

Strokes make an important contribution to early and late morbidity in this population. This has implications for the design and interpretation of trials in similar populations. Therapeutic targets may change over time.

1217-57

#### Rapid Cycle Interventions by Integrated Teams Can Effectively Improve Anticoagulation Clinical Care in a Safety Net Hospital

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**Background:** Our institution's medication safety reporting program identified warfarin therapy and referral to the Division of Cardiology's Long-Term Anticoagulation Clinic (Clinic) as an opportunity to improve care. Because patient referrals increased and stressed limited resources, a Clinical Process Improvement program was implemented to reduce the percentage of new patients referred to the Clinic who presented with dangerously elevated INRs (International Normalized Ratio).

**Methods:** An integrated Pharmacy, Nursing, Administrator and Physician team performed a Failure Mode and Effect analysis. Rapid cycle (1-2 months) interventions were implemented over a 15-month period to improve specific microsystems of care (inpatient referral services, outpatient clinic services, off-site referrals). A uniform data-collection tool and control charts tracked the effectiveness of each intervention. Specific interventions included adopting simplified outcome metrics, redesigning Clinic patient throughput, QA for INR point-of-care testing, limiting dispensed quantities of warfarin, and educating patients, residents, physician staff. Cardiac Rehabilitation Service reviewed therapy with each referring physician, standard policies were developed for referral to the Clinic and for oral vitamin K to treat elevated INRs in the Clinic.

**Results:** Total Clinic visits increased by 20% during the monitoring period (average of 35 new patients per month). Average turn-around time from referral to initial visit was reduced from 4.9 to 2.2 business days. Percent of new Clinic referrals presenting with elevated INRs (>4.0) decreased from 25% (running median 18%) in January 2001 and trended down to less than 5% by June 2002.

**Conclusions:** Multiple rapid cycle interventions using an integrated team approach improved outpatient anticoagulation services and safety.

1217-58

#### Contrast-Associated Nephropathy and Clinical Outcome of Patients With Chronic Renal Insufficiency Undergoing Cardiac Catheterization: Lack of Additive Benefit of Acetylcysteine to Saline Hydration

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**Background:** Recently the antioxidant acetylcysteine was shown to attenuate contrast-induced nephropathy in patients with chronic renal insufficiency during computed tomography. However, it has not yet been determined whether this drug confers a similar benefit as an adjunct to saline hydration in patients undergoing coronary angiography.

**Methods:** The study was designed as a double-blind, randomized, placebo-controlled trial. Eighty patients with chronic renal insufficiency (serum creatinine  $\geq 1.5$  mg per deciliter), who underwent coronary angiography with or without intervention, were randomly assigned to receive either acetylcysteine or placebo. Acetylcysteine (600 mg t.i.d.) was administered orally for a total of 48 hours, starting 24 hours before the administration of the contrast agent. All patients were treated with intravenous saline (0.45%) at a rate of 1 ml per kilogram of body weight per hour for 12 hours before and 12 hours after administration of the contrast agent. Iopamidol, a nonionic, low-osmolality contrast agent was uniformly administered during the procedure. **Results:** The mean ( $\pm$ SD) serum creatinine concentration of study participants was  $2.0 \pm 0.39$  mg per deciliter ( $177 \pm 34$   $\mu$ mol per liter). There was an increase of at least 0.5 mg per deciliter (44  $\mu$ mol per liter) in the serum creatinine concentration 48 hours after cardiac catheterization in 7 of the 80 patients (9%); in 4 of the 41 patients (10%) in the acetylcysteine group and in 3 of the 39 patients (8%) in the placebo group ( $p=0.52$ ). Mean serum creatinine was non-significantly reduced 48 hours after the procedure in the two groups (a decrease of  $0.01 \pm 0.36$  mg per deciliter [ $1 \pm 32$   $\mu$ mol per liter] vs.  $0.03 \pm 0.32$  mg per deciliter [ $3 \pm 28$   $\mu$ mol per liter] in the acetylcysteine and placebo groups respectively,  $p=0.77$ ). The incidence of in-hospital adverse clinical events and the length of hospital stay did not differ significantly between the two treatment groups. **Conclusions:** Our findings do not support routine prophylactic oral administration of acetylcysteine as an adjunct to saline hydration for the prevention of contrast-induced nephropathy, in patients with chronic renal insufficiency undergoing cardiac catheterization.

## ORAL CONTRIBUTIONS

### 866 Scientific Studies of Computation Science Applied to Cardiology

Tuesday, April 01, 2003, 4:00 p.m.-5:00 p.m.  
McCormick Place, Room S101

4:00 p.m.

866-1

#### Practice Impact and Patient Acceptance of a Cardiologist- Operated Web-Based Billing, Coding, and Report Generation System

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**Background:** The traditional cardiology Practice Management System (PMS), where the cardiologist performs medical services, and their staff does the Billing, Coding, and Report Generation (BCRG), has resulted in an increase in full-time employees (FTE) per cardiologist, to an all-time high of 4.7/1.0. We postulated that the highest accuracy/efficiency in BCRG would occur if a cardiologist could enter the data at the point and time of service (PATS), using a seamlessly upgradeable web-based system. An initial cardiology survey showed three obstacles: dislike for typing, lack of computer savvy, and unwillingness to change existing PMS.

**Methods:** Using a cardiovascular-specific, internet-based, "out-of-the-box system" and desktop and tablet-touch screens, AutoMedWare's™ CardioScribe System™ was interfaced to a common existing PMS. One hundred cardiologist/patient services (hospital and office) were monitored to access the seconds to complete the BCRG at the PATS, claims denials and patient response to the transaction. FTE per cardiologist was evaluated prior to and after the institution of the system.

**Results:** For patients already in the PMS, the BCRG took the cardiologist 50 seconds  $\pm$  5 seconds to complete. New patients, added to the system at the PATS by the cardiologist took 80 seconds  $\pm$  5 seconds. Of the 100 claims submitted, 0% were denied for coding errors. With institution of the system, the FTEs per cardiologist could be reduced from 4.7 to 2.8. Zero percent of patients found the system distracting, 0% intrusive, 57% informative, and 0% too time consuming. 52% of patients stated that an insurance carrier had denied their claim for physician miscoding and 84% of patients stated that it was important to them for the physician to code correctly the first time. 84% thought the system would be helpful to have in other doctors' offices. 68% of patients expressed concern regarding internet patient confidentiality, while 22% had previously heard of HIPAA.

**Conclusion:** PATS, BCRG by the cardiologist can be accomplished with minimal to no intrusion on the cardiologist/patient interaction and is associated with a high degree of accuracy and a substantial reduction in the FTE for cardiologists.

4:15 p.m.

866-2

#### Patient Acceptance and Satisfaction of Home-Telemonitoring in the Management of Heart Failure: TEN-HMS Study

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**Background:** Home-telemonitoring of heart rate and rhythm, blood pressure and weight is a promising new strategy for improving the care of patients with heart failure. Limited information is available on the acceptability of the technology to patients and patient satisfaction, especially amongst older patients.

**Aims:** To describe the acceptability of telemonitoring in patients with heart failure in a large randomised study of patients with left ventricular systolic dysfunction (LVSD) and chronic heart failure.

**Methods:** The Trans-European Network initiative Homecare Management System (TEN-HMS) is a randomized controlled trial comparing usual care (UC), nurse telephone contact (NT) and home telemonitoring (TM), in patients with heart failure and LVSD (EF < 40%) at high risk of readmission. 427 patients were randomized into one of the above three groups at a ratio of 1:2:2 respectively.

**Results:** Their mean age was  $67 \pm 12$  years with 31% of patients aged >75 years, 23% were women, the mean LV ejection fraction was  $25 \pm 8\%$  and the mean N-terminal pro-brain natriuretic peptide level was 715 pmol/l. On average patients had 2.6 admissions accounting for an average of 40 days in hospital in the previous 2 years. Of the 189 patients randomized to telemonitoring, 7 (4.1%) refused to accept the technology in their homes while 5 (2.9%) patients asked for the equipment to be removed and 3 (1.8%) discontinued recording. Overall patient acceptance at 400 days was good at 91.2%. Age did not appear an important determinant of acceptance. 96% of the patients were well satisfied with the system and 97% found the telecare devices easy to use.

**Conclusions:** Home telemonitoring is feasible. Its acceptance amongst patients with heart failure is high and it might have an important role in improving their management.