaging Performance Partnership interviews and analysis.
Move beyond first in, first out mentality

Spring Health System’s registrar prioritizes outpatients at check-in

- Prioritizes services based on appointment time, facility schedule, available staff, machines
- Takes patient factors into account, e.g. extensiveness of prep, services required
- Integrates add-on services for lab, x-ray
- Creates patient-friendly itinerary listing services in order

The ways Spring Health supports registrar prioritization

Registars receive interactive onboarding

- Full-day shadowing techs; helps visualize patient flow
- Shadowing occurs six months later for continual education
- Encourages critical thinking to prioritize patients

Techs provide ongoing support

- Two days prior: Schedule printed by night shift techs
- Day prior: Techs call patients, flag potential delays, prep issues
- Day of: Techs remain resource for real-time prioritization questions

Technology gives access to schedule, patient services

- Schedule displays facility’s capacity; registrars use to anticipate prioritization needs
- PACS shows all services patient requires for holistic view

Source: Imaging Performance Partnership interviews and analysis.
# Itinerary facilitates efficient patient journey

Document guides patient, staff through day

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Time scheduled</th>
<th>Duration</th>
<th>Location</th>
<th>Prep needs</th>
<th>Test completed by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic metabolic panel</td>
<td>10:30 am, <em>add-on service</em></td>
<td>20 minutes</td>
<td>Lab room 2</td>
<td>Check-in 30 minutes prior to appointment</td>
<td></td>
</tr>
</tbody>
</table>

Registrar assigns space for all procedures during visit

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Time scheduled</th>
<th>Duration</th>
<th>Location</th>
<th>Prep needs</th>
<th>Test completed by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chest x-ray</td>
<td>11:00 am, <em>add-on service</em></td>
<td>15 minutes</td>
<td>X-ray room 1</td>
<td>Remove jewelry, change into gown</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Time scheduled</th>
<th>Duration</th>
<th>Location</th>
<th>Prep needs</th>
<th>Test completed by</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT chest</td>
<td>11:25 am</td>
<td>20 minutes</td>
<td>CT room 1</td>
<td>Bring list of current medications, allergies</td>
<td></td>
</tr>
</tbody>
</table>

### Keys components of effective itineraries

- **All services** placed in appropriate order
- **Patient friendly instructions**, including location, directions to all services
- **Explanation of prep needed** to prevent tech, patient delays

### Impact on patient satisfaction

<table>
<thead>
<tr>
<th>Percentile patient satisfaction score</th>
<th>99th</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentile quality of care score</td>
<td>85th</td>
</tr>
</tbody>
</table>

Source: Imaging Performance Partnership interviews and analysis.

---

Spring Health System

Mid-size hospital in large health system

- Imaging department trained outpatient imaging registrars to prioritize patients at arrival, create patient-friendly service itinerary
- Registrar receives support from onboarding, techs, tools to create patient itinerary
  - Views scheduling grid, PACS worklist; keeps binder at desk outlining some patient flow
  - Registration staff levels flex depending on time of day; at minimum one responsible for greeting patient, building itinerary, two responsible for checking in imaging patient; two responsible for walk-in lab, x-ray registration
  - Once patient finishes service, modality tech calls next tech to see if ready for patient; if yes, patient directed to next service
- Itinerary ensures all services completed before patient leaves facility; contributes to 99th percentile patient satisfaction score, 85% quality of care

Source: Imaging Performance Partnership interviews and analysis.
In hospital setting, prioritization requires coordination

Blackburn Hospital\(^1\) leverages patient info, multidisciplinary communication

1. Techs access, review all ED, IP patient information
   - EHR worklist displays all imaging orders alongside other relevant patient information, e.g., acuity, pending discharge
   - Modality techs look for conflicting priorities, e.g. urgent exams

2. Techs, nurses create daily inpatient schedule
   - Lead techs develops schedule based on patient needs, priority, planned discharges
   - Nurses review schedule, raise conflicting priorities
   - Lead tech assigns transport time via TeleTracking duties based on patient location, acuity

“A strong working relationship with nurses and transport is key to reducing turnaround times. If imaging’s time is wasted, everyone’s time is wasted.”

Imaging Director


1) Pseudonym.
Shared throughput goals foster collaboration
Enables real-time cross departmental prioritization support

Steps Blackburn Hospital takes to ensure culture of communication

1. Leaders established ED turnaround time targets in conversation with imaging, nursing, ED
2. Leaders meet monthly to review performance, discuss challenges, brainstorm solutions
3. Staff embrace culture of communication, willingness to reach out, resolve in-the-moment issues
4. Staff recommended process improvements, e.g., nurses change patients into gown immediately; x-ray prioritized before ultrasound

Before

20 min. Average delays per transport case
30% ED patients not ready when tech arrives for transport

After: ED throughput improved

5.4 min. Reduction of transport time per case
9 min. Reduction of x-ray order response time

1) X-ray scan time 50% shorter than ultrasound according to 2016 benchmarks; 50th percentile x-ray scan time (15 minutes), ultrasound (30 minutes).
2) ED x-ray order response time, time from scan placement to scan begin, reduced from 23 to 14 minutes on average.
3) Blackburn Hospital transport takes 13.65 minutes compared to 19 minute national average (The National Association of Healthcare Transport Management).

Blackburn Hospital

Large hospital part of large health system

- Blackburn Hospital departments developed communication channels, assisted by electronic tools (TeleTracking and Epic worklist) and inpatient schedules, to prioritize imaging patients

- Departments worked together to improve throughput processes; developed certain rules:
  - X-ray exams performed before ultrasound on same patient
  - Nurses change patient into gown immediately upon bedside arrival
  - Techs schedule transport services via TeleTracking, assigned to transport staff, time of pick-up

- Ensure nurses understand importance of fact imaging turnaround times in meeting own ED throughput goals

- Overall ED imaging throughput improved; 9 minute reduction of x-ray order response time from 23 min to 14 min. on average; 5.4 min. reduction of transport time per case
Lesson #8: Leverage intelligent worklists to prioritize patients

Intelligent worklist automates prioritization

Intelligent worklist\(^1\) directs exams to correct Greensboro radiologist

Images sent to

Provider offices, imaging centers, hospitals

Radiologist worklists

Factors considered to assign cases:

- Radiologist specialty
- Referring provider, hospital location
- Exam urgency
- Submission order
- TAT service line agreements

Auto-load, workload balance streamlines individual radiologist reads

Example subspecialty radiologist worklist

<table>
<thead>
<tr>
<th>Exam</th>
<th>Submitted</th>
<th>Due</th>
<th>Urgent</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke</td>
<td>11:05 am</td>
<td>5 min.</td>
<td>Yes</td>
<td>ED</td>
</tr>
<tr>
<td>Spine CT</td>
<td>11:00 am</td>
<td>9 min.</td>
<td>Yes</td>
<td>IP STAT</td>
</tr>
<tr>
<td>Joint x-ray</td>
<td>10:12 am</td>
<td>7 min.</td>
<td>No</td>
<td>Clinic</td>
</tr>
<tr>
<td>HeaCT</td>
<td>10:30 am</td>
<td>25 min.</td>
<td>No</td>
<td>Clinic</td>
</tr>
</tbody>
</table>

Stroke case tops worklist although submitted last

Joint x-ray reassigned to general radiologist, balances workload across group

Automatic workload balance function saves 1–2 min. selecting next exam

Source: Canopy Partners, Greensboro, NC; Greensboro Radiology, Greensboro, NC; Imaging Performance Partnership interviews and analysis.

1) Part of Canopy Partners’ concierge program.
Worklist requires thoughtful implementation

Greensboro’s advice: Prepare to invest in three components

**Technical staff**
- Allocated 1.5 technical FTEs, outsourced or in-house, to manage ongoing changes
- Assigned project manager to oversee build, changes

**Software, hardware**
- Licensed, installed intelligent worklist software to build initial platform
- Developed algorithms to automatically route exams based on service level agreements, specialty, etc.
- Updated radiologist workstations, installed single viewer

**Time**
- Tested before go-live
- Implemented multiple phases, iterations; multi-year process
- Ensured technical FTEs have capacity to make changes

“Developing the intelligent worklist has been a moving target. We are constantly working on new iterations to keep up with new technology and processes.”

Scott Wilson, Director of Operations, Greensboro Radiology

Source: Canopy Partners, Greensboro, NC; Greensboro Radiology, Greensboro, NC; Imaging Performance Partnership interviews and analysis.
Efficiency gained from investment

Greensboro achieved ROI with improved TAT, enhanced partnerships

Intelligent worklist impact on report TAT

*In minutes*

<table>
<thead>
<tr>
<th></th>
<th>Survey median</th>
<th>Greensboro, before intelligent worklist</th>
<th>Greensboro, after intelligent worklist</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ED/Inpatient STAT</strong></td>
<td>31</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td><strong>Inpatient routine</strong></td>
<td>116</td>
<td>45</td>
<td>46</td>
</tr>
<tr>
<td><strong>Outpatient</strong></td>
<td>224</td>
<td>120</td>
<td>61</td>
</tr>
</tbody>
</table>

- Slight increase offset by OP, ED decrease

<10 min.  
**Inpatient STAT** service line agreement TAT goal

95%  
**Percentage goal met** due to worklist, professional radiology assistants

35 min.  
Greensboro overall turnaround time improvement

1.13 FTE  
Radiologist annual time saved with Greensboro concierge program; equivalent to 200 annual shifts

Source: Greensboro Radiology, Greensboro, NC; 2017 Imaging Benchmarking Survey, Imaging Performance Partnership, Advisory Board; Imaging Performance Partnership interviews and analysis.

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1) Concierge program includes intelligent worklist and professional radiology assistants.  
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Canopy Partners, Greensboro Radiology

- Canopy Partners: Health care technology services company headquartered in Greensboro, NC
- Greensboro Radiology: 70-physician radiology group in Greensboro, NC; part of Radiology Partners, a national radiology practice

- Greensboro Radiology and health system partner, Cone Health, sought to improve physician access, communication, and workflow; Canopy Partners helped redesign communication for both radiology practice and hospital to meet physician, patient needs
  - Deployed Canopy concierge program that includes professional radiology assistants (PRAs) and intelligent worklist solution

- Uses intelligent worklist to prioritize exam reads by specialty, referring provider, hospital location, urgency, submission order, TAT agreements
  - Worklist monitors turnaround targets, volumes; auto distributes cases
  - If borderline subspecialty or generalist study, stays on specialty list for ~30 min., then populates on generalist list; first available radiologist reads exam

- Technical staff builds, tweaks algorithms on intelligent worklist
  - Staff makes changes anytime hospital partner makes EMR change; develops new rules to route exams to specialties

- Intelligent worklist reduced overall turnaround times by 35 minutes; part of overall concierge program that includes professional radiology assistants
  - Outpatient reads decreased 32 min. (-34%); ED/STAT reads decreased 4 min., 27 sec. (-57%); Inpatient reads increased 42 sec. (3%)

Source: Canopy Partners, Greensboro, NC; Greensboro Radiology, Greensboro, NC; Imaging Performance Partnership interviews and analysis.
Lessons from high performers to take home

Highly efficient imaging programs

Deploy real-time, dynamic patient prioritization

Lessons to take home

1. To maximize capacity, imaging programs must prioritize patients, services, and reads beyond first-in, first-out

2. Artificial intelligence tools can process conflicting priorities most efficiently, but requires significant investment in staff, time, and money.

   Without AI investments, programs should train frontline staff to prioritize patients and services that have the greatest impact on overall patient throughput and machine capacity

Source: Imaging Performance Partnership interviews and analysis.
Efficiency from the consumer’s perspective

“Anyone who has ever waited for medical test results knows just how excruciating that experience is.”

“What do patients view as efficient imaging?

Effectively using their time

- Ability to schedule quickly
- Short time in waiting room, waiting in hospital for imaging
- Timely radiology results

“Not only did I have to wait to get in, but once I got there I sat in the waiting room for 45 minutes! It felt like they didn’t value me or my time.”

Source: Imaging Performance Partnership interviews and analysis.
Become a highly efficiency imaging program

- Create throughput-focused staffing model
- Build schedules aligned with true machine capacity
- Deploy real-time dynamic patient prioritization

What now?

Understand your holistic performance compared to peers to uncover the biggest opportunities for improvement using the Imaging Productivity and Efficiency Benchmark Generator.

Model out the potential impact of changes on your capacity and staff productivity using the Imaging Capacity Modeling Tool.

To access both tools, visit advisory.com/ipp/tools

Set up calls with our researchers to walk through these tools, discuss your results, brainstorm solutions, and plan next steps.

Source: Imaging Performance Partnership interviews and analysis.
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Enhancing Imaging Revenue Capture
Top opportunities to avoid revenue erosion
A call to action on avoidable revenue erosion

Top opportunities to enhance imaging revenue capture

Growing revenue potential
Break out the champagne!

"Hospital finances are finally starting to stabilize, Moody's finds"

"According to the analysis, a number of metrics indicate nonprofit and public hospitals experienced stable profitability in FY1 2018"

Advisory Board Daily Briefing Excerpt
April 30, 2019

1) Fiscal year.
Upon closer inspection, margins still signal trouble

Despite cost control progress from system, imaging leaders

Revenue and expense growth rates for non-profit hospitals

2009–2018 medians

Major cost control initiatives undertaken by imaging

- Staffing changes
- Support service centralization
- Equipment, supply standardization
- Joint purchasing

Cost control alone can’t save us

Source of financial improvement needed to stabilize health system margins

Advisory Board’s model system “Antares”

Health systems must simultaneously control expenses and grow revenue to attain sustainable margins


1) Antares Health System is Advisory Board’s financial model of an average health system, developed to illustrate the magnitude of the margin management challenge facing most hospitals and health systems.
The revenue challenge demanding your attention

Avoidable revenue erosion hitting health systems on both sides

Denial write-offs

Percentage of NPR\(^1\),
Median performance
n=72; n=33; n=56

<table>
<thead>
<tr>
<th>Year</th>
<th>Denial Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>1.1%</td>
</tr>
<tr>
<td>2013</td>
<td>1.3%</td>
</tr>
<tr>
<td>2017</td>
<td>2.1%</td>
</tr>
</tbody>
</table>

Increase in write-offs from 2011 to 2017 90%

Total patient obligations

Hospital potential revenue from patient obligations
n=700,000 commercial patient accounts, 21 facilities

<table>
<thead>
<tr>
<th>Year</th>
<th>Patient bad debt</th>
<th>Patient payments</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>5.0%</td>
<td>4.1%</td>
</tr>
<tr>
<td>2015</td>
<td>7.5%</td>
<td>3.1%</td>
</tr>
</tbody>
</table>


1) Net patient revenue.
What’s your role in revenue improvement?

May depend on oversight, but sitting on the sidelines not a viable option

Roles for imaging leaders by scope of control

Fully within imaging’s control

Direct oversight
- Manage imaging-specific challenges, initiatives

Influential partner
- Lead larger initiatives with direct impact on imaging

Centralized function
- Consult financial leaders, provide imaging expertise

Fully centralized, outsourced

Top opportunity: no-shows, late cancels

Top opportunity: patient bad debt

Today’s focus

Source: Imaging Performance Partnership interviews and analysis.
Revenue erosion begins before patient arrival

Wasted imaging capacity contributes to potential revenue loss

Strategies to maximize revenue-generating capacity

- **Align schedule with true machine capacity**
  Maximizes scheduled patients slots, enabling greater revenue potential
  → *Discussed earlier today*

- **Ensure scheduled patients receive care**
  Allows programs to realize revenue potential of dedicated capacity
  → *Focus of this presentation*

5.0%  
Of scheduled imaging exams cancelled 24 hours+ before appointment

5.0%  
Of scheduled imaging exams cancelled within 24 hours of appointment

$1M  
Estimated revenue potential from eliminating imaging no-shows, late cancels

Rising patient obligations threatens business

Increase in health care costs has tangible impact on imaging

Health economic indicators

*Cumulative increase; Indexed to 2009 base*

- **69%** Employee contribution
- **23%** Wages

<table>
<thead>
<tr>
<th>Year</th>
<th>Wages</th>
<th>Employee Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**35%** of households do not have enough liquid assets to cover $2,000 deductible

Smith Medical Groups’ imaging facilities bad debt

*As percentage of NPR*

<table>
<thead>
<tr>
<th></th>
<th>Prior to HDHP^2 market entrance</th>
<th>After HDHP entered market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bad debt</td>
<td>1.5%</td>
<td>4.5%</td>
</tr>
</tbody>
</table>

**200%**

Increase in bad debt after HDHPs entered Smith’s market


1) Pseudonym.
2) High deductible health plan.
Imaging particularly susceptible to bad debt

While not immediately obvious, represents significant opportunity

**Bad debt per case**

*By service type*

- Inpatient medical: $864
- Inpatient surgical: $1,410
- Outpatient imaging: $258
- Outpatient surgery: $733
- Outpatient other: $240

**Bad debt as a percentage of NPR**

*By service type*

- Inpatient medical: 2.9%
- Inpatient surgical: 2.8%
- Outpatient imaging: 11.6%
- Outpatient surgery: 4.6%
- Outpatient other: 10.2%

*Imaging services often fall under patient deductible, meaning substantial amount of potential imaging revenue comes from patient, not payer, payment*

Source: Revenue Cycle Benchmark Generator, 2019, Advisory Board; Imaging Performance Partnership interviews and analysis.
## Enhancing imaging revenue capture

Two key opportunities for imaging programs to avoid revenue erosion

### Ensure patients receive scheduled care

*To reduce no-shows, cancellations:*

**Principle #1:**
Adopt a data-driven approach to prioritize no-show efforts

**Principle #2:**
Implement strategic interventions to address no-show challenges

### Develop a proactive patient obligation collection strategy

*To minimize patient bad debt:*

**Principle #3:**
Set patient payment expectations upfront with price estimates

**Principle #4:**
Ask for payment early

**Principle #5:**
Offer patients realistic payment options

Source: Imaging Performance Partnership interviews and analysis.
A call to action on avoidable revenue erosion

Top opportunities to enhance imaging revenue capture

Growing revenue potential
Ensure patients receive scheduled care

How to reduce no-shows, cancellations in imaging
No-shows: An underexamined revenue opportunity

Rate of no-shows or cancellations within 24 hours

*Percentile performance, Imaging Productivity and Efficiency Survey*

n = 50, national cohort

<table>
<thead>
<tr>
<th>Percentile</th>
<th>10th</th>
<th>20th</th>
<th>30th</th>
<th>40th</th>
<th>50th</th>
<th>60th</th>
<th>70th</th>
<th>80th</th>
<th>90th</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of all scheduled appointments</td>
<td>18.2%</td>
<td>8.5%</td>
<td>8.0%</td>
<td>7.0%</td>
<td>5.0%</td>
<td>5.0%</td>
<td>3.7%</td>
<td>2.7%</td>
<td>2.0%</td>
</tr>
</tbody>
</table>

2,600 annual volume difference  $600k annual Medicare revenue difference

**No-show**

When a patient does not receive scheduled care

**Patient does not arrive**

e.g., forgets appointment; clinical, financial anxiety

**Facility, patient cancels appointment**

Cancellation within 24 hours of scheduled appt.

e.g., inadequate patient prep; authorization issue

1) Median radiology outpatient revenue per case, $229.21. Metric defined as average payment per case as reported in CMS’s Outpatient Standard Analytical File (SAF); reflects Medicare fee-for-service outpatient encounters in 2017 Q4 - 2018 Q3.

Source: 2017 Imaging Benchmarking Survey; 2018 Hospital Benchmark Generator, Advisory Board; Imaging Performance Partnership interviews and analysis.
What’s the biggest driver of no-shows?

It depends on the study you read

**Excerpt**

Understanding Why Patients No-Show

“Scheduling lead time was [one of the] the most predictive factors of no-shows.”

*Journal of the American College of Radiology*

**Excerpt**

The Financial Burden of Missed Appointments...

“Mammogram screening...can in fact impose a large burden of uncaptured revenue [for no-shows].”

*Current Problems in Diagnostic Radiology*

**Excerpt**

Predicting No-Shows in Radiology Using Regression Modeling

“...prior no-show history was a strong predictive factor for future no-shows...”

*Journal of the American College of Radiology*

Allows imaging leaders to excuse problem

- Blame no-shows on outside factors
- Assume no-shows are inevitable
- Treat all patients the same despite individual needs

Literature in brief

► **Overview:** Leveraged EMR data to predict patient no-shows; found previous no-shows and appointment lag time highest predictors

► **Overview:** Determined which modalities led to greatest uncaptured revenue due to no-shows; found mammography screening as highest revenue loss

► **Overview:** Analyzed fifteen years of outpatient imaging exams; determined modality type and scheduling lead time biggest predictor of no-shows

► **Overview:** Discuss three reasons patients no-show: finances, fear, forgetting; proposed solutions for each reason
## A modality by modality look at no-shows

<table>
<thead>
<tr>
<th>Modality</th>
<th>Common reasons for no-show, late cancellation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mammography</strong></td>
<td><em>Typically higher for screening exams</em></td>
</tr>
<tr>
<td></td>
<td>• Time from order to scheduled appt.</td>
</tr>
<tr>
<td></td>
<td>• Non urgent exam (i.e. screening)</td>
</tr>
<tr>
<td></td>
<td>• Confusion over screening guidelines</td>
</tr>
<tr>
<td></td>
<td>• Patient perceived discomfort</td>
</tr>
<tr>
<td><strong>CT</strong></td>
<td><em>Typically higher</em></td>
</tr>
<tr>
<td></td>
<td>• Preauthorization delays</td>
</tr>
<tr>
<td></td>
<td>• Patient steered to lower priced site</td>
</tr>
<tr>
<td></td>
<td>• Financial fear</td>
</tr>
<tr>
<td></td>
<td>• Radiation patient concerns</td>
</tr>
<tr>
<td></td>
<td>• Claustrophobic patient</td>
</tr>
<tr>
<td><strong>MRI</strong></td>
<td>• Preauthorization delays</td>
</tr>
<tr>
<td></td>
<td>• Patient steered to lower priced site</td>
</tr>
<tr>
<td></td>
<td>• Claustrophobic patient</td>
</tr>
<tr>
<td></td>
<td>• Financial fear</td>
</tr>
<tr>
<td></td>
<td>• Length of appt.</td>
</tr>
<tr>
<td></td>
<td><em>Added consideration: Lost capacity for lengthy exam</em></td>
</tr>
<tr>
<td><strong>Ultrasound</strong></td>
<td>• Time from order to scheduled appt.</td>
</tr>
<tr>
<td></td>
<td>• Non urgent exam (i.e. screening)</td>
</tr>
<tr>
<td><strong>Nuclear medicine</strong></td>
<td>• Incorrect prep</td>
</tr>
<tr>
<td></td>
<td>• Financial fear</td>
</tr>
<tr>
<td></td>
<td><em>Added consideration: Cost of wasted isotopes</em></td>
</tr>
<tr>
<td><strong>PET</strong></td>
<td>• Incorrect prep</td>
</tr>
<tr>
<td></td>
<td>• Financial fear</td>
</tr>
<tr>
<td></td>
<td><em>Added consideration: Cost of wasted isotopes</em></td>
</tr>
<tr>
<td><strong>X-ray</strong></td>
<td><em>Likely lower due to add-on nature</em></td>
</tr>
<tr>
<td></td>
<td>• Time of appt. (mornings, evenings more likely to no-show)</td>
</tr>
</tbody>
</table>

Source: Imaging Performance Partnership interviews and analysis.
How to uncover your greatest revenue potential

Use principled process to reduce no-shows

**Principle #1**

Adopt a data-driven approach to prioritize no-show efforts
- Gather data on biggest reasons for no-shows
- Conduct root cause analysis to identify major challenges within control

**Principle #2**

Implement strategic interventions to address no-show challenges
- Map solutions to root cause analysis
- Measure success of intervention by comparing impact on no-show rate

Source: Imaging Performance Partnership interviews and analysis.
Root cause no-shows, cancellations

Welch\(^1\) analyzed data to uncover challenges, improvement opportunities

### Substantial gains from no-show initiative

- **3 Month initiative**
- **25% Reduction in MRI no-shows**
- **$3.6M Annual gross revenue earned**

### Process to uncover root causes of MRI no-shows

1. **Created committee** to address no-show challenge
   - Includes five imaging leaders, project manager; in collaboration with schedulers as needed
   - Tasked with data collection

2. **Pulled MRI data from Epic reports**
   - Compared completed appointments to scheduled appointments, add-ons

3. **Identified reason for no-show** when rescheduling appointment
   - Instructed call center staff to ask patient reason for missed appointment
   - Isolated major facility, patient no-show reasons based on data obtained by schedulers
   - Grouped reasons into five categories; used as foundation for root cause analysis

---

1) Welch Health; pseudonym.

Source: Imaging Performance Partnership interviews and analysis.
Prioritize high-impact solutions within imaging control

Root cause analysis for MRI no-shows, late cancellations

Environment  
- e.g., transportation

Machine  
- e.g., equipment failure

Management  
- e.g., internal issues

People

Process

- Forgot appt. (45%)
- Claustrophobia (10%)
- Call in sick (7%)
- Schedule errors (30%)
- No preauth (25%)
- Pregnant (<1%)

Key
- Outside scope
- Within scope

Classified outside of scope if...

- Lack of imaging control
- Insufficient cause of no-shows
- Solutions costly, impractical

1) Percentages do not equal 100%; patients may identify multiple reasons for missing exam.

Source: Imaging Performance Partnership interviews and analysis.

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Case Example

Welch Health

Multi-hospital academic medical center

- Underwent a radiology improvement initiative to decrease MRI no-show rates
  - Three month project consisted of data analysis, root cause problem solving, countermeasure roll-out to address no-show drivers
- The imaging department tracked appointments completed and appointments scheduled
  - This uncovered significant opportunity in MRI; staff created daily reports listing number of scheduled patients, number of patients who completed their appointment, add-on patients
  - Schedulers received lists of patients daily that canceled or did not show; while rescheduling, asked patients to identify reason for missing exam
- This data informed the root cause analysis and suggested solutions
  - Multiple solutions were suggested
  - For example, leaders created automated Televox reminder three days prior to the appointment to address challenge of patients forgetting their appointment; if patient doesn’t answer, a live person will call again
- The MRI no-show rate reduced from 12.5% to 10% in three months

1) Pseudonym.

Source: Imaging Performance Partnership interviews and analysis.
Guide to beginning data analysis

Multiple ways to identify your biggest no-show opportunity

Three common starting points

Service type
- Clinical urgency
- Modality

Patient population
- Demographics
- Insurance type
- History of no-shows

Scheduling operations
- Time from order to appt.
- Time, day of appt.

Example metrics to track
- Total scheduled volumes
- Volumes of no-shows
- Imaging program direct cost per case
- Average revenue, reimbursement per case

Source: Imaging Performance Partnership interviews and analysis.
An iterative process successfully reduces no-shows

Complete full cycle to realize total benefits

Measure solution effectiveness with continued data collection, comparison to baseline

Conduct data analysis
- Identify trends, areas of opportunity
- Establish baseline to measure progress against

Prioritize efforts through root cause analysis
- Group major reasons contributing to no-shows from data gathered
- Identify discrete challenges leading to each overarching reason

Design interventions
- Select high impact solutions within imaging control that solve major challenges
- Establish plan to roll out solution in phases

Source: Imaging Performance Partnership interviews and analysis.
Principle #2: Implement strategic interventions to address no-show challenges

Imaging's top opportunities to reduce no-shows

5 Top reasons for no-shows

- Preauthorization breakdowns
- Patient forgets
- Inadequate patient prep
- Lack of transportation
- Financial anxiety

Top reasons meet established criteria

- Within imaging’s ability to influence
- Significant volume loss for most imaging programs
- Cost effective solutions available

Source: Imaging Performance Partnership interviews and analysis.
Poor preauthorization process increases no-shows

Ineffective imaging preauthorization

**Outcomes**

1. Leads to in-office appointment cancellations

2. Delays time from order to scheduled appointment

**Impact on no-shows**

- Patient arrives without auth., turned away or cancelled
- Strong correlation between third next available appointment, no-shows in Imaging Performance Partnership survey

Source: 2017 Imaging Benchmarking Survey; Imaging Performance Partnership interviews and analysis.
Is your imaging preauthorization process effective?

Children’s Hospital of LA uncovered flaws upon closer look

100% of imaging patients believed to be authorized by financial clearance vs. 70% of imaging patients actually authorized at time of appt.

Imaging leader’s steps to uncover missing 30%

- Review accounts where preauth not obtained
- Record reasons for process failure
- Conduct root cause analysis to identify challenges

Three major challenges identified

- **Manual data, eligibility errors**
  - Authorization number typos
  - Unrecorded secondary insurance

- **Reliance on paper records**
  - Used hardcopy records
  - Resulted in errors, time wasted, lost paperwork

- **Unclear process oversight**
  - Unorganized pre-work; multiple departments used single hardcopy of patient packet
  - Staff received 200 clarifying emails daily across multiple departments; led to lack of insight into prep status

**Transitioned to electronic worklist**
Imaging oversight key to improving preauthorization

CHLA\(^1\) new preauth process teaches lessons for all organizations

增多成像维度管理，通过新的成像预授权结构

- 创建成像财务审核团队，负责所有成像授权；从不协调的模型中转换
- 培训财务审核人员参加为期六周的培训课程；讨论放射学过程的细微之处

Additional options: develop imaging specific training for centralized preauth staff

建立人员责任制度，通过每日例会，监测表现

- 实施财务审核，调度员每日例会；审查预授权状态在计划考试的三天前
- 解决预授权延误后例会；重新安排预约所需

Additional options: regularly track key indicators to monitor performance, identify challenges

Results from new process

- 99% of patients arriving at facility have preauthorization
- 2 days average time from order to appointment; previously 2-4 weeks

TAKE HOME LESSON

Many preauthorization models work. The key is having radiology oversight over staff training and input into the process to ensure it runs smoothly.

Mario Pistilli, Imaging Director
Children’s Hospital of Los Angeles

1) Children’s Hospital of LA.

Source: Children’s Hospital of Los Angeles, Los Angeles, CA; Imaging Performance Partnership interviews and analysis.
Children’s Hospital of Los Angeles

391-bed pediatric hospital in Los Angeles, California

- Imaging restructured preauthorization model after learning that 30% of patients arrived at appointment without authorization
  - Financial clearance team thought they preauthorized 100%
  - Imaging leader reviewed all cases not preauthorized, conducted a root causes analysis to identify the major challenges: data entry errors or unclear process oversight

- The imaging leader instituted three solutions:
  - Staff transitioned to electronic worklists, built by CHLA’s IT team over one year; tech, financial clearance staff, schedulers, and nurses use this to complete tasks prior to the patient appointment
  - Financial clearance staff aligned under imaging; previously, both radiology staff, referring providers submitted auth which created confusion over ownership; hiring and training the new staff took 6–8 weeks
  - Imaging, financial clearance staff, schedulers huddle daily three days prior to patient appointment date; they discuss outstanding preauthorization and, if needed, reschedule patients

- 99% of patients arrive to appointment with preauthorization
  - Order to scheduled appointment reduced from 2–4 week to under 2 days; MRI machine utilization increased from 70% to 90%
Schedule promptly to reduce likelihood of no-shows

Challenges with Todd Hospital's old preauthorization process

**Disjointed**
Service overseen by centralized financial clearance team, referring providers; no formal relationship to imaging

**Lengthy**
Scheduler set conservative lag time reflecting longest potential preauth turnaround time

New process shortens appointment lag time, saves money

**2 days**
Goal for time from order to appointment

**$1.2M**
Average annual savings from denials due to new process

More aggressive approach reduced scheduling lag

Preauthorization staff moved from centralized model to imaging-specific

Todd Hospital’s new preauthorization process tiers staff to authorization needs

Radiology referral specialist submits authorization request

Intake access staff address issues preventing auth

Dedicated RN conducts necessity review

Denied, patient informed

All patients scheduled within two days

> 90% of cases

Typically within 2 days

Time varies

Receive authorization for almost all patients within two days

For few patients not authorized within two days, staff call to reschedule

Source: Imaging Performance Partnership interviews and analysis.
Todd Hospital¹

Mid-size hospital

- Imaging department streamlined preauthorization to reduce turnaround times, allow patients to receive their appointment earlier

- Transition aligned preauthorization under imaging, moved away from a centralized model that relied on referring provider submissions; three imaging preauthorization roles created:
  - Radiology referral specialist: 16 non-clinical staff submit authorization via the EMR for all imaging patients
  - Intake access staff: fix outstanding issues preventing an exam from being authorized; about 10% of imaging patients have some initial issue with obtaining authorization
  - Dedicated RNs: five RNs dedicated to performing medical necessity reviews in an effort to make this process streamlined

- Preauthorization turnaround time reduced from 1–5 weeks to 2 days
  - The system saves average of $1.2M from denials due to new process

¹ Pseudonym.
Could you remove preauthorization entirely?

Bouvier Health\(^1\) uses imaging CDS

- Appropriate exams\(^2\) automatically preauthorized
  - Patient scheduled immediately
- Ordering providers consult CDS
- All other exams\(^3\) undergo preauthorization process
  - Standard appt. wait times

Rodham Radiology\(^1\) partners with employers

- Employer partners
  - Preauthorization not required
- All other patients
  - Preauthorization required
- Rodham Radiology

Path to partnership

- Health system, payer developed shared preauth model after data demonstrated CDS effectiveness in utilization management
- Schedulers trained to accept same-day exams for preapproved orders
- Monthly retrospective data analysis; health system reimburses payer for exams RBM would have denied

Path to partnership

- Rodham Radiology seeks self-funded employer partnerships
- Develops direct contract to offer lower cost, high quality imaging
- Preauthorization requirements omitted per contractual agreements

Source: Imaging Performance Partnership interviews and analysis.

1) Pseudonym.
2) Appropriate exams are those scored 7-9 on ACR Appropriateness Scale.
3) Exams scored 1-6, unscored exams, and those outside of CDS.
Bouvier Health¹

Multi-hospital academic medical center

- Health system, payer developed shared preauthorization model; exams scored appropriate by CDS exempt from preauthorization, managed by health system; all other exams undergo traditional preauthorization process, managed by RBM

- Health system regularly initiated imaging utilization management conversations at payer meetings starting in 2014, process began summer 2018

- Challenge to create structure to streamline preauthorization; RBM first asked health system to manage all exams scored by CDS, health system then asked to manage only appropriate exams due to lack of infrastructure to review low-scored and unscored orders, deny physician requests
  - Applicable only for exams ordered and furnished by health system providers

- Roughly 6% of patient population covered by payer, including health system employees
  - Expected to impact about 25 advanced imaging exams per week

- Plan to first educate schedulers on accommodating same or next-day exams for appropriate exams
  - Once process runs smoothly, will educate physicians about benefits at department meetings, organization-wide emails

¹ Pseudonym.
Rodham Radiology¹

Private radiology practice

- Formed partnership with employers that have self-funded insurance plans to capture additional imaging volumes
  - All employees, regardless of whether the referral was from onsite clinic or elsewhere, receive same negotiated flat rate from Rodham Radiology
  - Negotiated rate 20% higher than Rodham Radiology’s rate with major payer in market

- Incentivized employees to visit facility for imaging through no copay, no deductible agreement and extensive marketing of partnership
  - Staffed open enrollment fair employer office, sent letter to all employees explaining the partnership, and placed Rodham Radiology logo on insurance card

- Increased market share of imaging services for employees from 62% to 81% after one year of partnership

¹ Pseudonym.

Source: Imaging Performance Partnership interviews and analysis.
Does your reminder system work?

Despite reminder systems, patients continue to forget appointments

36% no-shows attributed to patients forgetting

68% of healthcare organization use text reminders

Renown Health increased reminder frequency, type for greater no-show impact

1x  Patients reminded via Televox\(^1\) or EPIC MyChart before appt.

2x  Live call attempts day before appt. to give reminder, patient education

Contact center representative connected if questions, need to reschedule

20% **Decrease** in no-shows, from 5 to 4%

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\(^1\) Automated patient communication vendor.
Renown Health

Four-hospital health system in Reno, Nevada

- Imaging underwent initiative to improve patient access
  - Learned if wait time for outpatient appointments reaches a 7–10 day average, then number of STAT appointment requests increases by 50%

- One step: restructured their Televox reminder system, EPIC MyChart to reduce no-show rates
  - The radiology director hypothesized that no-show rates increase with longer time to next available appointment; Patients are more likely to show up if scheduled and reminded sooner

- The imaging department began pilot to explore the impact of giving a patient one automated, two live appointment reminders instead of the customary one

- The imaging no-show percentage decreased from 5% to 4%, a 20% improvement
Ensure patients arrive prepared

Tailor communication to increase likelihood patient readiness for exam

Patients cited patient prep, anxiety as major reason for missing appointment (i.e. claustrophobia, unreported implant, inadequate prep)

Dandridge Hospital\(^1\) tailors prep instructions

Schedulers take robust notes in patient record, informs how to tailor communication e.g., language barriers, hearing issues

Patients complete surveys during pre-registration indicating communication preferences e.g., email, phone, text, mail

Communication specialists use notes during pre-arrival calls to explain prep instructions, get preauth info, address financial concerns

EMR portal also contains instructions, patients can independently access

$2.7M Increase in annual revenue due to 3% no-show reduction\(^2\)

Adopt this model at your organization

- Segment patients into large categories, e.g.:
  - Age
  - Health literacy
  - Previous history in health system

- Develop unique scripting for each
  - Deliver information in manner that resonates best with cohort

---

1) Pseudonym.
2) Based on internal analysis; average operating income/margin about $740 per DI procedure at organization.

Source: Imaging Performance Partnership interviews and analysis.
Dandridge Hospital
Comprehensive specialty care center

- Imaging department uses multi-modal reminders to deliver prep information in a manner that resonates with that patient

- Organization keeps robust notes in patient record so schedulers know how to tailor communication
  - Only 20% of imaging patients are new to the system, most patients have a record that includes communication notes
  - Organization asks patients to fill out surveys indicating their communication preferences (e.g., email, phone, text, or mail)
  - Staff input helpful observations into patient charts (e.g., language barriers, hearing issues)

- Communication specialists use notes for pre-arrival calls to explain prep instructions, get information for preauthorization, address financial concerns
  - Patients also independently access prep instructions inside EMR portal
If you bring them, they will come

Davis Imaging\(^1\) provides transport to select patients

- **Schedulers ask patients**, “do you anticipate having a challenge getting to your exam,” during appointment reminder calls
- **If yes**, schedulers arrange for Uber to transport patient
- **If no**, patients receive directions to facility during final reminder call

Language encourages only at-risk patients to accept offer

How to provide transportation at your organization

1. **Provide service only to patients with true need**
   - Identify patients at-risk to no-show due to transport barriers
   - Offer service at time of scheduling

2. **Select appropriate ride-share partnership model**
   - Determine distance parameters for eligible patients (e.g., 30 min ride)
   - If expecting significant volumes:
     - Large urban organizations: Use Uber Health, Lyft Business
     - Rural organizations: Partner with community transportation agencies

3. **Track return on investment**
   - Track no-show rates after implementation to assess effectiveness
   - Maintain focus on efficiency in providing service; effective program see increase in patient punctuality

---

\(^1\) Pseudonym.

\(^2\) Median radiology outpatient revenue per case, $229.21. Metric defined as average payment per case as reported in CMS’s Outpatient Standard Analytical File (SAF); reflects Medicare fee-for-service outpatient encounters in 2017 Q4 - 2018 Q3.

Davis Imaging

Large independent radiology group

► Schedulers ask patients, “Do you anticipate having a challenge getting to your exam,” during appointment reminder calls

► Schedulers give patients two to three reminder calls in advance of appointment
  – During calls, schedulers give patients prep instructions, answer questions, determine other issues that will impact their ability to receive exam
  – If patient needs transportation system, schedulers order an Uber; they do not work with Uber Health

► About 4% of patients request transportation assistance
  – Average trip costs $45 round trip

Our take: Uber and Lyft want to partner with you. Is that a good investment?
Financial anxiety major reason for patient no-shows

Patients struggle to meet obligations even with insurance

“One of the biggest reasons patient don’t show up to exams is fear of not being able to pay.”

Director, Multi-hospital health system

“I was scheduled for a breast MRI…but when I found out that I would first have to meet my [deductible and then pay more]…I ended up cancelling.”

Anthem Blue Cross patient

40% of individuals report at least one affordability issue, with most common “affording bills before meeting deductible”

51% of individuals say someone in family skipped or delayed care due to price

Coming up:

Develop a proactive patient obligation collection strategy


1) Data points denote individuals with employer-sponsored insurance.
Can no-shows be fully resolved?

Percent of no-shows or cancellations within 24 hours

\( n = 50, \text{ national cohort} \)

<table>
<thead>
<tr>
<th>Percentile</th>
<th>50th</th>
<th>60th</th>
<th>70th</th>
<th>80th</th>
<th>90th</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of all scheduled appointments</td>
<td>5.0%</td>
<td>5.0%</td>
<td>3.7%</td>
<td>2.7%</td>
<td>2.0%</td>
</tr>
</tbody>
</table>

What do you do when your no-show rate plateaus?

- Would you push for more aggressive strategies to either dissuade no-shows or backfill in the moment?
- If so, what strategies would you consider?

Source: 2018 Imaging Productivity and Efficiency Benchmark Generator, Advisory Board; Imaging Performance Partnership interviews and analysis.
# Retrospective no-show strategies

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Keys to success</th>
<th>CASE EXAMPLES</th>
</tr>
</thead>
</table>
| Waitlist     | • Update patient names on waitlist via routine maintenance                       | **Dandridge Hospital**¹  
Comprehensive specialty care center  
• Creates online waitlists of preauthorized patients that op-in to fill last minute slots  
• Prioritizes patients in order of highest acuity |
|              | • Ensure preauthorization completed for patients on list                          | **Robinson Hospital**¹  
Health care system  
• Charges no-shows $40; patients informed of policy in preregistration paperwork  
• Led to decrease in no-shows |
|              | • Automate other steps needed to fill slot wherever possible (e.g., contact top five patients on list after cancellation) | **Davis Imaging**¹  
Large independent radiology group  
• Overbooks MRI at facility with high no-show rate; schedules 17-18 appt., can accommodate 15  
• Promised no patient will wait longer than 15 min., even if all arrive  
• No issues have resulted from policy |
| Patient fines| • Notify patients of policy in preregistration paperwork, appointment reminders    |                                                                                                                                            |
|              | • Build flexibilities into policy to preserve patient relationships (e.g., refunds for prompt reschedule) |                                                                                                                                            |
| Overbooking  | • Overbook in incremental amounts (e.g., 1 – 3 appointments per day)              |                                                                                                                                            |
|              | • Maintain efficiency standards even if all patients show up                     |                                                                                                                                            |
|              | • **Long-term:** Use predictive analytics to identify patients most likely to no-show based on previous no-shows, time to appointment, payer, facility distance, new patient, appointment type |                                                                                                                                            |

¹) Pseudonym.
Key lessons to take home

Enhance imaging revenue capture by:

Ensuring patients receive scheduled care

1. Minimizing the impact of no-shows and late cancellations provides an early revenue opportunity, as solutions fall directly within imaging leaders’ scope of control.

2. Imaging leaders should invest time and resources to uncover their biggest areas of opportunity by analyzing root causes of facility-specific no-shows.

   Once no-show interventions are underway, programs cannot assume success. Instead, imaging leaders must continue tracking key performance indicators and adapt projects to drive down no-show rates.

Source: Imaging Performance Partnership interviews and analysis.
Develop a proactive patient obligation collection strategy

How to effectively reduce imaging patient bad debt
Current collection strategy is ineffective

Organizations struggle to collect rising patient portion of health care bills

Health systems struggle with collections

- 77% of providers say it takes more than a month to collect any payment
- 3% full cost to collect as percentage of NPR\(^1\); no improvement in median performance since 2013
- 36% chance of collecting full amount without a POS\(^2\) payment

Commercial patient obligation as percent of total bill

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>8.0%</td>
</tr>
<tr>
<td>2017</td>
<td>12.2%</td>
</tr>
</tbody>
</table>

53% increase

Bad debt as a percentage of NPR

By type of service

<table>
<thead>
<tr>
<th>Service</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outpatient imaging</td>
<td>11.6%</td>
</tr>
<tr>
<td>Outpatient other</td>
<td>10.2%</td>
</tr>
<tr>
<td>Outpatient surgery</td>
<td>4.6%</td>
</tr>
<tr>
<td>Inpatient medical</td>
<td>2.9%</td>
</tr>
<tr>
<td>Inpatient surgical</td>
<td>2.8%</td>
</tr>
</tbody>
</table>


1) Net patient revenue.
2) Point of service.
Set program up to collect full patient obligations

Challenges with current approach:

- Unable to afford care
- No time to financially plan
- Mistrust of owed amount
- Confusing billing process
- Inaccessible financial options
- Inability to submit payment

Three principles to effectively reduce patient bad debt:

1. Set payment expectations upfront with price estimates
2. Ask for payment early
3. Offer patients realistic payment options

Source: Imaging Performance Partnership interviews and analysis.
Accurate estimates increase patient payment

Decisions to guide a successful price estimation strategy

Estimates increase likelihood of collection

Percentage private payer patients who paid full bill within one month of arrival
n= 367

- No Price Estimate: 51%
- Price Estimate: 70%

Two price estimation questions

1. What price will you provide?
   - Out-of-pocket estimate
   - Flat fee
   - Price ceiling

2. How will you provide the estimate?
   - Incoming calls
   - Online platform
   - Notifications/reminds
   - Outgoing calls

CASE EXAMPLE

Integris Health System

“Accurate pricing estimates prior to care delivery increased point-of-service patient collections from $1 million in 2008 to $18 million by 2015”

Generating a meaningful price estimate

Drawing a hard line to ensure estimate enables collection

What price will you provide?

Out of pocket accuracy, impact

Out-of-pocket global estimate

Out-of-pocket technical estimate

Price ceiling

Flat fee

Out-of-pocket technical estimate

Price range

Self-pay rate

Chargemaster

Insurance fee schedule

Complexity to implement

CMS transparency requirement not enough

Not meaningful enough estimate to increase collections

Source: Imaging Performance Partnership interviews and analysis.
How will you provide the estimate?

How will you provide estimates to patients

Strategies for estimate delivery

Patient directed

Incoming calls

Most common way patients ask for, access price estimates

Online platform

Consumers increasingly interested in online estimation tools

Notifications, reminders

Notifications direct patients to self-service price estimates, but fewer dedicated staff

Program directed

Outgoing Calls

Preemptive strategy to reach all scheduled patients by proactively providing estimates

Considerations when selecting estimate delivery method

Level of market price sensitivity

Target demographic

Price relative to competitors

Source: Imaging Performance Partnership interviews and analysis.
Start the payment process early

Early collection improves likelihood of payment

Probability of collecting total patient obligation

Probability of collecting full TPO

Legend: TPO paid at POS
- 71-80% paid
- 61-70% paid
- 0% paid

1) Analysis for a median performing facility, defined as collecting 26.7%-71.0% of total patient obligations when no POS payment is made.
2) Total patient obligation.

Source: "Are you Collecting Enough at Point-of-Service?", Revenue Cycle Advancement Center, Advisory Board; Imaging Performance Partnership interviews and analysis.
**It’s not an all or nothing game**

Collect as much upfront as possible

**Percentage of patients with HDHPs able to pay upfront**

“Suppose you had an unexpected medical bill that was equal to the full amount of your deductible. Based on your current financial situation, how would you pay that bill?”

\[ n=1,407 \]

<table>
<thead>
<tr>
<th>Able to <strong>pay in full</strong> at the time of service</th>
<th>Would be able to <strong>pay partial</strong>, not full amount</th>
<th>Would not be able to pay at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collect full amount upfront</td>
<td>Collect portion of payment upfront</td>
<td>Connect to charity care</td>
</tr>
</tbody>
</table>

| 33%                                            | 51%                                            | 16%                             |

Patients are twice as likely to pay **total obligations** if they make any point of service payment

# Introducing our profiled organizations

<table>
<thead>
<tr>
<th>11-hospital health system • Bethlehem, PA</th>
<th>6-hospital health system • Detroit, MI</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Goal</strong></th>
<th>Improve patient financial experience</th>
<th>Reduce bad debt</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Key teaching objective</strong></td>
<td>Comprehensive collections strategy</td>
<td>Strategic rollout of price estimates, upfront collections</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Price estimate</strong></th>
<th>Flat fee</th>
<th>Out-of-pocket estimate</th>
<th>Out-of-pocket estimate</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Estimate delivery</strong></th>
<th>Online</th>
<th>Incoming calls</th>
<th>Outgoing calls</th>
<th>Remote notification</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Collection strategy</strong></th>
<th>Full upfront payment</th>
<th>Timely post-service bill</th>
<th>Ask for payment at scheduling</th>
<th>Accept flexible amount</th>
</tr>
</thead>
</table>

| **Scope of project** | System-wide focus on imaging, lab, low-end procedures | Pilot for system-wide initiative |

Source: Henry Ford Health System, Detroit, MI; St. Luke’s University Health Network, Bethlehem, PA; Imaging Performance Partnership interviews and analysis.
Lead with clear price estimates

St. Luke’s offers price estimates to all patients

**Price estimation example:** MRI-Chest with Contrast (CPT 71551)

<table>
<thead>
<tr>
<th>Out of pocket estimate:</th>
<th>$1,233</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual estimate of out of pocket obligations¹</td>
<td></td>
</tr>
</tbody>
</table>

- Includes hospital fee only
- Presents source of patient obligation, e.g., $1,000 deductible, $233 co-insurance

**Useful for all patients**

<table>
<thead>
<tr>
<th>PriceLock price:</th>
<th>$500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat fee, pre-pay discount</td>
<td></td>
</tr>
</tbody>
</table>

- Includes professional, technical payment
- **100% payment required upfront** to schedule exam

**Designed for patients unlikely to fulfill obligations**

**What is the PriceLock price?**
- Comprehensive technical, professional price
- Pre-pay discount established for competitive pricing

**Why don’t all patients select PriceLock?**
- OOP price would be less than PriceLock for patients with no, low deductible
- PriceLock is only attractive to patients with high exposure to health care prices

---

¹ Generated using the price estimation software Simplee.

Availability of estimates decreases collection costs

Highly accessible price estimates, financial resources

Potential patient

100 web visits per day

110 call per day

Patients provided both:
- Out-of-pocket estimate
- PriceLock price

St. Luke’s price estimation access strategy

Online estimates widely accessible
- Partnered with Simplee¹ to provide 24/7 access to estimates on website
- Uses patient-friendly language
- Directs patients to call financial navigators for scheduling, payment

Incoming calls fielded by financial navigators
- Initiated with existing staff, expanded to accommodate volume growth
- Navigators deliver estimates, provide financial counseling, schedule
- 4-month staff training; customer service, insurance fundamentals, collections

Success

3X
Growth in patients using online tool over three years

50%
Of patients who call for an estimate opt into PriceLock


¹) Price estimation software vendor.
Set patients up for payment success

Propensity-to-pay: Patient-specific payment collection method

**High propensity to pay**
- Email asks for **full payment**
- If unable to pay, patient can self-enroll in a payment plan

**Low propensity to pay**
- Email offers **best payment plan options** based on p2p
- Patients self-enroll in payment plan online, change as needed

**Propensity-to-pay calculations include:**
- Demographics
- Credit score
- Payment history
- Bad debt history

68% of programs use a **third party vendor**

42% Of payments made within 7 days of patient email alert

85% Of payments made online, 39% through mobile device


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1) Propensity-to-pay.
St. Luke’s billing process

- **Patient email alert**: Patient receives email to view bill immediately following services.
- **Online bill portal**: Using account number and date of birth, patient views bill from multiple devices.
- **Unified bill**: Bill reflects all charges across the patient’s household.
- **Payment plans**: Patient pays statement or enrolls in payment plan on payment portal.

If patient does not respond to email alert, they are mailed their statement and directed to pay online, via phone, or via check. 71% increase in self-service payment.

Source: St. Luke’s University Health Network, Bethlehem, PA; Imaging Performance Partnership interviews and analysis.
Reviewing St. Luke’s comprehensive strategy

Set payment expectations upfront with price estimates

Offers timely, accurate out of pocket price estimate to all patients before scheduling

Ask for payment early

Requires full upfront payment for patients that choose PriceLock before scheduling

Offer patients realistic payment options

Uses propensity-to-pay to recommend payment plans with greatest likelihood for full payment

Provides option for patients unable to pay full OOP amount with PriceLock

Nervous about offering a discount?

This strategy can be effectively deployed without price discount

Winning on patient experience

St. Luke’s outshines best-in-class brands

Net promoter score by organization

<table>
<thead>
<tr>
<th>Organization</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>St. Luke’s payment portal</td>
<td>50</td>
</tr>
<tr>
<td>Google</td>
<td>50</td>
</tr>
<tr>
<td>St. Luke University Health Network</td>
<td>44</td>
</tr>
<tr>
<td>Mercedes</td>
<td>39</td>
</tr>
<tr>
<td>St. Luke’s PriceChecker</td>
<td>38</td>
</tr>
<tr>
<td>Average health care organization</td>
<td>18</td>
</tr>
</tbody>
</table>

More than 2x higher than average health care organization

The retail-like experience is here in healthcare. **Digital self-service pricing and payments can be a win for patients and for us.** The financial experience is a patient satisfier and complements quality healthcare.

*Rich Madison, VP Revenue Cycle*

*St. Luke’s University Health Network*

St. Luke’s University Health Network

10-hospital health network in Bethlehem, Pennsylvania

▶ Provides patients with two upfront estimates, insurance-specific out-of-pocket estimate, prompt pay flat fee
▶ Partnered with healthcare technology vendor, Simplee, to deliver online estimates, trained financial services staff to answer phone-based requests
▶ Uses predictive analytics to calculate patients’ propensity-to-pay, customizes payment options based on a three tiers of financing plan
▶ Since implementation, system observed 33% decrease in cost-to-collect, reduction in bad debt
  – St. Luke’s payment portal and net promoter scores surpass top consumer brands

Source: St. Luke’s University Health Network, Bethlehem, PA; Imaging Performance Partnership interviews and analysis.
Addressing common concerns of collection strategy

1. "It’s too expensive"
   Costly investment in system-wide price estimation software

2. "This is a health system problem"
   Dedicated revenue cycle teams address issues related to collections

3. "Strategies are complex to operationalize"
   Deductible-specific estimation data difficult to acquire, complicated to deliver

Supporting Evidence

Clear return on investment
- Increased POS collections, decreases in bad debt
- Revenue gained from no show declines

Most to gain, best to lead
- Imaging services fall within a patient’s deductible
- Imaging exams are simpler to estimate than other outpatient services

Start small, expand
- Small-scale pilot enable programs to work out challenges before expansion
- Measure pilot results to guide future investment

Source: Imaging Performance Partnership interviews and analysis.
System-wide initiative to reduce bad debt

Henry Ford’s radiology estimation, collection pilot

Designing system-wide solutions to bad debt

- Led by revenue cycle leadership
- Input from department leaders with highest bad debt
  - **Radiology**
  - **Internal Medicine**
  - **Surgery**
  - **Gastroenterology**
  - **Optometry**
  - **Urology**
  - **HemOnc**
  - **Plastics**
  - **Women’s Health**

- Launched pilot with radiology, GI
- Plans to expand to all service lines
- Accountability managed through weekly review of metric scorecard

How Henry Ford scoped radiology pilot program

Which locations should we start with?

- Highest volume sites with most bad debt: Henry Ford Hospital, Fairlane

What modalities would be best for the pilot?

- Most expensive, highest debt modalities: nuclear medicine, ultrasound, CT, MRI

Which payers should we start with?

- Identify payers willing to share real-time data: Health Alliance, BCBS¹

¹ Blue Cross Blue Shield.

Source: Henry Ford Health System, Detroit, MI; Imaging Performance Partnership interviews and analysis.
Pilot program in action

Henry Ford’s process to deliver prices estimates to all scheduled patients

Process to deliver estimates, collect

- Patient scheduled for imaging exam
- Staff generate out-of-pocket estimate using Epic tool
- Radiology schedulers deliver estimate at point of scheduling
- Attempt to collect full out-of-pocket amount over phone

Patients included in pilot monthly: ~500

11% of payment collected upfront from patients involved in pilot

Bad debt reduction goal for radiology, April 1 – Dec. 31, 2019: $500,000

Source: Henry Ford Health System, Detroit, MI; Imaging Performance Partnership interviews and analysis.
Use results to monitor, scale efforts

Progress measured through weekly review of metric scorecard

<table>
<thead>
<tr>
<th>Scorecard metric</th>
<th>Reporting Frequency</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Error rate by scheduling staff</td>
<td>Weekly</td>
<td>Baseline: 25% Current: 10%</td>
</tr>
<tr>
<td>Number of patients given estimate</td>
<td>Weekly</td>
<td>Baseline: 0% Current: 100% pilot patients</td>
</tr>
<tr>
<td>No-show rate</td>
<td>Weekly</td>
<td>6% reduction</td>
</tr>
<tr>
<td>Number of patients collected from</td>
<td>Weekly</td>
<td>11%</td>
</tr>
<tr>
<td>Bad debt</td>
<td>4-6 billing cycles</td>
<td>Assessing 3rd quarter, 2019</td>
</tr>
<tr>
<td>Accuracy estimate</td>
<td>Still looking for ways to measure estimate accuracy</td>
<td></td>
</tr>
</tbody>
</table>

Henry Ford’s next steps

- **Innovate**
  - Develop automated, online self-service portal for real-time estimates

- **Expand**
  - Expand price estimation, patient collection pilot to more departments, payers

- **Collect**
  - Create self-service payment options for patients including payment plans, P2P

Source: Henry Ford Health System, Detroit, MI; Imaging Performance Partnership interviews and analysis.
Henry Ford Health System
6-hospital health system in Detroit, Michigan

- Launched two-site radiology price estimation, collections pilot for ~500 patients as part of system-wide initiative to reduce bad debt
- Schedulers run patient-specific price estimates through EPIC estimation tool, deliver estimates at point of scheduling and attempt to collect full amount
- Progress tracked through ongoing review of scorecard metrics, including error rate, number of estimates delivered, percentage collected, bad debt reduction
- Plan to expand pilot to online, self-service platform for all service lines, modalities, payers
- About 11% of patients collected prior to service, with a goal of $500,000 reduction in bad debt in 2019

Source: Henry Ford Health System, Detroit, MI; Imaging Performance Partnership interviews and analysis.
Staff training the linchpin of estimation success

Welch Health’s training equips staff for friendly financial conversations

Three components of training

Provide effective, consistent messaging

- Onboarding separated by department, use system-wide price transparency training materials
- Consistent scripts, references distributed across system

Key questions staff answer

- How does my insurance work?
- What is included in the price estimate?
- What are my options for payment?
- What if I can’t pay now?

Conduct quality reviews

- Financial services leadership pulls one patient account per employee for monthly quality review
- Leadership reeducates staff if issue identified; non-punitive

Facilitate structured pull up meetings

- Leaders from all departments share updates, challenges monthly

Sample Scripting

“To best serve all patients, our policy is to ask for payment at this time. It allows you take care of your payment now, rather than worry about a bill later. Would you like to pay cash, check, or credit card?”

1) Pseudonym.
CASE EXAMPLE

Welch Health¹

Multi-hospital academic medical center

- Uses EPIC price estimator to deliver out-of-pocket estimate to inquiring patients
- Implemented structured staff training program to equip staff to have patient friendly financial conversations
  - Provides effective, consistent messaging and scripting for all departments, including exercises for new hire training, call scripting and insurance resources
  - Tracks performance through monthly quality reviews. Leadership selects patient accounts to review, ensure estimates delivered appropriately
  - Utilizes cross-department daily huddles, monthly meetings to discuss ongoing challenges
- 95% of patients scheduled for an exam receive price estimate

¹ Pseudonym.

Source: Imaging Performance Partnership interviews and analysis.
Help your organization select an estimation product

Out-of-pocket estimates require a tool

Should you invest in a price estimation vendor?

What can you do without a vendor?
- Flat fee
- Price ceiling

When do you need to invest in a vendor?
- Out-of-pocket technical estimate
- Out-of-pocket global estimate

How Advisory Board advises CFO\(^1\)’s to select a price estimation tool

- Prioritize vendors who offer price estimates for all types of care, including inpatient, outpatient, imaging, diagnostic services
- Ensure patients receive customized quote, not standard charge; solutions should incorporate patient’s insurance status, specific plan details
- Verify the vendor has high quality implementation experience
- Find a vendor with a broader commitment to tracking ongoing performance and scaling the product

Source: Patient Financial Journey, Revenue Cycle Advancement Center, Advisory Board; Imaging Performance Partnership interviews and analysis.

1) Chief Financial Officer.
What’s your take?

Unanswered Imaging Questions

$ How will you provide an estimate for professional fees?

How can you provide an estimates for sites with different prices?

How will you change the culture around pre-service collections?
Ideas to consider

Unanswered Imaging Questions

How will you provide an estimate for professional fees?

- Bill globally, provide estimate for full amount
- Ask radiology groups to participate by giving estimates for their services
- Provide clear scripting explaining what estimate includes

How can you provide an estimates for sites with different prices?

- Ask patients to select site before receiving estimate
- Move all sites to one fee schedule or offer price ceiling

How will you change the culture around pre-service collections?

- Prepare staff to handle challenging patient financial conversation
- Staff financial counselors or equip offices with financial information cards
Lessons to take home

1. As patient price exposure rises, so too does health care bad debt. Imaging is particularly susceptible, as a growing percentage of imaging’s potential revenue stems from patient obligations.

2. In order to curb bad debt, programs should develop a proactive patient obligation strategy that begins with providing price estimates prior to service. Patients are most likely to fulfill their obligations if they receive upfront estimates and pay at least a portion of their bill by the time of service.

Best-in-class programs leverage patient-specific information to recommend payment options and increase the likelihood of collecting full payment.

Enhance imaging revenue capture by
Developing a proactive patient collection strategy

Source: Imaging Performance Partnership interviews and analysis.
A call to action on avoidable revenue erosion

Top opportunities to enhance imaging revenue capture

Growing revenue potential
Long-term view of revenue capture opportunities

Maximize existing revenue

Grow market share

Current revenue potential

Imaging revenue

Combat operational inefficiency, revenue erosion

Expand capacity, win new volumes

Today’s focus:
1. Top Attributes of Highly Efficient Imaging Programs
2. Enhancing Imaging Revenue Capture

Tomorrow’s focus:
3. Retaining Market Share in an Age of Steerage
4. Winning Referring Physicians and Patients

Source: Imaging Performance Partnership interviews and analysis.
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Outpatient Growth
Imperatives for Today’s
Competitive Market
The way to a customer’s heart: Through his grocery bill?

Amazon continues grocery strategy

Amazon to buy Whole Foods for $13.4 billion
The acquisition is a reflection of… a desire to turn Amazon into a more frequent shopping habit by becoming a bigger player in food and beverages.  
_The New York Times, June 2017_

Amazon’s acquisition of Whole Foods is about two things: data and product
With massive amounts of data from Whole Foods shoppers, Amazon will ultimately be able to tailor the grocery shopping experience to the individual.  
_Forbes, Aug. 2017_

Health care’s Amazonian moment

Share of wallet: the new health care growth metric

Share of patient wallet: the percentage of a patient’s total health care spend occurring at an organization

Reasons to focus on patient loyalty

A less expensive approach

10x

The cost of attracting a new customer compared to retaining an existing one

An accretive revenue driver

6x

More revenue generated by a patient who is retained\(^1\) over three years versus a patient who is not

---

1) Over three years, patients who have at least one visit within 18 months using the Athenahealth portal.

Growing ambulatory networks to capture share of wallet

Increased diversity of health system investments outside the hospital

- **~31%**
  - Of 10,080 urgent care locations owned or partially owned by health systems, 2015

- **~41%**
  - Of 5,602 ambulatory surgery centers owned or partially owned by health systems, 2017

Benefits of health system ambulatory network expansion

- **Increases overall referral base for system**
- **Ensures system receives higher percentage of patient spend**
- **Creates ambulatory footprint for competing across markets**

Referral leakage undermines strategic investment

Patient journey through a system’s ambulatory network

PCP¹ → Specialist → Imaging center → ASC² → Post acute care center

What is lost when a patient goes elsewhere for imaging?
- Imaging revenue
- Potential downstream revenue
- Patient data
- Opportunity to reinforce brand with patients
- Interactions with affiliated physicians
- Care continuity

Even direct revenue is about more than imaging’s bottom line

-$206,884
Average net loss per employed physician for health system medical groups

Imaging revenue important to offset losses from employing referring physicians

Source: Outpatient Imaging Referral Benchmarking Tool; Imaging Performance Partnership interviews and analysis.

1) Primary care provider.
2) Ambulatory surgery center.

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Three major forces impacting share of wallet

Steerage, physician preference, consumerism all impact patient loyalty

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Focus now:

**8 am.** Retaining Market Share in an Age of Steerage

**9 am.** Choosing Your Steerage Response Strategy: An Interactive Workshop

Focus later:

**10 am.** Winning Physicians and Patients

---

Source: Imaging Performance Partnership interviews and analysis.
Retaining Market Share in an Age of Steerage

Potential responses to steering entities
Not only a hospital issue

Impacts of steerage on freestanding providers

$ Creates increased price pressures
- Affects higher-cost freestanding facilities
- Accelerates price competition among outpatient providers of all types

Affects hospital partners
- Increases incentives for hospitals to seek partnership, support from outpatient providers

Incentivizes new growth strategies
- Provides new potential source for volume growth
- Affects decisions concerning new locations, capacity expansion

Changes the competitor field
- Encourages new competitors to enter the market as low-cost options
- Incentivizes hospitals who have previously not competed on price to re-evaluate

Source: Imaging Performance Partnership interviews and analysis.
# Steerage takes many forms...

## Two major types of steerage

<table>
<thead>
<tr>
<th>Soft steerage</th>
<th>Hard steerage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payer or employer contacts patient to encourage use of cheaper provider</td>
<td>Payer denies payment for hospital-based imaging</td>
</tr>
<tr>
<td>Payer or employer directs patients to online database with cost and quality information on providers</td>
<td>Physician group or employer partners with lower-priced site because of ACO incentive</td>
</tr>
<tr>
<td>Payer or employer provides monetary incentive for using preferred providers</td>
<td></td>
</tr>
</tbody>
</table>

Source: Imaging Performance Partnership interviews and analysis.
...and hails from many quarters

Steering entities growing, becoming more active

Payers

40 million lives covered by Anthem and UHC,¹ who have now adopted site-of-care review

Self-funded employers

61% of covered workers in the US are enrolled in plans that are at least partially self-funded

Physicians under risk

60% of respondents to 2017 AMGA² survey ready to take on downside risk within two years

¹ Advisory Board is a subsidiary of UnitedHealth Group, the parent company of UnitedHealthcare. All Advisory Board research, expert perspectives, and recommendations remain independent.
² American Medical Group Association.

Can you see the steerage?

Manifestations of steerage all along the referral pathway

*Imaging department’s steerage awareness*

- **Payer denies claim**
- **Patient cancels, citing insurance**
- **Patient no-shows, never reschedules**
- **Patient calls to ask about price; never schedules**
- **Physician aware of steerage, sends patient elsewhere**

**Suggestions for quantifying steerage**

- Track denials related to site of service, by insurance plan
- Ask for reasons for cancellations
- Track insurance plans of no-show patients
  - Monitor no-shows and follow up to ask for reason
- Track insurance plans of patients calling to ask for price
- Ask patients requesting price estimates about insurance communication
- Follow up with patients (all or a sample) to understand reason for not scheduling
- Track volumes by insurance plan over time
- Track physician leakage, by insurance plan if possible
- Contact physicians to discuss out-of-network referrals
- Survey physicians about patient price concerns

Source: Imaging Performance Partnership interviews and analysis.
Steerage: Friend or foe?

Two sets of potential responses

Minimize the impact of steerage

1. Push back against steering payers

2. Lower rates for select payers and/or services to avoid steerage

Embrace steerage, innovate outpatient strategy

3. Move outpatient imaging to freestanding rate and compete aggressively for new market share

4. Court steerage from clinical entities focused on referral management

Source: Imaging Performance Partnership interviews and analysis.
Four potential responses to steerage

- Response #1: Push back against steering payers
- Response #2: Lower rates for select payers and/or services to avoid steerage
- Response #3: Move all outpatient imaging to freestanding rate and compete aggressively for new market share
- Response #4: Court steerage from clinical entities focused on referral management
Response #1: Push back against steering payers

For some, there is no need to worry

Who can push back against payers?

1. Organizations with limited competition for payers to steer towards
2. Organizations with a small percentage of patients from the steering payer
3. Programs with significant brand awareness

"We threatened to walk and they caved because they could not afford to lose us. All of their covered lives want to come to us because of our quality and name brand so they did not have much of a choice."

Imaging Director
Large academic medical center

Two routes to success

1. Use market share and patient preference data to highlight importance in market to payers
2. Demonstrate value to payers in quality, appropriate use

Source: Imaging Performance Partnership interviews and analysis.
Showcase value to counteract steerage

RAF\(^1\) avoids rate reduction by showing savings from utilization management

Payer proposes rate cuts across market

Negotiated with payer, **demonstrated success on utilization management metrics** when compared to competitor

RAF avoids rate cuts, receives small rate enhancement

Annual impact: $1.3M

Sample metrics RAF shares quarterly with payer

- Percent of imaging using ultrasound
- Percent of CT abdomen/pelvis exams out of all CT exams
- Percentage of CT chests
- Number of patients with more than one imaging encounter per day
- Percent of studies performed with contrast

**Demonstrates use of ultrasound over MRI when possible**

**Highlights success at limiting utilization for commonly overutilized exams**

**Shows use of lower cost procedures when no clinical benefit could be gained**

\(^1\) Radiology Associates of Fredericksburg.
Radiology Associates of Fredericksburg

- 33-physician independent group located in Fredericksburg, Virginia

  - Negotiated with payer to avoid rate reduction in exchange for continued success in utilization management
    - Payer instituted rate cut across entire market, allowed Radiology Associates of Fredericksburg to remain at previous rate
  - Provide payer with monthly dashboards on utilization management to maintain rate
    - Metrics include:
      - Percent of imaging using ultrasound
      - Percentage of CT abdomen/pelvis exams out of all CT exams
      - Percentage of CT chest exams
      - Number of patients with more than one imaging encounter in a single day
      - Percent of studies performed with contrast
  - Annual impact of avoided rate drop, slight rate increase was $1.3 million

Source: Radiology Associates of Fredericksburg, Fredericksburg, VA; Imaging Performance Partnership interviews and analysis.
Selectively cut prices to minimize impact of steerage

Two methods to reduce prices

1. **Network-wide price cut**
   - Negotiate with steering payer(s) for a lower rate at all outpatient imaging sites in exchange for no steerage.

2. **Steer to a lower-priced site**
   - Identify patients on insurance plans that practice steerage and schedule them at a lower-priced facility.

Source: Imaging Performance Partnership interviews and analysis.
Negotiate price cuts specifically for steered services

Arya Health System\(^1\) meets with steering payer to discuss options

Original price of MRI = $1,000
Percent of patients from steering payer = 35%

1) **Small reduction to avoid steerage**
   - Arya reduces price to $800
   - Payer agrees to no longer steer away from Arya Health

2) **Large reduction to actively capture steerage**
   - Arya reduces price to $700
   - Payer agrees to actively steer towards Arya Health

Imaging leaders sit down with payer, discuss pricing options to prevent steerage

Projected volume gain insufficient to justify steeper discount

---

1) Pseudonym.

Source: Imaging Performance Partnership interviews and analysis.
Arya Health System

- Medium sized health system located in the Northeast

- Significant payer in market announced site-of-care review steerage policy to steer MRIs to freestanding sites
  - 35% of patients at Arya Health were insured by this payer
- Negotiated with payer to reduce rate for MRIs in order to avoid the steerage policy
  - Payer provided them with two options:
    - A slightly reduced rate in which case they would no longer steer away from Arya Health
    - Or a further reduced rate in which case the payer would actively steer patients towards Arya Health
- Decided to take first option, a slightly reduced rate, in order to avoid steerage
- Maintained MRI market share for patients from this payer, successfully avoided steerage

Source: Imaging Performance Partnership interviews and analysis.

1) Pseudonym.
Leverage lower-priced site for steered patients

Bran Health\(^1\) steers patients to lower-priced facility

Scheduler identifies any patients on steering plan

Scheduler listens for any signs of patient price sensitivity

Patients on steering plan, price-sensitive patients scheduled at freestanding site

All other patients scheduled at HOPD

Keys to success:

**Communicated with payer**
- Actively reached out to payer to ensure they were aware of lower-priced facility

**Trained schedulers**
- Taught schedulers which payers engaged in steerage, which exams would be steered

**Proactively steered patients**
- Began scheduling steered patients at lower-priced sites for affected modalities

---

1) Pseudonym.

Source: Imaging Performance Partnership interviews and analysis.
Bran Health

- Large health system in the Southwest

- System with multiple off-campus HOPDs and one freestanding IDTF
- Large payer in market announced site-of-care review policy
- Bran Health responded by ensuring payer had IDTF listed as a lower-priced site of care
- In addition to communication with the payer, Bran proactively directed patients who were likely to be steered to their IDTF to ensure they remained within their system
  - Taught schedulers which exams from which payers were most likely to be steered

1) Pseudonym.
2) Hospital outpatient department.
3) Independent diagnostic-testing facility.

Source: Imaging Performance Partnership interviews and analysis.
### Calculations to help select a response

#### Pre-steerage volume

\[
X = \text{HOPD volume}
\]

#### Steered volume

\[
Y = \text{HOPD volume} \times \% \text{ subject to steerage}
\]

#### Option 1: Stand your ground

**Revenue with steerage**

\[
C = \left[ X - Y \times \% \text{ (likely to be successfully steered by payer)} \right] \times \text{HOPD rate}
\]

#### Option 2: Cut prices

**Revenue after price cuts**

\[
D = \left[ X - Y \right] \times \text{HOPD rate} + \left[ Y \times \text{Reduced rate} \right]
\]

#### Option 3: Steer to existing lower-priced site

**Revenue after self-steering**

\[
E = C + \left[ Y \times \% \text{ (likely to be successfully re-steered by provider)} \right] + \left[ \text{New HOPD volume} \times \text{HOPD rate} \right] - \text{Cost of accommodating new volume at lower-priced site}
\]

---

1) Volume gained at HOPD from available capacity.

Source: Imaging Performance Partnership interviews and analysis.
Calculations for creating lower-priced site

Pre-steerage revenue

\[ \text{X} = \text{HOPD volume} \]

Steered volume at HOPD

\[ \text{Y} = \text{HOPD volume} \times \% \text{ subject to steerage} \]

Option 1: Do nothing

Revenue with steerage

\[ \text{C} = \text{X} - \left[ \text{Y} \times \% \text{ likely to be successfully steered by payer} \right] \times \text{HOPD rate} \]

Option 2: Flip HOPD to IDTF

Revenue after conversion

\[ \text{D} = \text{HOPD volume} \times \text{Freestanding rate} + \left[ \text{New volume}^{1} \times \text{Freestanding rate} \right] + \left[ \text{X} - \text{Y} \right] \times \text{Volumes leaked to new site} \times \text{HOPD rate} - \text{Cost of accommodating new volumes} \]

Option 3: Build new site(s)

Revenue after building

\[ \text{E} = \text{Y} \times \% \text{ successfully re-steered by provider to new site(s)} \times \text{Freestanding rate} + \left[ \text{New volume}^{1} \times \text{Freestanding rate} \right] + \left[ \text{X} - \text{Y} \right] \times \text{Volumes leaked to new site} \times \text{HOPD rate} - \text{Cost of build} \]

If considering forming a joint venture to build new site, adjust profit generated from site and cost by percentage investment in JV

---

1) Includes leaked volumes from affiliated HOPDs and new volumes from outside of system.

Source: Imaging Performance Partnership interviews and analysis.
Response #3: Move all outpatient imaging to freestanding rate and compete aggressively for new market share

From cutting your losses to actively growing

Embrace forces shifting imaging outpatient to capture market share

Hospital A’s Outpatient Network

Hospital B’s Outpatient Network

HOPD volumes
IDTF volumes

20%
Outpatient market share

HOPD volumes
IDTF volumes

60%
Outpatient market share

“We were losing a quarter of our outpatient volumes to freestanding competitors, and we knew why – price, access, ease of use – we saw the writing on the wall and decided to pursue an aggressive outpatient growth strategy.”

Imaging director, large health system

1) Medically necessary exams conducted at hospital.

Source: Imaging Performance Partnership interviews and analysis.
Certain markets ripe for expansion

Robb Hospital\(^1\) operates in competitive market

**Pleasantville market**
- 15% overall population growth
- 40% Anthem market share

Freestanding competitors threaten to attract steerage from Robb

Lack of freestanding capacity in adjacent markets presents opportunity for Robb to gain market share

Source: Imaging Performance Partnership interviews and analysis.

\(^1\) Pseudonym.
Compete across a large market on price

Sansa Health\(^1\) partners with IDTF operator to capture market share

**Forming a successful partnership**

- Chose IDTF operator in market to reduce competition
- Included all HOPD facilities in partnership and converted to IDTFs
- Asked outpatient operator to run combined partnership
- Utilized hospital trainings, protocols, radiologists in all new centers

**Differentiators of JV\(^2\) facilities**

- **Freestanding rate**
  - All facilities shifted to freestanding rate to better compete in large market

- **Strong management**
  - Experience outpatient partner controls scheduling, operations

- **Broad scope**
  - Total sites after expansion allows for increased geographic coverage

---

1) Pseudonym.
2) Joint venture.

Source: Imaging Performance Partnership interviews and analysis.
Partnership yields increased market share

Zip code analysis demonstrates ability to compete across broader market

15% Increase in volumes across all imaging centers + Steady hospital outpatient volumes = Overall increase in market share

Volume growth stems from capturing competitor market share

- Review of zip codes before and after partnerships showed significant increase in zip codes farther from traditional service area
- New zip codes concentrated in locations where competitors previously controlled most of market

Our intent was to force our outpatient business outside of the hospital in order to better compete for patients. This frees up the hospital for ED\(^1\) imaging, inpatient imaging, and outpatient imaging that specifically requires hospital resources.

Imaging Director
Sansa Health

Source: Imaging Performance Partnership interviews and analysis.

1) Emergency department.
Questions to ask when considering this strategy

If I outsource management to a partner, how will I stay involved and monitor data to make sure the strategy is successful long-term?

Is my market price-sensitive enough to capture patients by offering lower price?

How should my outpatient facilities be branded and marketed – especially if I have a JV partners?

Beyond price, how would I differentiate freestanding facilities from competitors?

If I wish to expand freestanding footprint, should I go it alone or attempt to partner?
Sansa Health¹

- Large health system in the Northwest

- Based in a highly competitive market, realized they were consistently losing market share to hospital competitors
- Decided to pursue freestanding imaging strategy to take advantage of price, access benefits in order to better compete
- Partnered with outpatient imaging operator in market, leveraged operational expertise to run new joint venture
- Converted existing HOPDs to IDTFS and lowered prices while raising prices of centers that were previously operated by their outpatient partner
- Saw volumes increase by 15% across all outpatient imaging centers without a drop in hospital volumes
  - This increase in market share was linked to capturing more volumes from zip codes near competitors through a zip code analysis

Source: Imaging Performance Partnership interviews and analysis.

¹) Pseudonym.
Become the exclusive option for steering entities

Steering agent’s view of imaging provider landscape

- All imaging providers
- Lower-priced imaging providers
- High-quality, lower-priced providers
- Preferred imaging partner

**Potential partners**
- Physician groups under risk
- Onsite clinics
- Employers
- Physician groups serving self-pay patients

Source: Imaging Performance Partnership interviews and analysis.
Employer partnerships may lack exclusivity

Neither low prices nor primary care relationship guarantee imaging referrals

Self-funded employer’s two provider partnerships

- Large, self-funded factory
- Employer encourages use of cheaper IDTF
- Lower IDTF prices cause some leakage from onsite clinic

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Limited competition for referrals</td>
<td>• No partner has exclusive hold on volumes</td>
</tr>
<tr>
<td>• No preauthorization requirements</td>
<td>• Employer maintains leverage over both parties</td>
</tr>
</tbody>
</table>

Source: Imaging Performance Partnership interviews and analysis.
Develop partnerships that benefit all involved

Rickon Clinic¹, factory form mutually beneficial partnership

Path to partnership

- Large factory operates as a self-funded employer, utilizes onsite clinic for health services
- Onsite clinic operator reached out to Rickon Clinic about providing low-cost imaging services
- Factory develops direct contract with Rickon Clinic to ensure all employees can receive the lower cost imaging

A win-win-win partnership

Employees

- Enjoy no deductible and no copay model with Cersei Clinic
- Avoid delays in care with no pre-authorization model
- Receive care at high quality, freestanding site

Rickon Clinic

- Receives modality-based flat rate from factory
  - 20% higher on average than rates from major payers
  - Simplified billing
  - No pre-authorization requirements
- Gains volumes by being exclusive provider for onsite clinic

Factory

- Saves money on imaging costs for employees
- Increases satisfaction of onsite clinic partner, employees
- Removes barriers for imaging, screening and prevents more advanced disease

¹) Pseudonym.

Source: Imaging Performance Partnership interviews and analysis.
Taking ownership of marketing maximizes results

Rickon Clinic’s three-pronged marketing approach

In person
Staff attended open enrollment at factory, operated a booth explaining benefits

Insurance card
Added Rickon Clinic name and branding to insurance

Mail
Letters sent to every factory employee explaining partnership

Partnership demonstrates success in first year

62% → 81%
Overall increase in imaging market share for factory employees

59% → 87%
Increase in MRI market share for factory employees

Source: Imaging Performance Partnership interviews and analysis.
Rickon Clinic¹

- Medium sized independent radiology group in the Southwest

- Formed partnership with factory to capture additional imaging volumes
  - All factory employees, regardless of whether the referral was from onsite clinic or elsewhere, receive same negotiated rate from Rickon Clinic
  - Negotiated modality-based flat rate from factory with no preauthorization required
    - Rate was 20% higher on average than rates from major payers
  - Incentivized employees to visit facility for imaging through no copay, no deductible agreement and extensive marketing of partnership
    - Staffed open enrollment fair at factory, sent letter to all employees explaining the partnership, and placed Rickon Clinic logo on insurance card
  - Increased market share of imaging services for factory employees from 62% to 81% after one year of partnership

1) Pseudonym.
Comprehensive case: Evaluate a steerage response

Steerage pressure amplifies when two payers begin to impact market

Catelyn Health¹ evaluates CT/MRI revenue impact of two steering payers

Revenue loss potential from payer 1’s hard steerage

$2.1M

Revenue loss potential from payer 2’s soft steerage of CT/MRI

$925K

$2.1M

$3.4M

$4.6M

25%  50%  75%  100%

Degree of steerage from payer 2

Case in brief

- Catelyn Health¹ is a large health system on the west coast
- Imaging located in hospitals, off-campus HOPDs, and freestanding joint ventures across a large, populous geographic area
- Major payer has ramped up soft steerage in recent years
- Another major payer recently announced policy to steer all outpatient CT, MRIs to freestanding sites
- Analyzed current revenue, potential revenue loss, capacity, operating hours, and volumes across all sites

Source: Service Line Strategy Advisor analysis; Imaging Performance Partnership interviews and analysis.

1) Pseudonym

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Break down impact by facilities, location

<table>
<thead>
<tr>
<th>Potential revenue loss due to steerage&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Region 1</th>
<th>Region 2</th>
<th>Region 3</th>
<th>Region 4</th>
</tr>
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<tbody>
<tr>
<td>$1.5M</td>
<td>$229K</td>
<td>$1.1M</td>
<td>$1.4M</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Footprint:</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• 2 hospitals</td>
<td>1 hospital</td>
<td>1 HOPD</td>
<td>3 hospitals</td>
<td></td>
</tr>
<tr>
<td>• 3 off-campus HOPDs</td>
<td></td>
<td>2 IDTF</td>
<td>1 IDTF</td>
<td></td>
</tr>
<tr>
<td>• 2 IDTF</td>
<td></td>
<td>2 JV sites</td>
<td>3 JV sites</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Competition</th>
<th>Mostly other hospitals</th>
<th>Only other hospitals</th>
<th>Some freestanding</th>
<th>Mostly freestanding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected five-year outpatient imaging growth</td>
<td>5%–10%</td>
<td>-5%–1%</td>
<td>10%–15%</td>
<td>5%–10%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Payer mix:</th>
<th>5% payer 1</th>
<th>4% payer 1</th>
<th>7% payer 1</th>
<th>3% payer 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 12% payer 2</td>
<td>16% payer 2</td>
<td>13% payer 2</td>
<td>10% payer 2</td>
<td></td>
</tr>
</tbody>
</table>

Source: Service Line Strategy Advisor analysis; Imaging Performance Partnership interviews and analysis.

<sup>1</sup> Assumes 100% steerage from payer 1 and 50% steerage from payer 2.
## Best response differs by region

<table>
<thead>
<tr>
<th>Region 1</th>
<th>Region 2</th>
<th>Region 3</th>
<th>Region 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Proposed responses:</strong></td>
<td><strong>Proposed responses:</strong></td>
<td><strong>Proposed responses:</strong></td>
<td><strong>Proposed responses:</strong></td>
</tr>
<tr>
<td>• Convert HOPD to IDTF and steer hospital, HOPD volumes to save $350K</td>
<td>• Accept reduced rates for high-priced exams</td>
<td>• Shift MRI volumes to existing IDTF save $350K</td>
<td>• Shift volumes from HOPD to existing IDTF to saves $413K</td>
</tr>
<tr>
<td>• Add CT/MRI at IDTF to increase capacity</td>
<td></td>
<td>• Add capacity to JV sites and shift HOPD volumes there</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Open new IDTF in zip codes with low market share to capture growth</td>
<td></td>
</tr>
</tbody>
</table>

1) Assumes 100% steerage from payer 1 and 50% steerage from payer 2.

Source: Service Line Strategy Advisor analysis; Imaging Performance Partnership interviews and analysis.
Can you see the steerage?

Manifestations of steerage all along the referral pathway

*Imaging department’s steerage awareness*

- Payer denies claim
- Patient cancels, citing insurance
- Patient no-shows, never reschedules
- Patient calls to ask about price; never schedules
- Physician aware of steerage, sends patient elsewhere

Suggestions for an effective steerage response strategy

**Track all steerage points**
- Track volumes, denials, no-shows, cancellations, leaked referrals by insurance plan
- Ask patients for reasons for cancellations and no-shows
- Survey referring physicians and discuss patient price concerns

**Act early**
- Develop and implement a response before physicians permanently adjust referral patterns

**Communicate to physicians and patients** – not only payers
- Ensure referrers have the latest information about your prices
- Educate patients on why they should choose your facility

Source: Imaging Performance Partnership interviews and analysis.
Key considerations for steerage response

Minimize the impact of steerage

1. Push back against steering payers
   - Is a significant portion of our volumes at risk for steerage?
   - Is there freestanding capacity in the market for the payer to steer to?
   - Do we have significant power in the market?
   - Can we prove higher quality or better utilization management?

2. Lower rates for select payers and/or services to avoid steerage
   - Is a significant portion of our volumes at risk for steerage?
   - Can we get the payer to negotiate on price?
   - Do we own freestanding facilities with available capacity?
   - Does it make more financial sense to cut prices or to open a freestanding center?

Embrace steerage, innovate outpatient strategy

3. Move outpatient imaging to freestanding rate, compete aggressively for new market share
   - Is a significant portion of volumes market-wide at risk of steerage?
   - Is our market highly competitive and are we at risk of losing market share?
   - Do we have the ability to expand across a larger footprint?
   - Is there a good partner for us to pursue a joint venture with?

4. Court steerage from clinical entities focused on referral management
   - Do physicians operating under risk-based contracts control a significant patient base in our market?
   - Are there large self-funded employers in our market?
   - Can we offer sufficient value to employers or physician groups to gain partnership?

Source: Imaging Performance Partnership interviews and analysis.
Imaging Performance Partnership

Project Director
Lea Halim
Oksmanl@advisory.com
202-266-5923

Research Team
Ty Aderhold

Program Leadership
Lea Halim
Sruti Nataraja, MPH
Shay Pratt

Design Consultant
Kate Young

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Choosing Your Steerage Response Strategy

An interactive workshop
Goals for this session

Learning objectives

1. Understand potential impact of steerage policies on business
2. Review options to mitigate steerage using sample hospital
3. Learn to use Price Shift Calculator to determine least-costly option
Pleasantville Hospital

- 250-bed community hospital
- Located in suburban, middle class area

- Hospital operates two outpatient facilities
  - On-campus outpatient radiology department
  - Off-campus imaging center billing as HOPD\(^1\)

- Hospital leaders struggle to determine how to react to Anthem’s and UHC’s\(^2\) site of care steerage policies that refuse reimbursement for CT and MRI imaging performed in HOPDs

---

1) Hospital Outpatient Department
2) UnitedHealthcare; Advisory Board is a subsidiary of Optum, which is part of United Health Group. All analysis in this exercise is independent of and separate from UnitedHealthcare.
Significant UHC, Anthem outpatient volumes

**Payer Mix**

- **2018**
  - **Self-insured**: 5%
  - **UHC**: 15%
  - **Anthem**: 15%
  - **Medicaid**: 45%
  - **Other commercial**: 15%

**Procedure Mix**

- **2018**
  - **X-ray**: 12,137
  - **Ultrasound**: 8,033
  - **CT**: 7,577
  - **MRI**: 2,955

<table>
<thead>
<tr>
<th>Procedure</th>
<th>On-campus HOPD</th>
<th>Off-campus HOPD imaging center</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-ray</td>
<td>12,137</td>
<td></td>
</tr>
<tr>
<td>Ultrasound</td>
<td>8,033</td>
<td></td>
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<tr>
<td>MRI</td>
<td>2,955</td>
<td></td>
</tr>
</tbody>
</table>

Source: Imaging Performance Partnership interviews and analysis.

1) Outpatient.
Four potential responses to steerage

1) Push back against steering payers

2) Lower rates for select payers and/or services to avoid steerage

3) Move OP imaging to freestanding rate, compete aggressively for new market share

4) Court steerage from clinical entities¹ focused on referral management

Source: Imaging Performance Partnership interviews and analysis.

¹ Physician ACOs, activist employers, etc.
Introducing the Price Shift Calculator Tool

Primary uses

- Analyze impact of changing outpatient center billing status (e.g. HOPD to MPFS)

- Evaluate impact of price, payer mix changes

- Model required volumes needed to break even on price cuts

To download, visit advisory.com/ipp/tools

Source: Imaging Performance Partnership interviews and analysis.
Careful process needed to plan response

1. Size the impact
   - Determine payer mix, current rates for UHC/Anthem imaging patients
   - Calculate impact of potential loss of all CT/MRI volumes for UHC/Anthem patients at HOPD

2. Calculate retention option costs
   - Options could include price cuts, switching current off-campus HOPD to freestanding billing, entering into joint venture with freestanding center, or building new center

3. Account for retention value of UHC/Anthem patients
   - Calculate revenue generated by UHC/Anthem CT/MRI patients otherwise lost
   - Discount to account for shift from HOPD to freestanding rates
   - Subtract from retention cost so cost is lowered

4. Compare options
   - Select the *least costly* option to imaging’s bottom line
   - Losing UHC/Anthem patients may generate the least loss

Source: Imaging Performance Partnership interviews and analysis.
Step 1: Size the impact of CT/MRI steerage

1. Open the “Steerage Case Exercise” file. This file is a modified version of the Price Shift Calculator that has data pre-filled.

2. Select the “CPT_1” tab. This tab contains the CPT codes linked to all UHC/Anthem CT and MRI patients, which the hospital will lose due to these payers’ steerage policies.

3. Select the “Calculator1” tab. Under the Payer Mix table, find the row for UHC and Anthem, and then set the “New Payment Rate Relative to Medicare” to 0, effectively eliminating revenue from UHC and Anthem.

4. Scroll down to see the impact of losing all UHC/Anthem CT/MRI patients.

Impact of Pleasantville Hospital steerage response

Value of all UHC/Anthem CTMRI patients

Size the impact

Calculate option costs

Account for retention value

Compare options

Source: Imaging Performance Partnership interviews and analysis.
Step 2a: Evaluate cost of price cuts

What if UHC and Anthem just paid freestanding rates?

1. Remaining on the “Calculator1” tab, find the “New Payment Rate Relative to Medicare” values for UHC and Anthem that you just set to 0.

2. Set both of these values to 125%.
   - UHC will be reduced from 150% of Medicare to 125%.
   - Anthem will be reduced from 175% to 125%.

3. Scroll down to see the impact of these price reductions.

Impact of Pleasantville Hospital steerage response

Size the impact  Calculate option costs  Account for retention value  Compare options

Source: Imaging Performance Partnership interviews and analysis.
Visualizing retention of hospital volumes

Base case ("do nothing")

Hospital (HOPD)  OP center (HOPD)

Hospital and OP center both lose all UHC/Anthem patients due to steerage

Flip OP center to freestanding rates

Hospital (HOPD)  OP center (freestanding)

UHC/Anthem patients at hospital steered to freestanding center, but now reimbursed at discounted rate

UHC/Anthem patients at freestanding center retained, but now reimbursed at discounted freestanding rate

Source: Imaging Performance Partnership interviews and analysis.
Step 2b: Calculate impact of HOPD to freestanding

What if UHC and Anthem just paid freestanding rates?

1. **Move to the “CPT_2” tab.** This tab contains CPT data for Pleasantville’s off-campus outpatient imaging center, which currently bills as an HOPD.

2. **Select the “Calculator2” tab.** Set “Future billing status” to “Freestanding (TC only).”

3. **Scroll down to see the impact** of the billing change.

---

**Impact of Pleasantville Hospital steerage response**

<table>
<thead>
<tr>
<th>Cost of losing all UHC/Anthem CTMRI patients</th>
<th>Cost of switching off-campus center to freestanding</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Bar chart showing costs]</td>
<td>[Bar chart showing costs]</td>
</tr>
</tbody>
</table>

Source: Imaging Performance Partnership interviews and analysis.
Step 3a: Value retained UHC/Anthem patients

1. **Move to the “CPT_3” tab.** This tab contains CPT data for UHC/Anthem CT/MRI patients at the hospital, excluding those at the OP center who have already been accounted for in the previous calculation.

2. **Select the “Calculator3” tab.** Set “Future billing status” to “Freestanding (TC only).” This simulates the change in value from moving these UHC/Anthem patients from the on-campus HOPD to the off-campus center now billing as freestanding.

3. **Scroll down to see the impact of the billing change.** The important number we want here is the “Future – Overall” value of the CT and MRI patients. This is the value of retaining them by changing the billing status of our off-campus center.

---

**Impact of Pleasantville Hospital steerage response**

<table>
<thead>
<tr>
<th>Value of UHC/Anthem CTMRI patients at hospital</th>
<th>Reduction from shift to freestanding</th>
<th>Net value of UHC/Anthem hospital patients now at freestanding</th>
</tr>
</thead>
</table>

Source: Imaging Performance Partnership interviews and analysis.
Step 3b: Calculate net cost of switching billing status

Be wary of double-counting volumes

- $1.8M  
  Cost of switching off-campus HOPD center to MPFS

+ $600K  
  Value of UHC/Anthem CT and MRI patients at the hospital ($716K) discounted to account for shift to MPFS

- $1.2M  
  Net cost of switching off-campus HOPD center to MPFS

Impact of Pleasantville Hospital steerage response

- Cost of changing OP center to freestanding
  - Gain from retained hospital-based Anthem/UHC patients
  - Net cost of changing billing status of OP center

Size the impact  
Calculate option costs  
Account for retention value  
Compare options

Source: Imaging Performance Partnership interviews and analysis.
Decision analysis: What did you choose and why?

First choice: Option B

- Negotiating lower rates least costly, most desirable option
- Accepting lower prices on UHC/Anthem patients less costly ($275K) than losing them outright ($1.4M)

Second choice: Option C

- If negotiation not an option, Option C less costly ($1.2M) than losing all UHC/Anthem patients ($1.4M)
- May attract additional price sensitive patients to freestanding site

Third choice: Option A

- Most costly, least desirable option

Impact of Pleasantville Hospital steerage response

<table>
<thead>
<tr>
<th>Option A</th>
<th>Option B</th>
<th>Option C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lose all UHC/Anthem HOPD patients</td>
<td>UHC/Anthem price cuts to freestanding</td>
<td>Shift HOPD to freestanding</td>
</tr>
<tr>
<td>-$1.4M</td>
<td>-$275K</td>
<td>-$1.2M</td>
</tr>
</tbody>
</table>

Source: Imaging Performance Partnership interviews and analysis.
Real analyses can be more complicated...

Additional considerations, resources for planning your response

- Does your off-campus HOPD have sufficient capacity to absorb additional volumes?
- What would the additional cost be of adding a new CT or MRI machine to your center?
- Is there potential to capture price-sensitive patients from existing competitors?
- Is there potential for your freestanding center to cannibalize existing on-campus HOPD volumes?
- Are there potential joint venture partners who could help you profitably operate a freestanding center?

### Additional Partnership resources

- [Price shift calculator](#)
- [Imaging capacity modeling tool](#)
- [Imaging pricing toolkit](#)
- [Scrutiny over hospital imaging prices continue: how you should respond](#)
- [Growing outpatient imaging](#)
- [Top 5 questions on site neutral payments, answered](#)
- [How Medicare’s final rules affect imaging in 2019](#)
- [Imaging consumer survey results portal](#)
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Winning Referring Physicians and Patients

Six lessons for imaging programs seeking outpatient growth
1. Locked in a tight race

2. Winning referring physicians and patients

3. The destination of choice
Three forces impacting share of wallet

Steerage, physician choice, consumerism all impact patient loyalty

Forces impacting patient retention

Steerage

Physician choice

Patient consumerism

Focus earlier:

8:00 am: Retaining Market Share in an Age of Steerage
9:00 am: Choosing Your Steerage Response Strategy: An Interactive Workshop

Focus now:

10 am. Winning Physicians and Patients

Source: Imaging Performance Partnership interviews and analysis.
Restaurant industry feeling the pinch

Volumes dropping across the board

6 consecutive quarters of negative same-store sales for casual dining industry¹ across 2016, 2017

“From boomers to millennials, people aren’t eating out as much”
NBC News

People are sitting down less often to eat, and that may become a headache for restaurants”
Forbes

But success possible for those who meet new consumer needs

7.5% Projected growth of fast casual restaurant² sector in 2018

20% Projected rise in delivery sales³ in 2018

Source: Peltz, JF, “Americans still love eating out. So why are restaurants like Chili’s, BJ’s, and Cheesecake Factory struggling?,” LA Times, Sep. 18, 2017; Sherman E, “From boomers to millennials, people aren’t eating out as much,” NBC News, Oct. 16, 2018; Cheng A, “Millennials are ordering more food delivery, but are they killing the kitchen, too?,” Forbes, Jun. 26, 2018; Maze J, “Technomic: Fast casual will continue to lead industry growth,” Restaurant Business, Apr. 17, 2018; Imaging Performance Partnership interviews and analysis.

1) Restaurants that serve moderately priced food and provide table service.
2) Self-service restaurant that provides prepared to order meals, often considered an intermediate between fast food and casual dining.
3) Restaurant sales stemming from delivery, including through online orders and third party apps.
Carving up a smaller pie

Stagnating imaging volumes create urgency to compete

10%

decrease in CT and MRI utilization rates per 1,000 population from 2016–2017

Outpatient imaging growth projections

Five-year growth projections out from 2018

- 65+ 18.1%
- 45-64 -3.7%
- <45 4.9%

Source: Advisory Board Market Scenario Planner, OECD Health Statistics; Imaging performance partnership interviews and analysis.
Physicians, patients not “locked in” by employment

40% Average employed PCP referral leakage out of the health system

79% of consumers seek care from at least two health systems over five-year period

51% of survey respondents¹ said they or someone in their family skipped or postponed needed care due to cost

Employed physicians not necessarily loyal

Patients exercising choice regardless of employed physician referral

¹ From Kaiser Family Foundation/LA Times survey.

Source: Advisory Board tools and data warehouse; Market Innovation Center Primary Care Consumer Choice Survey, PCP Consumer Loyalty Survey, and Surgical Care Consumer Choice Surveys; Market Innovation Center interviews and analysis; “New KFF/Los Angeles Times survey highlights the financial challenges facing people with employer health benefits,” Kaiser Family Foundation, May 2, 2019; Health Care Advisory Board analysis; Imaging Performance Partnership interviews and analysis.
**Growth requires new focus on referrers, patients**

<table>
<thead>
<tr>
<th>Understand and support referring providers</th>
<th>Strategically deploy direct-to-patient marketing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Identify physicians for targeted marketing</td>
<td>4  Market price transparency always, affordability when possible</td>
</tr>
<tr>
<td>2  Differentiate on customization and ease of use</td>
<td>5  Identify and speak to key patient preferences</td>
</tr>
<tr>
<td>3  Integrate into referrer clinical workflow to capture underutilized services</td>
<td>6  Utilize hyper-targeted marketing strategies to effectively reach key audiences</td>
</tr>
</tbody>
</table>

Source: Imaging Performance Partnership interviews and analysis.
1. Locked in a tight race

2. Winning referring physicians and patients

3. The destination of choice
Understand and support referring physicians

- Lesson #1: Identify physicians for targeted marketing
- Lesson #2: Differentiate on customization and ease of use
- Lesson #3: Integrate into referrer clinical workflow to capture underutilized services
Three steps to a stronger tie with referring physicians

1. Identify physicians for targeted marketing

   Key questions
   • How do we identify referring physician offices that present opportunity to expand referral streams?
   • How do we prioritize limited marketing resources?
   • How do we prioritize resources for service recovery?

2. Differentiate on customization and ease of use

   Key questions
   • How can we help providers identify screening-eligible patients and refer them to us?
   • How can we work with providers to strengthen patient compliance?
   • How do we make referring physicians aware of new services available at our system?

3. Integrate into referrer clinical workflow to capture underutilized services

   Key questions
   • How can we help providers identify screening-eligible patients and refer them to us?
   • How can we work with providers to strengthen patient compliance?
   • How do we make referring physicians aware of new services available at our system?

Source: Imaging Performance Partnership interviews and analysis.
Lesson #1: Identify physicians for targeted marketing

Target splitters to protect and grow referrals

Benefits of targeting splitters

- Splitters already value program and offer significant room for growth
- Splitters can become dissenters absent support

Source: Crimson Market Advantage meta-analysis; Imaging Performance Partnership interviews and analysis.
Giving physician liaisons access to leakage data

UCLA Health Radiology leverages EHR data to assist liaisons in physician outreach

Physician data hosted in Salesforce
- Data organized by ordering physicians, ordering practices
- Liaisons gain vital information on physician practices, including ordering patterns
- System gains clear view of data, which can then be fed into other applications (e.g. Tableau)

Data allows liaisons to better serve imaging
- Better allocate resources, time to key physician groups
- Identify offices that may require service recovery
- Improve effectiveness of visits by leveraging data that highlights metrics important to physician groups

Source: UCLA Health Radiology, Los Angeles, CA; Imaging Performance Partnership interviews and analysis.
Key physician information, all in one place

Physician Salesforce page a one-stop shop for liaisons

Example of UCLA Health Radiology’s data-rich Salesforce view

Future updates

- Ability to rank providers by volume to identify key physicians from landing page
- “Time since last visit” function to automatically track which physicians should be outreach priorities
- Providing view to clinical operational managers at referring physician offices

<table>
<thead>
<tr>
<th>Smith and Smith Orthopedics</th>
<th>Office profile</th>
</tr>
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<tbody>
<tr>
<td>► Office referral details</td>
<td>Address: 55 Sunny Ave.</td>
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<tr>
<td>▼ Physician referral details</td>
<td>10 Orthopedic specialists</td>
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<tr>
<td>▼ Smith, John</td>
<td>Recent interactions</td>
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<td>12 months</td>
<td>Phone call: 04/07/19</td>
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<tr>
<td>Total</td>
<td>In-network</td>
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<tr>
<td>X-ray</td>
<td>480</td>
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<tr>
<td>MRI</td>
<td>175</td>
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<tr>
<td>X-ray</td>
<td>50</td>
</tr>
<tr>
<td>MRI</td>
<td>12</td>
</tr>
</tbody>
</table>

Houses 14 months of historical referral data, provides view of monthly trends

Allows liaisons to track visits, conversations, physician requests

Source: UCLA Health Radiology, Los Angeles, CA; Imaging Performance Partnership interviews and analysis.
Connecting leakage and geography to set strategy

Tableau data visualization helps set strategy based on leakage rates

**UCLA Health Radiology turns EPIC data into detailed leakage heat maps**

- **Steps taken to generate heat maps**
  - Created homegrown process to feed Salesforce physician page data into Tableau
  - Data allows for two different heat map views:
    - **Overall volumes** by provider and patient home location
    - **Leakage** by health-system provider (outgoing referrals created in EPIC)

- **KEY**
  - 0%–15% outside referrals
  - 16%–30% outside referrals
  - 31%+ outside referrals

- **Additional details provided when selecting a region**
  - Most commonly referred exams, by office and physician
  - Leakage by each office, each physician in area, by modality
  - UCLA sites most often referred to by office, physician
  - Competitor facilities most often referred to by office, physician

Source: UCLA Health Radiology, CA; Imaging Performance Partnership interviews and analysis.
Following the leakage trail to growth opportunities

Data reveals lack of mammography capacity

Heat map showed 75% of patients from PCP office receiving mammograms outside of system

Heat map, layered with imaging facility map demonstrates lack of UCLA capacity in area

Conversations with physicians confirmed capacity was major issue

Moved underutilized machine into physician office, provided imaging staff

0% of patients received mammograms outside of system

Building new women’s center to capture downstream services

RESULTS

Heat maps identify key growth opportunities for UCLA Health Radiology

Over $30 million in revenue can be attributed to new sites, equipment identified through heat mapping

“The heat maps have allowed us to assess our current growth, identify opportunities to place new capacity or address physician concerns, and view the impact of these changes over time.”

Jay Won
Director of Access and Business Development
UCLA Health Radiology

Source: UCLA Health Radiology, Los Angeles, CA; Imaging Performance Partnership interviews and analysis.
UCLA Health

170-location health care system in Los Angeles, California

► Developed system to gather better data on affiliated referring providers and use that data for business decisions and to help physician liaisons

► Require ordering physicians to enter all orders through EHR, even those going outside of the system

► Pull this order data, along with physician office data, into Salesforce to provide access to liaisons
  – Data uploaded weekly, process takes roughly 15 minutes for one FTE¹

► Feed Salesforce data into Tableau to generate heat maps for business development usage
  – Data allows for multiple views:
    • Overall volumes by provider and patient home location
    • Leakage by provider

► System has helped UCLA Health Radiology recognized over $30 million in revenue from growth initiatives

¹ Full-time employee.

Source: UCLA Health Radiology, Los Angeles, CA; Imaging Performance Partnership interviews and analysis.
Four ways to identify referral physician leakage

1) Utilize EHR capabilities to track when physicians order outside of system.

2) Compare existing physician referral volumes to Outpatient Imaging Referral Benchmarks.

$ Purchase or access comprehensive claims data

Leverage market-wide professional claims data

1) E.g. Crimson Market Advantage.
2) For physicians groups that read for an entire geographic area.

Source: Imaging Performance Partnership interviews and analysis.
Achieving growth through referring physician service

Saint Thomas forms JV with Premier Radiology

Lesson #2: Differentiate on customization and ease of use

Partners’ freestanding footprint at outset

- Saint Thomas
- Premier
- Other¹

Joint venture footprint

- 15 freestanding centers

Saint Thomas
Premier

Five years later

- Combined operations under purview of Premier
- All outpatient volumes, even those performed at hospital, included in JV

100,000 combined annual volumes

40,000 combined annual volumes

“Price was not the driving factor behind our success, it was all about service. Excellent service is still the most important piece to successful growth.”

Mike Moreland, CEO, Premier Radiology

¹ Four additional IDTFs purchased as part of the formation of the joint venture.

Source: Premier Radiology, Nashville, TN; Imaging Performance Partnership interviews and analysis.
Two secrets to Premier’s success

Tailor to physician preferences

- Dedicated physician liaisons identify physician priorities
- Scale allows individual practices to customize interaction with imaging

Provide faster service

- Scheduling shifted entirely to Premier Radiology
- Time to schedule drops from 22 minutes to 1.5 minutes

Source: Premier Radiology, Nashville, TN; Imaging Performance Partnership interviews and analysis.
Four areas to provide customized service to referrers

Premier Radiology’s “have it your way” approach to physician service

- **Scheduling**: Allow providers to schedule exams via multiple methods
  - Online
  - EMR connection
  - Phone call
  - Faxed order forms

- **Reports**: Multiple options for how physicians can receive reports, including messages via EMR or PACS downloads

- **Protocols**: Custom protocols based on needs of specialists, e.g. different protocols for sports medicine orthopedists

- **Order forms**: Provide customized order forms for physicians based on service line, e.g. pulmonologists do not see order forms for knee MRIs

Source: Premier Radiology, Nashville, TN; Imaging Performance Partnership interviews and analysis.
Differentiate through exclusive service to key offices

Premier Radiology hosts wellness events for patients, physician office staff

Components of a wellness event

- **Exclusive access** for patients, staff of office on a particular day
- Focused on **specific services**, such as mammography
- **Festive atmosphere** with prizes, t-shirt giveaways

Wellness events provide key benefits to referring providers

- Greater access for physician’s patients
- Increased screening rates for MIPS measures
- Additional value for office staff

Source: Premier Radiology, Nashville, TN; Imaging Performance Partnership interviews and analysis.
Premier Radiology

50-physician independent radiology group located in Nashville, Tennessee

- Formed joint venture with Saint Thomas Health in 2011 that combined two Saint Thomas IDTFs with three Premier freestanding sites and four outpatient sites purchased as part of the formation of the JV
  - All operations of outpatient centers run by Premier Radiology
  - Included all outpatient volumes, even Saint Thomas’s hospital outpatient volumes, in joint venture to encourage scheduling of imaging in freestanding space

- Grew to 15 freestanding centers in joint venture with a 400% increase in volumes

- Success stemmed from providing excellent service, improved access across sites
  - Reduced average scheduling time at Saint Thomas sites from 22 minutes to 1.5 minutes
  - Allow physician groups to customize their interactions with Premier Radiology based on their needs
  - Provide exclusive access to physician groups via wellness parties

Source: Premier Radiology, Nashville, TN; Imaging Performance Partnership interviews and analysis.
Leverage physician survey to better differentiate

The Radiology Clinic surveys all physicians in market

**Referring physician satisfaction survey**

1. How satisfied are you with the following:
   a) Ease of ordering studies
   b) Ease of scheduling studies
   c) Timeliness of reports
2. How accessible is our staff by phone when you have a question?
3. Why do you refer patients to The Radiology Clinic? Please rank the choices
4. Would you recommend The Radiology Clinic’s services to other physicians?

**Why do you refer patients to The Radiology Clinic? Please rank the choices.**

a. Accessibility for patients
b. Patient request
c. Speed of Reporting
d. Range of studies offered
e. Knowledgeable staff
f. Overall quality of services provided
g. Open MRI
h. Flexible and adaptable staff
i. Ease of ordering

**Develop five unique differentiators**

- Knowledgeable and adaptable staff
- Patient satisfaction
- Convenience
- Speed of reporting
- Open MRI

Source: The Radiology Clinic, Tuscaloosa, AL; Imaging Performance Partnership interviews and analysis.
The Radiology Clinic

21-physician independent group located in Tuscaloosa, Alabama

- Simplified Medical Management LLC operates as an MSO¹ that manages The Radiology Clinic
- Hoped to better understand physician preferences as they revamped physician marketing
- Included question about what factors mattered most to physicians when referring for imaging on a physician satisfaction survey
- Sent to physicians via email, physician liaisons went through questions with physicians during office visits
- Developed “five uniques,” five factors that differentiate The Radiology Clinic based on survey results

¹ Management services organizations.
Access, scheduling key to growth

Jamie Health¹ prioritizes the customer experience with “Easy to do Business With” strategy

Invested in people, process, technology to create world class service experience

- Centralized scheduling for all outpatient imaging sites
- Leveraged information technology capabilities to improve scheduler efficiency in managing orders
- Increased scheduler pay 10%, built collaborative culture, and competency support program

Improving scheduling, growing volumes

- 80% of calls answered in under 30 seconds
- 90% of orders scheduled within 24 hours
- 10% Volume increase in each of the first three years of strategy
- 50% Of advanced imaging volume increase tied to capturing former leakage

¹ Pseudonym.

Source: Imaging Performance Partnership interviews and analysis.
Jamie Health

Large health system located in the Southwest

- Proactively partnered with referring providers to develop new access model that would make using services easier.
- Invested in “Easy to do Business With” Strategy, which involved making services easier to access and trust for referring providers, reducing leakage, and improving economic performance
  - Centralized scheduling for all of outpatient imaging to ensure an exceptional customer experience
  - Leveraged information technology capabilities to improve scheduler efficiency in managing electronic orders
  - Increased scheduler pay 10%, built collaborative culture, and competency support program
- Call center metrics improved dramatically, along with a 10% overall volume increase

Source: Imaging Performance Partnership interviews and analysis.

1) Pseudonym.
Looking to gain a piece of the new referral pie

Screening, incidental findings, IR\(^1\) all underutilized

<table>
<thead>
<tr>
<th>Screening</th>
<th>Incidental finding follow-up</th>
<th>Interventional radiology</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;2%</td>
<td>46%</td>
<td>68 to 1</td>
</tr>
<tr>
<td>of eligible smokers were screened for lung cancer in 2016</td>
<td>of patients with recommended imaging follow-up over a 13-month period received follow-up(^2)</td>
<td>Ratio of hysterectomies to UFE(^3) procedures from a nationwide inpatient sample</td>
</tr>
</tbody>
</table>


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\(^1\) Interventional radiology.
\(^2\) According to a study at the University of Rochester.
\(^3\) Uterine fibroid embolization.
Three ways to increase referrals

Options for working with providers to drive volumes for underutilized services

- Ensure referring providers know about service
  - Important for IR services

- Help physicians understand what services a patient needs
  - Important for IR, screening, and follow-up services

- Take ownership of ensuring that patients receive exams
  - Important for screening, follow-up services
Physician education should be targeted

Three keys to any physician education initiative

1. Select specific services to focus on which tie to larger growth initiatives

2. Target specific physicians most likely to refer for these services

3. Bring deep clinical expertise to the effort by investing in liaison education and including physician champions

Source: Imaging Performance Partnership interviews and analysis.
Select high-potential referrers for IR education effort

Some physician cohorts more likely to refer to IR than others

1. Non-procedure based specialists
   Providers referring patients for treatment, e.g.:
   • Medical oncology
   • Primary care
   • Pediatrics
   • Palliative care

2. Proceduralists with sufficient volumes
   Providers caring for significant number of patients, not threatened by offloading cases to IR
   • Unique to each market

3. Provide alternative, but not identical, services
   Providers treating patients who may be better served by IR alternatives, e.g.:
   • OB/GYNs (fibroid)
   • Pain management (diagnostics)

Additional considerations when identifying physicians for education

- **Historic referral data**
  Leverage liaison knowledge, referral data to understand current referrals for IR, competing services

- **Physician location**
  Analyze markets to pinpoint possible reach for campaigns

- **Availability of IR**
  Examine prevalence of IR service within each market to determine availability of services

Source: Imaging Performance Partnership interviews and analysis.
Keys to Successful Marketing Conversations

► Explain what patient populations IR can serve
► Describe how IR compares to alternatives
► Focus conversation on patient choice for care, treatment options
► Provide clear directions, guidance for how to reach IR
► Bring materials about relevant IR services offered in their local market
► Address how IR will follow up with referring provider about patient care
► Present IR as a partner in high quality care delivery
► Educate physicians about newest technology and services
Reach physicians outside of the office

UCSF reaches physicians through digital advertising campaigns

UCSF shifts investment towards digital marketing strategy, including email campaigns, SEO, social media ads

Survey results identified LinkedIn as most commonly used social media site by UCSF physicians

Results

2x
Increase in lung screening orders after email campaign, LinkedIn ads

44,983
Total impressions across three LinkedIn ads

Source: UCSF, San Francisco, CA; Imaging Performance Partnership interviews and analysis.
UCSF Medical Center

900-bed academic medical center located in San Francisco, California

- Radiology’s marketing director launched physician marketing campaign utilizing multiple digital mediums
- Surveyed physicians to understand where they received information
  - Identified email, internet search, and social media as key opportunities for digital marketing
- Survey physicians on social media habits, identified that LinkedIn was the most commonly used platform
  - Launched a LinkedIn and email marketing campaign focused on educating physicians on lung screening
  - Doubled the number of orders after launch of campaign
  - LinkedIn ads received a total of 44,983 impressions

Source: UCSF, San Francisco, CA; Imaging Performance Partnership interviews and analysis.
Help physicians understand what services a patient needs

Educate providers to ensure correct, timely follow-up

Tyrion Medical Center\(^1\) provides physicians with care process map

**Key features**

- Shows entire care pathway from initial screening to surgery, chemotherapy, and support care
- Guides physicians through ordering process with specific guidance as to why patients would move to a certain step (Bi-rads, age, biopsy result, etc.)
- Provides guidance as to the timing in which steps should occur to ensure process moves efficiently (e.g. surgical consult should occur less than seven days after a positive biopsy)

**Overall benefits of care guide**

- Ensures patient receives most appropriate care
- Speeds up ordering process for physicians
- Eliminates unnecessary care steps

**2 weeks to 7 days**

Reduction in diagnostic-to-biopsy time after education, as physicians stop ordering surgical consult before biopsy

---

1) Pseudonym.

Source: Imaging Performance Partnership interviews and analysis.
Tyrion Medical Center¹

Medium-sized academic medical center located in the Northeast

- Realized breast screening patients were not receiving most appropriate care in follow-up leading to unnecessary care and delayed treatment
  - Diagnostic-to-biopsy time was often over two weeks
- Developed flowchart to guide physicians through the follow-up process
  - Flowchart helps referrers understand the results of the screening and what these results mean in terms of future care
- Provided new flowchart to physicians over email and via in-person meetings
  - Reduced diagnostic-to-biopsy time to less than seven days, as physicians avoid ordering a surgical consult before biopsy

1) Pseudonym.
New Hanover Regional Medical Center creates physician alert for AAA¹ screening

### Creation of EHR alert
- Vascular surgeons led efforts to identify protocols to use to build alert
- Alert considers problem list, past medical history, smoking history of patient
- Actionable alert allows physicians to immediately order AAA screening
- Only ambulatory physicians receive alert

### Marketing plan to drive awareness
- Developed communication plan including mission statement, main messages, background information, Q&As, fact sheets
- Created marketing materials targeted at both patients and physicians
- Included information about the Society for Vascular Surgeons criteria to educate physicians about screening beyond USPSTF² guidelines

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### AAA screenings

1,026 41 3
AAA screenings performed February-June 2016¹ compared to just 17 at main campus in 2015 Positive findings of aneurysms equal or greater than 3 cm Operable aneurysms referred to non-invasive, life-saving procedure

---

1) Abdominal aortic aneurysm.
2) US Preventive Services Task Force.
3) Includes screenings performed at affiliated NHRMC hospitals and in New Hanover Medical Group offices.

Source: New Hanover Regional Medical Center, Wilmington, NC, Imaging Performance Partnership interviews and analysis.
Marketing program important to program success

Multiple methods to drive program volumes

Social media

Patient education

Physician education

Source: New Hanover Regional Medical Center, Wilmington, NC, Imaging Performance Partnership interviews and analysis

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New Hanover Regional Medical Center

Two-hospital system based in Wilmington, North Carolina

- Offers imaging screening services in seven locations across market
- Decided to focus on increasing AAA screenings organization-wide, including collaboration with the affiliated, employed medical group
  - In 2015, only 17 AAA ultrasounds were conducted at the main hospital campus
- Leveraged strong relationship with physicians, vascular surgeons to get support for initiative
- Created health maintenance process in Epic which identifies qualifying patients and prompts physicians to discuss and schedule screening
- Created a multi-pronged marketing campaign including social media, patient materials, and physician outreach
- Set aside funds through foundation to cover costs for screenings not covered by insurance

Source: New Hanover Regional Medical Center, Wilmington, NC, Imaging Performance Partnership interviews and analysis
Ensure patients are scheduled for follow-up exams

Carle Foundation’s new workflow for patients who require follow-up exams

Radiologist say “follow-up recommended” during dictation

Patient automatically removed from queue once exam is received

Patient placed into Powerscribe work queue

Navigator alerted to overdue patients in worklist

Steps navigator takes for overdue exams

1. Confirms system correctly removed exams that have been received
2. Looks at physician notes for referral outside of Carle, insurance denial, or patient refusal
3. Sends personalized message to provider highlighting findings and necessary follow-up exam
4. Contacts nurse navigators at other provider facilities to see if patient was referred, went elsewhere

400 exams per month worked by navigator
30% of cases where navigator sends letter to provider result in imaging at Carle Foundation

Source: Carle Foundation, Urbana, IL; Imaging Performance Partnership interviews and analysis.

1) Send letter directly to patients who do not have a PCP or specialist related to needed imaging.
CASE EXAMPLE

Carle Foundation

413-bed regional hospital located in Urbana, Illinois

- Developed system to better track, ensure care for imaging exams that require follow-up
- Utilize worklist product from PowerScribe by Nuance to track findings
  - Radiologists required to dictate “follow-up recommended” for exam to be placed in worklist
  - Recommended exams automatically removed from worklist when received by patient
- Navigator actively works any recommendations which become “overdue” on the worklist
  - Checks to ensure exam was not received and missed by system
  - Sends personalized message to provider highlighting finding and recommended follow-up exam
  - Reaches out to nurse navigators at other institutions to identify if patients received care outside of system
- Navigator currently works 400 overdue exams each month

Source: Carle Foundation, Urbana, IL; Imaging Performance Partnership interviews and analysis.
Enable direct scheduling to ensure follow up occurs

Tywin Hospital’s incidental finding alert enables referrer to delegate responsibility to imaging

**Report**

Incidental lung nodule, recommend follow-up in 12 months

**Would you like imaging to schedule this exam?**

- Yes
- No

**Impact**

Overall revenue opportunity from ensuring 100% follow-up for incidental findings estimated at $600,000 annually

- Physicians required to sign in to EHR and acknowledge findings
- Can click box to allow system imaging department to schedule the exam for them

Source: Imaging Performance Partnership interviews and analysis.
Tywin Hospital

Large academic medical center located in the Northwest

- Utilize Fluency software from MModal to alert physicians of findings, necessary follow-up care
  - System requires physicians to log in and acknowledge the finding
- Adding in option to notification that will allow physicians to request Tywin Hospital to own the scheduling of any necessary follow-up exams for the finding
- Conducted an analysis of the potential additional revenue from capturing follow-up imaging
  - Found an overall revenue opportunity of $600,000 annually
Bring lessons from high performers back home

**Understand and support referring providers**

**Lessons to take home**

1. Imaging programs can realize significant volume and market share growth by leveraging robust leakage analytics to target outreach and support for referring providers, as well as capacity expansion.

2. Faster scheduling and customization of access, protocol, and reporting options for referring physicians—based on a deep understanding of referrer preferences—can transform referral patterns in a market.

3. To secure referrals for screening, IR, and incidental finding follow-up, progressive imaging programs are creating deeply targeted physician education and providing hands-on support at all stages of the referrer's clinical workflow.

Source: Imaging Performance Partnership interviews and analysis.
Strategically deploy direct-to-patient marketing

- Lesson #4: Market price transparency always, affordability when possible
- Lesson #5: Identify and speak to key patient preferences
- Lesson #6: Utilize hyper-targeted marketing strategies to effectively reach key audiences
Are your patients shopping?

“We are seeing more and more patients shopping for care; our referrers have noticed it too. They are calling to ask for price estimates and then never scheduling.”

Imaging director
Health system in Southeast

“In our market, patients are still loyal to the hospital and referring provider recommendation. I hear nationally about patient consumerism but I never see it here.”

Imaging director
Health system in Midwest
Can you tell who is doing the shopping?

Consumer choices may be hiding behind physician referral decisions

**Average percentage of referrals going out of network**

The average hospital member is losing nearly one third of referrals to out-of-network providers.

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient preference</td>
<td>23.0%</td>
</tr>
<tr>
<td>Provider directed</td>
<td>22.7%</td>
</tr>
<tr>
<td>No specialist in network</td>
<td>15.4%</td>
</tr>
<tr>
<td>Availability</td>
<td>12.5%</td>
</tr>
<tr>
<td>Continuity of care</td>
<td>11.7%</td>
</tr>
</tbody>
</table>

Design a comprehensive marketing strategy

Price and value both important to patients

Lesson #4: Market price transparency always, affordability when possible

Lesson #5: Identify and speak to key patient preferences

Lesson #6: Utilize hyper-targeted marketing strategies to effectively reach key audiences

Source: Imaging Performance Partnership interviews and analysis.
Lesson #4: Market price transparency always, affordability when possible

Transforming the market with a new price message

Northwest Radiology did away with complexity of healthcare charges

Example: Setting a flat rate for spine MRI

Original chargemaster price

$2,000

New flat rate

$1,000

Range of contracted rates

$0

Range of patient obligations

Single Flat Rate

$600

- “Ceiling” price quoted to all patients
- Used as new chargemaster rate
- Used as new self-pay rate
- Equals patient obligation\(^1\) for HDHPs\(^2\)
- Basis for calculating all OOP\(^2\) costs

Range of contracted rates

set at 90\(^{th}\) percentile of contracted rates

Source: Northwest Radiology, Indianapolis, IN; Imaging Performance Partnership interviews and analysis.

1) Unless patient has met deductible or deductible falls below flat rate.
2) High-deductible health plan.
3) Out of pocket.

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Northwest Radiology’s evolution toward greater price transparency

- Communicated flat rate with patients calling for price estimates
- Shared with referring physicians, self-funded employers
- Advertised widely on website, through social media, news outlets

RESULTS

2x Growth in patient-directed volumes

48% Overall volume growth over first two years of marketing

Source: Northwest Radiology, Indianapolis, IN; Imaging Performance Partnership interviews and analysis.
Price transparency key to success

“At the end of the day, the patient is still paying the same as they were before we introduced flat rate pricing. **This is really about price transparency.**”

Karen Elliot, Marketing Manager
Northwest Radiology

**Northwest Radiology’s website today**

<table>
<thead>
<tr>
<th></th>
<th>AVERAGE COMPETITOR</th>
<th>NWR FLAT RATE</th>
<th>AVERAGE SAVINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>General X-Ray</td>
<td>$550</td>
<td>$75</td>
<td>86%</td>
</tr>
<tr>
<td>CT <em>without contrast</em></td>
<td>$1,200</td>
<td>$500</td>
<td>58%</td>
</tr>
<tr>
<td>CT <em>with contrast</em></td>
<td>$1,350</td>
<td>$600</td>
<td>56%</td>
</tr>
<tr>
<td>CT <em>with &amp; without contrast</em></td>
<td>$1,500</td>
<td>$700</td>
<td>53%</td>
</tr>
</tbody>
</table>

Publicly available chargemaster rates of competitors

Source: Northwest Radiology, Indianapolis, IN; Imaging Performance Partnership interviews and analysis.
Lower price not always a winning strategy

Price competition may not be sustainable

- Volume growth may not be adequate to compensate for lower price
- Potential to start a race to the bottom with other competitors

Reasons patients may not be price sensitive

- Deductible met
- Feel quality is worth higher price
- Trust physician referral
- Cannot afford any imaging, regardless of price
- Expect to meet deductible with future care
- No awareness of prices, how to shop

Source: Imaging Performance Partnership interviews and analysis.
How low should you go?

Determining when—and when not—to compete on price

**Olenna Health System’s process to right-size price across system**

<table>
<thead>
<tr>
<th>Identified volume loss to competitors</th>
<th>Evaluated current price structure</th>
<th>Strategically adjusted HOPD, freestanding prices</th>
<th>Marketed price changes</th>
</tr>
</thead>
</table>
| Data revealed leakage to competitors; physician conversations confirmed price as cause of leakage | Worked with payer contracting management to evaluate inpatient and outpatient rates across system | Cut HOPD rates by: **10%**
Standardized, lowered HOPD prices to match freestanding competitor | Referring physician and patient awareness of new market competitive prices resulted in increased economic performance |
| **raised freestanding rates by: 6%**
Standardized, raised freestanding prices to partially offset revenue loss | |

**Process results in: 400 Fewer advanced imaging exams leaked exams in first year 7% Increase in outpatient gross margin**

1) Pseudonym.

Source: Imaging Performance Partnership interviews and analysis.
Competing on price not an all-or-nothing proposition

Columbus Regional finds niche area to compete on price

Chose to compete on loss-leading service

- Identified lung screening as a loss-leader with significant volume potential in their market
- Recognized that downstream revenue from lung screening could be significantly higher than losses from offering service at low rate

Tested multiple prices to identify level of price sensitivity

Downstream analysis

$480,000

Revenue generated from downstream lung screening services over first six months of reduced pricing

Volume increase

394%

Increase in volumes in first year of reduced pricing

Source: Columbus Regional Health, Columbus, IN; Imaging Performance Partnership interviews and analysis.
Tactics for successfully marketing price

- **Make it simple, easy to understand**
  - Northwest Radiology creates patients-facing video which explains flat rate, highlights exact prices

- **Highlight across website, social media**
  - Northwest Radiology shows pricing changes, video on website landing page
  - Columbus Regional leverages Facebook to reach key demographics for low priced lung screening

- **Target referring providers**
  - Olenna Health System\(^1\) highlights price reduction with all affiliated providers to reduce leakage
  - Columbus Regional provides $10 coupons for lung screening to out-of-region referring physicians

---

Source: Northwest Radiology, Indianapolis, IN; Columbus Regional Health, Columbus, IN; Imaging Performance Partnership interviews and analysis.

---

1) Pseudonym.
Northwest Radiology

55-physician independent radiology group in Indianapolis, Indiana

► Developed flat rate pricing structure in response to price sensitivity in market and continued patient calls asking for price estimates
► Created price ceiling by adjusting chargemaster rates down to the 90th percentile of all contracted rates
► Communicated change to providers
► Began advertising flat rate pricing on website and marketing to patients on price transparency
► Saw the number of patients who self-directed to Northwest double in two years of marketing
► Overall, volumes grew by 48% after two years of marketing new flat rate

Source: Northwest Radiology, Indianapolis, IN; Imaging Performance Partnership interviews and analysis.
Olenna Health System\(^1\)

Large health system located in the Southeast

- Physician-ordering patterns revealed that Olenna Health System was losing volumes to a freestanding competitor in market
  - Physician conversations confirmed that price was a leading factor in leakage
- Evaluated pricing structure across system
  - Lowered HOPD prices on average by 10% across system to align with freestanding competitor rates
  - Raised freestanding prices on average by 6% across system to offset revenue loss from HOPD price reductions
- Communicated competitive prices to referring physicians to ensure that price-sensitive patients were aware that they were same price as competitors

\(^1\) Pseudonym.
Columbus Regional Health

225-bed community hospital located in Columbus, Indiana

► Columbus Regional Health recognized that lung cancer was a serious concern in their market
  – National Lung Screening Trial found that incidents of lung cancer in southeastern Indiana were 2x that of the national average

► Launched initiative in 2017 to increase lung screening rates through competitive pricing, marketing

► Dropped prices for lung screening to $10 and saw an immediate uptick in calls, scheduled exams
  – Price raise to $49 led to a drop in calls,
  – Reduced price back down to $25, volumes stabilized

► Increased lung screening exams from 106 in 2016 to 529 in 2017

► Calculated $480,000 in downstream revenue from lung screenings over the first six months of reduced pricing
Imaging consumer preferences run the gamut

Top ten factors influencing consumer choice of outpatient imaging facility

- **Cost**
  - The imaging facility’s quality scores are far above industry average
  - The imaging facility’s patient satisfaction scores are far above industry average

- **Access**
  - The imaging provider provides a comprehensive and clear understanding of MRI procedure, medical condition, diagnosis
  - The provider is in-network for my insurer

- **Quality**
  - Once I arrive at the facility, I will have to wait <5 minutes before I receive my exam
  - I will receive same-day results
  - A radiologist who is specialized in reading this type of MRI will interpret my scan

- **Recommendation**
  - The imaging facility has the most advanced level of technology for MRI
  - My out-of-pocket costs for the imaging exam will be less than $30

Lesson #5: Identify and speak to key patient preferences

Speaking to patients’ non-financial concerns

Lesson #4: Market price transparency always, affordability when possible

- Communicating price
- Communicating value

Direct-to-patient marketing

- Appealing to most patients’ sense of value
- Attracting select constituencies

Lesson #5: Identify and speak to key patient preferences

Lesson #6: Utilize hyper-targeted marketing strategies to effectively reach key audiences

Source: Imaging Performance Partnership interviews and analysis.
Survey patients to identify what matters most to them

The Radiology Clinic’s patient preference survey

1. What matters most to you when choosing where to go for your medical imaging services?

   - Safety: 3%
   - Price: 1%
   - Doctor’s recommendation: 20%
   - Appointment time: 5%
   - Convenience: 25%
   - Timely results: 19%
   - Facility’s staff: 28%

Identified five key “uniques”

SURVEY IN BRIEF

- Five-question patient survey covering patient satisfaction, preferences, and likelihood to recommend
- Sent to every patient who came in for a month via automated text
- Distributed at health fair to capture preferences from other patients in market
- Results used to create patient-facing marketing materials which highlight identified preferences

Source: The Radiology Clinic, Tuscaloosa, AL; Imaging Performance Partnership interviews and analysis.
Leveraging patient preference in marketing materials

Radiology Clinic creates advertisements based on patient survey results

Encourages patients to request a referral with their physician

Highlights a few “uniques” in bold

Source: The Radiology Clinic, Tuscaloosa, AL; Imaging Performance Partnership interviews and analysis.
The Radiology Clinic

21-physician independent group located in Tuscaloosa, Alabama

- Simplified Medical Management LLC operates as an MSO that manages the Radiology Clinic.
- Decided to pursue a more aggressive direct-to-patient marketing strategy.
- Began new strategy by gathering data on patient preferences in their market through a survey:
  - Survey was sent to all patients who came to The Radiology Clinic for imaging.
  - Staff also collected survey responses at local health fairs.
- Received 639 responses overall.
- Identified five key patient preferences: doctor’s recommendation, appointment time, convenience, timely results, and compassionate and caring facility staff.

Source: The Radiology Clinic, Tuscaloosa, AL; Imaging Performance Partnership interviews and analysis.
Focus groups allow for more detailed feedback

Baystate leverages focus groups to better understand patient preferences

- Focus groups led by an outside facilitator along with VP of Marketing
- Patient participants sourced from Patient and Family Advisory Council
- Questions centered around patient experience, space design, color schemes, waiting room preferences, branding, and staff interaction

Two key components

1. Held focus groups prior to designing space and after space was completed

2. Recorded additional one on one sessions with select patients to gain further insight, leverage during staff training

Results

After three months, ranked #5 among all Baystate facilities for patient satisfaction

By end of first year, moved to #1 across all of Baystate for patient satisfaction

Source: Baystate Health, Springfield, MA; Imaging Performance Partnership interviews and analysis.
Baystate Health

4-hospital health system located in Western Massachusetts

- Leveraged focus groups to understand patient perspective on new women’s imaging center before it was opened
  - Focus groups were led by outside facilitator along with VP of Marketing and other key Baystate leaders
  - Patients were sourced from Baystate’s Patient and Family Advisory Council
  - Each session featured 10–15 participants, who were asked to provide feedback on branding, facility layout, etc.

- Focus groups held before design process began to ensure patients helped drive the culture and the space design of the new facility

- Asked for volunteers to provide filmed one-on-one feedback in addition to the focus group
  - Videos focused on patient experience, including past experiences at imaging facilities and what patients want out of their experience
  - Leveraged in staff training and onboarding to drive home the importance of patient experience

- Based on feedback from sessions, changed the branding, overall room design of the facility, and set stage for key service priorities (e.g. how to greet, interact with patients)

Source: Baystate Health, Springfield, MA; Imaging Performance Partnership interviews and analysis.
Attract consumers through targeted campaigns

Lesson #4: Market price transparency always, affordability when possible

Lesson #5: Identify and speak to key patient preferences

Lesson #6: Utilize hyper-targeted marketing strategies to effectively reach key audiences

Source: Imaging Performance Partnership interviews and analysis.
Two strategies for two patient types

1. Activated patients
   - Patients already receiving care
   - Patient searching medical terms online

   Meet them when or where they are looking for care

2. Non-activated patients
   - Underserved populations
   - Care decision makers
   - Family members of potential patients

   Identify target audience, educate, and motivate to pursue care

Source: Imaging Performance Partnership interviews and analysis.
Activated patients

Target patients already in referring physician office

Physician offices, imaging centers a ready-made marketing location

Premier Radiology advertises same-day mammography with “mammoNOW” campaign

Source: Premier Radiology, Nashville, TN; Imaging Performance Partnership interviews and analysis.

Target audience

- Individuals accompanying patients for care
- Patients visiting for other services
- Staff of physician offices, imaging centers

50%

Increase in mammography volumes after introduction of “mammoNOW”
Premier Radiology

50-physician independent radiology group located in Nashville, Tennessee

- Began offering same-day mammography at all imaging locations in an attempt to grow mammography volumes
- Advertised change through “mammoNOW” advertising campaign
  - Featured posters and flyers throughout imaging centers, physician offices highlighting same-day mammography and speed at which the exam could be completed
- Aimed at capturing patients who were already visiting for other services or accompanying a patient
- Saw a 50% increase in mammography volumes
Reach patients even at competitor offices

Loras Radiology’s geo-fencing strategy

Geo-fences placed around 7 high-volume splitter physician offices, some of which were competitor-owned

Tyrion Imaging Center

Referring Physician Offices

Loras places “home fence” around own center to track success

**RESULTS**

33

New patients from Ob/Gyn office in competitor building in first month of geofencing ads

3%

Average increase in market share for geofenced offices

**TECHNOLOGY IN BRIEF: GEO-FENCING**

- Allows user to target advertisements on certain mobile device apps within hyper-specific geographic areas
- User can also create a “home fence” to receive alerts when any consumer who saw an ad enters their home fence
- Can exclude individuals at location based on multiple factors, including time at location or demographics

1) Pseudonym.

Source: Imaging Performance Partnership interviews and analysis.
Keep ads simple and on message

Examples of Loras Radiology’s geofencing ads

- Highlights friendly staff
- Focuses on access, ease of use
- Shows convenient hours

1) Pseudonym.

Source: Imaging Performance Partnership interviews and analysis.
Loras Radiology\(^1\)

Large radiology group located in the Midwest

- Decided to pursue a more aggressive direct-to-patient marketing strategy
- Began geofencing physician offices in their target market to send patients ads while they were in the office
  - Geofenced seven physician offices in the market, offices were a mix of independent physicians and competitor-affiliated physicians
- Created a “home fence” around their imaging center to detect when a patient who had seen an ad entered their facility
- Saw increased volumes as a result of geofencing
  - Averaged 3% increase in market share for the geofenced offices
  - In the first month of geofencing an Ob/Gyn office in a competitor’s building, 33 patients who saw ads at the office then came to Loras’s imaging center

\(^1\) Pseudonym.

Source: Imaging Performance Partnership interviews and analysis.
Diagnostic assessment engages concerned patients

Margaery Medical Center’s¹ online breast risk assessment

21-question survey covers patient risk factors including family history, patient habits

Directs eligible patients to high-risk breast clinic

Guides patients at ordinary risk level to continue to receive annual mammograms

Suggests patients discuss results with PCP and provides link to Margaery PCPs for patients who do not have one

Sample questions

- What is your ethnic group?
- Have you had one or more children?
- Do you smoke?
- If any women in your family have had breast cancer, check their relationship to you
- Was your mother, sibling, or child diagnosed with breast cancer before the age of 50?
- Have you been told that you have certain gene mutations linked to breast cancer?
- Has a mammogram shown that you have dense breasts?

Three ways assessment is distributed

Patients searching for risk assessments online

Emails over patient listserv highlighting assessment

Physician offices directing patients to webpage

¹ Pseudonym.

Source: Imaging Performance Partnership interviews and analysis.
Margaery Medical Center\textsuperscript{1}

Large medical center located in the South

- Utilize online breast risk assessment to help patients understand their personal breast cancer risk
  - Assessment is 21 questions long, focuses on patient history, family history, and key risk factors such as breast density
  - Directs patients with high risk to their breast clinic
  - Recommends for user to discuss results with PCP, provides link to Margaery Medical Center PCPs for patients who do not have one

- Distribute assessment by emailing out to patient listserv and having physicians provide link to patients

- Also capture patients who are searching online for a risk assessment

\textsuperscript{1} Pseudonym.

Source: Imaging Performance Partnership interviews and analysis.
Activating key demographics through social media

Mount Sinai uses social media, simple branding to appeal to consumers

Effective components of Mount Sinai’s tweet

- Speaks directly to patients
- Invites patients directly to clinic for treatment
- Provides data, evidence of treatment success that patients can understand

Keys to targeting patients

- Choose appropriate service (UFE): non-urgent alternative to invasive procedure with favorable patient outcomes
- Select appropriate medium for patient population: social media to target young women
- Leverage mediums demographic information to target most appropriate users

Marketing results

50% of fibroid patients self-referred
15% growth in UFE YTD
15% growth projected for next five years

Source: Mount Sinai Health System, New York, NY; Imaging Performance Partnership interviews and analysis.
Mount Sinai Health System

3,500-bed, seven-teaching hospital health system located in New York, New York

- IR program faced turf wars with other specialists over patients with fibroids
- Recognizing consumer appeal of IR’s fibroid treatment as alternative to more invasive surgical services, program launched patient-centric social media marketing campaign including patient testimonials on Twitter, Facebook, websites for Mount Sinai’s IR uterine fibroid services
- Program simplified messaging to capture consumer attention, focusing on benefits of service, directing patients to IR clinic for fibroid needs
- Results: after marketing campaign 50% of UFE patients self-referred, 15% growth in UFE procedures projected for next five years
Leaning on family members to activate patients

Columbus Regional targets smokers, family members of smokers with Facebook ads

Targeted to:

- Individuals who have “liked” or interacted with tobacco products on Facebook
- Specific demographics most likely to be eligible for lung screening
- Family and friends of individuals on Facebook who have interacted with tobacco products

Marketing results

563 patients screened in 2018
399 patients screened through May 2019
On pace for 70% volume growth year over year

Source: Columbus Regional Health, Columbus, IN; Imaging Performance Partnership interviews and analysis.
Columbus Regional Health

225-bed community hospital located in Columbus, Indiana

- Columbus Regional Health recognized that lung cancer was a serious concern in their market
- National Lung Screening Trial found that incidents of lung cancer in southeastern Indiana were 2x that of the national average
- Launched initiative in 2017 to increase lung screening rates through competitive pricing, marketing
- Conducted comprehensive marketing campaign for lung screening that utilized: social media, SEO, newsletters, print advertising, radio advertising, physician outreach, and posters
- Leveraged social media demographic data to target those most likely to be eligible for lung screening, including individuals who interacted with tobacco products
  - Also targeted ads at family members of smokers in order to reach individuals who could influence the care decisions of eligible patients

Source: Columbus Regional Health, Columbus, IN; Imaging Performance Partnership interviews and analysis.
Bring lessons from high performers back home

Strategically deploy direct-to-patient marketing

<table>
<thead>
<tr>
<th>Lessons to take home</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> While levels of visible patient “shopping” vary across markets, patient preferences—related to price as well as quality and experience—are influencing referring provider decisions</td>
</tr>
<tr>
<td><strong>2</strong> When it comes to price, a marketing message focused on transparency and predictability benefits all providers, while well-marketeted price cuts in select areas that meet market need can allow even higher-priced providers to compete effectively for consumers</td>
</tr>
<tr>
<td><strong>3</strong> The most promising channels for reaching high-value patient constituencies are the referring physician’s office and social media</td>
</tr>
</tbody>
</table>

Source: Imaging Performance Partnership interviews and analysis.
1. Locked in a tight race

2. Winning referring physicians and patients

3. The destination of choice
How would you spend 100 pennies?

Priorities for responding to forces impacting patient retention

Steerage
Decide whether to push back against payers, offer targeted price cuts, pursue an aggressive price competition strategy, and/or capture steerage through a preferred provider arrangement

Physician choice
Invest in leakage analytics, ease of use, customization, and physician workflow support for underutilized services (screening, IR, incidental finding follow-up)

Patient consumerism
Establish and market price transparency. Create a targeted and differentiated marketing strategy for reaching select patient groups

Our penny allocation: 20 65 15

Your penny allocation: — — —

Source: Imaging Performance Partnership interviews and analysis.
Is your gain your patient’s gain also?

Becoming the imaging destination we would choose for ourselves

Patients journey through a system’s ambulatory network

What can be gained when a patient is retained?

- Imaging revenue
- Potential downstream revenue
- Patient data
- Opportunity to reinforce brand with patients
- Further interactions with affiliated physicians

- Continuity of care
- High quality of care
- Referring physician satisfaction
- Superior patient experience
- Superior, lower-cost downstream care
- Positive transformation of imaging operations and culture

Source: Imaging Performance Partnership interviews and analysis.
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Imaging’s Analytics Advantage
1. Setting goals for performance improvement

2. Overcoming data distrust

3. Storytelling with data
Would you buy this asset?

Mystery asset class

Price index (year 1 = 100)

Year 1: 100  
Year 2: 107  
Year 3: 114  
Year 4: 121  
Year 5: 133  
Year 6: 148  
Year 7: 158

Source: Imaging Performance Partnership interviews and analysis
How about now?

US housing price index, 2000 - 2006

Source: “All-Transactions House Price Index for the United States,” St. Louis Federal Reserve; Imaging Performance Partnership interviews and analysis.
Some worrisome indicators

US housing market indicators, 2003-2006

1) Ratio of housing prices to median household income.
2) Ratio of housing prices to equivalent rent.

The boom goes bust

US housing price YoY¹ changes

1) Year over year.

“No one can see a bubble. That’s what makes it a bubble.”

*The Big Short (2015)*

Source: “All-Transactions House Price Index for the United States,” St. Louis Federal Reserve, [https://fred.stlouisfed.org/series/USSTHPI](https://fred.stlouisfed.org/series/USSTHPI); McKay A, *The Big Short*, 2015, Paramount Pictures; Source: Imaging Performance Partnership interviews and analysis
Challenges we are facing with data

1. The explosion of available data makes it difficult to decide **what metrics to track**

2. Even when we are tracking metrics, it’s difficult to **identify and execute on performance improvement opportunities**

3. When we’ve identified insights from data, we run into trouble **communicating our findings** to decision-makers

---

**Data key to management**

“If you can’t measure it, you can’t manage it.”

*Peter Drucker*

Management Consultant

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Goals for today

Three key questions to answer on making the most of data

1. How do I use metrics to realize performance improvement?

2. How do I create a data-driven culture that avoids some of the pitfalls of dealing with data?

3. How do I communicate our performance to decision-makers?
Inertia a powerful force in metric tracking

Results in missed opportunities, failure to adapt

Consequences of metric tracking inertia

- **Checkbox mentality** where making budget is the goal, not finding and solving problems
- **Missed opportunities** from failure to adapt to changing market conditions
- **Lots of meetings, little action** as misalignment with institutional goals prevents performance improvement

A better approach

1. Pick metrics that represent your goals and key outcomes
2. **Balance** your selection of metrics across focus areas
3. Set **appropriate and aggressive benchmarks** to realize performance improvement

Source: Imaging Performance Partnership interviews and analysis
Base measurement on key focus areas

Link process metrics to outcomes, outcomes to focus areas

How metrics fit together

Customer service

Patient recommendation rate

Call abandon rate

% of patients given cost estimates

Turnaround time

Time to 3rd next available appt

Referrer satisfaction

Focus area

Outcome metric¹

Process metric²

1) Refers to metrics that track a key outcome of a process or action, e.g. infection rate.
2) Refers to indicators of process steps that then influence outcomes, e.g. hand washing rate.

Source: Imaging Performance Partnership interviews and analysis
Ensure balance across selected metrics

Watch out for blind spots

<table>
<thead>
<tr>
<th>Financial performance</th>
<th>Customer satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue growth</td>
<td>Denial rate</td>
</tr>
<tr>
<td>Cost per procedure</td>
<td>Supply cost</td>
</tr>
<tr>
<td></td>
<td>Overtime paid</td>
</tr>
<tr>
<td></td>
<td>Number of complaints</td>
</tr>
<tr>
<td>Cancellations</td>
<td>Time to 3\textsuperscript{rd} next available</td>
</tr>
<tr>
<td>Referring physician satisfaction</td>
<td>Turnaround time</td>
</tr>
<tr>
<td></td>
<td>Order to response time</td>
</tr>
<tr>
<td>Efficiency and access</td>
<td>% of managers having “stay” conversations</td>
</tr>
<tr>
<td></td>
<td>Governance committee participation</td>
</tr>
<tr>
<td></td>
<td>Turnover</td>
</tr>
<tr>
<td></td>
<td>Engagement rate</td>
</tr>
<tr>
<td>Staff engagement</td>
<td></td>
</tr>
</tbody>
</table>

Indicates potential “metric void”

Outcome metrics

Process metrics

Source: Imaging Performance Partnership interviews and analysis
Our metrics reflect our priorities

Most members track fewer than 10 metrics

<table>
<thead>
<tr>
<th>Top 5 imaging process metrics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of orders deemed inappropriate</td>
<td>68%</td>
</tr>
<tr>
<td>Avg. OP wait time</td>
<td>61%</td>
</tr>
<tr>
<td>Report turnaround time</td>
<td>61%</td>
</tr>
<tr>
<td>Order to exam start time</td>
<td>57%</td>
</tr>
<tr>
<td>Time to 3rd available</td>
<td>54%</td>
</tr>
</tbody>
</table>

72% of respondents track fewer than 10 metrics

<table>
<thead>
<tr>
<th>Top 5 imaging outcomes metrics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Claim denial rate</td>
<td>86%</td>
</tr>
<tr>
<td>Operating margin</td>
<td>79%</td>
</tr>
<tr>
<td>Referrer complaints</td>
<td>50%</td>
</tr>
<tr>
<td>Repeat imaging due to poor quality</td>
<td>46%</td>
</tr>
<tr>
<td>Patient recommendation rate</td>
<td>46%</td>
</tr>
</tbody>
</table>

80% of respondents use a dashboard to track key performance indicators

Source: Imaging Performance Partnership Top Imaging Metrics Survey, December 2018; Imaging Performance Partnership interviews and analysis
### Emerging metrics for a changing market

<table>
<thead>
<tr>
<th>Emerging focus areas</th>
<th>Key outcomes</th>
<th>Process metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appropriate use</strong></td>
<td>Number of low-value exams ordered</td>
<td>Free-text overrides</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CDS training completion rate</td>
</tr>
<tr>
<td><strong>Patient loyalty</strong></td>
<td>Net promoter score</td>
<td>Patient wait time</td>
</tr>
<tr>
<td></td>
<td>Downstream retention</td>
<td>Follow up rate for incidental findings</td>
</tr>
<tr>
<td><strong>Revenue integrity</strong></td>
<td>Point-of-service collections</td>
<td>Upfront cost estimates provided</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Copay requested at conclusion of visit</td>
</tr>
</tbody>
</table>

*Source: Imaging Performance Partnership interviews and analysis*
Aiming easy, or aiming high?

Source: Imaging Performance Partnership interviews and analysis.
Bountiful benchmarks

Range of options for setting the high bar

<table>
<thead>
<tr>
<th>Lower standards</th>
<th>Higher standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department historical benchmark</td>
<td>System benchmark</td>
</tr>
<tr>
<td>May reflect underperformance</td>
<td>High standard (usually), though still less rigorous</td>
</tr>
<tr>
<td>Organizational benchmark</td>
<td>National benchmark</td>
</tr>
<tr>
<td>Strong though not highest standard</td>
<td>Best-in-class</td>
</tr>
<tr>
<td>Out-of-industry benchmark</td>
<td>Aspirational benchmark</td>
</tr>
<tr>
<td>Quality leaders’ achievement</td>
<td>Perfect performance</td>
</tr>
</tbody>
</table>

Source: Imaging Performance Partnership interviews and analysis
The most basic comparison: historical performance

Aim for historical best, not historical average

Avoidable errors

- Average: 8
- Best: 2

Set bar at best, not average, performance

Source: Imaging Performance Partnership interviews and analysis.
Cross-department comparison broadens view

Keeping up with the Joneses can unlock better performance

Average days to fill position

- Leader's department: 59
- Department 1: 91
- Department 2: 38
- Department 3: 80
- Department 4: 67

System average: 67
System best: 38

Determine where you stand against peers

Advisory Board, other sources have national benchmarks available

Go to [www.advisory.com/ipp/tools](http://www.advisory.com/ipp/tools) to access the Imaging Productivity and Efficiency Benchmark Generator

Source: Imaging Performance Partnership interviews and analysis
Out-of-industry benchmarks

Comparing against the best in business

Employee turnover rates

<table>
<thead>
<tr>
<th>Industry</th>
<th>Turnover Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>9%</td>
</tr>
<tr>
<td>Educational services</td>
<td>15%</td>
</tr>
<tr>
<td>Financial activities</td>
<td>16%</td>
</tr>
<tr>
<td>Wholesale trade</td>
<td>18%</td>
</tr>
<tr>
<td>Information</td>
<td>19%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>19%</td>
</tr>
<tr>
<td>Transportation, warehousing, and utilities</td>
<td>22%</td>
</tr>
<tr>
<td>Health care and social assistance</td>
<td>23%</td>
</tr>
<tr>
<td>Construction</td>
<td>26%</td>
</tr>
<tr>
<td>Mining and logging</td>
<td>26%</td>
</tr>
<tr>
<td>Trade, warehousing, and utilities</td>
<td>29%</td>
</tr>
<tr>
<td>Retail trade</td>
<td>35%</td>
</tr>
<tr>
<td>Professional and business services</td>
<td>38%</td>
</tr>
<tr>
<td>Leisure and hospitality</td>
<td>49%</td>
</tr>
</tbody>
</table>

Aiming for perfect performance

The flawless benchmark

Targets for exceptional performance, even if unprecedented

100% compliance
- Documentation
- Hand washing
- New employees attending orientation

Zero sentinel events
- Wrong-site surgery
- Incompatible blood transfusion
- Nosocomial infections

Perfect care
- Compliance with all diabetes indications
- Compliance with all AMI core measures

Deciding on the metrics that matter

Next steps on your metric strategy
How Imaging Performance Partnership can support your quest for the most meaningful metrics

1. **Metric selection tool**
   - Consult our Imaging Metric Selection Tool to pick out process and outcomes metrics for your focus areas

2. **Choosing imaging metrics one-pager**
   - Use our handout as a guide for choosing top metrics related to key focus areas

3. **Imaging dashboard library**
   - See examples of other organizations’ data dashboards to determine the best way to display your performance on the metrics you’re tracking

1. Setting goals for performance improvement
2. Overcoming data distrust
3. Storytelling with data
What conclusions can you draw?

Wait times for specialist appointment

Percent of patients who waited less than 4 weeks

- USA: 76%
- Canada: 39%

What conclusions can you draw?

Wait times for specialist appointment

Percent of patients who waited less than 4 weeks

<table>
<thead>
<tr>
<th>Country</th>
<th>Wait Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>76%</td>
</tr>
<tr>
<td>Canada</td>
<td>39%</td>
</tr>
<tr>
<td>UK</td>
<td>80%</td>
</tr>
</tbody>
</table>

Infant mortality rate

Deaths per 1,000 live births, 2016

USA: 5.9%
UK: 3.8%

What conclusions can you draw?

Infant mortality rate

Deaths per 1,000 live births, 2016

- USA: 5.9%
- UK: 3.8%
- Slovenia: 2.0%

The “A” is earned, while the “F” is given

Reaction can lead us to false conclusions about data

**Questioning data validity**

“*These numbers can’t be right...*”

**Justifying results**

“*Our situation is unique...*”

Source: Imaging Performance Partnership interviews and analysis.
Changing how we react to data

Tactfully rebuffing unproductive responses

Managing numbers

Attack

Rationalize

Managing performance

Understand

Learn

Present data clearly

Learn from difference

Source: Imaging Performance Partnership interviews and analysis.
Who is most proficient?

Need to look beyond the numbers

Percentage of 8th graders scoring proficient in math

<table>
<thead>
<tr>
<th>Massachusetts</th>
<th>Georgia</th>
</tr>
</thead>
<tbody>
<tr>
<td>55%</td>
<td>86%</td>
</tr>
</tbody>
</table>

Percentage of students reported as proficient

<table>
<thead>
<tr>
<th>Westwood High</th>
<th>Lakeside Secondary</th>
</tr>
</thead>
<tbody>
<tr>
<td>78%</td>
<td>91%</td>
</tr>
</tbody>
</table>

Why might students from Massachusetts actually be outperforming Georgia’s students?

Why might Westwood High School’s outcomes be preferable?


1) Pseudonym.
Identical label, different definition

What does “proficient” mean?

It is easier to reach “proficient” threshold on Georgia’s test than on Massachusetts’s

<table>
<thead>
<tr>
<th>State proficient and above</th>
<th>NAEP proficient and above</th>
</tr>
</thead>
<tbody>
<tr>
<td>Massachusetts: 55%</td>
<td>Georgia: 86%</td>
</tr>
<tr>
<td></td>
<td>Georgia: 29%</td>
</tr>
</tbody>
</table>

## Standard stats?

### Varying measurement methods in imaging

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Department</th>
<th>Results</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turnaround time</td>
<td>A</td>
<td>4 hours</td>
<td>Scan complete to report completion</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>6 hours</td>
<td>Exam start to report completion</td>
</tr>
<tr>
<td>Capacity utilization</td>
<td>A</td>
<td>95%</td>
<td>Percentage of time slots filled</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>80%</td>
<td>Time used on scanner divided by time available</td>
</tr>
<tr>
<td>Peer review</td>
<td>A</td>
<td>2%</td>
<td>Percent reviewed out of all scans</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>10%</td>
<td>Percent reviewed of “complex” scans</td>
</tr>
</tbody>
</table>

Source: Imaging Performance Partnership interviews and analysis.
Measure magnitude to understand full impact

Full numbers often hidden under rates

Percentage of students reported as proficient

- Westwood High: 78%
  - 558 students
  - 716 students
  - 158 students below proficient

- Lakeside Secondary: 91%
  - 3,713 students
  - 4,080 students
  - 367 students below proficient

Source: Imaging Performance Partnership interviews and analysis

1) Pseudonym.
Large samples hide important low-frequency events

Understand actual magnitude of low-chance events before ignoring

0.1% medication error rate × 1.0% errors caused adverse events = 0.001% chance of an adverse event

600-bed teaching hospital → 40,000 patients annually × 10 medications per visit × 10 doses per medications = 4 million annual doses

4 million doses × 0.001% chance of an adverse event = 40 adverse events each year

Source: Imaging Performance Partnership interviews and analysis
Incomplete samples can skew results
Understand limitations of data collected

Of 60 employees included in the survey, only 20 responded. Ten complied with regulations; ten did not

Procedural compliance

50% 33%

Department 1 Department 2

Data was collected for the entire staff (127 FTEs) over a month-long period

Source: Imaging Performance Partnership interviews and analysis
Provide clarity to gain buy-in

Transparency critical to overcoming data denial

When preparing to present data
- Get data definitions, clarify calculations
- Obtain both sample size and rate
- Anticipate any questions that might arise

When communicating to staff
- Define all terms, provide calculations
- Present data in both absolute and relative terms
- Preclude attacks by providing answer in presentation

Source: Imaging Performance Partnership interviews and analysis.
Changing how we react to data

Tactfully rebuffing unproductive responses

Managing numbers

- Attack
- Rationalize

Managing performance

- Understand
- Learn

Present data clearly
Learn from difference

Source: Imaging Performance Partnership interviews and analysis.
Rationalizing results

Explaining it all away

Attempt at improving patient satisfaction

Unit 6E manager presents less than stellar patient satisfaction scores

Staff member argues that comparison to other departments is unfair:
- OB patients always more satisfied on average
- Other departments do not have as many new graduates
- 6E does not have private rooms

Unit 6E continues to receive poor patient satisfaction scores

Source: Imaging Performance Partnership interviews and analysis.
Expectations linked to our uniqueness

Cutting the data thinner to find a comfortable comparison

*We can only expect to be as good as:*

- Hospitals with 300–400 beds...
  - ...with trauma centers
  - ...and teaching missions
  - ...and unionized staff
  - ...in the Midwest
  - ...in an inner city
  - ...with a large Medicaid population

Source: Imaging Performance Partnership interviews and analysis.
Widen the options for inspiration

- **Grocery scanning**
  - **Bar codes**: Managing stock and ensuring accuracy of medication distribution

- **Motorola’s efforts to reduce errors**
  - **Six sigma**: Improving clinical and operational quality

- **Airline self check-in**
  - **Self-service kiosk**: Asking basic health and symptoms questions; collecting patient information, etc.

- **Pit crew**
  - **Highly specialized teams and codes**: Hardwire processes and procedures that improve turnover and increase efficiency (i.e., stroke teams)

- **Warehouse streamlining**
  - **Communication technology**: Infrastructure allowing providers to quickly know and respond to patient needs

Source: Imaging Performance Partnership interviews and analysis.
Search for differences within
Finding internal opportunities for improvement

*Increase opportunities for learning*

**Department turnover as a whole**
- Hospital average
- Our department

**Department turnover by shift**
- Day
- Night

**Day shift turnover by tenure**
- <1 year
- 1–3 years (highlighted)
- >3 years

**Night shift turnover by tenure**
- <1 year
- 1–3 years
- >3 years

Source: Imaging Performance Partnership interviews and analysis
Opportunities abound

Extending our search for improvement opportunities

Expand

Disaggregate

Who

When

What

Where

Source: Imaging Performance Partnership interviews and analysis
1. Setting goals for performance improvement
2. Overcoming data distrust
3. Storytelling with data
Two pitches: which would cause you to take action?

CASE EXAMPLE

Pleasantville Hospital
300-bed community hospital • Pleasantville

• CT volumes have been increasing rapidly, causing significant operational strain
• Capacity utilization is approaching unsustainable levels
• OP exams being scheduled 15 days out; patients have to wait on average 45 minutes after arriving to be seen

Our task

• Given significant capacity strains, we need to convince our hospital’s Executive Capital Committee that the imaging department needs funding for a new CT scanner
• The Capital Committee includes:
  – CFO, CNO, COO, CMO, CIO
  – Director of Decision Support

Source: Imaging Performance Partnership interviews and analysis
The poor pitch

CT volumes at Pleasantville Hospital
2016 - 2018

Procedures per day
January 2019

$1.2M
cost of new CT scanner, a 25% discount

Source: Imaging Performance Partnership interviews and analysis
A stronger case

**CT capacity utilization**

- **2018**
  - Actual: 75%
  - Projected: 99%

Maximum capacity industry benchmark: 85%

**CT productivity**

Percentile against benchmark (higher percentile = better performance)

- **CTs per FTE tech**: 82%
- **CTs per scanner**: 85%
- **CT procedure time**: 80%
- **Patient wait time**: 20%
- **Time to 3rd available**: 15%

**$850K**

5-year NPV of CT purchase due to retaining patients we’re losing due to operational issues and procedures we can’t currently do due to old technology

Source: Imaging Performance Partnership interviews and analysis
Big idea: CT scanner replacement

Based on our analysis of capacity utilization and productivity data, we conclude that an additional CT scanner is needed.

CFO
- Decision factors: revenue growth, cost reduction
- Approach: Emphasize positive ROI from recommended action

CNO
- Decision factors: staff productivity, patient satisfaction
- Approach: Focus on staff productivity vs. benchmark, patient complaints

CMO
- Decision factors: clinical quality
- Approach: Emphasize clinical benefits of action and supporting research

Lesson 1: Create context

Craft your message

Construct your story, reinforced with data

Bring out your inner Steve Jobs!

Persuasive storytelling narrative structure

**What is:** Status quo

**What could be:** Ideal future

**Tension/gap**

**Continuous contrast between status quo and ideal future**

**Call to action**

Impact through story

“Your ability to shape your future depends on how well you communicate where you want to be when you get there.”

Nancy Duarte

Data reinforces your story

Use KPIs¹ to show consequences of status quo and potential gains from achieving ideal future

---

¹ Key Performance Indicators.
Lesson 3: Choose the right graphics

Use graphics to focus audience attention

Eliminate clutter and avoid overly complex graphs

Before

After

It’s all about communication

Remember this guy?

(Hint: he was lobbying for a smoking ban during last year’s meeting)

Lessons on persuasive communication

1. Adapt your message to your audience. It’s about what they think – not what you think.

2. Plan ahead. Consider what archetypes your audience falls into (fact finder, diplomat, architect, strategist) and review past communication and relevant background material.

3. Tailor communications to gain stakeholder buy-in. Use active listening to guide your approach. Focus on increasing enthusiasm among undecideds and moving dissenters from negative reactions to neutral reactions.

Source: Imaging Performance Partnership interviews and analysis
Your Data Strategy To-Do List

- **Use our Productivity and Efficiency Benchmarks** to set targets for your department

- **Use our updated Metric Selection Tool** to pick the metrics related to your key organizational goals

- **Use our Data Dashboard Library and Choosing Imaging Metrics one-pager** to design your metric tracking strategy

- **Invite us to host a virtual metric selection discussion** with your team to ensure your metrics are properly balanced

- **Invite us to listen to and provide feedback on** a presentation you’re giving that uses data

- **Download our research studies and cheat sheets** to plan improvement initiatives

Source: Imaging Performance Partnership interviews and analysis
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