

# CPR Registry Can Be Used as Quality Tool

BY MARY ELLEN SCHNEIDER

With the national conversation turning to quality improvement in the nation's hospitals, officials at the American Heart Association are touting their database of in-hospital resuscitation events as a tool for physicians looking to identify problem areas and measure progress.

The National Registry of Cardiopulmonary Resuscitation (NRCPR) has been around for nearly a decade and includes data on more than 154,000 cardiopulmonary resuscitation events from more than 560 hospitals in the United States. The registry collects data on adult, pediatric, and neonatal acute respiratory compromise, cardiopulmonary arrest, and medical emergency team response.

One of the goals of the voluntary registry program is to help individual hospitals improve their performance on car-

diac and respiratory emergencies by providing targeted feedback about their individual performance, as well as on how the hospitals' performance compares with that of other similar facilities and to current practice guidelines.

For hospitalists, the data could raise important red flags. For example, it would highlight whether most cardiac arrests were occurring in a single unit or at a certain time of day. The data might also indicate a need to increase staffing or place equipment in a different location, said Beth Mancini, RN, Ph.D., chair of the NRCPR Science Advisory Board.

"It provides the individual hospitalist the data necessary to make discrete changes," said Dr. Mancini, who is the associate dean for undergraduate nursing programs and professor of health care research at the University of Texas in Arlington.

A recent analysis of the NRCPR details

specific ways that hospitals have used this type of feedback to advance quality improvement (Jt. Comm. J. Qual. Patient Saf. 2009;35:13-20). For example, one hospital that had implemented a postresuscitation hypothermia protocol found during the NRCPR's chart abstraction process that a number of cardiopulmonary arrest patients who met criteria for the treatment had not received it. They used the information to ramp up education efforts and added a copy of the hypothermia protocol to the drug tray in each crash cart.

Another hospital used NRCPR patient and event demographic reports to demonstrate the need to test the use of a medical emergency team to improve patient survival following cardiopulmonary arrest. Later, the hospital used data from the NRCPR to show that the medical emergency team had improved outcomes.

The NRCPR provides feedback indicating where the outliers are, but the hospital staff then has to do the detective work to figure out what caused the problem, said Dr. William Kaye, professor emeritus of surgery and medicine at Brown University, Providence, R.I., and a special consultant to the NRCPR. "There is no easy solution," he said.

In the aggregate, the national data trends have helped researchers to identify key areas that every hospital should examine, Dr. Mancini said. For example, past reports based on NRCPR data have shown that the time of day and day of the week when a cardiac arrest occurs impacts the likelihood of survival to discharge.

Another goal of the NRCPR is to use the national-level data to help understand why the success rate for cardiac arrest treatment has not changed much over the past few decades, Dr. Mancini said. Current estimates of rates of survival to hospital discharge are about 27%

among children and 18% among adults.

One of the reasons that figure has been difficult to improve is that the outcomes depend not only on the medical response to the cardiac arrest, but also on the underlying disease of the patient.

"All we can do is look at the processes and improve those processes," he said.

The NRCPR does not publish national-level data on survival outcomes, but the individual hospital data do show some positive signs in terms of improved processes, Dr. Mancini said. For example, more hospitals are implementing medical emergency teams to respond to cardiac arrest events.

As part of the voluntary registry program, hospitals pay an annual fee of \$1,500-\$1,800 to cover data support and report generation. Hospitals can generate reports using their own data at any time and also receive quarterly and annual reports with comparison data. The reports include information on location and time of events, system response variables, patient demographics, pre-event and event data, interventions, immediate causes of an event, patient outcomes, and areas for potential improvement.

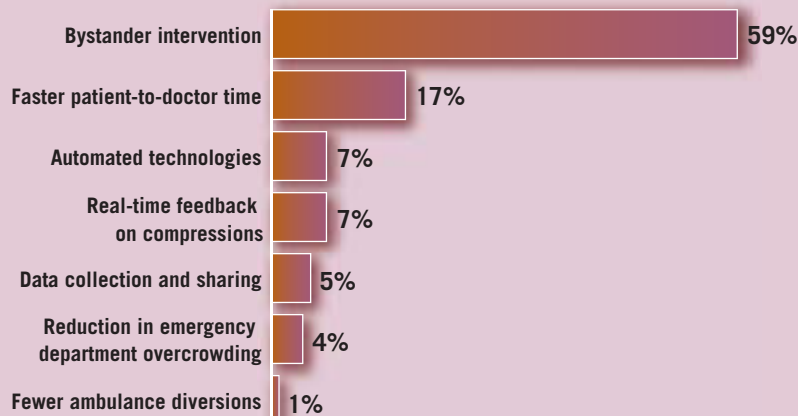
One of the advantages of reporting data to the NRCPR, instead of auditing your own data, is that the NRCPR has a common set of operational definitions that allows hospitals to compare themselves to other facilities, Dr. Mancini said. Participating hospitals also share best practice information when they achieve improved outcomes.

The biggest challenge in using the system is the time required to track and abstract patient records, an average of 30 minutes per chart when the charts are not available electronically, she said. ■

More information on the registry is available at [www.nrcpr.org](http://www.nrcpr.org).

## DATA WATCH

### Best Strategies to Improve Resuscitation Survival Rates



Note: Based on responses from 1,056 emergency physicians.

Source: American College of Emergency Physicians' State of Resuscitation survey

ELSEVIER GLOBAL MEDICAL NEWS

# Cystatin C May Predict Heart Failure Deaths

BY PATRICE WENDLING

CHICAGO — As in outpatients, cystatin C levels appear to offer additional prognostic information in patients admitted with heart failure exacerbations, according to an analysis of 240 consecutive inpatients.

There was no significant association between cystatin C levels on admission and the study's primary end point of length of hospitalization.

However, cystatin C was more predictive of all-cause mortality and the combined end point of readmission or death than was creatinine, Dr. Daniel J. Brotman and his colleagues reported in a poster at the annual meeting of the Society of Hospital Medicine.

Patients in the highest quartile of cystatin C (mean 2.44 mg/L) were at significantly increased risk of death (hazard ratio 2.07) and of readmission or death (HR 1.61) during the first year after admission, compared with those in the

lower three quartiles (mean 0.66-1.43 mg/L).

The association between cystatin C and the risk of readmission or death remained significant on multivariate analysis after adjustment for age, race, gender, and creatinine level (HR 1.65), according to Dr. Brotman, director of the hospitalists program at Johns Hopkins Hospital in Baltimore. The relationship also remained significant when ejection fraction was included in the model.

Cystatin C level has been shown to be a stronger predictor of the risk of death and cardiovascular events in elderly patients, compared with creatinine level (N. Engl. J. Med. 2005;352:2049-60). Accumulating evidence also supports its use as an alternative and more sensitive endogenous marker, compared with serum creatinine, for the estimation of glomerular filtration rate.

In the current analysis, there was a trend toward increased risk of readmission or death (HR 1.44) for patients in

the top quartile of creatinine (mean 2.0 mg/dL), compared with those in the lower three creatinine quartiles (1.0-1.3 mg/dL), but this difference did not reach statistical significance.

The combination of cystatin C and creatinine, however, was significantly more predictive of the combined end point of readmission or death than was either variable alone (HR 1.81).

"We are looking into whether serial changes in this biomarker during the course of hospitalization will have any potential clinical utility," Dr. Brotman said in an interview.

Clinical application is currently limited, as most laboratories do not routinely test for cystatin C.

Dr. Brotman disclosed receiving research funding from Siemens Healthcare Diagnostics Inc., serving on the hospitalist leadership panel for Quantia Communications LLC, and being on the advisory boards of several pharmaceutical companies. ■

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