Patient-centered Imaging

Proposition: create a truly patient-centered, transparent, evidence-based national imaging practice.

OVERUSE IS OVERUSED
Overuse is utilization that has negligible benefit, so that harm outweighs any slim benefit in virtually all cases. The benefits of patient-centered imaging far outweigh the risks.

Overuse causes harm by increasing interventions and by wasting resources that could otherwise be used for something meritorious. Regional variation of imaging is substantial. Higher utilization is not linked with better patient outcomes or explained by demographic or risk profile differences.1,2

Eliminating overuse reduces harm. It is not rationing.

The direct cost of imaging studies is over $100 billion annually. Up to one third of imaging may be overuse or duplication of studies.1-11

Beyond the direct cost, the actual cost of the initial overuse examination may be dwarfed by the downstream cascade of triggered non-value-added appointments, tests, interventions, and work days lost related to incidental findings. For computed tomography (CT), the rate of clinically significant incidental findings is approximately 10%.

The causes of imaging overuse include:

- Knowledge gap of the ordering provider.
- Patient demand that is amplified by a widespread lack of economic disincentive and assumption that more information is better.
- Financially motivated self-referral, radiologist imaging recommendations, and “just do it” service mentality. This segment alone may approach $16 billion annually.12
- Technology availability.
- Intolerance of diagnostic uncertainty.
- Defensive medicine, which accounts for approximately 1 in 5 examinations.13
- Inaccessibility or ignorance of previously performed examinations, which is estimated at approximately 1 in 5 examinations.2,14

MISUSE AND OVERUSE CAUSE PREVENTABLE CANCERS
Misuse is the inappropriate application of imaging that is otherwise clinically indicated (eg, use of a higher radiation dose than needed for diagnostic accuracy). Unnecessary exposure to ionizing radiation by overuse and misuse is a serious public health issue.

Patient-centered imaging employs the lowest possible dose, adjusted for age and weight. In 2003, only 57% of departments adjusted CT dosage for pediatric patients. The high frequency of “double scans” revealed in the Medicare Imaging Efficiency Measures indicates widespread misuse of diagnostic ionizing radiation.15 Misuse also is manifested in the unjustified 6- to 13-fold variation in radiation exposure for similar examinations.16

There is considerable controversy about the potential risks associated with radiation. At one end of the spectrum, radiation hormesis experts believe there is benefit from exposure to low levels of radiation. Others see a serious public health issue that, just from overuse of CT, will result in 12 preventable radiation-induced cancer deaths a day (assuming 30% overuse rate and a 50% mortality rate).16-20

Ignorance of radiation risk is widespread. For example, most patients and emergency medicine physicians don’t believe that there is increased risk of cancer associated with CT scans. It is critical that the means of reducing overuse and misuse does not scare patients and result in reduction of indicated care. Proper informed consent will not dissuade most patients from undergoing a needed procedure.20

Regardless of where the truth lies, we should use only as much imaging and radiation as is necessary for patient-centered care and nothing more. There is enough harm from the consequences of overuse, beyond potential risk associated with radiation, to justify action (ie, the economic cost compounded by the emotional, financial, and medical ramifications of incidental, false-positive, and medically meaningless true-positive findings).
**A PROPOSAL**

Convene an independent multi-stakeholder Imaging Leadership Coalition to create and set standards for a national web-based platform with an imaging scorecard and decision support functionality.

Transparency is requisite for patient-centered imaging.

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**IMAGING SCORECARD**

The Imaging Scorecard content should include:

- **Imaging Overuse**
  - Composite rating for selected high-quality evidence-based guidelines (e.g., percent of trauma head CT examinations for which designated clinical prediction rule was followed).
  - Percent of selected examinations where report calls for additional imaging relative to national benchmarks (e.g., CT Colonography registry).
  - Financial conflicts of interest. Patients and payers should know if the ordering physician has a personal financial stake in the imaging.

- **Imaging Misuse**
  - Actual radiation exposure/examination benchmarked against national guidelines.
  - Presence of protocols to manage radiation dose based on weight and age.
  - Medicare outpatient imaging efficiency measures (i.e., proportion of CT “double examinations”).
  - Facility accreditation by one of selected professional accrediting organizations.

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**DECISION SUPPORT INFORMATION SYSTEM**

The proposed national web-based platform with computerized physician imaging order entry and decision support offers a validated means to increase diagnostic appropriateness and reduce utilization. This can be done with transparency, evidence basis, and workflow efficiency. The technology facilitates consistent results while educating practitioners with immediate feedback on appropriateness that supports patient-centered workflow through point-of-order shared decision-making.7,20

Public and provider awareness of the moral imperative and opportunity to provide patient-centered care combined with the economic incentive for payers to reduce costs would drive use of this national utility. Its widespread adoption should occur without government intervention.

This national utility would facilitate access to a choice of decision-support vendor solutions that meet functionality and content standards. Companies would be reimbursed by the payers based on usage, a model already proven successful in reducing cost and improving appropriateness.21

There is an important difference between reducing cost and removing waste. The most prudent way to increase the value of imaging is to rationally drive out waste. Categorical reductions in payment would further reduce access to imaging and lower quality because the root causes of overuse and misuse would not be addressed.

Finally, adherence to the publicly endorsed practice guidelines creates a safe haven from malpractice liability.

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**CALL TO ACTION**

A national web-based platform with imaging scorecard and decision support functionality can, today, without federal regulation or legislation, achieve the imaging triple aim by lowering cost, improving satisfaction, and reducing harm associated with imaging.

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**REFERENCES**


