they presented in the emergency department. Private hospitals, cardiology institutes, and hospitals from rural areas were excluded from the study.

The quality improvement (QI) intervention included printed reminders that were attached to the clinical evaluation form; a checklist; educational materials; an algorithm for risk stratification and recommendation of evidence-based therapies for each risk category; and color-coded bracelets according to risk stratification category.

Clusters that were randomized to the QI program received on-site training visits that were complemented by web-based and telephone training. In addition, two health professionals (a physician who acted as the local leader and a research nurse case manager) attended a workshop on how to implement the QI intervention.

Among the 80.3% of patients who were eligible for all of the study interventions, 67.9% of those in hospitals that were randomized to the QI program received all of the evidence-based therapies in the first 24 hours versus 49.5% of patients who were randomized to hospitals without the QI program (p=0.01; Figure 1). Similarly, use of all evidence-based therapies during the first 24 hours and at discharge among eligible patients was higher in the intervention clusters versus controls (50.9% vs 31.9%; p=0.03; Figure 2). Overall, composite adherence scores were higher in QI intervention clusters than in control group clusters (89% vs 81.4%; p=0.01). There was no heterogeneity in the primary endpoint among major subgroups, including institution characteristics, such as teaching versus nonteaching, PCI availability, and cardiac surgery availability.

Figure 1. Adherence to All Evidence-Based Therapies in the First 24 Hours.
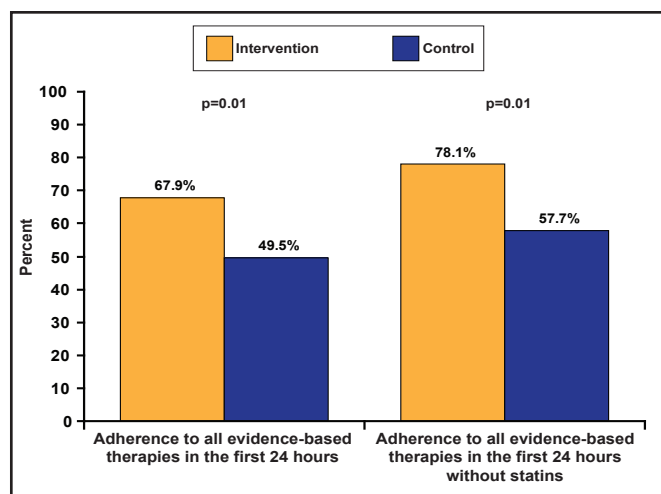
ZBerwanger O et al. JAMA 2012.

Figure 2. Adherence to All Acute and Discharge Evidence-Based Therapies.
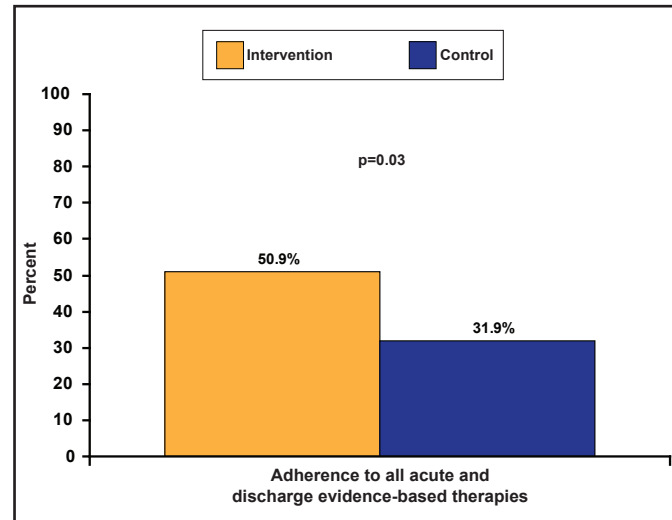
Berwanger O et al. JAMA 2012.

Overall, the intervention had no significant difference on clinical outcomes. The rates of major CV events were 5.5% for patients from clusters that were randomized to the QI intervention versus 7.0% in control group clusters (p=0.35). There was a trend toward a reduced odds of myocardial infarction (OR, 0.25; 95% CI, 0.05 to 1.26; p=0.09) but an increase in major bleeding (OR, 6.88; 95% CI, 0.93 to 51.10; p=0.06) with intervention.

According to Dr. Berwanger, the tools that were tested in the BRIDGE-ACS trial are both simple and feasible. As such, they can become the basis for developing quality improvement programs to maximize the use of evidence-based interventions for the management of ACS.

ROMICAT II: More Data Evaluating CT-First for Acute Chest Pain ED Triage

Written by Rita Buckley

The use of coronary computed tomography (CCTA) for screening patients that present in emergency departments (EDs) with acute chest pain shortens length of stay (LOS) compared with standard ED evaluation, according to the Rule Out Myocardial Infarction Using Computer-Assisted Tomography II Trial [ROMICAT II; NCT01084239]. ROMICAT II also showed that use of CCTA early into an ED evaluation improved clinical decision-making for ED triage compared with the standard approach. Udo Hoffmann,

MD, MPH, Massachusetts General Hospital, Boston, Massachusetts, USA, presented results from the study.

The first prospective, multicenter, randomized, controlled trial to compare CCTA screening with standard ED evaluation for patients with chest pain that is suggestive of acute coronary syndrome (ACS), ROMICAT II randomized 1000 patients at 9 sites in a 1:1 ratio to either CCTA screening or standard care. The hypothesis was that CCTA may enable earlier but safe triage, reducing LOS and hospital admissions compared with standard ED evaluation. The primary endpoint was LOS.

Inclusion criteria included chest pain or equivalent symptoms that were suggestive of ACS; patient age between 40 and 74 years; the ability of the patient to hold their breath for at least 10 seconds; and sinus rhythm. Baseline characteristics were similar between the two groups. The main complaint at presentation was anginal pain or equivalent (88.6% in the CCTA group, n=501; 90.6% in the standard ED evaluation group, n=499).

Average time to diagnosis was 10.4 hours in the CCTA group versus 18.7 hours in the standard ED evaluation group (p=0.0001). At discharge, 8.6% of CCTA patients versus 6.4% of those patients in the standard care group had ACS. Agreement between site and independent adjudication for discharge diagnosis was 96.5% (kappa 0.9). There were no missed diagnoses of ACS in either group.

The mean LOS for all CCTA patients was 23.2±37.0 hours versus 30.8±28.0 hours (p=0.0002) for the standard care group. For those without a final diagnosis of ACS, mean LOS was on average 10 hours shorter for the CCTA group (17.2±24.6 vs 27.2±19.5 hours; p<0.0001; Table 1).

The differences in patient disposition were significant, with direct ED discharge of 46.7% for the CCTA group versus 12.4% for the controls (p<0.001). Observation unit admission was 26.6% in the CCTA group versus 53.7% of controls (p=0.001). The respective figures for admission to the hospital and leaving against medical advice were both lower in the CCTA group—25.4% versus 31.7% and 1.3% versus 2.2%, respectively (both p=0.001).

Major adverse events (death, myocardial infarction, unstable angina, urgent revascularization) within 30 days were similar in both groups (0.4 and 1.0, respectively; p=0.37). There was higher cumulative radiation exposure in the CCTA group (14 mSv vs 5.3 mSv; p<0.0001).

Hospital billing data demonstrated no difference in mean total cost ($4004 vs $3828; p=0.72). However, the CCTA-first approach was associated with reduced mean ED costs of $2053±1076 versus $2532±1346 for the standard evaluation group (p<0.0001) that were partially offset by a higher mean hospital cost ($1950 vs $1297; p=0.17) with CCTA. Of note, use of a CCTA-first approach was associated with an increased use of conventional coronary angiography (12% vs 8%; p=0.04) and a numerically greater number of coronary revascularization procedures (6.4% vs 4.2%; p=0.16).

Table 1. LOS by Diagnosis.

	CCTA	Standard ED Eval	p value
Dx testing during index stay* n (%)			
Patients with 0 tests	9 (1.8%)	110 (22.1%)	<0.0001
Patients with 1 test	376 (75.0%)	336 (67.3%)	
Patients with ≥2 tests	116 (23.2%)	54 (10.6%)	
Cumulative invasive coronary angiography n (%)**	60 (12.0%)	48 (8.0%)	0.04
Cumulative Interventions n (%)**	32 (6.4%)	21 (4.2%)	0.16
PCI	27 (5.4%)	17 (3.4%)	
CABG	5 (1.0%)	4 (0.8%)	
Cumulative radiation exposure ** (CCTA/SPECT/ICA: mean ± SD per patient, mSv)	14.3±10.9	5.3±9.6	<0.0001

*Includes CCTA, SPECT, Echo, ETT and ICA; **Includes index hospitalization and 28 day follow-up; PCI=percutaneous coronary intervention; CABG=coronary artery bypass grafting; Dx=diagnosis.

Overall, ROMICAT II shows that CCTA is feasible in the ED for patients who present with suspected ACS and reduces both LOS and time to diagnosis. There was no significant increase in total cost associated with this approach; however, there was increased radiation exposure. Further studies are necessary to see if the use of CCTA in the ED has an effect on clinical outcomes.

Elective PCI at Community Hospitals With Versus Without On-Site Surgery

Written by Rita Buckley

Performance of elective percutaneous coronary intervention (PCI) at hospitals with and without on-site open heart surgery backup produces similar rates of mortality and major adverse cardiac events (MACE), according to clinical outcomes from the Cardiovascular