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Implementing New Health Technology

A model of applied clinical informatics is presented

Applied clinical informatics is a new discipline that can be defined as "the science and art of applying and managing data and information technology to improve health processes and outcomes in medical care and disease prevention for individuals, groups, and populations." A journal by the same name has been launched, and in its opening editorial, the editors attempt to shed light on this concept of medical informatics and how it can be applied.

Applied Clinical Informatics presents informatics as an iterative intellectual activity that starts with model formulation, the acquisition and transmission of biomedical information, moves to system development, where technologies are created and delivered to healthcare providers, system installation, where programs are implemented, and finally the study of effects, which allows for examination of the implemented program.

As technologies are researched and discovered, some will be successful and some will not. The phase of exploration before implementation is sometimes referred to as foundational or "pure" informatics. Once an information technology application has become accepted in a health domain such as a hospital or physician's office, it is thought to move from informatics research to clinical practice. Applied informatics, then, encompasses the activities that take place once the new system has been incorporated into workflow. Activities at that point tend to include further analysis, problem solving, and standardization.

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continued on page 2

... Implementing New Health Technology
continued from page 1

the design, implementation, deployment, and evaluation stages. While research is an important first step, each organization and setting will have unique needs, reactions, and experiences. Communication within the system often presents a challenge and opportunity for growth. Professionals with expertise in systems application are therefore needed to ease the transition and act as a resource. Adoption of health informatics is time- and labor-intensive, but it is a crucial component to improving healthcare in this country.

Source: Kim GR, Lehmann CU. 2009. In search of dialogue and discourse in applied clinical informatics. *Applied Clinical Informatics* 1:1-7.

Urology Domain Article Update

The following Patient Literacy Center article was recently updated and reviewed by the Urology Domain Medical Advisory Board. The updated article has been added to the websites of subscribers to the Urology Domain Patient Literacy Center. For information about becoming a Patient Literacy Center Subscriber, contact your Member Services Advisor at (800) 603-1420.

- Bladder Exstrophy

Most Prostate Cancer Screening Decisions Are Not Based on the Facts

Decision aids and supportive discussion with the healthcare professional may improve the process

The decision of whether to screen patients for prostate cancer is a controversial one, as the evidence for mortality and morbidity benefit is inconclusive. Guidelines vary; for example, the American Urological Association recommends prostate-specific antigen (PSA) testing as a valuable screening tool, the American Cancer Society suggests only a discussion between patient and provider about screening, and the U.S. Preventive Services Task Force advises against the use of PSA. Men and their physicians often experience uncertainty and distress because of these conflicting data and viewpoints. Two recent studies published in the *Archives of Internal Medicine* show that healthcare professionals hold great power when it comes to influencing a patient's decision, and that informed clinical decision making is critical.

The authors of the first study used a sample from The National Survey of Medical Decisions (DECISIONS), which surveyed U.S. adults older than age 40 years via random-digit dialing. Included in DECISIONS was a prostate cancer screening module, which addressed demographic, socioeconomic, and health status of participants, as well as details about the decision-making process. They were asked about what influenced them, what was important to them, and the content and structure of discussions with providers. Prostate cancer knowledge was also assessed.

Only 20.6 percent of men said they were informed about the pros and cons and asked their preference when it came to screening.

Although the majority of respondents reported feeling very well informed about prostate cancer, nearly 93 percent could not correctly answer more than 1 of 3 basic knowledge questions. Overall, patients overestimated risk of the disease and benefit of screening. Before making a screening decision, about 70 percent of patients discussed the topic with their provider, who they reported in most cases was the one to bring up testing — and speak well of it. The only discussion characteristic associated with testing was a healthcare professional's recommendation. Valuing the professional's opinion was also associated with testing. Only 20.6 percent said they were informed about the pros and cons and asked their preference when it came to screening. However, almost all participants felt they had been part of a thorough discussion on the matter. This finding indicates that informed decision making is not occurring and that patients are unaware that it is not occurring.

In the second study, the authors sought to create a

continued on page 4

... Most Prostate Cancer Screening Decisions Are Not Based ...
continued from page 3

decision aid that would help prostate cancer patients clarify their personal values while providing information about all aspects of this complex issue. Using population studies, they created a model of outcomes of PSA screening for men with low, moderate, and high risk of prostate cancer. Low risk was defined as men with no first-degree relatives affected, moderate risk was men with one affected relative, and high risk was men with two or more first-degree relatives affected. Their model was based on annual screening starting at age 40 years, which is consistent with American Urological Association recommendations. It projected risk for all three groups at 40, 50, 60, and 70 years.

Higher-risk men were found to have fewer prostate cancer-related deaths over time, but also more diagnosed cancers and related harms, such as hemorrhage and infection from biopsy, and the emotional harm of a false positive. False positives were relatively common in men who chose to be screened over several decades; of 1,000 men aged 60 years who have PSA testing during the following 10 years, the authors estimated that 115 will have a prostate biopsy due to abnormal results and 87 of these will not have cancer. Mortality rates — from prostate cancer and all causes — were similar in screened and unscreened men.

The authors conclude that "even under optimistic assumptions, the net mortality benefit [of PSA testing] is small, even when prostate cancer deaths are cumulated to 85 years of age." Decision aids may be able to help patients realistically assess the pros and cons of screening. The support of the healthcare professional is an important component in the care of these men.

Sources:

Hoffman RM, Couper MP, Zikmund-Fisher BJ, et al. 2009. Prostate cancer screening decisions: results from the National Survey of Medical Decisions (DECISIONS Study). *Archives of Internal Medicine* 169(17):1611-1618.

Howard K, Barratt A, Mann GJ, et al. 2009. A model of prostate-specific antigen screening outcomes for low- to high-risk men. *Archives of Internal Medicine* 169(17):1603-1610.

Hot Topic Highlights

Urology Domain recently posted the following Hot Topics to your website:

Alcohol May Protect Against Enlarged Prostate

According to a study published in the October 2009 issue of *The Journal of Urology,* alcohol consumption decreases the risk for enlarged prostate, also called benign prostatic hyperplasia (BPH). Alcohol did not have the same effect on male lower urinary tract symptoms (LUTS), which are frequently caused by BPH. The authors surmise that alcohol might decrease BPH risk via the same mechanism in which it reduces heart risk, but stress that more research is necessary.

Source:
Parsons JK, Im R. 2009. Alcohol consumption is associated with a decreased risk of benign prostatic hyperplasia. *The Journal of Urology* 182:1463-1468.

Vitamin B-6 May Prolong Survival in Patients With Early Prostate Cancer

Men with early prostate cancer live longer if they have a high intake of vitamin B-6, according to a study published recently in the *American Journal of Clinical Nutrition.* This benefit does not extend to patients with prostate cancer that has spread beyond the prostate (metastasized). The study of 525 men found a significantly reduced risk of death from prostate cancer in patients who had a high intake of vitamin B-6. This effect was noted only in men who had prostate cancer confined to the prostate and was not apparent with folate, riboflavin, or vitamin B-12 intake.

Source:
Kasperzyk JL, Fall K, Mucci LA, et al. 2009. One-carbon metabolism-related nutrients and prostate cancer survival. *American Journal of Clinical Nutrition* 90:561-569.