CASE STUDY

Minimising delivery time of high-quality CPR and defibrillation in a hospital BLS emergency response plan

Klinikum Links der Weser (KLdW) is one of four hospitals that make up the Gesundheit Nord healthcare association in Bremen. Each year 1,100 employees at KLdW provide ambulatory and in-patient care to 20,000 individuals. Klinikum Links der Weser treats cardiac patients from Bremen and surrounding regions, while the Reha Centre provides ambulatory care services.

Jan Waligora works in the Department of Anaesthesia, Intensive Care and Emergency Medicine at KLdW. His department led the review of the hospital's emergency response plan, and together with other departments developed a plan that improves time to defibrillation and the quality of cardiopulmonary resuscitation before the emergency response team arrives on scene to an in-hospital cardiac arrest or other life-threatening emergency.

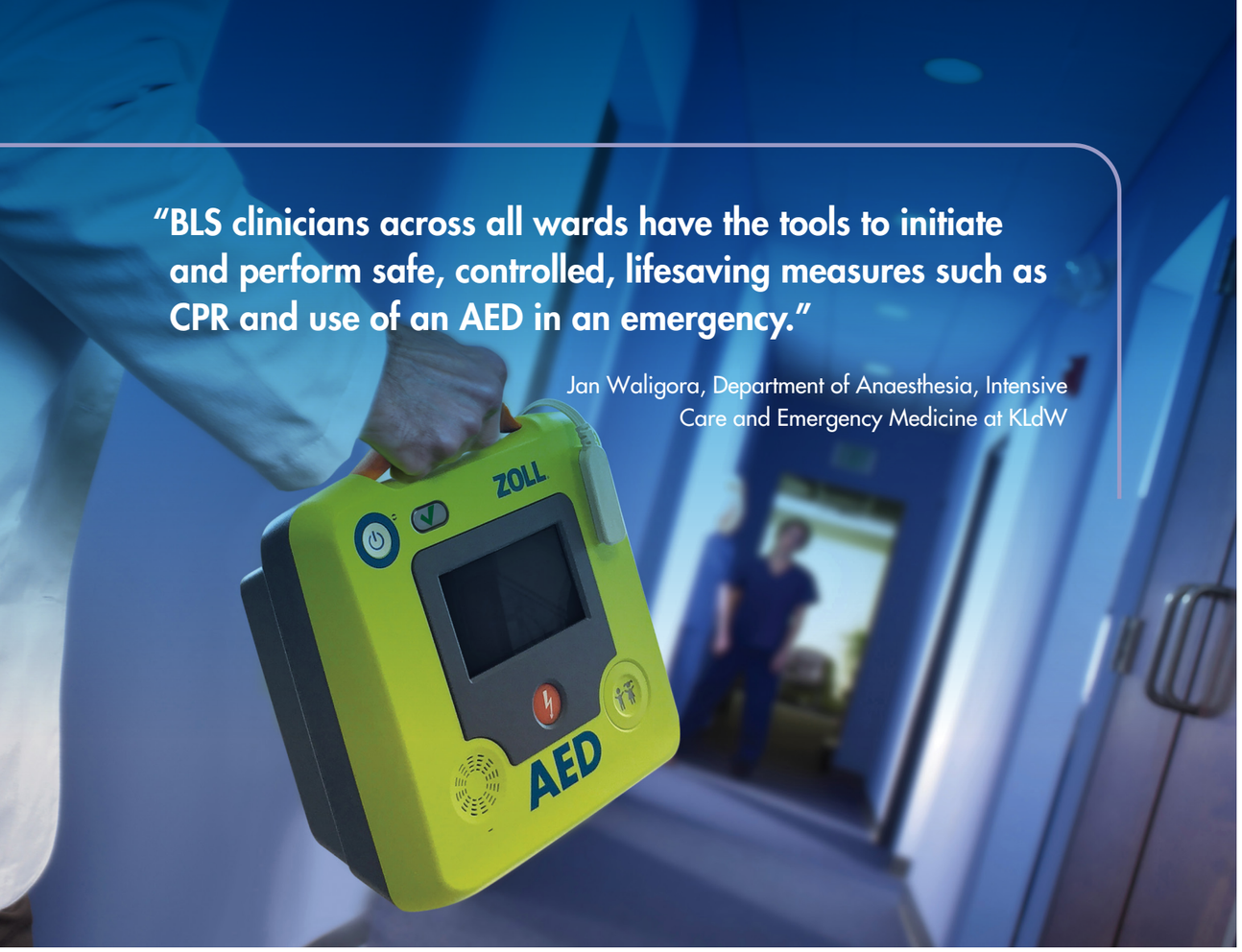
To improve patient safety, KLdW put its intra-hospital emergency response plan to the test in 2022. The results led to sweeping process improvements for critical cardiac arrest emergencies and the integration of automated external defibrillators (AEDs) with real-time feedback into the Basic Life Support (BLS) emergency response plan.

Jan Waligora shares what prompted this review, what the team learned, and what the hospital's BLS emergency response looks like today as a result.

Interviewer: How did the idea of incorporating AEDs into your BLS emergency response plan come about?

Jan: We felt it was time to analyse the hospital's emergency management response during an event requiring BLS care and probe for weaknesses. Some of the important questions we asked were:

- How can we optimise care until the emergency response team arrives and delivers an initial defibrillation?
- How can we ensure the performance of continuous, high-quality CPR in compliance with ERC Guidelines?
- What can we do to give clinicians across all wards the skills and tools necessary to act quickly and competently with the highest level of patient safety?



"BLS clinicians across all wards have the tools to initiate and perform safe, controlled, lifesaving measures such as CPR and use of an AED in an emergency."

Jan Waligora, Department of Anaesthesia, Intensive Care and Emergency Medicine at KLdW

Interviewer: What prompted this review of the hospital's BLS emergency response plan?

Jan: KLdW's emergency response plan has always been well formulated. However, an examination from various perspectives led us to question our actions and analyse the plan's steps, especially in the non-acute care wards. Clinicians in general wards have a different level of understanding and familiarity with emergency response procedures. However, data from the German Resuscitation Registry (GRR) shows that cardiac arrest occurs most often in the general wards.[1]

This review showed us that we needed to shorten the time to initial defibrillation during a cardiac arrest. Moreover, we realised that we also needed support systems for cardiopulmonary resuscitation (CPR) in accordance with ERC Guidelines for our BLS clinicians. Our goal was to develop an efficient solution that addressed all these issues.

Interviewer: How did you get started?

Jan: I developed a presentation of the hospital's current plan to make sure all functional areas and wards were taken into consideration.

Then we determined the weakest areas and exchanged information with other departments on incorporating possible additional measures to support response. We worked with our peers in management, medical technology, workplace health and safety, and other departments. We also consulted regularly with Jonas Boelsen, Chief Physician in the Department of Anaesthesia, Intensive Care and Emergency Medicine.

Interviewer: What challenges did you encounter?

Jan: From the very beginning, we felt it was important to respectfully convey the thoughts and integrated concepts behind the existing emergency plan. It was challenging to examine it critically and identify ways to ensure clinicians could respond as competently as possible and provide the highest level of patient care. To do so, we relied on the "Keep It Smart and Simple" (KISS) principle.

This review led to a new BLS plan that directs clinicians to respond immediately with an AED, allowing them to deliver high-quality CPR and a defibrillating shock, if necessary, before the emergency response team arrives.

As a result, a standardised, orange-coloured resuscitation board can now be seen in the corridor of each ward. Additionally, an AED with real-time feedback and CPR electrodes is installed on every floor, near the lift or in another easily accessible location.

Interviewer: How long was the process from plan development to implementation?

Jan: The entire process took 12 months. We quickly formulated and put into writing the vision and individual core objectives. However, it took time to convince all the decision makers involved.

Interviewer: How was the new plan received by staff in the hospital?

Jan: Reactions varied. Staff wondered why we needed an AED integrated into an urgent care plan for every intra-hospital emergency involving a patient with a life-threatening condition.

To gain support, we shared information about the benefits of real-time feedback systems to support thoracic compression and the importance of rapid, early defibrillation on patient outcomes. In addition, nearly 80 clinicians participated in the ZOLL® Pathways Programme in December 2022. Pathways is ZOLL's clinical benchmarking program designed to support a hospital's resuscitation efforts. Clinicians get the opportunity to perform CPR for two minutes without real-time feedback and two minutes with real-time feedback, demonstrating how their CPR quality compares to the ERC Guidelines recommendations.

Imagine needing to drive at a constant speed of 100 km/h on the motorway without the benefit of a speedometer. How sure would you be that you could maintain that speed?

Interviewer: What was the reaction from external parties?

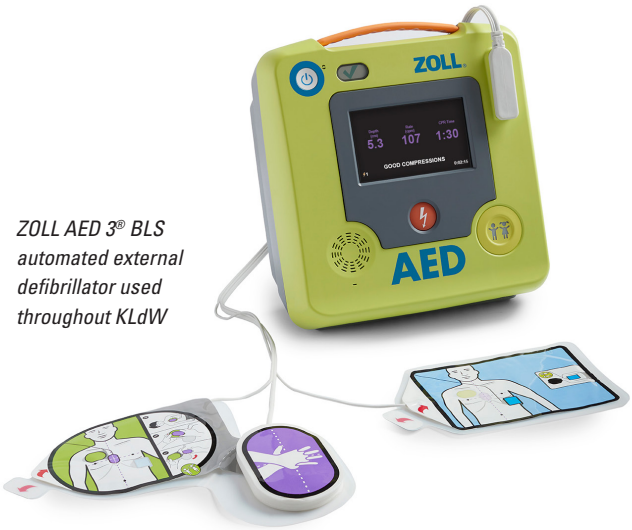
Jan: We received positive feedback when we presented the plan as part of our routine mandatory resuscitation management training. Its simplicity, combined with the competent use of an AED with CPR electrodes, was quite convincing.

KLdW staff participating in a ZOLL Pathways Programme in December 2022

Interviewer: How are you finding the BLS emergency response plan works after implementing these changes?

Typically, our intra-hospital emergency response team is on scene quickly, with an average arrival time ranging from 3 to 4 minutes. Now, during that short window of time, BLS clinicians across all wards have the tools to initiate and perform safe, controlled, lifesaving measures such as beginning CPR and using an AED in an emergency.

Just three months after implementation, we noticed signs of success. A patient in a cardiology ward experienced a heart rhythm requiring defibrillation. Within minutes, two nurses quickly applied an AED before the emergency team arrived. The patient even experienced return of spontaneous circulation (ROSC) and was able to ask what happened.



ZOLL AED 3® BLS automated external defibrillator used throughout KLdW

Contact your local ZOLL representative for more information about ZOLL's clinical education programs or visit **www.zoll.com.**

[1]Deutsches Reanimationsregister, In-clinic annual report 2022, www.reanimationsregister.de/themen/jahresberichte.html, September 2023. Accessed January 2024.

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