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A practical framework for understanding and reducing medical overuse:

Conceptualizing overuse through the patient-clinician interaction

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Abstract

The overuse of medical services is an increasingly recognized driver of poor quality care and high cost. A practical framework is needed to guide clinical decisions and facilitate concrete actions that can reduce overuse and improve care. We used an iterative, expert-informed evidence-based process to develop a framework for conceptualizing interventions to reduce medical overuse.

Given the complexity of defining and identifying overused care in nuanced clinical situations and the need to define care appropriateness in the context of an individual patient, this framework conceptualizes the patient-clinician interaction as the nexus of decisions regarding inappropriate care. Other drivers of utilization influence this interaction and include health care system factors, the practice environment, the culture of professional medicine, the culture of health care consumption, and individual patient and clinician factors. The variable strength of evidence in support of these domains highlights important areas for further investigation.

Keywords

High value care; Patient-centered care; Quality Improvement; Overuse; Conceptual framework

Introduction

Medical overuse is the provision of healthcare services for which there is no medical basis or for which harms equal or exceed benefits. [1] It drives poor quality care and unnecessary

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cost. [2, 3] The high prevalence of overuse is recognized by patients,[4] clinicians,[5] and policymakers[6]; initiatives to reduce overuse have been launched, targeting physicians,[7] the public, [8] and medical educators[9, 10] with limited impact.[11, 12] To date, few studies have addressed methods to reduce overuse, and de-implementing non-beneficial practices has proven challenging. [1, 13, 14] Existing conceptual models for reducing overuse are theoretical[15] or focused at administrative decisions[16, 17]; we believe a practical framework is needed. We used an iterative process, informed by expert opinion and discussion, to design such a framework.

Methods

First the four authors, who have expertise in overuse, value, medical education, evidence-based medicine and implementation science, reviewed related conceptual frameworks [18] and evidence regarding drivers of overuse. We organized these drivers into domains to create a draft framework which we presented at Preventing Overdiagnosis 2015, a meeting of clinicians, patients and policy makers with interest in overuse. We incorporated feedback from meeting attendees to modify framework domains, and performed structured searches using keywords in PubMed to explore evidence in support of items within each domain and estimate its strength. We rated supporting evidence as strong (studies demonstrate a clear correlation between a factor and overuse), moderate (evidence suggests such a correlation or demonstrates a correlation between a particular factor and utilization but not overuse per se), weak (only indirect evidence exists), or absent (no studies identified evaluating a particular factor). All authors reached consensus on ratings.

Framework principles and evidence

A patient-centered definition of overuse

During framework development, defining clinical appropriateness emerged as the primary challenge to identifying and reducing overuse. While some care generally is appropriate based on strong evidence of benefit and some is inappropriate due to clear lack of benefit or harm, much care is of unclear or variable benefit. Practice guidelines can help identify overuse, but their utility may be limited by lack of evidence in specific clinical situations[19] and their recommendations may apply poorly to an individual patient. This presents challenges to using guidelines to identify and reduce overuse.

Despite limitations, the scope of overuse has been estimated by applying broad, often guideline-based, criteria for care appropriateness to administrative data.[20] Unfortunately, these estimates provide little direction to clinicians and patients partnering to make usage decisions. During framework development we identified the importance of a patient-level, patient-specific definition of overuse. This approach reinforces the importance of meeting patient needs while standardizing treatments to reduce overuse. A patient-centered approach may also assist professional societies and advocacy groups in developing actionable campaigns and may uncover evidence gaps.

The centrality of the patient-clinician interaction

During framework development, the patient-clinician interaction emerged as the nexus through which drivers of overuse exert influence. The centrality of this interaction is demonstrated in studies of the relationship between care continuity and overuse[21] or utilization [22, 23], by evidence that communication and patient-clinician relationships impact utilization,[24] and by the observation that clinician training in shared decision-making reduces overuse.[25] A patient-centered framework assumes that, at least when weighing clinically reasonable options, a patient-centered approach will optimize outcomes for that patient.

Incorporating drivers of overuse

We incorporated drivers of overuse into domains and related them to the patient-clinician interaction. [26]Domains included the culture of healthcare consumption, patient factors and experiences, the practice environment, the culture of professional medicine, and clinician attitudes and beliefs.

We characterized the evidence illustrating how drivers within each domain influence healthcare use. The evidence for each domain is described in Table 1.

Results

The final framework is shown in the Figure. Within the healthcare system, patients are influenced by the culture of healthcare consumption, which varies within and among countries.[27] Clinicians are influenced by the culture of medical care, which varies by practice setting[28], and by their training environment.[29] Both clinicians and patients are influenced by the practice environment and by personal experiences. Ultimately, clinical decisions occur within the specific patient-clinician interaction.[24] Table 1 describes components of each domain, the domain's likely impact on overuse, and the estimated strength of supporting evidence. Interventions can be conceptualized within appropriate domains or through the interaction between patient and clinician.

Discussion

We developed a novel and practical conceptual framework for characterizing drivers of overuse and potential intervention points. To our knowledge, this is the first framework incorporating a patient-specific approach to overuse and emphasizing the patient-clinician interaction. Key strengths of framework development are the inclusion of a range of perspectives and the characterization of the evidence within each domain. Limitations include the fact that we did not perform a formal systematic review and our broad, qualitative assessments of the strength of evidence. However, we believe this framework provides an important conceptual foundation for future study of overuse and interventions to reduce it.

Framework applications

The framework highlights the many drivers of overuse; it can facilitate understanding of overuse and help conceptualize change, prioritize research goals, and inform specific interventions. For policymakers, the framework can inform efforts to reduce overuse by emphasizing the need for complex interventions and by clarifying the likely impact of interventions targeting specific domains. Similarly, for clinicians and quality improvement professionals the framework can ground root cause analyses of overuse-related problems and inform allocation of limited resources. Finally, the relatively weak evidence informing the role of most acknowledged drivers of overuse suggests an important research agenda. Specifically, defining relevant physician and patient cultural factors, investigating interventions to impact culture, defining features of the practice environment that optimize care appropriateness, and describing specific practices during the patient-clinician interaction that minimize overuse (while providing needed care) are pressing needs.

Targeting interventions

Domains within the framework are influenced by different types of interventions, and different stakeholders may target different domains. For example:

- The culture of health care consumption may be influenced through public education (e.g. Choosing Wisely® patient resources)[30-32], and public health campaigns.
- The practice environment may be influenced by initiatives to align clinician incentives,[33] team care,[34] electronic health record interventions[35], and improving access.[36]
- Clinician attitudes and beliefs may be influenced by audit and feedback, [37-40] reflection[41] role-modeling,[42] and education.[43-45]
- Patient attitudes and beliefs may be influenced by education, access to price and quality information, and increased engagement in care. [46, 47]
- For clinicians, the clinician-patient interaction can be improved through training in communication and shared-decision-making,[25] access to information (e.g. costs) that can be easily shared with patients[48, 49], and novel visit structures (e.g. scribes).[50]
- On the patient side, the interaction may be optimized through improved access (e.g. through telemedicine) [51, 52] or patient empowerment during hospitalization.
- The culture of medicine is difficult to influence. Change is likely to occur through regulatory intervention (e.g. CMMI's Transforming Clinical Practice Initiative), educational initiatives (e.g. AAIM/ACP high-value care curricula[53]) and medical journal features (e.g. “Less is More” from JAMA Internal Medicine[54], “Things We Do for No Reason” from the Journal of Hospital Medicine) and professional organizations (e.g. Choosing Wisely®).

As organizations implement quality improvement initiatives to reduce overused services, the framework can be used to target interventions to relevant domains. For example, a hospital

leader who wishes to reduce opioid prescribing may use the framework to identify the factors encouraging prescribing in each domain, including poor understanding of pain treatment (a clinician factor), desired early discharge encouraging overly aggressive pain management (an environmental factor), patient demand for opioids with poor understanding of harms (patient factors), and poor communication around pain (a patient-clinician interaction factor). While not all relevant factors can be addressed, their classification by domain facilitates intervention, in this case perhaps leading to a focus on clinician and patient education about opioids and development of a practical communication tool, targeting 3 domains. Table 2 provides examples of how the framework informs approaches to this and other overused services in the hospital setting. Note that some drivers can be acknowledged without identifying targeted interventions.

Moving forward

Through a multi-stakeholder iterative process, we developed a practical framework for understanding medical overuse and interventions to reduce it. Centered on the patient-clinician interaction, this framework explains overuse as the product of medical and patient culture, the practice environment and incentives, and other clinician and patient factors. Ultimately, care is implemented during the patient-clinician interaction, though few interventions to reduce overuse have focused on that domain.

Conceptualizing overuse through the patient-clinician interaction maintains focus on patients while promoting better and lower-cost population health. This framework can guide interventions to reduce overuse at important parts of the health care system while ensuring the final goal of individualized high quality patient care.

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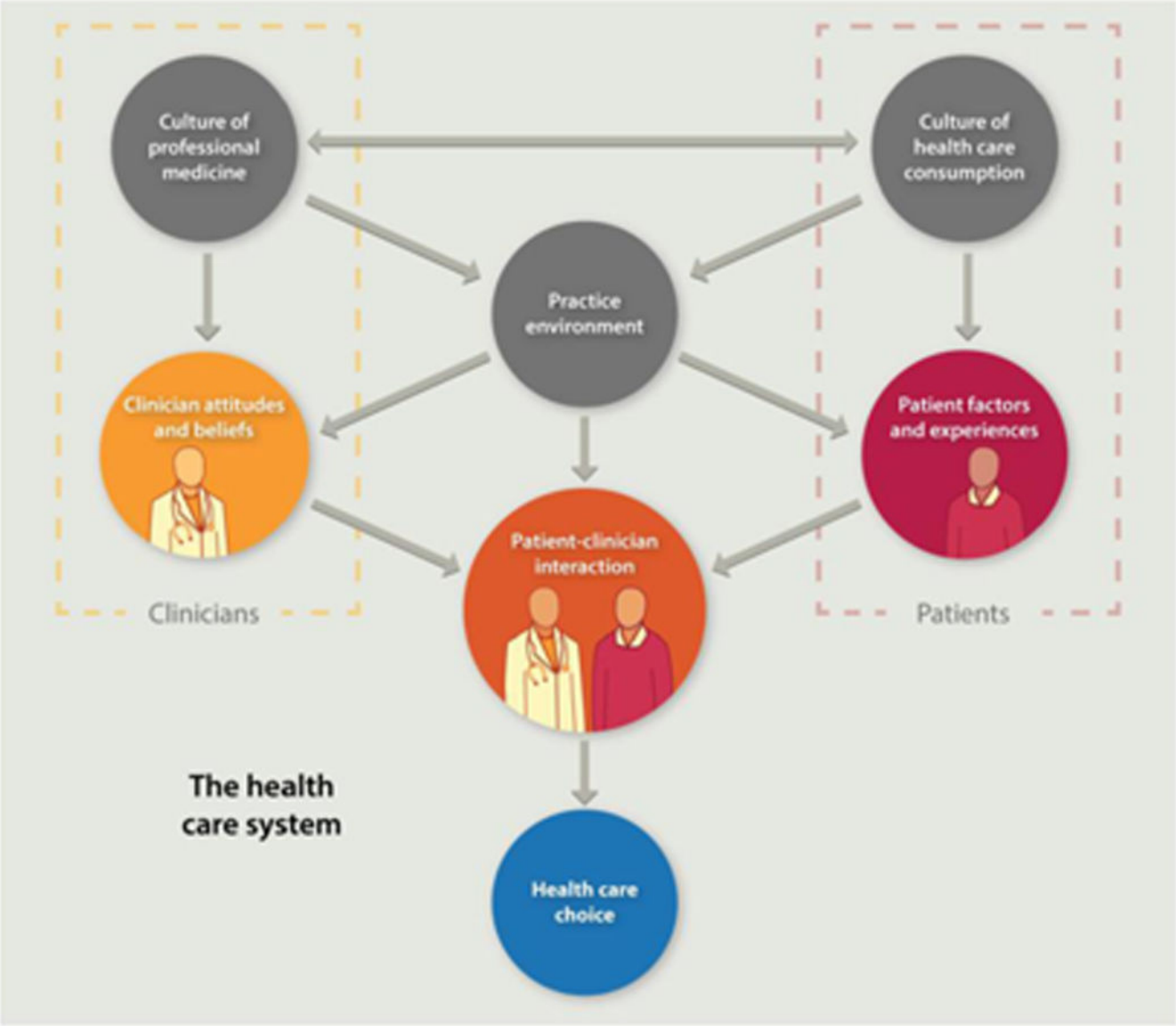

Figure. Framework for understanding and reducing overuse

Table 1
Factors that contribute to each domain of the framework for overuse of care

Domain	Factors	Evidence	Specific impact	Likely magnitude of effect on overuse
Culture of health care consumption	• Consumerism and advocating for one's own health • Information found on the internet and through the media • General expectations about the appropriate amount and type of care • Belief that you get what you pay for	Strength: weak None related to specific factors Evidence related to: • Variations in care[27, 55] • General enthusiasm for screening[56]	Likely leads to more general utilization, overuse, and use of costlier alternatives	Moderate
Patient factors and experiences	• Prior health care experiences (patient and family) • Demographic factors and education • Health literacy and numeracy • Patient interactions with health center staff • Patient interactions with other clinicians	Strength: weak to strong Evidence related to: • Impact of race/ethnicity on overuse and underuse[57, 58] • Patient expectations[59, 60] • Patient desire for investigation and answers[61]	Variable; can contribute to overuse or protect against overuse	Moderate. Interventions related to with patient demographics not defined
Culture of professional medicine	• Influence of broad regulations and metrics • Value placed on finding answers, certainty • Value placed on doing things • Discomfort with discussing/admitting diagnostic uncertainty to	Strength: absent to moderate No evidence exploring role of most individual factors Evidence related to: • Association between local culture and overuse[62-64](moderate evidence) • Physician factors and geographic variations[65]	Overuse performance measures can limit overuse but measures for preventing underuse may lead to overuse Emphasis on certainty, technology and active intervention likely contribute to overuse	Moderate to high

Domain	Factors	Evidence	Specific impact	Likely magnitude of effect on overuse
	others (strong vs. weak) • Fear of missing diagnoses • New high tech solutions more valued and reimbursed.			
Clinician attitudes and beliefs	• Personality and personal biases • Poor numeracy and knowledge of evidence • Past experiences with other patients with the same condition • Knowledge of and attitudes toward particular patient • Fear of litigation (defensive medicine) • Clinician-clinician interactions • Clinician-staff interactions • Comfort with discussing cost or other issues • Discomfort with diagnostic uncertainty	Strength: weak Evidence related to: • Physician beliefs and geographic variations[28] • Variation in utilization based on specific physician characteristics[66-68] • Self-reported drivers of physician overuse[26]	Traditionally mostly push toward more care Poor numeracy, lack of knowledge, discomfort with uncertainty, sampling biases from past experiences, interactions with other clinicians, fear of litigation, and some personality traits likely lead to overuse Patient continuity helps prevent overuse	High
Practice environment	• Financial incentives • Practice norms within the group and expectations from the affiliated health system • Structures which influence specific practices • Risk of lawsuits • Performance metrics may	Strength: weak Practice norms not well studied Evidence related to: • Local cultural norms and aggressive care[69-71] • Residency training and utilization[29, 72, 73] • Financial incentives[41, 74] (weak evidence) • General influence of practice setting[75]	Local cultural norms are influential (including local training culture) Other factors vary based on specifics	High

Domain	Factors	Evidence	Specific impact	Likely magnitude of effect on overuse
	encourage overuse	• Quality metrics may encourage too much care and overuse[76, 77]		
The patient-clinician interaction	• Specific communication styles • Concordance of culture, race, language, and gender • Prior experiences with each other • Visit priorities	Strength: moderate for shared decision making, continuity, weak for other factors Evidence related to: • Continuity of care and overuse[21] • Continuity of care and utilization[22,23] • Communication[24] • Shared decision making and overuse[25]	Continuity of care likely reduces overuse Shared decision making likely reduces overuse Unclear impact of culture and language	High

Note: Likely magnitude of effect on overuse was determined by author consensus based on strength and breadth of evidence and other factors

Table 2

Using the framework for real life examples of overuse to identify practical ways in which overuse can be addressed

Example of overuse	Possible drivers/domains	Feasible approaches to improvement
A hospitalist on a general medical service wants to reduce use of routine lab testing	Culture of health care: expectation of all clinicians (including attendings, consultants, nursing) for daily lab testing Clinician factors: belief that more is better, poor knowledge of evidence Practice environment: ease of daily ordering in the EMR Patient factors: expectation for frequent testing (likely a minor factor)	Culture: broad campaign across the medical center Clinician: education about evidence/ guidelines[43,44] Practice environment: EMR alert[35]
A physician hospital leader wishes to reduce inpatient opioid prescribing	Clinician factors: misperception of patient/parent desires, discomfort with pain treatment[81] Practice environment: pressure to discharge patients leading to aggressive pain treatment Patient factors: poor understanding of the potential harms of opioids, demand Patient-clinician interaction: poor communication regarding pain itself and the benefits/harms of therapy	Clinician: education about guidelines/evidence[43,44] Patient: provide information about options for treating pain and potential opioid harms Patient-clinician interaction: physician-directed tool for communicating about the issue[49]
A palliative care fellow seeks to reduce imaging tests in end-of-life (EOL) hospitalized patients	Culture of health care: need to define clinical problems even if there is no intervention, discomfort with doing nothing Clinician factors: belief that more information helps patients, belief that patients desire testing Patient factors: poor knowledge or acceptance of prognosis Patient-clinician interaction: poor communication regarding prognosis and EOL preferences	Clinician factors: education about harms of testing in these patients Patient-clinician interaction: specific tools to improve communication about EOL preferences[49,78]

EMR = electronic medical record; CMO=Chief Medical Officer