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Article
Long-term Outcomes after In-Hospital CPR in Older Adults with Chronic Illness.
Chest, November 2014; 146 (5): 1214—1225

Clinical Question
How does having certain chronic medical illnesses affect outcomes following CPR in patients 67 and older?

Study Type
Retrospective review of medical records with descriptive analysis

Methods
The authors used Medicare Medical Provider Analysis and Review (MedPAR) coding data from January 1994 to December 2005. They gathered data only on patients older than 67 that received in hospital CPR for both those without chronic illnesses or one of the following diagnoses: COPD, CHF, CKD, malignancy, DM, and liver cirrhosis. They then studied how many survived to discharge, survived for >6 months, where the patients were discharged to, and if the patients were rehospitalized. They further separated these chronic illnesses into "severe" and "mild/moderate" based upon related codes—such as a COPD patient requiring 24hr O_2 at home for "severe". Lastly, the authors used the data in combination with race, sex, and hospital type as well as median income for the hospital's population to find if there was any correlation to the above endpoints.

Results
A total of 358,682 patients were included in this study with 87,231 pts having none of the listed chronic illnesses. The average age was 78.9 overall, 49.7% female, 80.4% white, 14.6% black, 5% other or missing. The most common chronic illness was COPD at 52.4%. For those without chronic illness, 17.3% survived to discharge with 44.6% of them going directly home. The worst survival rates to discharge were in pts with severe/moderate cirrhosis (10%/14%), severe/moderate malignancy (11%/14%), and severe COPD (15%). Oddly, pts with mild/mod CHF, severe CKD, and severe DM had better survival rates than pt's without chronic disease.

Further, 6 month survival was worst for severe CHF (4mo), severe cirrhosis (3mo), and mild/mod CKD (3.5mo); 6 month survival was "best" for mild/mod CHF (9mo), mild/mod DM (9mo), and mild/mod COPD (8mo)—those without chronic illness had average survival of 27 months after discharge. Of survivors with a chronic illness, the most common disposition was home followed by another hospital. Rehospitalization was highest for severe COPD, severe DM, and severe CKD.

Finally, the data showed that survival to discharge was slightly lower for blacks compared to whites (OR 0.7) and those admitted from a SNF (OR 0.6). There was no statistical difference for survival to discharge for income or if the CPR occurred at a teaching hospitals, and females had an improved chance of survival over males (OR 1.21) overall.

Study Limitations/Issues
This study, despite having a ton of information, looked only at billing codes and did not include some factors. One factor includes changes in CPR protocols both over time and by hospital—I do not know if we can apply survival rates from the late 1990s when CPR standards have changed significantly since 2006. Furthermore, the authors admittedly state that they do not know where in the hospital the CPR was occurring or how advances in a variety of treatments for each illness may affect post-CPR survivability.

Discussion

This article had a lot of patients and a lot of interesting data. It did seem to confirm what I think a lot of us already know—old sick patients with chronic illnesses tend to do poorly, especially if they have an arrest. The benefit I think it has is being able to give patients and families some general objective information for end of life decisions. Even in my short career thus far, I have been asked to give an "estimate" or "chances" about survivability, and usually I just give the "I'm sorry, I don't know an exact figure." However, for a patient with, for example, advanced COPD, perhaps it would be of value, if asked, to tell a pt/his or her family that *if* CPR occurs, the chances of dying before discharge are about 85% and of those 15% survivors, many will be rehospitalized and on average live 5 months. This data could be used for several of those illnesses, especially COPD, malignancy, and cirrhosis. Of course the limitations above would weigh strongly about how much I'd use this, or I'd at least need to add a disclaimer about how CPR has evolved; some of these data are based on CPR from the early 1990s when we had different compressions to breaths ratios, some different meds, compression depths, different focuses (ABC vs CAB), and different post-CPR treatments (ie hypothermia). Bottom line, I think if pushed by patients/families, I may use this study to give some specific numbers, but in general, especially when not in the ICU, I would not readily offer these data.