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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 applica-

tion 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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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-in-

tensive, 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.

Cardiology Domain Article Updates

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

- Abdominal Aortic Aneurysm
- CT Scanning
- Stroke

Early Post-MI ICD Implantation Yields No Mortality Benefit

Study finds overall mortality nearly equal with optimal medical therapy

Prophylactic placement of an implantable cardioverter-defibrillator (ICD) within 40 days of acute myocardial infarction (AMI) does not reduce mortality, according to the results of a study published in the October 8, 2009 issue of *The New England Journal of Medicine*.

The authors note that the rate of death, including sudden cardiac death, is highest early after an MI. However, current guidelines do not recommend placement of an ICD within 40 days of an AMI to prevent sudden cardiac death. The authors undertook the current study, a randomized, prospective, open-label, investigator-initiated, multicenter trial, to determine if early placement of an ICD in patients at increased risk would prolong survival, as compared to patients who received only optimal medical therapy. The primary endpoint was overall mortality; secondary endpoints included sudden cardiac death, nonsudden cardiac death, and noncardiac death.

The authors enrolled 898 MI patients in 5 to 31 days following

the event if they met the following criteria:

- Reduced ejection fraction (less than 40 percent) on one of the days following MI and a heart rate of 90 beats per minute or more on the first available electrocardiogram (ECG) (criterion 1; 602 patients);

Although the risk of sudden cardiac death was reduced by ICD therapy, this effect was offset by an increase in the risk of nonsudden cardiac death — an observation that deserves further study.

- Nonsustained ventricular tachycardia (more than 150 beats per minute) consisting of 3 or more consecutive ventricular premature beats during Holter monitoring (criterion 2; 208 patients); or
- Both (88 patients).

Four hundred forty-five patients were randomly assigned to

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receive an ICD, and 453 received optimal medical therapy only. During a mean follow-up of 37 months, 116 patients in the ICD group and 117 patients in the medical therapy group died. Overall, mortality was not reduced in the ICD group, although that group experienced less sudden cardiac death (27 versus 60). The ICD group did however, experience more nonsudden cardiac deaths (68 versus 39). "Although the risk of sudden cardiac death was reduced by ICD therapy, this effect was offset by an increase in the risk of nonsudden cardiac

death — an observation that deserves further study," the authors conclude.

The study was supported by grants from Medtronic Bakken Research Center and AstraZeneca.

Source: Steinbeck G, Andresen D, Seidl K, et al. 2009. Defibrillator implantation early after myocardial infarction. *The New England Journal of Medicine* 361(15):1427-1436.

Hot Topic Highlights

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

Women with Diabetes at Increased Risk for Heart Rhythm Problem

Women with diabetes are more than twice as likely to experience a heart rhythm disorder called atrial fibrillation than women without the condition, according to a study published in the October 2009 issue of *Diabetes Care*. In a comparison of 34,744 people (half with diabetes, half without), women with diabetes had an increased risk for atrial fibrillation of 26 percent, but men did not appear to be at increased risk.

Source:

Nichols GA, Reinier K, Chugh SS. 2009. Independent contribution of diabetes to increased prevalence and incidence of atrial fibrillation. *Diabetes Care* 32(10):1851-1856.

Women with Atrial Fibrillation at Higher Risk for Stroke, Death than Men

Men experience a heart rhythm disorder called atrial fibrillation (AF) more often than women. However, a study published in the September 2009 issue of *Gender Medicine* found that women with AF are more likely than men to experience stroke. In addition, women are not prescribed blood-thinning drugs called anticoagulants as often as men.

Source:

Volgman AS, Manankil MF, Mookherjee D, Trohman RG. 2009. Women with atrial fibrillation: greater risk, less attention. *Gender Medicine* 6(3):419-432.