Socioeconomic and other Factors Shaping the Future Of Radiology

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Good News

- Fabulous new technology will improve image quality and result in new procedures
- IT solutions are on the way to improve productivity, quality and safety
- Demand for imaging will grow with aging of the baby boom generation

The Imaging Universe

Contemporary Practice

- Better temporal and spatial resolution facilitate expansion of applications
- Increasing use of imaging to guide therapy
- More sophisticated target specific pharmaceuticals: molecular imaging

PET-CT System

Case: 60 year-old male with history of recurrent colorectal cancer.
Findings: Extensive disseminated recurrent disease involving the liver and multiple lymph nodes.

PET

CT

Melanoma with BRAF mutation

Personalized genetically based therapy

Guided by PET “chemosensitivity”

Prostate Cancer (PSA – 10)
Benign Node

Pre Contrast

Post Contrast
**Bad News**

- As health system costs go up for imaging, it becomes a target for reimbursement cuts
- Other specialties want pieces of radiology—turf battles are increasing
- Commercial enterprises have become involved in providing imaging services—
  - Commoditization of radiology practice
- Radiation accidents and fear of radiation lead to more regulation
- Radiologists are remarkably happy and complacent
- "Millennials" are known for wanting well-defined jobs—
  - hours and responsibilities

**The Good and the Bad**

- All the good things will happen whether radiologists are on board or not
- All the bad things may happen but radiologists will either foster them or retard them by what they do
New transformative technologies are driving increased utilization of services and costs in diagnostic radiology.

**Utilization**

- Total Medicare Imaging Costs are Rising:
  - **GAO Report 2008**
  - Compound annual growth (CAGR) rate of > 14%

**Direct Economic Effects**
- Legislative assault on imaging reimbursement
  - MMA-2005 - CT, MRI, PET
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- Regulatory assault on imaging reimbursement
  - CMS—2010 MPFS Final Rule
  - Examples of MPFS Final Rule
- Aggregate impact is several billion dollars per year

**Indirect Economic Effects**
- Recession linked decrease in capital spending by hospitals and imaging centers
- Public and professional concerns about radiation exposure and risk
- Impossible to directly monetize these issues but clearly impactful
Legislative and Regulatory Cuts to Imaging Reimbursement

- **Deficit Reduction Act of 2005**
  - Capped the Technical Component (TC) at the lesser of the Medicare Physician Fee Schedule (MPFS) rate or Hospital Outpatient Prospective Payment Schedule (HOPPS) rate
  - Congressional Budget Office (CBO) projected a decrease of $1.3B in Medicare Technical (TC) payments for 2008
  - $1.23 Billion from DRA in first year = 3X projected cuts of $2.8 Billion over 5 year
- Additional losses as private payers adopt CMS policies and DRA cuts
- Especially heavy blow to outpatient centers, the fastest growing part of imaging

Health Reform Legislation 2010

- **Patient Protection and Affordable Care Act of 2010 (PPACA)**
  - $940 Billion over 10 years
  - 32 million more covered—95% of legal US residents
  - Individual mandate—up to $695 penalty
  - Employer mandate—up to $2000 per employee penalty
  - Medicaid expansion—up to 133% of Federal Poverty Level
  - Private insurance reforms

PPACA Imaging Provisions: Contiguous Body Part Reduction and Change in Utilization Assumption

- TC contiguous body part reduction increased to 50% from 25%
- Utilization:
  - Obama Administration legislative proposal—95%
  - CMS 2010 MPFS Final Rule—4 year phase in to 90%
  - Initial reconciliation proposal—90%
- Final legislative provision—75%—effective in 2011 for higher cost imaging devices—CT&MRI

PPACA and Accountable Care Organizations (ACOs)

- FFS reimbursement
- Cost targets based on health status of enrollees with sharing of betterment to target
- No penalty (yet) for not meeting the target
- Differ substantially from HMOs and capitation

Problematic Issues with Medicare ACOs

- Cost target methodology poorly defined and of questionable accuracy—
  - Relies on backward looking factors about health status
  - Same factor damaged the HMO movement
- No requirement that a patient receive care within the ACO—“Snowbirds” head south
- Institutions will have to invest ahead of the curve in new infrastructure—NPs, IT
Problematic Issues with Medicare ACOs

- Patients will not necessarily even know they are part of an ACO
- Numerous non financial quality and service metrics required in order to receive incentive payments
  - Additional prospective investment
- Few institutions with sufficient scale, IT capability and financial resources
- Most health system reserves are in the hands of insurance companies

New Mischief From CMS

- CMS is proposing to extend the contiguous body part concept
- Officially called the “Multiple Procedure Reduction Rule” (MPRR)
- Applies to CT, MRI and Ultrasound
- CMS is proposing to apply the rule whenever more than one test is done in a day
- MPRR would then apply across modalities and for non contiguous body parts

New Mischief From CMS

- CMS has just (1/1/2011) bundled CT abdomen and CT pelvis with drastic cuts in reimbursement
- Likely more to come
- CMS believes these actions are in the “spirit” of Congressional intent to decrease reimbursement for “over valued” services

Impact of DRA and CMS Policy Cuts on Industry and Radiology Practice

- ACR member survey—600 respondents
  - 41% laid off staff or altered hiring plans
  - 49% cancelled or postponed equipment acquisitions
- DI Magazine reported:
  - Many imaging centers closed and valuations plummeted
  - “The medical device industry saw sales of CT, MR and PET fall $125M”

Impact on Industrial Revenue: GE

- Quarterly Revenue GE Health Care
  - Q4 2007, Q3 2008, Q3 2009, Q3 2010
  - Revenue in Billions

CMS Timeline

- Changes in TC Payment for MRI Brain WW0
  - DIOPPS Payment
  - PFS Payment

Health reform and CMS policy changes

Note: Source: ACR, Data - P. Kassing, Payment Policies 2011 presentation
Market for CT Scanners

• US market
  – 2007 = $2.1 Billion
  – 2010 = $585 Million
• Number of devices 2010
  – US ~ 700
  – Europe ~ 1200

Factors That Will Propel Imaging Forward

• Economic recovery
• Consumer demands for better, safer, more effective health care—baby boom generation
• Provider needs for more efficient care delivery—ACOs, Capitation, bundled payments
• Competition between institutions to provide better quality and service
• Regulation—requirements for more data and clinical trials prior to FDA approval
• Highly dependent on imaging and new imaging technology

Future Directions For Imaging—Clinical Practice And Technology Development

With All of the Economic Threats, Will Medical Imaging Survive and Flourish?

Development of New Technology

GE Health Care Quarterly Revenue Versus S&P 500

Economic recovery is a tide that will lift industry's boats.
**Future Growth Of Clinical Medical Imaging In The United States**

- DRI, P-4-P, RBMs, NSF, radiation scare, recession
- Organic growth with aging population
- Reimbursement for CCTA, CTC, and Lung Cancer Screening etc.
- DRA 2, new 3rd party initiatives and Medicare cuts

**Turf Battles**

- Inevitable as patterns of care change
  - Major imaging on the critical path of care for many diseases
  - Endovascular interventions
  - Ultrasound for everything
- Non radiologists often favored by hospitals
  - Competition for admissions
  - Admitting patients generates major revenue
- Many radiologists are invisible to patients and referring physicians

**Pushing Back**

- Radiologists must demonstrate their unique value
  - More in depth knowledge of the imaging process
  - More knowledge about radiation and radiation protection
  - Better and more accurate interpretations
- Radiologists must become more visible
  - ACR Face of Radiology Campaign

**ACR Survey Results**

- Only 48% of those surveyed correctly identified radiologists as doctors!!

- Americans are CURRENTLY split down the middle on:
  - Preference for "MY DOCTOR" or a RADIOLOGIST when subject to medical imaging procedures.
  - Whether a radiologist is a person who INTERPRETS or a person who ADMINISTERS the scan – i.e. a technologist.
  - Those who correctly identify the radiologist as a “physician” are MORE LIKELY to want to see them for medical imaging scans.

- Educating Americans on the radiologist’s training and role can POSITIVELY IMPACT public preferences for radiologists.

**ACR Face of Radiology Campaign**

- Radiologists are physicians
- Radiologists are the best trained in diagnostic imaging
- Importance of high-tech delivered health care
- Radiologists are your physician

**ACR Campaign Position Statement**

*From: Radiology is the medical specialty directing medical imaging technologies to diagnose and sometimes treat diseases. (Wikipedia)*

*To: Your radiologist - the physician expert in diagnosis through medical imaging technologies.*
Commoditization

• Another kind of turf battle
• Radiologists are paid primarily for interpreting images
• The more studies performed, the more money is made

Interpretation of Images

• However, if radiology is too narrowly defined around image interpretation, the practice of radiology can be outsourced and commoditized
  – Phantom nighthawks and dayhawks
  – Interpretations bought and sold
  – eBay for radiology

How to avoid becoming a commodity

Add Value Beyond Interpretation

Become indispensible by being expert and engaged in all phases of the imaging process
Complete Practice Of Radiology

- Select and manage equipment
- Educate and evaluate technologists
- Establish imaging protocols
- Evaluate indications for examination
- Educate patients
- Determine appropriate examination
- Monitor examination quality
- Monitor and assure patient safety
- Attend hospital conferences and correlate imaging results with other patient data
- Communicate results and consult with referring doctors (and patients)

Interpret Images

Commodity Services

Take Charge of Managing the Entire Imaging Process

Management of the Imaging Process

Consultation With Referring Physicians

- Continuing medical education about medical imaging
- Selection of best imaging method for a particular patient
- Results reporting and discussion of significance
- Multidisciplinary conferences to help integrate care

Consult with:
- Referring physicians
- Patients
- Payers
- Technologists
Just-in-time information for referring physicians

Quality and Safety

- Radiation exposure
  - ACR DR, CR and CT dose registries
- Image quality, exam completeness
- Quality of interpretation
  - Peer review
  - ACR RADPeer – over 13,000 users
- Contrast reactions
- Contrast induced nephropathy
- Complications
- Report turnaround time

Take Charge of Radiation Issues
Why all the furor now about radiation exposure?

- BEIR VII (Biological Effects of Ionizing Radiation) endorsed the linear no-threshold model for extrapolating cancer induction
- NCRP (National Committee on Radiation Protection)
  - Medical exposures have increased by 7 fold over last 25 years

CT Radiation Dose

- Rapid growth in procedures & aggregate related increase in radiation exposure
- CT accounts for 49% of medical radiation exposure (NCRP Report 160)
- Reported “29,000 excess cancers” and “15,000 excess cancer deaths” from CT @ 2007 rate of performance (A Berrington de Gonzalez et al. Arch Intern Med 2010: 170;2071-2077)
- Widely publicized cases of overexposure
- Concerns from patients, providers, regulators and third party payers

Beir VII: Health Risks from Exposure to Low Levels of Ionizing Radiation

Figure 2. In a lifetime, approximately 42 (solid circles) of 100 people will be diagnosed with cancer from causes unrelated to radiation. The calculations in this report suggest approximately one cancer (star) in 100 people could result from a single exposure 100 mSv of low-LET radiation.

Dual Approach to Dose Reduction

- Eliminate unnecessary scans
  - Appropriateness criteria
  - Education—all stakeholders Tort reform
  - Ban on self-referral
- Reduce the dose per scan
  - Protocol optimization
Protocol Development

- Professional judgment is important
- Medical “completeness” of protocols
- Patient safety and tolerance
- Selection of equipment
- Definition of image acquisition- radiation dose optimization
- Criteria for judging completeness and quality
- Maintenance of policy and procedure manual to meet regulatory requirements

Image Gently Campaign Of The Society Of Pediatric Radiology

http://www.pedrad.org/associations/5364/ig/

Low-dose H&N CT

Dx: Bilateral Peritonsillar Abscesses
CTDvol = 2.75mGy, DLP = 51mGy.cm
Estimated Dose = 0.27mSv

9 yr old boy underwent whole spine CT with scoliosis protocol

Scan parameters
High pitch: 3.0:1
kVp: 100
Table speed: 115.2
Ref mAs: 10

Amelia of left upper limb
Hypoplastic left scapula
Hypoplastic left chest wall muscles
No scoliosis or spinal abnormality

Estimated Dose: 0.15 mSv

17 yo male with chest pain, elevated troponnin

3D Volume rendering
Negative CTA obviated need for invasive angiography. Cardiac MRI confirmed myocarditis (arrows).

FLASH-mode radiation dose: 0.76 mSv

Diffuse lung disease chest CT reconstructed with FBP and ASIR high definition mode

CT Dose Comparison

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<td>3.3 (median)</td>
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<td>10</td>
<td>5</td>
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<td>CTC</td>
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Actively Manage Relations With Stakeholders

Stakeholders

- Referring physicians
- Patients
- Technologists
- Nurses
- Other departmental personnel
- Hospital administrators
- Payers

Stakeholder Satisfaction

- Identifying stakeholder expectations
- Different for each category
- Surveys of selected stakeholders to determine satisfaction
  - Employees
  - Patients
  - Referring Physicians
- “Gap-to-goal” strategy to address concerns
Management of Human Resources
• Most hospitals under invest in the education of their work forces and do not have an articulated philosophy
• Radiologists should play a key role in employee education and management
  – Technologists
  – Nurses
  – Others

Mass General Imaging - Information for Patients
• Patient exam guides
• Imaging center appointment postcards
• One-page spotlights on specific service lines and locations
• Posters and banner displays
• Mass General Imaging "View-Master"
• Slide shows in waiting rooms
• Mass General Imaging Calendars

Brochures and Collateral Materials

Brochures and Collateral Materials

Patient Satisfaction Surveys For Each Imaging Location

Special Programs
• New physician “Welcome Wagon”
• New practice support staff orientation
• Cancer Center Imaging Patient program
• Sports Medicine program
• Referring Physician “Whistle Stop” Quality Tours
Targeted Approach: Education of Referring Physician Support Staff

Support staff orientation

Special Programs: “Welcome Wagon” For New Referring Physicians

Engaging in Community Events

• American Cancer Society “Relay for Life”
• American Heart Association Boston Heart Walk
• Making Strides Against Breast Cancer
• Tufts 10K for Women Road race
• American Diabetes Association Diabetes Walk Boston
• Boston Marathon Sports and Fitness Expo
• Breast Cancer Awareness Month

Mass General Imaging Community Event Sponsorships

What Hospitals Are Looking For From Radiologists In 2010 And Beyond

• High quality and safe imaging
• Excellent service
  – Patient satisfaction
  – Referring physician satisfaction
  – 24/7 coverage
• Cooperation with hospital imperatives
  – Participation in Q&S programs
  – Care integration
  – Utilization management
  – Rapid report turnaround and patient throughput
What Hospitals Are Looking For From Radiologists In 2010 And Beyond

• Commitment to delivering "value added" services
  – Consultations
  – Management of hospital personnel
  – Education and training of hospital personnel
  – Help with equipment selection and management
  – Etc
• Radiology groups should periodically assess as objectively as possible how well they are meeting these expectations

Conclusions

• The future for demand for imaging is bright
• Legislative and regulatory initiatives will continue to put downward pressure on reimbursement
• Some turf will inevitably be lost
• Where radiologists come out in the equation will depend heavily on how strategies are developed and carried out

Conclusions

• Enormous opportunities exist to add value beyond interpretation of images to patients, referring physicians, hospitals and other stakeholders
• Groups that do this well will be seen as indispensable to their organizations
• Groups that define their practices too narrowly around interpretation of examinations will have little leverage and will be at risk for being replaced in whole or in part by other physicians or by teleradiology