Cultivating the Magic Sauce for Surviving Out-of-Hospital Cardiac Arrest:
Clinical Commentary on “My Experience as a Bystander”

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I read Bobby Grams’ touching commentary about his experience as a bystander with a smile on my face—and hope. I have heard this story first hand from Bobby and his wife Karen and cannot help but think how every part of the chain of survival went right for Karen to have this great outcome. Bobby had to recognize a life-threatening situation, think quick on his feet, pick up that phone and call 911, and keep calm so he could follow dispatch’s instructions. Dispatch had to have the experience and know-how to effectively guide Bobby through cardiopulmonary resuscitation. First-responders had to get to the house quickly, bypass barking dogs, take over patient care, transport while continuing life-saving measures, and handoff to the emergency room for definitive care. It all went right.

But, of course, so many others who experience out-of-hospital cardiac arrest (OHCA) are not as lucky. In our home state of Michigan, depending on where you arrest, the likelihood of survival to hospital discharge varies between 5% and 15%. We need to close this gap. Which community one arrests in should not dictate likelihood of survival. While we work on coming up with new therapies and devices to optimize the quality of cardiopulmonary resuscitation, we also need to focus on identifying what distinguishes high survival communities along the chain of survival. What is the “magic sauce” for survival in the field? What are the key system-level factors that increase the likelihood of OHCA survival in the prehospital setting?

Over the past several decades, research on approaches to OHCA care have led to targeted improvements across the care continuum (eg, 9–1-1 telephone cardiopulmonary resuscitation instructions, bystander cardiopulmonary resuscitation, public automated external defibrillator access, resuscitation processes, and postresuscitation care)1; however, survival disparities across US communities persist.1–3 Best practices among high-performing communities must be identified and effective strategies must be disseminated to

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other localities in the United States to help increase their survival rates. Further, increasing OHCA survival requires a more integrated approach to OHCA response across its continuum of care. Such an approach should examine factors that affect the treatment (both acutely and postresuscitation) of OHCA while also accounting for the multidisciplinary nature of care which is at the core of high-quality emergency medical services (EMS) system responses, including a formal emphasis on stakeholder collaboration which brings together the community, first-responders, transport agencies and health care systems, professional organizations, and government.\textsuperscript{1,2,4,5}

This is the focus of the National Heart, Lung, and Blood Institute–funded study Enhancing Prehospital Outcomes for Cardiac Arrest—a collaboration between the University of Michigan, SaveMiHeart, and RAND Corporation. In this study, we aim to identify EMS system-level factors critical to surviving OHCA at the intersection of community, first responders, transport agencies, and hospitals. Our preliminary findings show an approximate 6\% to 48\% variation in likelihood of return of spontaneous circulation in the field with pulse upon arrival to the ER among EMS agencies that participate in CARES (Cardiac Arrest Registry to Enhance Survival) in Michigan. Early findings from evaluating an EMS system on the high end of the survival spectrum reveals the following important factors for survival: promoting an adaptable, interdisciplinary organizational culture; leadership that takes an active role in engaging key stakeholders; regionalization and standardization of OHCA care; strategic positioning of first responders in the community to maximize capacity for OHCA response; raising the public’s awareness of OHCA and first-responder roles, among other factors.

The value of evaluating prehospital response from a multidisciplinary, integrated system standpoint has been demonstrated in other settings. Research by the RAND Corporation on mass casualty incident preparedness and response,\textsuperscript{6} for example, has shown that one critical aspect of an effective mass casualty incident response is interdisciplinary collaboration and cross-training in advance of incidents among responding agencies—including fire, police, EMS, and hospitals. Prehospital OHCA response—which is a response to a critical incident involving one casualty with the same responding entities—can be viewed through a similar lens.

Current integrated efforts between community, EMS, and hospitals are underway for system-wide implementation of evidence-based practices within regions, states, and among communities,\textsuperscript{7,8} such as Mission: Lifeline, Take Heart America, and the HeartRescue Project\textsuperscript{7}; however, it remains unclear how different communities, staffing models, oversight bodies, and inter-stakeholder collaborations affect performance, or how strategies specifically developed for one high-performing community can be adapted to others. Through Enhancing Prehospital Outcomes for Cardiac Arrest we aim to expand our understanding of how EMS systems improve OHCA outcomes across the full spectrum of prehospital care, from community bystander to hospital arrival. In this way, we hope to close the OHCA survival gap across Michigan and in other US communities by identifying the key ingredients of successful prehospital response so that many more bystanders and survivors can live to tell their survival stories like Bobby and Karen Grams.
REFERENCES


