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Review

Wolf Creek XVII Part 1: The future of cardiac arrest resuscitation



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Abstract

The Wolf Creek Conference, initiated in 1975, is a well-established tradition providing a unique forum for robust intellectual exchange between thought leaders and scientists from academia and industry focused on advancing the science and practice of cardiac arrest resuscitation. The Wolf Creek XVII Conference was hosted by the Max Harry Weil Institute for Critical Care Research and Innovation in Ann Arbor, Michigan, USA on June 15–17, 2023. A major focus of the conference proceedings was to identify and prioritize the knowledge gaps, barriers to translation, and research priorities for six major domains in the field of resuscitation: (1) automated cardiac arrest diagnosis, (2) amplifying lay-responder response, (3) mobile AEDs, (4) physiology-guided CPR, (5) extracorporeal support, and (6) neuroprotection. In addition, industry scientists were given the opportunity to present and discuss cutting edge innovations. Finally, building off of the conference's theme of "The Future of Cardiac Arrest Resuscitation", the Weil Institute introduced the "Wolf Creek Innovator in Cardiac Arrest and Resuscitation Award" to recognize early career investigators who were challenging current paradigms in resuscitation science. Similar to the early Wolf Creek Conferences, the goal was to fuel active discussion and debate among leading experts to determine where future research efforts should be focused. This manuscript provides an overview of the Wolf Creek XVII conference, and the individual manuscripts within this special edition of Resuscitation Plus describe the conference proceedings and outcomes in more detail. It is our intent that these publications will provide a roadmap for important academic and commercial advances in the field of cardiac arrest resuscitation.

Keywords: Cardiac arrest, Cardiopulmonary resuscitation, Defibrillation, Post-cardiac arrest syndrome

Introduction

The Wolf Creek Conference was first established in 1975 by James Jude, James Elam, and Peter Safar with the goal of improving the clinical practice of cardiopulmonary resuscitation by stimulating laboratory and clinical research.¹ This tradition has continued with a total of 17 conferences being held over the past 5 decades. Throughout its history, the conference has evolved to provide a unique forum for intellectual exchange between international thought leaders and scientists from academia and industry with the purpose of advancing the science and practice of cardiac arrest resuscitation. A comprehensive history of the Wolf Creek Conference is provided in Part 2 of this special edition of Resuscitation Plus.²

Ann Arbor, Michigan, USA. Invited conference participants included international thought leaders, leading scientists from academia and industry, and innovators in the field of cardiac arrest resuscitation (Fig. 1). All attendees submitted conflict of interest declarations and were asked to declare relevant conflicts of interests when speaking during the proceedings. A list of conference participants and their declared COI is provided in Supplemental Fig. 1. The conference program is provided in Supplemental Fig. 2.

Wolf Creek XVII was organized around six programmatic themes listed in Fig. 2. The proceedings of the conference focused on identifying and prioritizing knowledge gaps, barriers to translation, and research priorities for these six themes using a structured process outlined in Fig. 3. The results of the conference deliberations are published in Parts 3–8 of this special edition of Resuscitation Plus.^{3–8}

Meeting organization

The Wolf Creek XVII Conference was hosted by the Max Harry Weil Institute for Critical Care Research and Innovation on June 15–17 in

Innovator award competition

To nurture the pipeline of scientists focused on cardiac arrest resuscitation, we created the Wolf Creek Innovator in Cardiac

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Fig. 1 – Attendees of the Wolf Creek XVII Conference, June 15-17, 2023, Ann Arbor, MI, USA.

Wolf Creek XVII Programmatic Themes



Automated Cardiac Arrest Diagnosis: Implantable, wearable, audio, and video technologies capable of diagnosing cardiac arrest and activating the system-of-care.



Amplifying Lay-Responder Response: Optimizing the frequency and quality of lay-rescuer response to out-of-hospital cardiac arrest. Lay-rescuers are defined as those who are not obligated to respond at the time of the arrest as part of their employment.



Mobile AEDs: Optimizing the deployment and utilization of AEDs that can be delivered to the scene of an out-of-hospital cardiac arrest without having to be retrieved from a stationary location.



Physiology Guided CPR: Non-invasive and invasive physiologic monitoring techniques that can be used to guide and optimize therapy during CPR.



Mechanical Circulatory Support: Rescue strategies for refractory cardiac arrest using invasive mechanical devices such as extracorporeal cardiopulmonary resuscitation (ECPR), percutaneous left ventricular assist devices, and aortic balloon occlusion.



Neuroprotection: Therapeutic interventions initiated during CPR or after ROSC specifically targeting mechanism of brain injury cause by cardiac arrest.

Fig. 2 – Programmatic themes of the Wolf Creek XVII Conference, June 15-17, 2023, Ann Arbor, MI, USA.

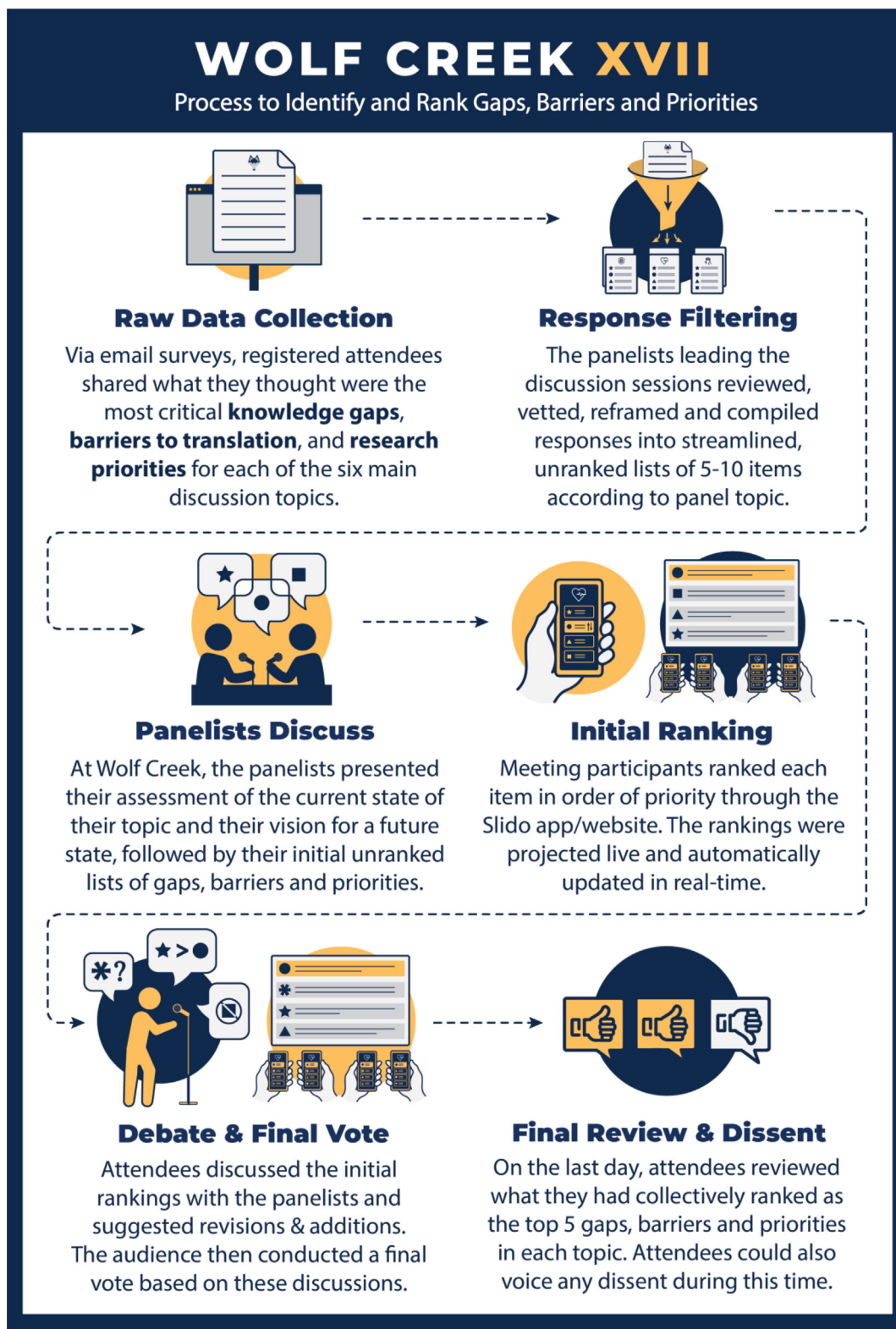


Fig. 3 – Wolf Creek XVII process to identify and rank knowledge gaps, barriers to translation and research priorities.

Arrest and Resuscitation Award competition. Applicants were evaluated by an international panel of experts, and 6 finalists were invited to present their work at the Wolf Creek XVII Conference. Dr. Ryan Morgan from Children's Hospital of Philadelphia was selected by the conference participants as the inaugural award

winner for his research focused on physiology-guided resuscitation. Details of the award program and finalist profiles are described in detail in Part 9 of this Special Edition of Resuscitation Plus.⁹ It is anticipated that this award program will continue to be a part of future Wolf Creek conferences.

Additional conference highlights

Conference participants were treated to numerous presentations by compelling thought leaders, innovators, and experts in the field. Cardiac arrest survivor Jerry Parish provided a compelling in-person testimony about his 2022 out-of-hospital cardiac arrest (OHCA) that nearly took his life — crediting his survival, in large part, to early recognition and immediate CPR by a pair of bystanders. In a dedicated scientific session, conference participants heard presentations by industry scientists from Stryker, Zoll, Philips, CARL/Resuscitec, and Schiller.

Additional speakers included representatives from the American Heart Association and the National Football League about the newly formed Smart Heart Sports Coalition (SHSC). The SHSC was spearheaded by the National Football League (NFL) and has grown into large coalition of major stakeholder organizations with a focus on being prepared to recognize and treat sudden cardiac arrest in athletes of all ages at all levels of competition.

Finally, in addition to great speakers and vigorous debate, the conference provided an opportunity to nurture the resuscitation community, re-energize teams, and facilitate new partnerships that will accelerate progress toward improving cardiac arrest outcomes. In the concluding statement of the first Wolf Creek Conference, Peter Safar wrote “The ultimate goal of resuscitology is the restoration of lives cut short before fulfillment.”¹ It is difficult to think of an endeavor more worthy of our efforts.

Future meetings

Planning is already underway for the Wolf Creek XVIII conference in June of 2025. The conference will be hosted again by the Max Harry Weil Institute for Critical Care Research and Innovation in Ann Arbor, Michigan, USA. It is noteworthy that this will be the conference’s 50th anniversary since inception. We hope to carry on the tradition of excellence and impact for which the conference is known.

Declaration of Competing Interest

The author declares that he has no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgments

This event would not have been possible without the administrative and creative support of the marketing and events team from the Max Harry Weil Institute of Critical Care Research and Innovation. We are especially indebted to Lisa Coon (Events Manager), Sue Wozniak (Events Specialist), Kate Murphy (Graphic Designer), and Megan VanStratt (Marketing & Communications Director). They were truly a championship team that did an incredible job designing and implementing this iteration of the Wolf Creek Conference.

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Appendix A. Supplementary material

Supplementary material to this article can be found online at <https://doi.org/10.1016/j.resplu.2023.100504>.

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