“Developing Your Breast Imaging Center of Excellence”
Technology Evaluation and Strategic Guidance
August 24, 2010

Presenter:
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Agenda for Today’s Presentation

I. THE MARKET FOR BREAST IMAGING SERVICES
II. ASSESSING THE TECHNOLOGY LANDSCAPE
III. “CENTER OF EXCELLENCE” STRATEGY

The Market for Breast Imaging Services
Still Reeling from the Economic Downturn...

- Through Wide Variability Reported Among U.S. Institutions

<table>
<thead>
<tr>
<th>Planned Budgeting Adjustments, 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedure</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>Mammography</td>
</tr>
<tr>
<td>Breast April</td>
</tr>
<tr>
<td>Breast May</td>
</tr>
</tbody>
</table>

Change in Volume, Q2/2009 – Q2/2010 (%):

- **Beds/Breast**:
  - Breast Density:
    - Decreased by 2% in 2009
  - Breast Density:
    - Decreased by 1% in 2010

Anecdotes from the Field:

"At our facility, we saw a drop in screening as a result of the recession, but not as much as we anticipated." - Manager, Breast Center

"We have seen a significant decrease in mammography volume, but it seems to be stabilizing now." - Manager, Breast Center

Future Drivers of Volume

Conflicting Regulatory Forces to Shape Future Demand

**USPSTF Recommendations**

- USPSTF found "no net benefit" for screening women with a mammography aged 40 to 49 years compared with those aged 50 to 74 years.
- The USPSTF recommended annual screening for women aged 50 to 74 years.
- Women aged 50 to 74 years and at increased risk for breast cancer, or who have a personal or family history of breast cancer, should consider continuing annual screening.

**Magnitude of USPSTF Recommendations**

In Millions of Shrinkage Mammograms, 2008

- Screening mammograms:
  - Decreased by 1%
- Diagnostic mammograms:
  - Decreased by 2%

**PPACA – Coverage Expansion**

- In 2013, total coverage exposure by age 40 to 49, women:
  - Coverage for women aged 40 to 49 years will be expanded.
- In 2013, women on Medicare will be covered.
- In 2013, employers may offer benefits to men.

Classification of Uninsured Coverage Target

Total Coverage Target = 3.3 million
Stability Prevails in Reimbursement for Breast Imaging Exams

### Suggested Technical Component Medicare Reimbursement, 2009 - 2010

<table>
<thead>
<tr>
<th>CPT Code</th>
<th>Description</th>
<th>2009 Rate</th>
<th>2010 Rate</th>
<th>% Diff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>77055</td>
<td>Mammography, unilateral</td>
<td>$49.05</td>
<td>$47.27</td>
<td>-3.8%</td>
</tr>
<tr>
<td>77056</td>
<td>Mammography, bilateral</td>
<td>$63.12</td>
<td>$61.34</td>
<td>-2.9%</td>
</tr>
<tr>
<td>77057</td>
<td>Screening mammography, bilateral</td>
<td>$45.80</td>
<td>$42.94</td>
<td>-6.7%</td>
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<tr>
<td>G0202</td>
<td>Screening mammography, producing direct digital image, bilateral</td>
<td>$94.86</td>
<td>$94.18</td>
<td>-0.7%</td>
</tr>
<tr>
<td>G0204</td>
<td>Diagnostic mammography, producing direct digital image, bilateral</td>
<td>$109.28</td>
<td>$110.42</td>
<td>1.0%</td>
</tr>
<tr>
<td>G0206</td>
<td>Diagnostic mammography, unilateral</td>
<td>$86.20</td>
<td>$86.60</td>
<td>0.5%</td>
</tr>
<tr>
<td>76645</td>
<td>Ultrasound, breast(s), unilateral or bilateral, real-time with image documentation</td>
<td>$62.50</td>
<td>$62.47</td>
<td>-0.1%</td>
</tr>
<tr>
<td>C8903</td>
<td>Breast MRI with contrast, unilateral</td>
<td>$427.41</td>
<td>$423.99</td>
<td>-0.8%</td>
</tr>
<tr>
<td>C8906</td>
<td>Breast MRI with contrast, bilateral</td>
<td>$427.41</td>
<td>$423.99</td>
<td>-0.8%</td>
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<tr>
<td>C8904</td>
<td>Breast MRI without contrast, unilateral</td>
<td>$348.06</td>
<td>$349.53</td>
<td>0.4%</td>
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<td>C8907</td>
<td>Breast MRI without contrast, bilateral</td>
<td>$348.06</td>
<td>$349.53</td>
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<tr>
<td>C8905</td>
<td>Breast MRI without contrast followed by with contrast, unilateral</td>
<td>$538.70</td>
<td>$535.40</td>
<td>-0.6%</td>
</tr>
<tr>
<td>C8908</td>
<td>Breast MRI without contrast followed by with contrast, bilateral</td>
<td>$538.70</td>
<td>$535.40</td>
<td>-0.6%</td>
</tr>
<tr>
<td>77051</td>
<td>Computer-aided detection, diagnostic mammography</td>
<td>$9.02</td>
<td>$8.30</td>
<td>-8.67%</td>
</tr>
<tr>
<td>77052</td>
<td>Computer-aided detection, screening mammography</td>
<td>$9.02</td>
<td>$8.30</td>
<td>-8.67%</td>
</tr>
<tr>
<td>0159T</td>
<td>Computer-aided detection, breast MRI APC Package</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
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### Downstream Implications Too Important to Ignore

#### From Screening to Diagnostics

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<td>- Breast Ultrasound: 175 per 1,000</td>
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<td>- Breast MRI: 60 per 1,000</td>
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<td>- Bone Density (DEXA): 187 per 1,000</td>
</tr>
<tr>
<td>- Breast Biopsies: 44 per 1,000</td>
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<td>- Vein Therapy: 65 per 1,000</td>
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### Assessing the Technology Landscape
Breast Imaging Space Becoming Increasingly Competitive

Mapping Imaging Technologies to the Continuum of Breast Care

Screening
Diagnosis
Staging / Pre-Surgical Planning
Treatment Monitoring

Breast SRT

Digital Breast Tomosynthesis

Breast MRI

Positron Emission Mammography

Breast PET or PET/CT

Emerging Application

Breast Specific Gamma Imaging

Source: Advisory Board Company research.

Across the Care Continuum

Breast Cancer Screening

FFDM Firmly Entrenched as Primary Imaging Modality

Mammography System Accreditation

As of July 1, 2010

Screening

- Additional patients with less related costs

- Empowerment

System Options Growing

Premium Applications
- Upgradable with vendor imaging software, such as SRT and DBT

New Players, More Options
- High-technology, high-SFO systems
- Profit improvements without SFO systems

Benefits of Digital Mammography Largely Operational in Nature?

Age 50 Years or Less, Pre- or Perimenopausal, Dense Breasts

Age 60 at Screening (U.K. Trial)

1 ROC Curve, p<0.005

2 No statistical significance across each outcome assessed

Breast Cancer Screening System Options Growing

Screening Only Units

Premium Applications

New Players, More Options

- Scaled-down systems with low initial costs
- Upgradeable
- Equipped with newest imaging software, such as FFDM and CESM

• Fuji introduces new DM Aspire

• Philips reportedly seeking US entry

Despite Initial Pains, Little Doubt Refuting the Value of FFDM

Lost Productivity for Radiologists?

Annual Revenue, Screening Mammography

Thorough Planning Translates to Smooth FFDM Adoption Process

1 Pseudonym.

2 Sources: Haygood TM, et al. AJR, 2009; 192:216-220; Advisory Board Company research.

Screening Digital Mammography

256 patients

189 patients

Sources: Haygood TM, et al. AJR, 2009; 192:216-220; Advisory Board Company research.
**Breast Tomosynthesis In Brief**

- Tomosynthesis is a digital imaging technology that uses a cone-beam source to generate images of tissue in the breast. 
- It involves slicing the breast into thin layers, allowing for clearer visualization of lesions. 
- Images are reconstructed as a stack of images at different angles, providing a 3D view of the breast.

**Benefits**

- High sensitivity and specificity for breast cancer detection.
- Increased detection of lesions, especially in dense breasts.

**Images Available**

- 2D images from conventional mammography and digital breast tomosynthesis.
- 3D images from digital breast tomosynthesis.

**Low Dose**

- GE, Siemens, and Hologic vendors offer low-dose options.

**MRI and 3T Vendors**

- Juniper Systems, WA, Philips, GE, and Siemens offer 3T MRI systems.
- 3T imaging provides improved contrast and resolution.


**New Law: A Boon or Bust for Ultrasound?**

- **Waiting Game for Tomosynthesis to Continue, But for How Long?**

**Breast Diagnostic Imaging**

- **With New Applications, Ultrasound May Find Greater Use**

**Tomosynthesis versus 2D Digital Mammography in Identifying Calcifications**

- **Study In Brief**
  - Tomosynthesis study involving 958 women comparing tomosynthesis and FFDM.
  - Tomosynthesis improves detection of calcifications.
  - Calcifications in 60% of 3D images from 12 of the 25 studies with low-contrast.

**Breast Tomosynthesis in Brief**

- *Benefits*
  - Higher sensitivity and specificity compared to 2D mammography.
  - Improved detection of calcifications and other breast masses.
  - Reduced recall rates due to improved lesion characterization.

**Images Available**

- 2D images from conventional mammography and digital breast tomosynthesis.
- 3D images from digital breast tomosynthesis.

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Pitfalls of Breast MRI Lead to Emergence of New Technologies

### Adding Selectivity to Biopsies

“...The learning curve is much more rapid for PEM than for MRI, for biopsy. If either positive or negative... The...”

— Medical Director, Direct Imaging Center

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<th>PEM In Brief</th>
<th>BSGI In Brief</th>
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<td>Breast surgeon can administer for and perform one of 3 PEM versions, including additional detection and differentiation of different tissue, and it is now available in all hospitals in the U.S.</td>
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### Breast Cancer: Reliable, Non-contrast Imaging

**BSGI In Brief**
- Functional and/or structural swings of breast tissue that are colorized
- Breast surgeon can administer for and perform one of 3 PEM versions, including additional detection and differentiation of different tissue, and it is now available in all hospitals in the U.S.
- New and less expensive, PEM is now available in all hospitals in the U.S.

**BSGI for the Detection of DCIS**
- Radiation oncologist can administer for and perform one of 3 BSGI versions, including additional detection and differentiation of different tissue |

### Pitfalls of Breast MRI Lead to Emergence of New Technologies

**Challenged by Complexity**
- Sometimes with our latest MRI we are generating hundreds of images, and they’re definitely not easy to interpret...Our breast surgeons also see a new patient every day; they have multiple straight-forward answers, and sometimes MRI can’t give that to our patients...

— Director of Radiology, Teaching Hospital

**Adding Selectivity to Biopsies**
- “The learning curve is much more rapid for PEM than for MRI...”

— Medical Director, Direct Imaging Center

### Breast Specific Gamma Imaging

**Ease of Use, Myriad Indications Supporting BSGI Adoption**

**BSGI In Brief**
- Functional and/or structural swings of breast tissue that are colorized
- Breast surgeon can administer for and perform one of 3 PEM versions, including additional detection and differentiation of different tissue, and it is now available in all hospitals in the U.S.
- New and less expensive, PEM is now available in all hospitals in the U.S.

**BSGI for the Detection of DCIS**
- Radiation oncologist can administer for and perform one of 3 BSGI versions, including additional detection and differentiation of different tissue |

### Functional Emission Tomography

**PEM Benefits Evident in the Second-Line Imaging Space**

**PEM In Brief**
- Contoured ensemble with functional and/or structural swings of breast tissue that are colorized
- Breast surgeon can administer for and perform one of 3 PEM versions, including additional detection and differentiation of different tissue, and it is now available in all hospitals in the U.S.
- New and less expensive, PEM is now available in all hospitals in the U.S.
Despite Benefits, Limited Volume Makes ROI Tenuous

Indications for Functional Breast Imaging
- Functional breast imaging includes BSE, PEM, and other
- Indications for PEM have been
- Breast malondiation and treatment monitoring
- To follow up on abnormality seen during clinical breast
- Difficult to discern breast abnormalities

Common Algorithm for Women Receiving Functional Breast Imaging

Estimates
Separating the "Must-Have" from the "Nice-to-Have"

Pathway
Necessary
Technology
Breast Mammography (Analog) ~$30K
Breast Mammography (Digital) ~$300K
Digital Breast Tomosynthesis ~$1.3M

Technology
Analog Mammography
Breast Tomosynthesis
Digital Breast Tomosynthesis
Breast Specific Gamma Imaging (BSGI)
Breast Ultrasound
Breast MRI

Cost
$558
$300K
$1.3M
$35K
$644
$225K
$700K

Primary Advantages
- Improved quality, easier detection of breast disease
- Lower radiation exposure
- Good diagnostic accuracy
- Newer: Digital
digitation
- Newer: DBC
- May have additional benefits
- Lower radiation exposure
- Lower cost
- May have additional benefits
- Lower radiation exposure
- Lower cost
- May have additional benefits

Primary Disadvantages
- Inadequate evidence
- Inadequate evidence
- Newer: DBC
- Lower radiation exposure
- Lower cost
- Newer: DBC
- Lower radiation exposure
- Lower cost
- May have additional benefits

Recommended exam
- Breast: Digit. or Digital
- Ultrasound
- MRI

Recommended imaging modality
- Breast: Digit. or Digital
- Ultrasound
- MRI

Recommended screening protocol
- Breast: Digit. or Digital
- Ultrasound
- MRI

Screening algorithm
- Breast: Digit. or Digital
- Ultrasound
- MRI

Technology
Breast Mammography
Breast Tomosynthesis
Digital Breast Tomosynthesis
Breast Specific Gamma Imaging (BSGI)
Breast Ultrasound
Breast MRI

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Recommended screening protocol
- Breast: Digit. or Digital
- Ultrasound
- MRI

Screening algorithm
- Breast: Digit. or Digital
- Ultrasound
- MRI

IV
“Center of Excellence” Strategy

Source: Advisory Board Company research.
Title Important for Building, Marketing...
— But Only One Part of the Strategy

"It's much ado about nothing if the quality of your work..." - John Dryden

Director of Marketing
Allocco Comprehensive Breast Center

Two Opportunities for "Center of Excellence" Designation

ACR Designated Breast Imaging Centers of Excellence (BICOE)

1. Peer reviewed, independent breast imaging centers
2. Accredited by the American College of Radiology

Quality, Performance Measurement Imperatives for WICs

NCRC Quality Certification Based on Classification, Reporting

Select NCRC Quality Indicators

- Calf heel x-ray
- Breast conversion volume
- Breast conversion rate
- Breast conversion compliance and pathology results
- Breakthrough and Re-Register-Success Re-Register

Enriching Technologies in Quality Improvement Efforts

- Technical expertise of examining technologists and radiologist procedures, generating direct costs to imaging services
- Technical expertise aligned with potential fix cost savings available for diagnostic mammography

Implementing Technology in Quality Improvement Efforts

- Manager trained in technology
- Technology to each individual account to reduce
- Technology to each center satisfaction survey, regarding satisfaction with throughput, overall service, competitive and new examinations
- Technology to each center satisfaction survey
- Technology to each center satisfaction survey

Breast Center Market Far From Saturated

The Model Center?

- Dedicated breast imaging building
- Dedicated mammography equipment
- Mammography units
- Consultant radiologists
- Special content for breast imaging
- Dedicated staff work closely with
- Dedicated staff work closely with
- Dedicated staff work closely with
- Dedicated staff work closely with
- Dedicated staff work closely with
- Dedicated staff work closely with
- Dedicated staff work closely with
Freestanding Sites Largely Competing on Screening, Access

Other Women’s Health Services Offered in Centers with Mammography

Separate Screening, Diagnostic Schedules Ideal

Facility Design Must Respect Patient Privacy, Workflow

Imaging Scheduling

Separate Screening, Diagnostic Schedules Ideal

Ensuring Efficiency in Mammography Suites Provides Ideal Patient Experience

Pre-Scheduling Follow-Up Ultrasounds for High-Risk Patients an Effective Strategy
Using Data and Analytics to Drive Efficiencies, Satisfaction

Accomplishing Same-Day Reads a Difficult Prospect

Batch-Reading Screening Mammograms the Preferred Model

<table>
<thead>
<tr>
<th>Hospital A: Same-day reads:</th>
<th>Hospital B: Batch-reads:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology sends images to radiologist for immediate review</td>
<td>Technology sends images to radiologist for immediate review</td>
</tr>
<tr>
<td>Radiologist reviews images and sends results to referring physician</td>
<td>Radiologist reviews images and sends results to referring physician</td>
</tr>
<tr>
<td>Referring physician sends results to patient’s family</td>
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</tr>
</tbody>
</table>

**Real-Time Patient Tracking with “Whiteboard”**

- Reduces time to print reports
- Reduces time to mail reports
- Provides tracking for long-term patients
- Improves patient satisfaction
- Ensures timely patient referrals to the appropriate physician

**The Common Patient Pathway at Juniper Medical Center**

- Patient arrives at the medical center
- Image is sent to the radiology department
- Radiologist reviews the image
- Results are sent to the referring physician

**IT Communication Essential for Maximum Productivity**

- A Host of (Necessary) Information Sources
- IT Can Present Significant Barriers
- Identify Your IT. Allies

**Sources:**
- Advisory Board Company sorrow
- Advisory Board Company sorrow
Marketing Your Successes, Experiences a Critical Step

Promoting a Culture of High-Quality Patient Care

Adapting a "Patient First" Culture

"It's a commitment to the community and the system to give great quality healthcare, and it's also a commitment to themselves personally. It's something they pride themselves on. I know that it sounds unbelievable, but it's true."

—Director, Solon Hospital Breast Center

Featuring the Team Vision

"We are a team. Our job should not be limited to focusing on our core responsibilities, we must never lose sight that we are all working together to help individual patients, and ensuring our communication, efficiency and effectiveness cannot be stressed enough."

—Breast Thakkar, Achilles Hospital

Multidisciplinary Breast Conferences Promote Continuity Throughout Care

Distribute Patient Satisfaction Questionnaires

- Develop open forum/communication to increase the quality of the patient experience
- Summarize return to give information, feedback, future improvement idea in presence
- Increase customer satisfaction, quality of communication, future improvement

Develop Public Relations

- Increase awareness of dedicated physicians and nurses
- First ads, collateral
- Testimonials
- Case studies

Institute Outreach Programs, Screening Days

- Collaborate with local newspaper to create a circle of specialists, community
- Certified outreach in screening day for: Departmental partners, local bylaws, education, collaboration, media
- Advertise media coverage
- Generate word of mouth awareness
- Develop internal awareness, boost morale, facility image

Positive Word-of-Mouth Communication Integral to Growth

- "Our center was built on the experiences of patients and survivors."
  —Manager, Akron Comprehensive Breast Care
- "Our growth, while fairly strong—around fifteen percent—has been mostly on word of mouth."
  —Manager, Pyle Breast Imaging Center

Survey

- 300+ surveys
- Conduct survey to measure awareness, satisfaction of patients, future improvements

Developing Your Website

- 9+ sites
- Develop websites to increase visibility
- Client testimonials
- Experts, biographies

Bus Ads

- 9+ ads
- Develop bus ads to boost awareness on areas
- Utilize Diagnostics, Ultrasounds, MRIs, Ultrasounds

Print Ads

- 9+ ads
- Develop print ads to increase visibility in targeted communities
- Radiologists, Oncologists, surgeons

Media

- 9+ media
- Develop media to foster awareness and boost morale
- TV, radio, magazines, newspapers, billboards

Video

- 9+ video
- Develop video to increase visibility in targeted communities
- Include: Radiologists, Oncologists, surgeons

Community

- 9+ communities
- Develop communities to increase visibility
- Create: Diagnostics, Ultrasounds, MRIs, Ultrasounds

Patient Advertisements

- 9+ patients
- Develop patient advertisements to increase visibility
- Include: Radiologists, Oncologists, surgeons

Developing Your Social Media

- 9+ social media
- Develop social media to increase visibility
- Include: Radiologists, Oncologists, surgeons

Developing Your Advertising

- 9+ advertising
- Develop advertising to increase visibility
- Include: Diagnostics, Ultrasounds, MRIs, Ultrasounds