



ILCOR 10 Steps to improve IHCA – a Case Study from the Children’s Hospital of Orange County, California, USA

Background: High quality CPR is the foundation for resuscitation and improving survival from in hospital cardiac arrest (IHCA). With this knowledge, in 2017 the Children’s Hospital of Orange County (CHOC), CA, USA, started work to improve IHCA outcomes with an initial focus on CPR quality. Data were collected from bedside CPR feedback monitors/defibrillators, allowing data driven quality improvement. At the same time, a Supervisor of Resuscitation position was created and filled by a Master’s prepared RN. This position serves as a champion and oversees resuscitation processes, data, quality improvement, research, and education for each link in AHA’s chain of survival.

In the initial year of data collection, only six CPR events were captured, showing AHA compliant CPR was only provided 3.2% of the time (median). Due to the low capture rate, an additional year of data was collected, which showed a median CPR quality of 6.1%.

Steps Taken

1. Identify a champion
2. Collect data. Start anywhere, just collect something! Determine best practices your institution can focus on based on your data.
3. Get the defibrillator/CPR feedback device to the bedside, on the patient for every resuscitation.
4. Created resuscitation scorecard with key metrics and joined an international resuscitation quality collaborative.
5. Created CPR quality report cards, providing feedback to staff on CPR quality, no-flow times, and opportunities to improve. This was one of the most impactful steps to change the culture at CHOC.
6. Changed to a quarterly model for AHA training and increased mock code drills throughout the organization.
7. Piloted implementation of best practices in two units based on opportunities identified and evidence. Provided techniques to improve quality, no-flow time, and an emphasis on why each part of the compression was equally important. Focus on importance of release, CPR technique, choreography, and physiologic guided CPR.
8. Ongoing feedback to staff and celebrate wins (survival to hospital discharge improving).
9. Create unit based and organizational resuscitation goals to elevate visibility throughout the organization.

Throughout all steps, ongoing Plan-Do-Study-Act (PDSA) cycles of change were used for continuous quality improvement.

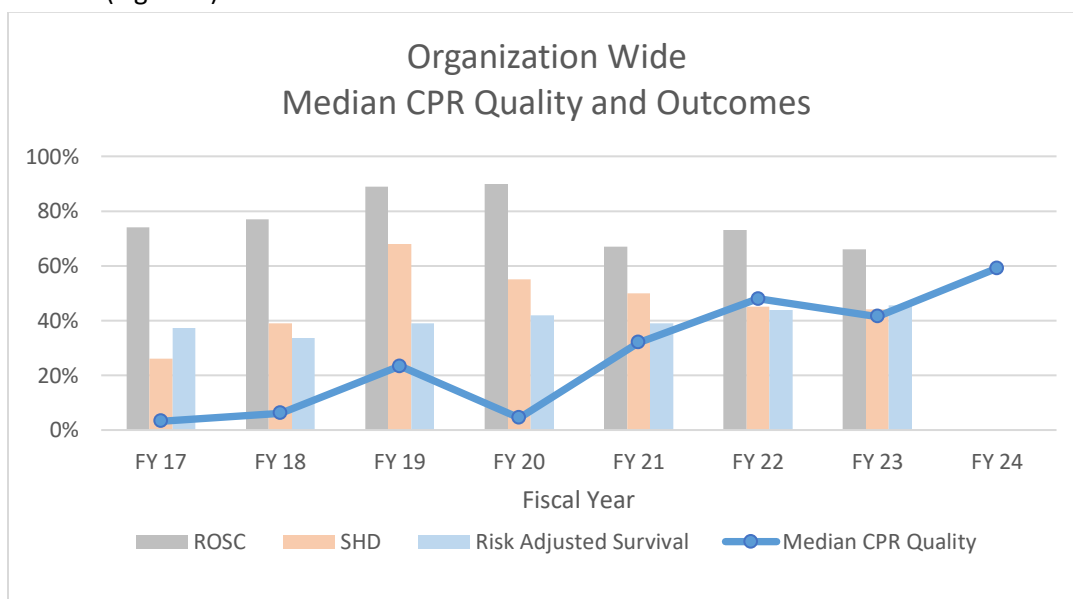
Challenges

- Lack of dedicated resources: Resuscitation position was requested for two years prior to creation. Data showed opportunities for improvement and the need for a dedicated resource, which was initially funded by a five-year grant.

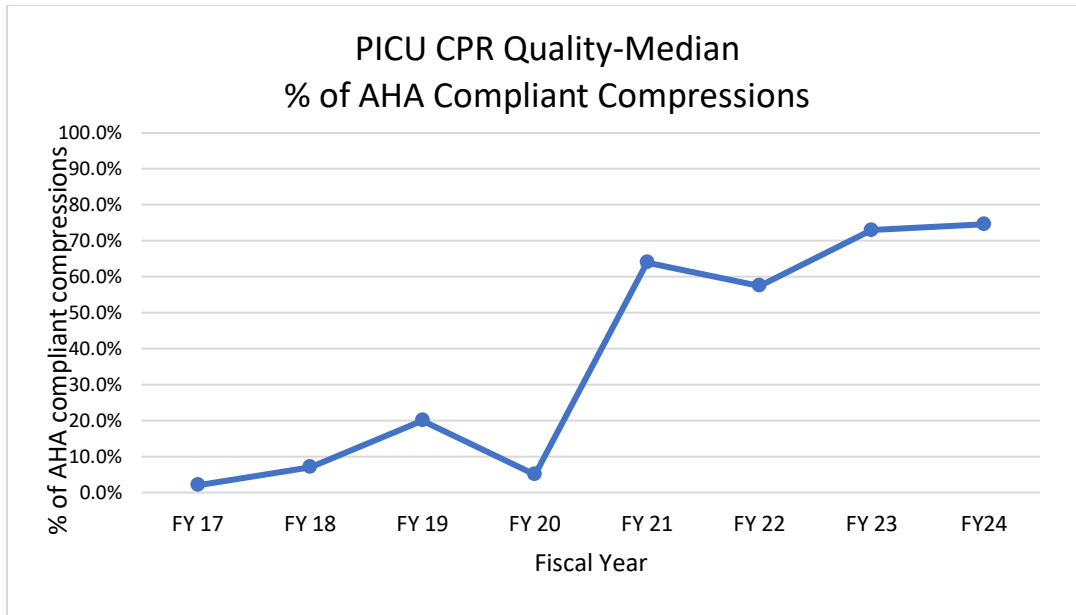
- No one believed the initial CPR quality data: Due to the low number of events captured, many felt the data was inaccurate. To overcome this, we had to collect more data and the feedback device had to be used on more patients (see next bullet point for how we overcame this challenge).
- We really struggled with getting the feedback device on our patients. The bedside clinicians viewed the defibrillator as such, so it was only brought to the bedside when a shock was needed. This required a major culture shift to get feedback pads placed more regularly. To start, our first two years of CPR quality data were shared, and staff were put through a “CPR challenge” showing each person the quality of CPR they provide with and without feedback. We highlighted that the CPR quality without feedback was what they were choosing to provide if they did not place the feedback device on their patient. This created immediate buy-in.
- We found placing a feedback device at the bedside did not automatically improve CPR quality. Clinicians needed to be trained how to interpret the feedback provided from the device and make real time changes to compressions.
- Struggled to get buy in for change. We overcame this by starting small and piloting changes in specific units. Data improvements helped others buy into the process.
- Limited time for education: Resuscitation champion role created. Six bedside nurses are pulled for a resuscitation shift once every 2 weeks to provide education on order of priorities, communication, and hands on practice with equipment.
- Find key stakeholders and partner with them! Talk to anyone who will listen about your work, data improvement and outcomes.
- CPR quality report cards helped us overcome several of the challenges we faced and were a significant part of our culture shift.

Results

- >90% of events have CPR feedback pads on the patient and CPR quality data collected.
- Organization median CPR quality increased from 3.2% in fiscal year 2017 to 59% year to date in fiscal year 2024 (Figure 1).



- Unadjusted survival to hospital discharge increased from 26% in fiscal year 2017 to 44% in fiscal year 2023 and risk adjusted survival increased from 37.4% to 45.5%, moving CHOC from quartile 2 to quartile 4 (Figure 1).
- PICU median CPR quality increased from 2% in fiscal year 2017 to 87% year to date in current fiscal year (Figure 2).



Outlook: CHOC’s work has resulted in a culture of resuscitation excellence. Bedside clinicians are fully bought into their ability to improve outcomes and provide the highest level of resuscitation. Next steps include ongoing CPR quality improvement organizationally while growing our existing quality improvement work in prearrest prevention, role delineation, and post arrest care.

References: not provided.

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