

MEMBER PROFILE

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## Helping Babies Thrive

### Optimizing antibiotic use in the NICU

Eighteen months of intensive work came to a close on December 14, 2017, at the fourth and final learning session of CPQCC's Antibiotic Stewardship Quality Improvement Collaborative. During the course of the project, 28 NICUs across California came together to reduce antibiotic utilization rates through the application of a best practice bundle.

Sites tracked a main outcome measure, Antibiotic Utilization Rate (AUR), as well as four process measures:

- appropriate cultures obtained prior to starting antibiotics
- compliance with antibiotic “time-outs”
- compliance with local early-onset sepsis guidelines
- compliance with antibiotic usage reviews

Sites also tracked two balancing measures:

- premature discontinuation of antibiotics, measured by tracking the number of eligible babies previously started on antibiotics (at less than 72 hours of life) who required a restart within seven days of discontinuation during the same hospital stay
- the number of babies readmitted for premature discontinuation

Data on more than 7,000 patients were entered over the course of the 18-month collaborative and early results show a statistically significant reduction in the AUR across the participating hospitals. While a thorough analysis of the data is still underway, preliminary findings indicate that the group eliminated thousands of “antibiotic days” across California – decreasing not only the cost of health care provided in the NICU, but more importantly, the risk of antibiotic resistance and adverse drug events in the babies that they care for.

### “Nobody likes change, but we’re doing it for the babies”

In October 2017, we interviewed medical staff at Kaiser Permanente Downey Medical Center and El Camino Hospital to learn from their experiences participating in the Antibiotic Stewardship Collaborative, understand implementation challenges faced by the centers, and to document factors which led to successful optimization of antibiotic use. Both centers were able to substantially reduce their antibiotic rate and pointed to learning sessions, staff communication, multi-disciplinary teamwork, regular reinforcement and reminders as critical in their success. Both are community hospitals. As of 2016, Downey Medical Center had 49 NICU beds, and El Camino Hospital 20 beds.

#### *What motivated your NICU to participate in this collaborative?*

- “We did have a discussion that antibiotic use was high... And the whole NICU world is talking about antibiotic usage.” – Dr. Arora, Neonatologist, Kaiser-Downey
- “We thought we were admitting so many well babies and taking them away from their mom. We wanted to learn what other people have been doing to prevent unnecessary admissions and a structure for us to adopt what [other centers] were doing as well.” -Dr. Bain, Neonatologist, El Camino

#### *What do you think contributed to your success during the collaborative?*

- “**Learning sessions** made physicians more comfortable to stop antibiotics. They helped to unify our practice (by) bringing the evidence we learned from the learning sessions at CPQCC (back to our NICU).” Also, “at

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**monthly meetings** we are able to get together, review the data so far, and see where we can improve.” – Neonatologist, Kaiser-Downey

- “Dissemination of the study and participation of everyone involved. **Review of outcomes and area where we can improve.**” -Merridith, Bedside Nurse, El Camino
- “**An environment ripe for change**...it’s a lot easier to make changes at El Camino. It’s a nice small unit where all nurses were on board and willing to try it out...Everyone was on board to make the changes once we explained why we wanted to do it and what the evidence was.” -Dr. Bain, Neonatologist, El Camino

#### *What challenges did you experience during the collaborative?*

- **Old habits:** Once we make these changes, it’s very easy to fall back into our old habits... anytime we see the data sliding, we bring it up in monthly team meetings as a reminder.” - Neonatologist, Kaiser-Downey
- **Provider education and communication:** “Because we are a large unit, we have over 100 nurses, a lot of travelers and per diems, a lot of them probably aren’t aware that we are doing this project, so that is another thing, like anything, it’s just about getting everyone on board.” - Lisa, Bedside Nurse, Kaiser-Downey

#### *What advice would you give to similar NICUs who are interested in joining future CPQCC collaboratives?*

- “I think joining a collaborative is always helpful if there is a goal that (a) NICU wants to achieve. If they are having some resistance from staff, **the collaborative shows that a group is doing it** so it’s easier to convince people rather than doing it as a solo person.” -Dr. Arora, Neonatologist, Kaiser-Downey
- “**Constant communication** with updates and any issues that arises and **reaching out to other groups or organizations** that had experienced and knowledge of the subject.”-Merrideth, Bedside Nurse, El Camino

#### *Any concluding comments about your experience in this collaborative?*

- “Nobody likes change or to do extra, because we are already doing a lot, but **as long as it is put out there that this is for the babies**, and it’s not for any other reason, we are doing this for improvement of our unit and the NICUs and the babies, I think that helps.” -Lisa, Bedside Nurse, Kaiser-Downey
- We still have a long way to go and we are working on it, it’s good that we do a **sustainability phase** which is helpful to keep us on board and not lose the improvement we made.” – Dr. Arora, Neonatologist, Kaiser Downey
- “I really liked the **educational piece** in the webcast where an expert would give like a 10-minute presentation on the work that was being done, they would present studies and data and that was helpful to reframe our work.” – Dr. Bain, Neonatologist at El Camino Hospital

Learning sessions, staff communication, engaging a multi-disciplinary team, using reinforcements and reminders, and holding regular meetings were important factors for successful reduction of antibiotic use at these hospitals. Through analyzing context and process factors paired with AUR data, CPQCC is currently working to identify and report factors that contributed to successful reduction of antibiotic utilization across all 28 NICUs that participated in this collaborative.

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