

Facilitating the CPR Decision: Position Paper

Intended Audience

Respecting Choices® Organizations, Physicians and Advanced Practitioners, Facilitators, and Instructors

Introduction: The Issue

Respecting Choices Faculty have received significant feedback on concerns from advance care planning (ACP) Facilitators, physicians, and others in facilitating the cardiopulmonary resuscitation (CPR) conversation, specifically regarding CPR outcome statistics, and from Instructors in effectively teaching CPR facilitation skills to others.

This position paper is intended to make recommendations for those who facilitate conversations about the CPR decision and Instructors who teach the CPR content.

Background

Respecting Choices describes person-centered conversations as an iterative process of helping people understand information, reflect on their beliefs (including religious, spiritual, cultural, and personal), and discuss these issues with others as needed. One of the ultimate goals of person-centered conversations is to assist individuals in making informed decisions that align with their goals and values. The Respecting Choices framework used to assist individuals in making specific treatment decisions is the “Decision-Making Framework.” The CPR decision is a component of shared decision-making conversations, especially for those with serious and/or advanced illness. Skills for facilitating the CPR decision are integrated into the Respecting Choices First Steps®, Next Steps, and Last Steps® ACP Facilitator Certification programs and Shared Decision Making in Serious Illness (SDMSI) curriculum for physicians/advanced practitioners. These skills include the provision of CPR outcomes as a component of helping individuals make a shared decision that is informed by factual information. There often exists tension among facilitators and physicians about how to integrate the most relevant CPR outcomes into a decision-making conversation with individuals.

Assessment/Need

Facilitating the CPR decision with individuals and their loved ones can be challenging for many reasons. First, there exists the common practice of simply asking a person the question, “Do you want CPR?” or “Do you want CPR if you are already dead?” These types of approaches, while common, are not person-centered conversations using open-ended questions that integrate the balance between evidence-based practice and an individual’s goals and values. Second, the discussion and information may be new to individuals who might never have contemplated this decision nor had previous conversations with their physician. Individuals may wonder why a Facilitator (e.g., non-physician) is initiating this conversation (e.g., “Is there something my doctor has not told me?”). Third, providing CPR outcome statistics and potential side effects may be a new experience for Facilitators and physicians, causing discomfort and uncertainty in how to balance the delivery of objective information with a spirit of neutrality and support. Last, outcome variables for a specific individual may not be known and will need follow-up conversations with the individual’s physician. Statistics regarding hospitalized patients’ CPR outcomes may vary widely from community CPR outcomes. (Please refer to the literature review at the end of this paper.)

Recommendations

This position paper includes three levels of recommendations: Organizational; Facilitator, Physician, and Advanced Practitioner; and Instructor.

ORGANIZATIONAL STRATEGIES

The organization will do the following:

1. Create clear expectations and qualifications for those who facilitate CPR conversations.
2. Follow best medical practices that avoid offering treatment menus (e.g., “limited code” or “chemical code only”).
3. Create, distribute, and gain support for written information about CPR provided to individuals as a component of their decision-making process. Based on a review of the literature, the following is a summary of CPR outcomes that considers the health state of the individuals and location of CPR.

In-Hospital CPR Statistics

- **Overall, for all hospitalized adults, there is a 24.8% chance of survival for in-hospital CPR and live to discharge.** (Retrieved 08/29/2017: http://cpr.heart.org/AHA/ECC/CPRAndECC/General/UCM_477263_Cardiac-Arrest-Statistics.jsp 2016 Out-of-Hospital Cardiac Arrest)
- **For adults 18–64 years old, there is a 30.4% chance of survival for in-hospital CPR and live to discharge.** (Mallikethi-Reddy et al., 2017, p. 1)
- **For adults who survive in-hospital CPR, there is a 28.1% chance of significant neurological disability.** (Girotra et al., 2012, p. 1919)
- **For adults greater than 64 years old, there is an 18.3% chance of survival for in-hospital CPR and live to discharge.** (Ehlenbach et al., 2009, p. 25)
- **For patients living in a nursing facility and dependent on others for their care,** the odds are much lower for surviving in-hospital CPR and discharge alive compared with independent community dwelling members. (Shah, Fairbanks, and Lerner, 2007, p. e29)

Out-of-Hospital CPR Statistics

- **For all adult patients who received out-of-hospital CPR and were hospitalized, 7.6%–9.6% patients survived to discharge** (a 3.4–22% variation exists based upon bystander and EMS response). (Girotra et al., 2016, p. 2162)
- **The rate of survival from out-of-hospital cardiac arrest to hospital discharge for community-dwelling elders, 65 years old and greater, worsens with age** (rates of survival to hospital discharge decreases with age: 8% for those 65–79 years old, 4% for octogenarians, 2% for nonagenarians). (Deasy et al., 2011, p. 401)
- **Factors resulting in poor survival with out-of-hospital CPR:**
 - **Multiple chronic illnesses reduce the odds for out-of-hospital CPR to hospital discharge alive.** (Carew, Zhang, and Rea, 2007, p. 729)

- **1 out of 3 people who survive out-of-hospital CPR die prior to discharge.** (Chan et al., 2016, p. 9)
 - **2% of nursing home residents who receive out-of-hospital CPR survive and live for a year compared with 5% of community-dwelling residents who survive CPR and survive one year.** (Shah, Fairbanks, and Lerner, 2007, p. e30)
 - **Poor functional and cognitive status** prior to cardiac arrest is related to lower long-term survival. (Pachys et al., 2014, p. 1057)
4. Create communication and documentation strategies that provide easy access to CPR conversations, goals of care, and decisions across time and location.
 5. Discuss strategies for physicians and advanced practitioners to provide more specific prognostic information on CPR outcome statistics for all individuals, including those with serious illness. For example:
 - **For adults, 67 years old and older, with one or more of six chronic diseases, the chance of survival for in-hospital CPR and live to discharge is between 11.3% and 14.8% (average 13%).** (e.g., 14.8% in the advanced COPD group [P < .001] and 11.3% in the advanced malignancy group [P < .001]). Those who discharged lived an average 2.8–5 (average 3.9) months longer. (Stapleton et al., 2014, p. 1219)
 6. Evaluate organizational CPR policies and accuracy with local CPR statistics. Provide local CPR statistics, as appropriate.
 7. Ensure that CPR conversations throughout the organization subscribe to a common set of outcome statistics.
 8. Create referral systems for physicians to address an individual's questions and concerns regarding his/her CPR decision and potential outcomes.

FACILITATOR/PHYSICIAN/ADVANCED PRACTITIONER STRATEGIES

1. Remember that the role of the Facilitator/physician in having value-neutral CPR conversations is to explore an individual's understanding of the CPR decision and promote reflection and discussion.
2. Explore own fears, concerns, and values when facilitating these conversations.
3. Explore past experiences with CPR conversations. What have you experienced or observed? What have you learned from these observations?
4. Practice facilitating the CPR conversation.
 - a. Practice sessions with feedback are particularly helpful for those with less experience.
 - b. Become familiar with written CPR information (e.g., education, decision aids) to appropriately integrate outcome statistics that apply to the target audience.
5. Consider opportunities to connect the CPR decision with previously expressed goals and values. This strategy can assist in helping an individual make a decision that is consistent with these goals and values and can provide continuity in the conversation. For example, if an individual has repeatedly expressed a desire NOT to return to the hospital, or NOT to be on a ventilator, it can be

helpful to bring these goals to the CPR conversation. For example, “Mr. X, I have heard you say several times today that you do not want to return to the hospital. As we begin to talk about CPR, I would like you to keep this goal in mind, as it will be important for you to understand that CPR will require hospitalization.”

6. For individuals who are interested in attempting CPR, explore with these individuals what an unacceptable outcome might be and when further treatment may be withheld/withdrawn.
7. Remember that individuals may need more time to reflect on the information provided, their goals and values, and discussion needed with others (e.g., physician, family).
8. Develop follow-up strategies as needed (i.e., making referrals to the physician and helping the individual craft questions as needed).
9. Be aware of your organizational and community policies and practices, some of which may be contradictory to best practices; this will ensure that individuals understand how their decisions will be honored within the organization and community where they seek care.

INSTRUCTOR STRATEGIES

1. Keep abreast of the current literature to be able to respond to participants’ questions and concerns. Respecting Choices has included a comprehensive literature review at the end of this position paper.
2. Openly address best practices and potential organizational inconsistencies. For example, the issue of intubation along with CPR arises consistently in the current Respecting Choices Next Steps and Last Steps Facilitator Certification courses. The Respecting Choices approach to address this issue when teaching Facilitator courses is as follows:
 - CPR is a medical treatment and is delivered based on current best medical standard of care (e.g., CPR, ACLS, EMT protocols), which includes intubation.
 - These CPR protocols are delivered by certified professionals in the community and inpatient settings.
 - Individuals may express conflicting goals regarding CPR that are important to clarify and understand. For example, “I want CPR, but I don’t want to be intubated” or “Can I just try CPR for 5 minutes and see if it works?” These conflicting goals need to be acknowledged and included as part of the shared decision-making conversation.
 - We do acknowledge that the inpatient setting may allow for adaptations to the CPR protocols (although may not be best practice). However, this adaptation is based on a different set of circumstances and medical judgment.
3. Integrate organizational and community standards related to CPR; some of which may be contradictory to best practices. For example:
 - What are the existing hospital code order sets? Do they include an option to have “limited resuscitation,” such as no intubation? These practices may need to be identified for Facilitators as issues that need attention and resolution to align with best practices.

4. Take an active role in helping Facilitators and physicians integrate a person’s previously expressed goals into the CPR decision. Reinforce in the classroom and during role-play exercises.
5. Help Facilitators and physicians understand the impact of “nudging” strategies on person-centered conversations.

Nudging is defined in ethics literature as a way of influencing an individual’s choice by altering the “architecture” of the individual’s choices (i.e., “choice architecture”). The intent is to preserve freedom of choice, thus promoting beneficence and autonomy (Cohen, 2013).

However, there are many ways an individual can be nudged, or steered, in different directions that may interfere with person-centered conversations. Nudging techniques should not limit freedom of choice.

A literature review exploring the use of nudging during shared decision-making conversations identified both potential positive and negative impact. Sunstein (2015) states that shared decision making must “preserve freedom of choice,” which may or may not occur when nudging is used. The nudging strategy can potentially create a decision-making framework that is not centered on the individual’s self-determination, but instead be coercive or interfere with an individual’s autonomy. An example of a negative impact of nudging during an ACP conversation may include asking questions that reflect a bias about an expected response, for example:

“Do you want CPR if you are already dead?”

Another example of nudging (perhaps interpreted as positive or negative) is the manner or “architecture” of how information is provided. Consider the following way that CPR information can be provided:

“Overall, for all hospitalized adults, there is a 24.8% chance of survival for in-hospital CPR and live to be discharged.”

“Overall, for all hospitalized adults, there is a 75.2% chance you will not live to leave the hospital.”

Shared decision making not only relies on sharing facts but also facilitates expression of personal goals and values and the impact these may have on decisions that are being explored. As such, nudging may only be appropriate if it serves to move an individual toward a decision that is most in line with the individual’s personal goals and values (Cohen, 2013; Holm & Ploug, 2013).

In conclusion, Respecting Choices recommends that ACP Facilitators, physicians, advanced practitioners, and others engaged in person-centered conversations remain value neutral and carefully consider the impact nudging techniques may have on freedom of choice. Respecting Choices recommends that communication skills be used to actively engage individuals in an exploration of personal goals, values, and beliefs. Once identified, individuals can be guided to make healthcare decisions that are in alignment with these goals, values, and beliefs.

In summary, this position paper offers Respecting Choices’ recommendations on a variety of strategies to promote person-centered conversations assisting individuals in making CPR decisions that are both grounded in evidence and aligned with their personal goals and values.

CPR Outcome References

References for In-Hospital CPR

a. In-hospital CPR stats for any age adult:

2016 American Heart Association In-Hospital Cardiac Arrest

Incidence: 209,000

Survival Rate Adult: 24.8% (survival to hospital discharge)

Survival Rate Children: N/A

http://cpr.heart.org/AHA/ECC/CPRAndECC/General/UCM_477263_Cardiac-Arrest-Statistics.jsp

Girotra, S., Nallamothu, B. K., Spertus, J. A., Li, Y., Krumholz, H. M., Chan, P. S., for the American Heart Association Get with the Guidelines–Resuscitation Investigators (2012). Trends in survival after in-hospital cardiac arrest. *N Engl J Med*, 367(20), 1912–1920. doi:10.1056/NEJMoa1109148

We identified all adults who had an in-hospital cardiac arrest at 374 hospitals in the *Get with the Guidelines (GWTG)*–Resuscitation registry between 2000 and 2009. Risk-adjusted rates of survival to discharge increased from 13.7% in 2000 to 22.3% in 2009 (adjusted rate ratio per year, 1.04; 95% confidence interval [CI], 1.03 to 1.06; P<0.001 for trend).

According to the GWTG–Resuscitation Investigators (unpublished data, June 22, 2012), 24.2% (95% CI, 23.5%–24.9%) of patients of any age or 23.9% (95% CI, 23.2%–24.6%) of adults and 40.2% (95% CI, 34.2%–46.2%) of children (excluding neonates who experienced in-hospital cardiac arrest with any first recorded rhythm) in 2011 survived to discharge.

b. In-hospital CPR stats for nonelderly adults:

Mallikethi-Reddy, S., Briasoulis, A., Akintoye, E., Jagadeesh, K., Brook, R. D., Rubenfire, M., . . . Grines, C. L. (2017). Incidence and Survival After In-Hospital Cardiopulmonary Resuscitation in Nonelderly Adults: US Experience, 2007 to 2012. *Circ Cardiovasc Qual Outcomes*, 10(2). doi:10.1161/circoutcomes.116.003194

We examined survival trends and factors associated with survival after in-hospital CPR in nonelderly adults aged 18 to 64 years, using Healthcare Utilization Project Nationwide Inpatient Sample Database from 2007 through 2012 in the United States.

Overall, 30.4% patients survived to hospital discharge. Survival improved from 27.4% in 2007 to 32.8% in 2012 (Ptrend<0.001).

c. In-hospital CPR stats for 65+:

Ehlenbach, W. J., Barnato, A. E., Curtis, J. R., Kreuter, W., Koepsell, T. D., Deyo, R. A., & Stapleton, R. D. (2009). Epidemiologic study of in-hospital cardiopulmonary resuscitation in the elderly. *N Engl J Med*, 361(1), 22–31. doi:10.1056/NEJMoa0810245

1992 through 2005 to identify beneficiaries 65 years of age or older who underwent CPR in U.S. hospitals. 18.3% of these patients (95% confidence interval [CI], 18.2 to 18.5) survived to discharge.

d. In-hospital CPR for chronic illness and elderly:

1. Stapleton, R. D., Ehlenbach, W. J., Deyo, R. A., & Curtis, J. R. (2014). Long-term outcomes after in-hospital CPR in older adults with chronic illness. *Chest*, *146*(5), 1214–1225. doi:10.1378/chest.13-2110

We examined inpatient Medicare data from 1994 through 2005 to identify CPR recipients. We grouped beneficiaries aged ≥ 67 years by severity of six chronic diseases—COPD, congestive heart failure (CHF), chronic kidney disease (CKD), malignancy, diabetes, and cirrhosis—and investigated survival to discharge, discharge destination, re-hospitalizations, and long-term survival.

We identified 358,682 CPR recipients. Most patients with chronic disease were less likely to survive to discharge (e.g., 14.8% in the advanced COPD group [$P < .001$] and 11.3% in the advanced malignancy group [$P < .001$]) than patients without chronic illness (17.3%). Among discharge survivors, the median long-term survival was shorter in patients with chronic illness (e.g., 5.0, 3.5, and 2.8 months in the advanced COPD, malignancy, and cirrhosis groups, respectively; $P < .001$ for all) than without (26.7 months).

2. Abbo, E. D., Yuen, T. C., Buhrmester, L., Geocadin, R., Volandes, A. E., Siddique, J., & Edelson, D. P. (2013). Cardiopulmonary resuscitation outcomes in hospitalized community-dwelling individuals and nursing home residents based on activities of daily living. *J Am Geriatr Soc*, *61*(1), 34–39. doi:10.1111/jgs.1206

OBJECTIVES: To determine whether poor functional status is associated with worse outcomes after attempted cardiopulmonary resuscitation (CPR).

DESIGN: Retrospective study of individuals who experienced cardiac arrest stratified according to dependence in activities of daily living (ADLs) and residential status (nursing home [NH] or community dwelling).

SETTING: 235 hospitals throughout North America.

PARTICIPANTS: Adult inpatients age 65 and older who had experienced a cardiac arrest as reported to the *Get with the Guidelines*–Resuscitation registry between 2000 and 2008.

MEASUREMENTS: Primary outcomes were return of spontaneous circulation (ROSC) and survival to discharge.

RESULTS: 26,329 individuals who experienced cardiac arrest met inclusion criteria. NH residents, dependent in ADLs, had lower odds than community-dwelling independent participants of achieving ROSC (odds ratio [OR] = 0.73, 95% confidence interval [CI] = 0.63–0.85), whereas participants dependent in ADLs from either residential setting had lower odds of survival (community-dwelling: OR = 0.76, 95% CI = 0.63–0.92; NH: OR = 0.79, 95% CI = 0.64–0.96) after adjusting for participant and arrest characteristics. Duration of resuscitation and doses of epinephrine or vasopressin were similar between groups and had no significant effect on ROSC or survival, although participants dependent in ADLs were more likely to have a do-not-resuscitate (DNR) order placed after ROSC. Overall, median time to signing a DNR order after resuscitation was 10 hours (interquartile range 2–70).

CONCLUSION: Functional and residential status are important predictors of survival after in-hospital cardiac arrest. Contrary to the hypothesis but reassuring from a quality-of-care perspective, less-aggressive attempts at resuscitation do not appear to contribute to poorer outcomes in individuals, dependent in ADL, regardless of residential status.

e. Neurological disability post in-hospital CPR for all patients:

Girotra, S., Nallamothu, B. K., Spertus, J. A., Li, Y., Krumholz, H. M., Chan, P. S., for the American Heart Association Get with the Guidelines–Resuscitation Investigators (2012). Trends in survival after in-hospital cardiac arrest. *N Engl J Med*, 367(20), 1912–1920. doi:10.1056/NEJMoa1109148

We identified all adults who had an in-hospital cardiac arrest at 374 hospitals in the *Get with the Guidelines–Resuscitation* registry between 2000 and 2009. Rates of clinically significant neurologic disability among survivors decreased over time, with a risk-adjusted rate of 32.9% in 2000 and 28.1% in 2009 (adjusted rate ratio per year, 0.98; 95% CI, 0.97 to 1.00; P=0.02 for trend).

References for Out-of-Hospital CPR Stats

a. For all patients:

2016 American Heart Association Out-of-Hospital Cardiac Arrest

Incidence: More than 350,000

Bystander CPR (overall): 46.1%

Survivor rate (overall): 12% (survival to hospital discharge)

http://cpr.heart.org/AHA/ECC/CPRAndECC/General/UCM_477263_Cardiac-Arrest-Statistics.jsp

1. Girotra, S., van Diepen, S., Nallamothu, B. K., Carrel, M., Vellano, K., Anderson, M. L., . . . the Heart Rescue, P. (2016). Regional Variation in Out-of-Hospital Cardiac Arrest Survival in the United States. *Circulation*, 133(22), 2159–2168. doi:10.1161/CIRCULATIONAHA.115.018175

Using data from the Cardiac Arrest Registry to Enhance Survival, we identified 96,662 adult patients with out-of-hospital cardiac arrest in 132 U.S. counties. A total of 9,317 (9.6%) patients survived to discharge, and 7,176 (7.4%) achieved functional recovery. At a county level, there was marked variation in rates of survival to discharge (range, 3.4%–22.0%; median odds ratio, 1.40; 95% confidence interval, 1.32–1.46) and survival with functional recovery (range, 0.8%–21.0%; median odds ratio, 1.53; 95% confidence interval, 1.43–1.62). **The wide variation is based upon the difference in bystander response.**

2. Comilla Sasson, MD, MS; Mary A.M. Rogers, MS, PhD; Jason Dahl, MD; Arthur L. Kellermann, MD, MPH (2010). Predictors of Survival from Out-of-Hospital Cardiac Arrest: A Systematic Review and Meta-Analysis. *Circ Cardiovasc Qual Outcomes*. 3:63–81.

The pooled survival rate to hospital admission was 23.8% (95% CI, 21.1 to 26.6) and to hospital discharge was 7.6% (95% CI, 6.7 to 8.4). People are more likely to survive if cardiac arrest is witnessed by a bystander and EMS, found in a shockable rhythm. The aggregate survival rate of OHCA (7.6%) has not significantly changed in almost 3 decades.

b. For older community-dwelling patients:

Deasy, C., Bray, J. E., Smith, K., Harriss, L. R., Bernard, S. A., Cameron, P. (2011). Out-of-hospital cardiac arrests in the older age groups in Melbourne, Australia. *Resuscitation*. 82(4), 398-403.

The Victorian Ambulance Cardiac Arrest Registry (VACAR) was searched for all OHCA not witnessed by Emergency Medical Services (EMS) occurring in those aged 65 years and older.

Between 2000 and 2009 there were 30,006 OHCA of which 9,703 (32%) were in people 65–79 years of age, 6,430 (21%) in octogenarians, 1,530 (5%) in nonagenarian and 40 (0.1%) in centenarians. Rates of attempted resuscitation decreased with advancing age: 48% for those aged 65–79 years, 39% for octogenarians, 31% for nonagenarians, and 17% for centenarians. Similarly, rates of survival to hospital discharge decreased with age: 8% for those aged 65–79 years, 4% for octogenarians, 2% for nonagenarians; for 65–79-year-olds, octogenarians, and nonagenarians, survival if in VF/VT was – 17%, 10% and 4%; asystole – 1%, 1% and 0.5%; and PEA – 6%, 3% and 3%, respectively. Multivariable logistic regression shows that between 2000 and 2009, rates of transportation with return of spontaneous circulation have improved for both shockable and non-shockable rhythms [OR 95% CI 1.07(1.04–1.10) and 1.16(1.12–1.20), respectively] but survival to hospital discharge has improved in the shockable rhythm group only [OR 1.12(1.07–1.16)].

CONCLUSION: Outcomes for OHCA with shockable rhythm have improved over the last 10 years for people aged 65 years and over. Quality of life studies should be performed to help inform the community and EMS on appropriate resuscitative efforts.

c. For nursing home dwelling patients, non-shockable rhythm:

1. Deasy, C, Bray, JE, Smith, K, Harriss, LR, Bernard, SA, Davidson, PM, Cameron, P. (2012). Resuscitation of out-of-hospital cardiac arrests in residential aged care facilities in Melbourne, Australia. *Resuscitation*. 83(1) 58-62.

CPR in patients in residential aged care facilities (RACF) deserves careful consideration. We examined the characteristics, management, and outcomes of out-of-hospital cardiac arrest (OHCA) in RACF patients in Melbourne, Australia. The Victorian Ambulance Cardiac Arrest Registry (VACAR) was searched for all OHCA occurring in RACFs in Melbourne. The characteristics and outcomes were compared with non-RACF patients in the VACAR.

RESULTS: Between 2000 and 2009, there were 30,006 OHCA, 2,350 (7.8%) occurring in a RACF. A **shockable rhythm** was present in 179 (7.6%) patients on arrival of paramedics of whom bystander CPR had been performed in 118 (66%); 173 (97%) received an EMS attempted resuscitation. ROSC was achieved in 71 (41%) patients and 15 (8.7%) patients survived to leave hospital. **Non-shockable rhythm was present in 2,171 patients (92%) of whom 804 (37%) had an attempted resuscitation by paramedics.** ROSC was achieved in 176 patients (22%) and 10 patients (1.2%) were discharged alive. Survival from OHCA occurring in a RACF was less than survival in those aged >70 years of age who suffered OHCA in their own homes (1.8% vs. 4.7%, $p = 0.001$). On multivariable analysis, witnessed OHCA (OR 3.0, 95% CI 2.4–3.7) and the presence of bystander CPR (OR 4.6, 95% CI 3.7–5.8) was associated with the paramedic decision to resuscitate.

CONCLUSIONS: Resuscitation of patients in RACF is not futile. However, informed decisions concerning resuscitation status should be made by patients and their families on entry to a RACF. Where it is appropriate to perform resuscitation, outcomes may be improved by the provision of BLS training and possibly AED equipment to RACF staff.

2. Carew, H., Zhang, W., Rea, T. (2007). Chronic health conditions and survival after out-of-hospital ventricular fibrillation cardiac arrest. *Heart* 2007;93:728–731. doi: 10.1136/hrt.2006.103895

OBJECTIVE: To investigate whether chronic clinical comorbidity, as collected from emergency medical services (EMS) reports, influences survival after out-of-hospital ventricular fibrillation (VF) cardiac arrest.

METHODS: In this observational retrospective cohort study in King County, Washington, USA, 1,043 people who suffered out-of-hospital VF arrest due to heart disease between 1 January 1999 and 31 December 2003 were studied. Chronic conditions were ascertained and tallied from EMS reports using a uniform abstraction form by people blinded to outcome status. The outcome was survival to hospital discharge.

RESULTS: 75% (776/1043) of patients had at least one chronic health condition and 51% (529/1043) had prior clinically recognized heart disease. Overall, the increasing count of chronic conditions was inversely associated with the odds of survival to hospital discharge after adjustment for potential confounders (OR 0.84 [95% CI 0.74 to 0.95] for each additional chronic condition). The chronic condition–outcome association tended to be more prominent among those with longer EMS response intervals ($p = 0.07$ for interaction term between condition count and response interval). For example, the OR of survival was 0.72 (95% CI 0.59 to 0.88) for each additional chronic condition when the EMS response interval was 8 min compared with an OR of 0.95 (95% CI 0.79 to 1.14) when the EMS response interval was 3 min.

CONCLUSION: In this cohort, an **increasing burden of clinical comorbidity** based on a review of EMS reports was associated with **lower odds of survival** after VF arrest. This finding suggests that chronic conditions influence arrest pathophysiology and, in turn, could help guide resuscitation care.

3. Paul S. Chan, MD, MSc; Bryan McNally, MD, MPH; Brahmajee K. Nallamothu, MD, MPH; Fengming Tang, BS; Bradley G. Hammill, PhD; John A. Spertus, MD, MPH; Lesley H. Curtis, PhD (2016). Long-Term Outcomes Among Elderly Survivors of Out-of-Hospital Cardiac Arrest. *J Am Heart Assoc.* 2016;5:e002924 doi: 10.1161/JAHA.115.002924)

16,206 adults 65 years or older with an out-of-hospital cardiac arrest between 2005 and 2010. Among 1,127 patients who were discharged alive, we evaluated whether 1-year mortality, cumulative readmission incidence, and follow-up inpatient costs differed according to patients' race, sex, initial cardiac arrest rhythm, bystander delivery of cardiopulmonary resuscitation, discharge neurological status, and functional status (hospital discharge disposition). Overall 1-year mortality after hospital discharge was 31.8%. Among survivors, there were no long-term mortality differences by sex, race, or initial cardiac arrest rhythm, but worse functional status and severe neurological disability at discharge were associated with higher mortality. Moreover, compared with first responders, cardiopulmonary resuscitation delivered by bystanders was associated with 23% lower mortality (hazard ratio 0.77 [confidence interval 0.58–1.02]). Besides mortality, 638 (56.6%) patients were readmitted within the first year, and the cumulative readmission incidence was 197 per 100 patient-years. Mean 1-year inpatient costs were \$23,765–\$41,002. Younger age, black race, severe neurological disability at discharge, and hospital disposition to a skilled nursing or rehabilitation facility were each associated with higher 1-year inpatient costs (P for all <0.05).

CONCLUSION: Among elderly survivors of out-of-hospital cardiac arrest, **nearly 1 in 3 patients die within the first year**. Long-term mortality and inpatient costs differed substantially by certain demographic factors, whether cardiopulmonary resuscitation was initiated by a bystander, discharge neurological status, and hospital disposition.

4. Shah, M. N., Fairbanks, R. J., & Lerner, E. B. (2007). Cardiac arrests in skilled nursing facilities: continuing room for improvement? *J Am Med Dir Assoc*, 8(3 Suppl 2), e27–31.
doi:10.1016/j.jamda.2006.12.005

To characterize the care received by skilled nursing facility (SNF/NF) patients suffering cardiac arrest and to evaluate the outcome of SNF/NF patients experiencing cardiac arrest.

A retrospective analysis of an existing cardiac arrest registry. The study took place in Rochester, NY, an urban city in upstate New York with approximately 220,000 residents cardiac arrest between January 1998 and December 2001 were included. Forty-two (8%) of cardiac arrest patients resided in an SNF/NF. Sixteen (38%) of the events were witnessed arrests. Only 28 (67%) patients received CPR and none were defibrillated prior to EMS arrival. One (2%) patient was alive 1 year after the event, a survival rate similar to the community-dwelling population (5%). SNF/NF patients suffering cardiac arrest often did not receive CPR or defibrillation while awaiting EMS arrival. SNF/NF patients suffering cardiac arrest have a very low survival rate, similar to the community-dwelling population. The impact of not providing CPR and defibrillation on the survival rate is unclear, but needs to be evaluated prior to any decisions regarding the medical futility of resuscitating SNF/NF patients.

5. Corrada, E., Mennuni, M. G., Grieco, N., Sesana, G., Beretta, G., & Presbitero, P. (2013). Neurological recovery after out-of-hospital cardiac arrest: hospital admission predictors and one-year survival in an urban cardiac network experience. *Minerva Cardioangiol*, 61(4), 451–460.

AIM: The aim of the study was to detect early predictors of neurological recovery and evaluate one-year survival related to neurological status at discharge in patients (pts) admitted after out-of-hospital cardiac arrest (OHCA).

METHODS: Sixty-three consecutive pts with OHCA from any cardiac cause, admitted to our cardiac intensive care unit, were classified according to survival and cerebral performance category (CPC) scale from 1 to 4 at hospital discharge. Pre-hospital and emergency room (ER) variables were analyzed to identify early predictors of neurological recovery as defined CPC=1-2.

RESULTS: Overall, in-hospital survival was 60%. Sixty-eight and 32% of survivors were classified as CPC 1-2 and CPC 3-4, respectively. During one-year follow-up, 96% of patients classified as CPC 1-2 survived and 100% of CPC 3-4 died. Emergency crew witnessing, performance of cardiopulmonary resuscitation (CPR) by witnesses, the call for chest pain, no history of heart disease, and a Glasgow coma scale (GCS) of ≥ 9 on arrival to the ER, were more frequent in patients classified as CPC 1-2 and times from "OHCA to return of spontaneous circulation (ROSC)," from "emergency medical system (EMS) arrival to ROSC," and "first DC shock to ROSC" were also significantly shorter in these patients. The time of first DC shock to ROSC in pts who presented with rhythm in ventricular fibrillation and the time from OHCA to ROSC in pts with witnessed OHCA were independent predictors of neurological recovery.

CONCLUSION: Forty-one percent of pts admitted to our tertiary centre after OHCA were discharged with CPC 1-2 and at one-year follow-up, 96% of these were alive, while all pts classified as CPC 3-4 died. Easily documented information such as the time from OHCA to ROSC and the time of first shock to ROSC are early independent predictors of neurological recovery.

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doi:10.1016/j.resuscitation.2014.03.312

BACKGROUND: Current focus on immediate survival from out-of-hospital cardiac arrest (OHCA) has diverted attention away from the variables potentially affecting long-term survival.

AIM: To determine the relationship between neurological and functional status at hospital discharge and long-term survival after OHCA.

METHODS: Prospective data collection for all OHCA patients aged >18 years in the Jerusalem district (n=1043, 2008–2009).

PRIMARY OUTCOME MEASURE: Length of survival after OHCA. Potential predictors: Activities of Daily Living (ADL) and Cerebral Performance Category (CPC) scores at hospital discharge, age, and sex.

RESULTS: There were 52/279 (18.6%) survivors to hospital discharge. Fourteen were discharged on mechanical ventilation (27%). Interviews with survivors and/or their legal guardians were sought 2.8+/-0.6 years post-arrest. Eighteen died before long-term follow-up (median survival 126 days, IQR 94-740). Six improved their ADL and CPC scores between discharge and follow-up. Long-term survival was positively related with lower CPC scores (p=0.002) and less deterioration in ADL from before the arrest to hospital discharge (p=0.001). For each point increment in ADL at hospital discharge, the hazard ratio of death was 1.31 (95%CI 1.12, 1.53, p=0.001); this remained unchanged after adjustment for age and sex (HR 1.26, 95%CI 0.07, 1.48, p=0.005).

CONCLUSIONS: One-third of the patients discharged from hospital after OHCA died within 30 months of the event. Long-term survival was associated both with better neurological and functional level at hospital discharge and a smaller decrease in functional limitation from before to after the arrest, yet some patients with a poor neurological outcome survived prolonged periods after hospital discharge.

References for Nudging

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Abstract: Libertarian paternalism's notion of "nudging" refers to steering individual decision making so as to make choosers better off without breaching their free choice. If successful, this may offer an ideal synthesis between the duty to respect patient autonomy and that of beneficence, which at times favors paternalistic influence. A growing body of literature attempts to assess the merits of nudging in healthcare. However, this literature deals almost exclusively with health policy, while the question of the potential benefit of nudging for the practice of informed consent has escaped systematic analysis. This article focuses on this question. While it concedes that nudging could amount to improper exploitation of cognitive weaknesses, it defends the practice of nudging in a wide range of other conditions. The conclusion is that, when ethically legitimate, nudging offers an important new paradigm for informed consent, with a special potential to overcome the classical dilemma between paternalistic beneficence and respect for autonomy.

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