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Do I really need to have that test? understanding risk and making medical decisions in the age of TMI

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Do I really need to have that test?

Understanding risk and making medical decisions in the age of TMI.

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Introduction

EVEN IN THE AGE OF TOO MUCH INFORMATION, the truth is that in health care we have less hard data for treatment effectiveness than most people believe. Often, predicting a serious problem with precision is beyond our science. So, when a clinician tests for a diagnosis or recommends a treatment, what may be lurking behind that decision? Is it evidence-based reasoning? Or, could it be market-based pressures, ingrained ritual, or simply clinical ignorance?

Are you, the consumer, entering the health care visit with fear or hope fueled by the barrage of media proclaiming health threats and new, powerful treatments? How do you decide what to do?

Using skills and strategies based in health literacy may help bring sanity to this confusing onslaught of information. The clinician and the consumer both need a healthy dose of skepticism, the ability to discriminate among information sources, and mastery of a few simple numerical concepts. Even for healthy young people, the use of these skills and strategies can help cut through the hype and provide evidence to consider when deciding to seek care, participate in screening tests, or consider using a medication.

But, is our health care system set up to support and encourage expanded health literacy? What may be the drawbacks of promoting a more activated, informed consumer? And, lastly, as we become better at discriminating overload information and hype from the essential and important particulars in health care information, will we achieve health outcomes that matter?

Is treatment always needed?

Think about why you go to the “doctor.” (*Because I am a family nurse practitioner, I choose to use the more inclusive term “clinician” in place of “doctor” as clinician includes many different primary care providers including nurse practitioners, nurse-midwives, physician assistants, and physicians.*) Perhaps you were first taken to the clinician for an acute care visit because an earache complicated an otherwise mild illness. Your parents believed any ear infection to be dangerous, requiring immediate treatment with antibiotics to avoid short-term severe illness and long-term hearing complications.

Today, we know that is not so. Ear infections in young healthy children over age two with mild to moderate symptoms are best managed with a watch-and-wait approach that delays any use of antibiotics for 48 to 72 hours.¹ By this time most children will not need antibiotics. At 24 hours, 61% of children have decreased symptoms whether they receive a placebo or an antibiotic.

To understand this better, a concept called “number needed to treat” helps us figure out how much added benefit a drug or other treatment provides beyond what would improve if you just waited for time to pass.

For children with ear infections, because at least two-thirds (or maybe as high as 90%) improve without antibiotics, many children would have to be treated with antibiotics to help the few who may benefit. That the number needed to treat for this problem is more than 7 (and may be as high as 20), means you have to treat at least 7 children who would get better on their own to improve the outcome of just 1 child, who would need an antibiotic to improve.

So, the outcome for just about all of the children given early antibiotics was not improved by the giving of antibiotics, because they were going to get better without any treatment. And, it means that each child not benefiting from an antibiotic was exposed to the risk of an allergic reaction, and that parents and/or the health care system incurred a significant amount of cost involved in obtaining that antibiotic.

Our science does not yet help us identify which 1 of the 7 to 20 children will benefit from early antibiotic treatment and for this we may need better diagnostic discriminators. Perhaps this information is hidden in our genome (stay tuned for those developments). But for now, medicine has recognized the unintended consequences of over-treatment, including problems such as antibiotic resistance and increased cost of care.

Acute ear infection is just one condition, among many common ailments, including acute low back pain that, based on current evidence, indicate overly aggressive use of medical treatment. Is this also the case for disease screening?

New evidence, major changes in cancer screening

Even beyond our inability to say precisely what treatments are truly effective and who will benefit from these treatments, we have great imprecision in our diagnostic and screening processes. If you are female, you are well aware of how many “health screening” actions you are expected to participate in, including those for breast and cervical cancer. If you are male, you probably visit clinicians for care far less often. Data from as recently as 2006 showed that young men between the ages of 20–29 years of age had less than one quarter the rate of visits for preventive care compared with young women. Female visits for Pap smears account for half of this difference.² For these reasons, the examples here will focus on cancer screening for young women.

For decades, young women have been taught that breast cancer is deadly and must be diagnosed early to save lives. Women of all ages were expected to conduct monthly breast self-exams. Boys, not to be excluded from monthly search-and-find missions, were taught testicular self-exam, which is another unsupported intervention.^{2,3} During the “annual physical exam (another clinical service that has been found lacking in its effectiveness)”⁴⁻⁶ young women from puberty onward were exhorted to continue breast self-exams and the skill was reinforced each visit. Finally, in 2009, the U.S. Preventive Services Task Force (USPSTF), an independent panel of experts, systematically reviewed breast cancer screening research. Their analysis and recommendations exploded our old rituals of care.⁷

Relying on high-quality, large clinical trials that found breast self-exams resulted in high rates of referral for suspicious masses with no evidence of lives saved, the USPSTF graded the evidence for breast self-exams as “D.”⁷ A “D” grade means that there is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits and that the practice should be discouraged. Now, in contrast to preceding decades of clinical and social marketing messages powerfully reinforcing the importance for breast self-exam (and, in more than a few cases, women feeling guilty for not practicing this “health-saving” practice), breast self-exam is now out of favor.

Clearly, medicine is learning more and more that “the extent to which beliefs are based on evidence are very much less than believers suppose.”⁸ Similarly for the clinical breast exam, the “C” grade assigned by the USPSTF means that the net benefit is small and that the service should not be routinely provided, especially in women under age 40.⁷

Young women are also encouraged to be screened for cervical cancer. Wrongly, in my opinion. Too many

clinicians continue to require cervical cancer screening as a mandatory prerequisite to prescribing contraception. It makes no sense to link pregnancy prevention to participation in a cancer prevention program. But over many decades, women have been held hostage to this ridiculous linkage—no Pap test, no contraceptives. The Pap test takes cells from the transformation zone of the cervix, which is the junction where cervical dysplasias (abnormal cells) arise. Out of those abnormal cells, rarely, and more often if HPV types 16 and 18 are present, cervical cancer may develop. (Note: the HPV vaccine is safe and effective at protecting against these types.) Putting this into perspective, each year 2 to 3 million Pap tests are interpreted as abnormal. Out of those, less than one half of one percent (0.5%), or 100,000 to 150,000, are high-grade dysplasia and of those high-grade lesions, there is a less than a 15% rate of progression to invasive cervical cancer over about 5 to 15 years.⁹ Over 70% (at least 10,500 out of the 15,000) of those cases are related to HPV type 16 and 18.¹⁰

With our current understanding of the natural progression and resolution of low-grade cell changes of the cervix, it is now recommended that young women not be tested for cervical cancer before the age of 21. After age 21, a less than annual testing schedule, often every three years, is recommended for most women.⁹ This less aggressive approach prevents unnecessary interventions for mild abnormalities that will revert back to normal on their own while preserving the important benefits of cancer screening. This new, less aggressive approach earned an “A” grade by the USPSTF.⁹

But, in spite of the best evidence, when clinicians were surveyed recently, less than 25% followed the new recommendations, and most chose screening options that overused services.¹¹

One other USPSTF “A” grade screening recommendation is testing for chlamydia infection in sexually active women age 24 or younger. Chlamydia trachomatis infects three million new people each year in the U.S. and it is a major cause of infertility, pelvic inflammatory disease, and tubal (ectopic) pregnancy in women. Most infected women have no symptoms. Therefore, screening using a nucleic amplification test has the potential to uncover hidden infections. Treatment can then be given to those who test positive. This will minimize the spread of the infection and decrease the risk of complications, improving the overall health of this young adult population. However, even though chlamydia screening received an “A” rating and the test is very good at identifying those infected, the test is not perfect. How so?

The evidence is clear that nucleic amplification tests have test sensitivities of up to 97%.¹² This means that

if 30 out of every 1,000 sexually active young women between the ages of 15 and 24 are expected to have chlamydia, the nucleic amplification test will correctly identify 29 of these women ($30 \times .97 = 29$). One woman will be told she does not have chlamydia when she actually has the infection. That is called a false negative and neither false negatives nor false positives are medical errors but simply the nature of imperfect tests.

The specificities of the nucleic amplification tests are also high at about 99%.¹² Of the 970 young women who are tested for chlamydia but are not expected to have the infection, the test will correctly identify 99% of those, or 960 women. But, 10 women may be told they have chlamydia when, in fact, they do not have the infection. Again, these false positives are because the test is not perfect, not because of medical error. And, very importantly, samples obtained by urine tests are as reliable as cervical swabs.¹² Hence, screening for this sexually transmitted disease can be done easily, although not as perfectly as many would like to believe.

Conclusion

After working through the evidence that clarifies the reasoning behind the treatment and screening of a few conditions, I hope I've imparted a healthy skepticism about current practices. And, I've underscored what abilities are required to discriminate evidence from values and beliefs. I want to leave you with a few high-quality, evidence-based resources that promote health literacy.

Becoming an informed, activated health care consumer is now up to you. For future conversations, the following questions remain: What may be the drawbacks of promoting a more activated, informed consumer? And, lastly, as we become better at discriminating overload information and hype from the essential and important particulars in health care information, will we achieve health outcomes that matter?

Resources & Readings

<http://www.ahrq.gov/consumer/>
<http://www.cochrane.org/>
<http://medicalconsumers.org/>
<http://www.informedhealthonline.org>
<http://www.healthnewsreview.org/>

Know Your Chances: Understanding Health Statistics, by Steven Woloshin, MD, Lisa Schwartz, MD, and H. Gilbert Welch, MD. 2008.

Should I Be Tested for Cancer? Maybe Not and Here's Why, by H. Gilbert Welch, MD. 2004.

Overtreated: Why Too Much Medicine Is Making Us Sicker and Poorer, by Shannon Brownlee. 2007.

The Best Practice: How the New Quality Movement is Transforming Medicine, by Charles Kenney. 2008.

Worried Sick: A Prescription for Health in an Overtreated America, by Nortin Hadler, MD. 2008.

Endnotes

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