Ten Principles for More Conservative, Appropriate, and Careful Diagnosis

Introduction

Multiple, often competing spotlights are shining on the complexity and challenges associated with medical diagnosis. From one side, the recent National Academy of Medicine (NAM) report suggests that every person will experience at least one serious diagnostic error during their lifetime,¹ and the problem of diagnostic errors and delays is increasingly being illuminated as the leading cause of medical malpractice claims. (Ref) From another angle, clinicians and patients are being urged to use fewer diagnostic tests, and “Choosing Wisely” campaigns focusing on overuse of costly and/or potentially harmful diagnostic testing have been initiated in nearly every U.S. medical specialty and 20 countries worldwide.² Balancing tradeoffs between under-diagnosis (missing or delaying important diagnoses) and wasteful and harmful over-diagnosis that labels patients with “diseases” that may never cause suffering or death, is often represented as a need “to keep the pendulum from swinging too far in either direction.” (Ref) This framing of the problem as a simple tradeoff misses an underlying dynamic. Instead of a one-dimensional continuum, we see the need for a dialectical approach that views under- and over-diagnosis as two sides of the same coin, unified by the need for more timely, accurate, efficient, thoughtful, and caring approaches to diagnosis.

Patients worried about symptoms and clinicians uncertain about their exact cause or wanting to avoid missing the most serious possibilities often seek reassurance from diagnostic imaging, laboratory tests, and referral to specialists. However, there is increasing evidence that reflexively ordering tests or referrals or indiscriminately screening asymptomatic patients for feared diagnoses such as cancer, often fail to provide definitive explanations or lead to beneficial treatments. (Ref) In fact, there is evidence that indiscriminate diagnostic ordering is often more harmful than beneficial. (Ref) To counterbalance the tendency to order tests or generate referrals, payers (particularly in the U.S.) increasingly impose impediments that create financial barriers in the form of copays and deductibles, aimed at limiting ordering and utilization of diagnostic tests.

Current efforts to promote diagnostic restraint often focus on specific tests for particular conditions (e.g., Choosing Wisely with more than 250 specialty-specific recommendations to limit diagnostic testing). (Ref) Beyond such “test-by-test” admonitions, what is needed is an overarching, less reductionist set of principles that can guide practitioners and patients toward more appropriate diagnostic strategies and use of diagnostic tests. Such principles should support improved clinician and patient decision-making and education, as well as help guide health policy decisions to ultimately improve health outcomes and decrease costs.
We previously developed a set of principles for more conservative medication use to enhance prescribing safety and appropriateness. Here, we propose 10 general principles that extend the idea of a conservative approach to the domain of diagnosis. As with medications, we struggled to select the best label to describe this fundamentally different approach. Various potential candidate descriptors more judicious, mindful, patient-centered, careful, rational, effective, or appropriate diagnosis (see table 1). For the purposes of this paper, we use the term conservative diagnosis to encourage readers to contemplate what it means to both be more conservative with resources and more thoughtful about ordering tests that lack proven benefit.

As with the conservative prescribing principles, they are informed by the precautionary principle (Ref) which urges erring on the side of restraint when new technology or chemicals are introduced, to protect patients and the environment until we have adequate evidence of benefit and data to assure their longer-term safety. We have combined this precautionary approach with a philosophy guided by core primary care principles (e.g., care continuity, trusting relationships, good communication), as well as key patient safety lessons (e.g., situational awareness of diagnostic pitfalls, safety nets to mitigate harm, safety culture to facilitate learning and avoid blame). We assembled a diverse group of clinicians, educators, and health policy and communication experts from multiple countries with shared concerns about diagnosis quality to develop the following set of 10 principles to guide both clinicians and policy approaches.
Table 1. Potential labels for New Diagnosis Approach

What to Call This Approach to Diagnosis?

*“More … Diagnosis”*

- Conservative
- Judicial
- Mindful
- Patient Centered
- Shared
- Listening
- Relationship-based
- Modest
- Prudent
- Caring
- Thoughtful
- Realistic
- Honest
- Rational
- Appropriate
- Cautious
- Skillful
- Smarter
- Effective
- Safer
- Optimal
1- Promoting a New Model for Caring

Patients experiencing symptoms seek explanations of what is wrong, to understand what is causing their suffering, and to guide appropriate treatment. They rightfully expect their concerns to be taken seriously and to receive an accurate diagnosis. In many settings and for many symptoms, this has come to mean ordering diagnostic tests, imaging studies, or referral to specialists as the way to validate their concerns and best sort out their problems. For both urgent symptoms in acute care settings, and for subacute or chronic problems, patients and clinicians want to “rule out” serious, potentially life-threatening diagnoses and identify those for which a specific treatment could be beneficial.

This standard paradigm is challenged by important realities that undermine the traditional narrower, linear model of the physician making a diagnosis and then prescribing treatment. This model presumes that an exact diagnosis can and should always be made, and invariably matters for selecting therapies. It posits that testing is the key to making an accurate diagnosis. It often shortchanges the role for the history and physical examination, and importantly, this approach overlooks the role of the patient in “co-producing” diagnoses collaboratively with clinicians. (Ref: Tudor Hart, NAM report) It ignores the fact that diagnoses often evolve over time, making diagnosis more of a longitudinal process than a cross-sectional outcome. It implicitly assumes that what is most important to patients is having a diagnostic label to apply to their illness, rather than addressing their concerns (both stated and unstated) and having a plan to manage their symptoms. Instead of a static label, diagnosis should be re-envisioned as a dialogue with patients, one that continuously strives to align our understanding with theirs (Ref: R. Lehman) or even recognizes that, at times, no diagnosis is needed or expected.

In many ways, what we are proposing is not really a “new” model, but rather an integration of the best traditions of scientific medicine, patient-centered care, and shared decision-making, which are sometimes forgotten in the glamor of advanced testing and imaging technology. Carefully listening to and observing patients over time often provides more valuable information than that revealed by a myriad of radiological or molecular tests.

Testing can often distract as much as provide answers or reassurance. Thus, we need a new model and message demonstrating that caring and thoroughness is not synonymous with ordering tests and referrals. Rather, giving patients and clinicians adequate time to review relevant history, jointing weigh differential diagnoses and their likelihoods, share uncertainties, and follow-up longitudinally, will generally provide better outcomes than many thousands of dollars of tests. Using tests as shortcuts, workarounds, or substitutes for the nuanced human endeavor that diagnosis represents is a recipe for both missed- as well as over-diagnosis.
2. Developing a New Science of Uncertainty

The importance and pervasive nature of uncertainty in medical care, and particularly in primary care has received renewed attention in recent years. (Ref) Ironically, as tests have become more precise (Ref) and “precision medicine” has been declared a major project for U.S. health care (Ref), there is a growing awareness of the pervasiveness of uncertainty in medicine. (Ref) How to say with certainty which of the hundreds of patients a clinician sees who present with fever, abdominal pain, headache, dizziness, falls, weakness, or back pain have a benign, self-limited problems. a rarer but more urgent or serious diagnosis, represents a key challenge for clinicians. The proliferation of new imaging, genetic, and even self-administered diagnostic technologies and “apps” amplifies, rather than decreases these challenges. By introducing additional uncertainties, this surfeit of data often requires both clinicians and patients to attempt to interpret and understand the significance of frequent, incidental findings, genetic “risk factors” poorly calibrated with outcomes, or evaluate positive tests with poor predictive value especially when indiscriminately applied to patient populations with a low probability of serious disease.

Thus, we need to develop a new science and praxis of uncertainty, as well as a major public conversation acknowledging its challenges to our way of working with patients and its opportunities for learning and collaboration. (Ref) A four-pronged strategy is needed. First, clinicians need a better awareness and appreciation of their own and medicine’s limitations. This will require far greater physician humility. This enhanced appreciation of our personal limitations and the limitations of medicine. It needs to be driven by research and education that specifically targets the ways diagnostic uncertainties and errors permeate and impact complex systems. This prescription for modesty can serve as a starting point for enhanced situational awareness and practicing more reflective, cautious and, ultimately, conservative medicine.

Second, beyond simply becoming aware of our limitations, we need to accept that uncertainty is intrinsic to our work and become more comfortable with working in zones of uncertainty. However, being more aware of uncertainties can counterproductively lead to more clinician and patient anxiety and/or ordering more tests. Additionally, becoming comfortable with uncertainty should not lead to complacency, resignation, or indifference to patients’ concerns. Patient suffering and anxieties must be respected rather than handled in a dismissive manner. Thus, a third strategic requirement is developing sensitive, caring, and effective ways of communicating uncertainty to patients. We need better language, experience, and feedback from patients to help us learn how to advance the state of the art for conveying and discussing uncertainties. Clinicians seeking to be both more honest as well as reassuring to patients will need help regarding recommended yet customizable language, along with time and support to foster transparency and sharing uncertainty with patients. Different patients will have different needs and desires and we need to learn better ways to flexibly address and accommodate these varied needs.
Finally, we need more thoughtful and effective ways to operationalize our practice of uncertainty science. At the most basic level, the crafting of a differential diagnosis structurally acknowledges that a single definite diagnosis is not always possible or desirable. Physician notes, even in serious malpractice cases, often lack an adequate differential diagnosis. (Ref) We need to learn how to craft accurate assessments and associated prognoses and plans, as well as convey and document these assessments. Current electronic records are becoming littered with a host of distracting information and tasks taking us away from this key element of operationalizing our reflecting, recording and acting on our diagnostic thinking. (Ref) Engineering proactive, reliable follow-up and outcomes feedback is another important aspect of ensuring that uncertainty is hard-wired into medical practices. (Schiff 2007 Nicholson BMJ 2016) Because we can never be 100% certain of our diagnoses, we need to design safety nets that both keep the door open to make it easy for patients to contact us when they are not improving or progressing as expected, as well as create proactive mechanisms that reach out to them to monitor their course. There is a critical need to automate reliable ways to perform such monitoring, and make it easy for both clinicians and patients. (Ref)

3. Rethinking Symptoms.

More than half of office visits are prompted by common symptoms, yet two important facts stand out, and are underappreciated by clinicians and patients: a) decades of epidemiologic studies examining encounters have shown a third to a half of symptoms defy definitive medical diagnosis, and b) most are self-limiting with 75-80% improving over the next 4-12 weeks, usually regardless of medical treatment. (Ref)

For example, earlier studies by Kroenke tracked 1000 primary care encounters for patients with 14 common complaints with a total of 567 new symptoms including chest pain, dizziness, fatigue, headache, edema, back pain, dyspnea, insomnia, abdominal pain, numbness, impotence, weight loss, cough, and constipation. Diagnostic testing was performed in two-thirds, yet an “organic etiology” was found in only 16%. Based on this and others studies the authors concluded that “the classification, evaluation, and management of common symptoms need to be refined. Diagnostic strategies emphasizing organic causes may be inadequate.” (Ref) Fortunately, many such poorly explained symptoms are self-limited, and even for those that do not resolve, initiating a cascade of lab testing, imaging, and referrals often leads to more harm than benefit. Serious causes not initially apparent seldom emerge after long-term follow-up. (Ref)

Many physical symptoms cannot be linked to a physical diagnosis. This may be due to a range of factors, including the limitations of medicine for explaining all physical dysfunction, the stage of the disease process, the patient’s misunderstanding of medicine’s capacity, and finally, the
Some patients have somatic symptoms strongly associated with and often meeting criteria for depression, anxiety, or somatoform illnesses—diagnoses which in up to 2/3 of these patients go unrecognized and untreated. (Ref) Many of these symptoms are related to and rooted in social circumstances and various stresses and financial problems patients experience at home (or lack of one), work, or their personal relationships. Even when these factors are identified, clinicians tend to fall back on their more limited repertoire of tests and drug treatments, rather than diagnosing and addressing these seemingly “insoluble, non-medical problems.” (Ref) Recent data suggest that visits for so called “medically unexplained symptoms” are the fastest growing type of medical encounter outpacing circulatory, cancer, respiratory, or endocrine causes of medical encounters. (Ref) Caring for patients with such problems can be frustrating and can lead clinicians to be dismissive, or overtly or subtly stigmatize such patients. Instead, we need to move away from exhaustively trying to “rule-out” multiple rare diseases and then labeling patients as “non-organic,” toward more thoughtful diagnostic approaches.

A final failure in our current approach to symptomatic patients that often leads clinicians to stray from a more conservative path is their failure to thoughtfully match the symptoms and signs to disease syndromes. Isolated symptoms are misconstrued by clinicians (or at times, by patients searching the Internet) and inaccurately connected to unrelated incidental lab or imaging findings. For example, a mental status change in an elderly dementia patient is often misattributed to a urine specimen suggesting bacteriuria (frequently improperly collected in a non-sterile way or representing colonization), or a patient with a six-week history of continuous atypical chest pain is sent to the ED to rule-out acute coronary ischemia and ends up undergoing a battery of cardiac tests.


Continuity of care and the resulting knowing, trusting relationships, is central to conservative diagnosis. It is the foundation for judicious clinical practice, without which – clinicians are forced to adopt defensive, inadequately informed, costlier, and often less-productive practice styles.

Realistically, not every encounter with every patient can be with a clinician who has a long-term relationship with that patient. However, health systems that maximize relational and informational continuity have been demonstrated to perform better and cost less. (Ref) Systems that build on a strong foundation of primary care that supports knowing the patient, their past medical history, and their individual characteristics and circumstances, help focus diagnosis on what is most relevant to that patient, and avoid needless medical work-ups for problems that are either chronic or primarily psychosocial. The clinical phrase “in her usual state of health”
represents knowledge of a patient’s baseline, a longitudinal understanding that critically informs diagnostic strategy and facilitates diagnostic restraint.

Patients value having a personal clinician who knows them well. At the same time, health care is changing, with teams, urgent care centers, shift-work duty hours, increasing emergency department (ED) encounters, and patients demanding ready access to care. This is transforming where and how care is delivered. We need to harness the many forces driving these changes to productively understand and use them to maximize continuity. If patients are finding it more convenient to access an urgent care center during working hours near work, or the ED “after-hours” near home, we need to re-engineer care models to make access to their long-term provider easier. If clinicians’ schedules are overbooked for the next 2 months thereby blocking needed primary care physician access for patients with urgent symptoms, then practices need to redesign patient flow and scheduling, and provide the additional resources to give continuity the priority it warrants.

Continuous insurance coverage is essential to ensure ongoing rather than disrupted continuity. Internationally, universal single-payer type systems that do not depend on employment age, shifting family income or marital status, or frequent disruptive switching of employers’ health plans, while not a panacea, have demonstrated better continuity of care. (Ref: Commonwealth)

Another important aspect of continuity and trust, that greatly impacts on clinicians’ ability to be conservative in ordering testing and referrals, is financial incentives. Patients are more likely to follow clinician’s advice and less likely to sue doctors they know and trust. But if clinicians are financially incentivized to order or withhold tests, it makes it difficult to trust advice that a test or treatment is not needed—since patients wonder whose interest is being served by this advice—the doctors’ or the patients’? Whether related to incentives to order more tests (e.g. physician owns the MRI machine, or receives additional remuneration for each echocardiogram they read) or pay-for-performance), reimbursements that incentivize clinicians to order fewer tests (e.g. metrics that tie bonuses to ordering fewer MRIs for back pain), such arrangements create financial conflicts that undermine patient trust and the ability of physicians to follow a more judicious approach. (Ref)

5. Taming Time

Time is the currency of clinical care and the great incubator for diagnosis. Having adequate time to spend with and follow patients represents the decisive factor that separates good diagnosis from missed and over-diagnoses. Having an understanding and engaging the time dimension of diagnosis—an element often missing from static disease definitions or textbook descriptions that simply list signs and symptoms—is key to making an accurate diagnosis of what is really going on with a patient. Carefully and skillfully weighing diagnoses as they evolve over time requires
patience and time for clinicians to work with patients to listen, observe, discuss, think, and follow-up.

Few clinicians would disagree with many of the conservative diagnosis practices we have advocated here. But many would argue that they simply do not have time for prolonged discussions with patients about uncertainty, or explore their symptoms in greater depth, or spend time on the phone following up on their patient’s course. Thus, redesigning clinical practice to create the time needed for these vital elements of diagnosis represents a critical priority for more judicious diagnosis. Since time is limited, this inevitably requires changing the ways we practice to create new efficiencies and synergies with other team members as well as the restructure our time and patient follow-up. This starts with better delegation of tasks to others on the office or hospital team, but more fundamentally entails a re-engineering of what, where, when and how we do our work. Many face-to-face encounters can be replaced by phone or electronic communication, as well as better managed by using smarter tools (e.g. ambulatory blood pressure monitoring) and approaches for collecting and organizing information from patients. Leveraging this with more careful follow-up will allow us to practice more conservatively. While watchful waiting is a fundamental pillar of conservative diagnosis, it is not the same as unwatchful neglect. We need to design proactive follow-up systems to operationalize safety nets to proactively and reliably reach out to patients to check how they are doing or whether they have developed worsening or new symptoms.

6. Linking Diagnosis to Treatment

Both conceptually and practically, diagnosis needs to stand less alone and more in tandem with treatment. The value of diagnosis is obviously greater where there are effective and specific treatments, and more limited if no therapy exists or when a diagnosis is not needed to select among differing treatment options. While this might seem obvious, many diagnostic efforts proceed without careful consideration of this reality. Consider, for example, nonspecific neck or back pain without neurologic findings, acute upper respiratory or sinus symptoms in non-toxic patients, stable chest pain, chronic headaches, genetic testing in low risk populations, mild head trauma, or repeat testing in patients with known and stable diagnoses. Each exemplify situations where clinicians often order tests without weighing how likely it is that results will change the treatment, or contribute (or detract) from patient’s wellbeing. (Ref)

Thus, diagnosis needs to be prioritized based on treatment availability, effectiveness, specificity, urgency, and acceptability to the patient. This goes beyond simply asking how a certain diagnosis will change treatment. It also entails an iterative discussion, between the clinician and patient of broader management considerations, including how the patient might want to proceed given various possible contingencies and diagnoses. A patient who is absolutely opposed to
having back surgery might be best treated without an exact anatomical diagnosis of the cause of their pain given the evidence we now have regarding similar outcomes with similar treatment alternatives. In such situations, treatment does not need to always follow precise diagnosis: rather the relationship between the two is more dynamic and complex.

7. Tests: More thoughtful Ordering and Interpreting

Practicing more conservative diagnosis is not just saying no to tests or patients requesting them. Rather, it is about more intelligent test selection, timing, and interpretation, and a more balanced understanding of their benefits, harms, costs, and limitations. Creating such a balanced approach starts with a better appreciation of the potential harms of testing (Table 2). Some harms are more obvious, but many are less visible or emerge later, perhaps on another clinician’s watch.

In addition to recognizing potential harms, the clinicians should scrutinize the purported benefits of a particular test. Tests results are “only a surrogate marker for actual benefit for the patient.” (Ref) Application of this approach “requires a shift in clinicians’ thinking to clearly recognize that, whatever their accuracy, diagnostic tests are of value only if they result in improved outcomes for patients.” (Ref) Thus, testing needs to be viewed more strategically and held to a higher standard of evidence. Lacking such evidence, clinicians should be skeptical about the value of testing and err on the side of being more critical and refrain from ordering tests until their benefit for the patient is proven.

Few clinicians realize the lack of rigor in approving new diagnostic tests. Compared to medications which typically require evidence from at least two randomized efficacy trials to obtain FDA approval, diagnostic tests are often introduced and widely adopted with much less stringent evidence. Frequently, there are biases in the studies which are conducted and subsequently analyzed by the researchers or companies developing and selling the new tests, with inadequate or no independent evaluations. (Ref)

A final set of issues relates to the real-world application of diagnostic testing strategies. Their timing, sequencing, marginal benefits, proper performance and interpretation, and rates of errors in sample collection, analysis, and interpretation, all need to be considered when ordering and acting on test results. A conservative approach would be mindful of these factors and aim to mitigate these problems by a more deliberate approach to test-ordering.
Table 2. Potential Harms from Diagnostic Testing

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<th>Direct Harm from Testing</th>
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<tr>
<td>- Complications of invasive tests</td>
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<td>- Radiation-associated cancers, other radiation harms</td>
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<td>- Unstable patients leaving more protective environments to undergo tests</td>
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<tr>
<td>- Delays in initiation of urgent treatment awaiting test performance, receipt of results</td>
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<td>- Adverse reactions (e.g., renal toxicity) from contrast or other diagnostic agents</td>
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<td>- Local complications from phlebotomy, catheter access (hematoma, contamination, pain from multiple venipuncture sticks, wounds), loss of future venous access</td>
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<th>Downstream Harm from Testing</th>
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<tr>
<td>- Harm from further work-up and treatment of false positive tests.</td>
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<td>Especially failure to account for poor predictive values of positive results in low prior probability patients</td>
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<tr>
<td>- Harm from treatment from over-diagnosis (i.e., conditions which, although correctly diagnosed diseases, never would have caused harm or required treatment)</td>
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<tr>
<td>- False reassurance: complacency /failure to treat as result of a false negative test</td>
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<tr>
<td>- Harm from additional testing- cascades following initial false positive/over-diagnosis test/result</td>
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<tr>
<td>- Conveying a message to patients that promotes a culture of indiscriminate testing</td>
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<th>Harm Intrinsic to Making a Diagnosis</th>
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<td>- Stigmatizing labels (that may outweigh any benefits of the diagnosis for that patient)</td>
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<td>- Anxiety from diagnoses that would not have otherwise been discovered or treated; or longer anxiety period</td>
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<tr>
<td>- Distraction of attention (clinicians’, patients’) from more beneficial diagnostic activities (obtaining better history, serial exams) and treatment</td>
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8. Safety Nets: Incorporating Lessons from Diagnosis Errors

The recent attention given to diagnostic errors (with such errors emerging as the leading cause of malpractice claims) might seem to argue for more aggressive efforts to “rule out” a myriad of common and rarer diagnoses, lest they be missed and labeled diagnosis errors and delays. (Ref) In reality, initiatives to reduce diagnostic errors should be synergistic with rather than oppose more conservative diagnostic approaches. To the extent we can better anticipate such errors and hard-wire systems to protect against them, the more we can inhabit a space where it is safe to practice conservatively.

The National Academy of Medicine and others have made a series of recommendations which, if followed, could provide guidance and, at the same time, afford wider latitude for more cautious practice. (Ref) Clinicians armed with focused knowledge and reminders of key pitfalls to avoid red flags, and diagnoses not to miss, could be justified and comfortable operating in a more conservative, less “defensive medicine” zone. Armed with “situational awareness” of danger zones, clinicians and patients could be reassured of the low likelihood of serious errors or harm in other situations where watching and waiting was generally safe.

Incorporating safety culture lessons related to avoiding blame, encouraging staff and patients to speak up, learning from errors and near misses, and apology and disclosure, can all support more conservative reflexes, conversations, and practices. By understanding where safety fails and building protective safety nets, the dual movements of diagnosis error reduction and conservative diagnosis can complement rather than compete with each other.

9. Addressing Cancer-Fears and Challenges

Every era has its dreaded disease, which draws inordinate focus and elicits disproportionate fear. Today, most often cancer fits this bill. Almost any symptom can be related to cancer and most cancers present with a variety of nonspecific symptoms. Missed and delayed diagnosis of cancer is the leading reason for cause outpatient malpractice claims. (Ref) Early diagnosis is central to the paradigm of screening and early stage treatment which logically posits treating cancer while it is still localized.

A major bombshell, whose full implications we are still grappling with, is prostate-specific antigen (PSA) testing. How could a screening test that detects the most common cancer in men (besides skin cancer) and the 3rd leading cause of men’s cancer death, not be universally recommended? Virtually everyone knows of someone whose “life was saved” by having their prostate cancer detected early by a PSA test. Yet it is now widely understood that there are serious controversies regarding the benefits of PSA testing and even the test’s inventor now discourages the use of the test. (Ref) Screening efforts for early detection for breast, thyroid,
lung, and ovarian cancers have also been plagued by many of the same issues including lead time bias, over-diagnosis of incidental best-untreated cancers, false positive and false negative test results, uncertainties about the value of treatment, and questions about the marginal benefits of early treatment. So how do we conservatively navigate this minefield, especially when these concepts are so difficult to grasp and explain, especially to patients and particularly when the data is absent or conflicting?

We will need to help patients recognize that in one sense, every diagnosis of cancer is delayed—that we can never detect the first abnormal mitosis of every cancer cell. We will also have to help patients understand the major toll imposed by adverse consequences of false positive and over-diagnosed cancers. We will even have to help them come to terms with the resulting trade-offs which inevitably mean we will miss or delay the diagnosis of some cancers if we are to strike a good balance between helping the few with cancer while avoid harm to the many who do not. In the future, perhaps better tests and improved data from well-trials will help us advance on both fronts—beneficial early detection and practicing conservatively. For now, we will be helping more people by working on prevention and carefully evaluating our patients and their risks to sort out who can best be approached conservatively, rather than immediately imaging or indiscriminately screening with lab or genetic tests.

10. Transforming Specialists and Emergency Departments Physicians into Conservative Diagnosis Stewards

While one theme running through this paper has been to discourage indiscriminate overuse and referrals to specialists and emergency departments, we believe that specialty and ED clinicians can move from being part of the problem to becoming part of the solution. Just as we have seen a shift in the role of infectious disease specialists from purveyors of the latest broad spectrum antimicrobials to stewards of prudent antibiotic use (Ref), we need a similar shift here. The ID stewardship role and construct, that has emerged in large part in response to the problem of growing drug resistance from overuse needs to be replicated here. This starts with recognizing the inverted pyramid of the epidemiology of the patient population specialists see versus the patients typically seen in primary care whose symptoms and problems rarely represent serious or unusual diagnoses. (Ref) Specialists could (as they have begun to do in the Choosing Wisely initiative) provide the guidance and reassurance that costly potentially harmful testing is not always required. They could help provide safety nets (e.g. triage consultations, rapid electronic second opinions) and safe harbors (i.e. legal protections) for both the patients and clinicians, and even help counsel patients whose diagnosis may have been initially, but not negligently, missed or delayed, that their PCPs did the right thing.
More profoundly, specialists will have to help provide the evidence to guide optimal testing strategies with an eye toward longer-term time horizons, limitations of tests, errors and misuse, societal resources, and patient shared decision-making. Specialists are also poised to develop and critically evaluate therapeutic alternatives, including more conservative treatment options that are so intimately tied to conservative diagnostic approaches. (Ref). Finally, redesigning care to ensure better coordination will almost certainly keep many patients out of emergency departments and thereby decongest ED queues to enable more careful sorting out of true emergencies and to more accurate guidelines (e.g. Ottawa ankle rules) that provide a foundation from more conservative practices.

Conclusions

Many forces are simultaneously pushing towards more as well as less conservative diagnosis approaches. A better balance requires thoughtful redesigning of care at the individual or encounter level, as well as systemic approaches to promote and support these principles. Properly designed, the safety and quality of diagnosis can be protected by the practical safety nets embodied in these principles (Table 3).
Table 3

**Practical Safety Nets to Enable Practice of Conservative Diagnosis**

Continuity, trusting relationships

- To facilitate “knowing” patients
- Ensure reliable follow-up
- Assure patient buy-in and trust that patient interests supersede any cost conflicts/considerations
- Communication and resolution programs for addressing errors.

Shared understanding about confidence, uncertainties in working diagnosis

Clinical follow-up safety nets:

- Contingency planning with patients regarding red flag symptoms warning of potential worsening and/or misdiagnosis.
- Awareness of potential disease/symptom specific pitfalls; failsafe mechanisms to safeguard against.

Administrative follow-up safety nets:

- Low barriers to re-access care if needed
- Scheduled “check-ins” (visits, calls, emails) to assess course/response to treatments,
- Proactive systems for outreach to patients to ensure course consistent with diagnosis

Second opinions:

- Easy access for clinicians and patients to specialists, others, to address uncertainties/concerns

Flexibility to deviate from conservative guidelines when felt to be clinically warranted

Culture and mechanisms that facilitate and encourage patients to question their diagnoses

- Welcoming patients speaking up about concerns