



CPQCC

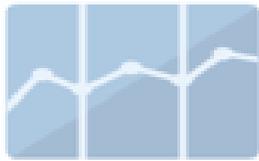
california perinatal  
quality care collaborative

20th Anniversary

1997-2017

# Mission

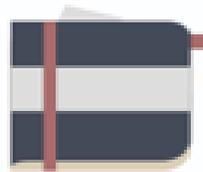
The California Perinatal Quality Care Collaborative is committed to improving the quality of care to California's mothers and our most vulnerable infants.



## **Data Arm**

### *Data Center*

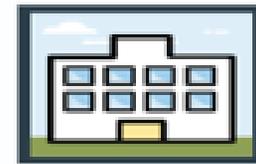
Develop and maintain a responsive, real time, risk adjusted perinatal data system.



## **QI Research Arm**

### *Research and Dissemination*

Research best practices and continual reassessment of performance improvement outcomes.



## **Quality Improvement Arm**

### *Implementation*

Implement a strategy for data driven quality improvement activities. Provide collaborative projects, training, and toolkits.

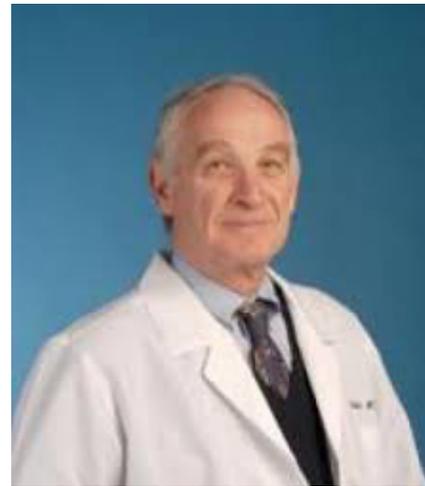


*“Our goal is to improve the health of pregnant women and newborns by making sure that approaches to illness that have been demonstrated to be effective are actually being carried out.”*

*- Jeffrey B. Gould, MD, MPH*

*Dear Colleagues,*

The California Perinatal Quality Care Collaborative was conceived as an action arm of the California Association of Neonatologists and the Vermont Oxford Network as the nation's first statewide perinatal quality improvement collaborative. Our major goal was to improve the quality and outcomes of perinatal health care in California. To achieve this we were determined to develop a collaborative network of public and private obstetric and neonatal providers, insurers, public health professionals and business groups to support a system for benchmarking and performance improvement activities for perinatal care. We adopted the notion of value as a key driver of our enterprise with the goal of bringing value to our stakeholders, to our members, and most importantly to the mothers and infants of California. At a time when concern with quality of care was in many places driven by the potential threats of widespread report carding and payment for performance, our California based initiative was based on our "grass roots" premise that quality improvement was a fundamental goal of perinatal medicine. Our Executive Committee, and the active participation of a membership that included representatives of 1) Maternal Child Health (MCH) Branch, 2) California Children's Services (CCS), 3) Office of Vital Records, 4) Office of Statewide Health Planning and Development (OSHPD), 5) Regional Perinatal Programs of California (RPPC), 6) American College of Obstetricians and Gynecologists (ACOG), 7) California Association of Neonatologists (CAN), 8) Pacific Business Group on Health (PBGH), 9) David and Lucile Packard Foundation, 10) and the Vermont Oxford Network (VON) was essential to our success as the nation's first statewide perinatal quality collaborative. We have been honored to serve as a model for and mentor to other states and in 2016 there were 48 states represented at the first national meeting of perinatal quality improvement collaboratives. From 12 VON NICUS that cared for 67 very low birth weight infants in 1966, we have grown to a membership of 136 California NICUs who cared for over 12,000 high risk infants in 2015. Through a program that includes toolkit development, educational meetings, and formal quality improvement initiatives, we have been able to fulfill our promise to improve the care and outcomes of California's mothers and their newborn infants. California has some of the best perinatal outcomes in the country. To give some examples, in the last 10 years we have decreased severe brain bleeds by 28%, necrotizing enterocolitis by 44%, and nosocomial infection by 49%. We have decreased the mortality of the high risk infants that we care for by 31% and increased the number of infants that leave our NICUs without experiencing a severe morbidity by 16%. These accomplishments represent the commitment of the doctors, nurses, and perinatal staff to improving the health of California's mothers and their newborn infants. CPQCC, our statewide collaboration, has been honored to support and facilitate this commitment to excellence.



Content:  
CPQCC History  
Research  
Data Center  
QI Collaboratives  
Outcomes  
Thank You

*Sincerely,*

*Jeffrey B. Gould, M.D.*

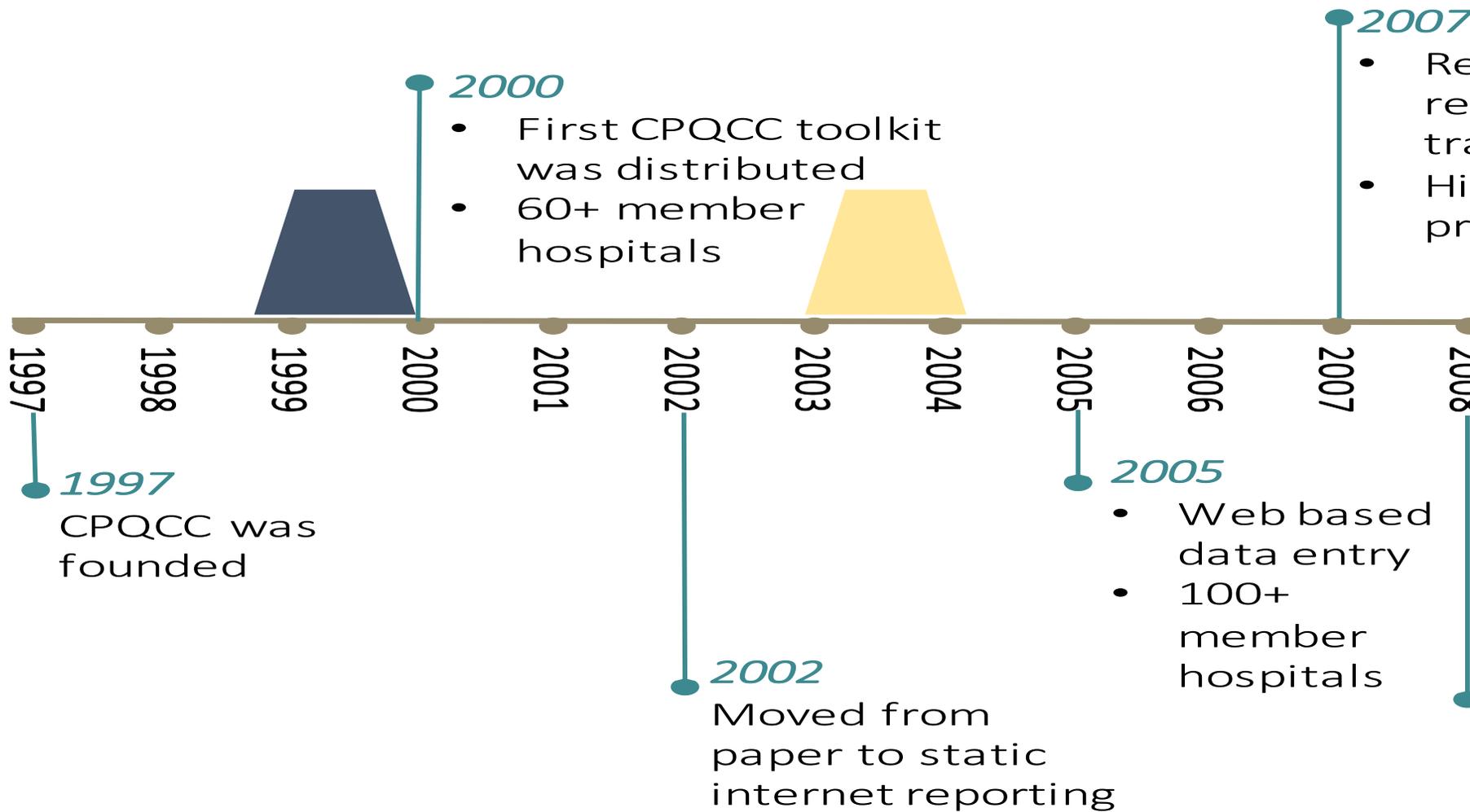
Jeffrey B. Gould, MD, MPH

Principal Investigator and Co-Founder, CPQCC

Director of Perinatal Epidemiology and Health Outcomes Research, Stanford School of Medicine



# CPQCC Timeline



## Collaboratives Key:



Antenatal  
Steroid  
Promotion



Nosocomial  
Infection  
Reduction



Catheter-  
Associated  
Bloodstream  
Infection



Breastmilk  
Nutrition

Real time reporting of acute transport data  
High-risk infant QI project released



**2008**  
Infants linked across NICUs

**2009**  
High risk infant follow-up (HRIF) to age 3

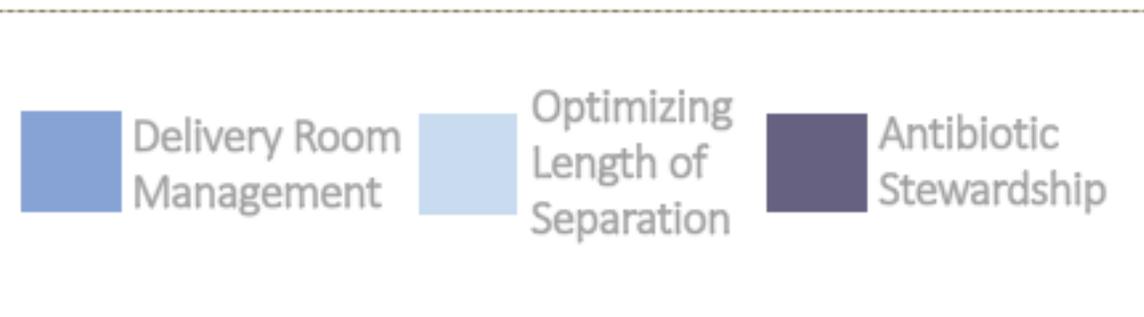
**2012**  
Linkage of CMQCC and CCS-HRIF data

**2013**  
NICU based follow-up reports

**2015**

- Grants received for Social Disparities in NICU Care and a Dashboard of Racial/Ethnic Disparity in Care Provided by NICUs

**2017**  
138 member hospitals  
Real Time Control Charts





# The Research

CPQCC's data and quality improvement activities provide a rich opportunity for research that can have wide reaching clinical and public health impact. There are opportunities for clinical, epidemiologic, and translational research using both quantitative and qualitative methods, and studies in implementation and dissemination. There are also expanding opportunities for CPQCC data linkage to maternal, transport, and follow-up clinic data. This research feeds back into the quality improvement activities of CPQCC for further implementation and dissemination work.

# Key Advances

Selected publications highlighting CPQCC quality improvement and research activities:

- Extreme Hyperbilirubinemia and Rescue Exchange Transfusion in California from 2007 to 2012 (Journal of Perinatology 2016)
- Inhaled Nitric Oxide Use in Preterm Infants in California Neonatal Intensive Care Units (Journal of Perinatology 2016)
- Burnout in the Neonatal Intensive Care Unit and its Relation to Healthcare-Associated Infections (Journal of Perinatology 2016)

- Determinants of Chronic Lung Disease Severity in the First Year of Life: A Population Based Study (Pediatric Pulmonology 2015)
- Regional Variation in Antenatal Corticosteroid Use: a Network-Level Quality Improvement Study (Pediatrics 2015)
- Referral of Very Low Birth Weight Infants to High-Risk Follow-Up at NICU Discharge Varies Widely Across California (Pediatrics 2015)

- A Randomized Clinical Trial of Therapeutic Hypothermia Mode During Transport for Neonatal Encephalopathy (Journal of Pediatrics 2014)
- Estimating the Quality of Neonatal Transport in California (Journal of Perinatology 2013)
- A Quality Improvement Project to Increase Breast Milk Use in Very Low Birth Weight Infants (Pediatrics 2012)

- Factors Associated with Failure to Screen Newborns for Retinopathy of Prematurity (Pediatrics 2012)
- Nosocomial Infection Reduction in Very Low Birth Weight Infants with a Statewide Quality-Improvement Model (Pediatrics 2011)
- The Effect of Preterm Premature Rupture of Membranes on Neonatal Mortality Rates (Obstetrics and Gynecology 2010)

- Factors Influencing Breast Milk Versus Formula Feeding at Discharge for Very Low Birth Weight Infants in California (Journal of Pediatrics 2009)
- Promoting Antenatal Steroid Use for Fetal Maturation: Results from the California Perinatal Quality Care Collaborative (Pediatrics 2006)
- Prospective Evaluation of Postnatal Steroid Administration: a 1-Year Experience from the California Perinatal Quality Care Collaborative (Pediatrics 2006)

# The Data

CPQCC's enriched dataset contains substantial clinical and demographic data, which may be used for improving the quality of maternal/neonatal care, health policy analyses, health outcomes research and health program management. Health care providers and academic researchers benefit from our demographically and biologically rich database, which offers nearly real time data management.

## Data Management Awards



### CPQCC (NICU) All-Star

Achieve the April 1st Superstar Award, the June 2nd Early Bird Award and submits all June 1st deliverables by May 15th



### CPQCC (NICU) Super Star

Submit items 2 through 8 on the close-out checklist before March 15th



### CPQCC (NICU) Early Bird

Submit item 13 on the Close-out Checklist (CCS Report confirmation) on June 2nd



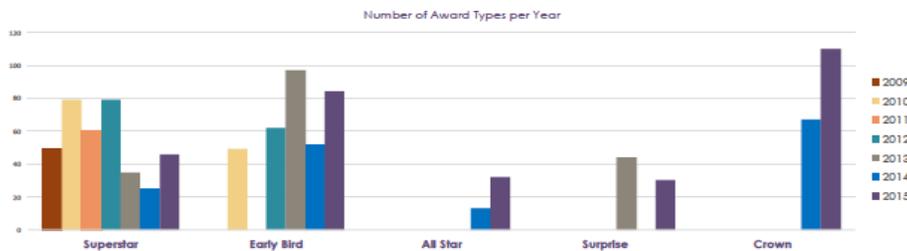
### CPQCC (NICU) Surprise

Recognized for a random positive performance aspect



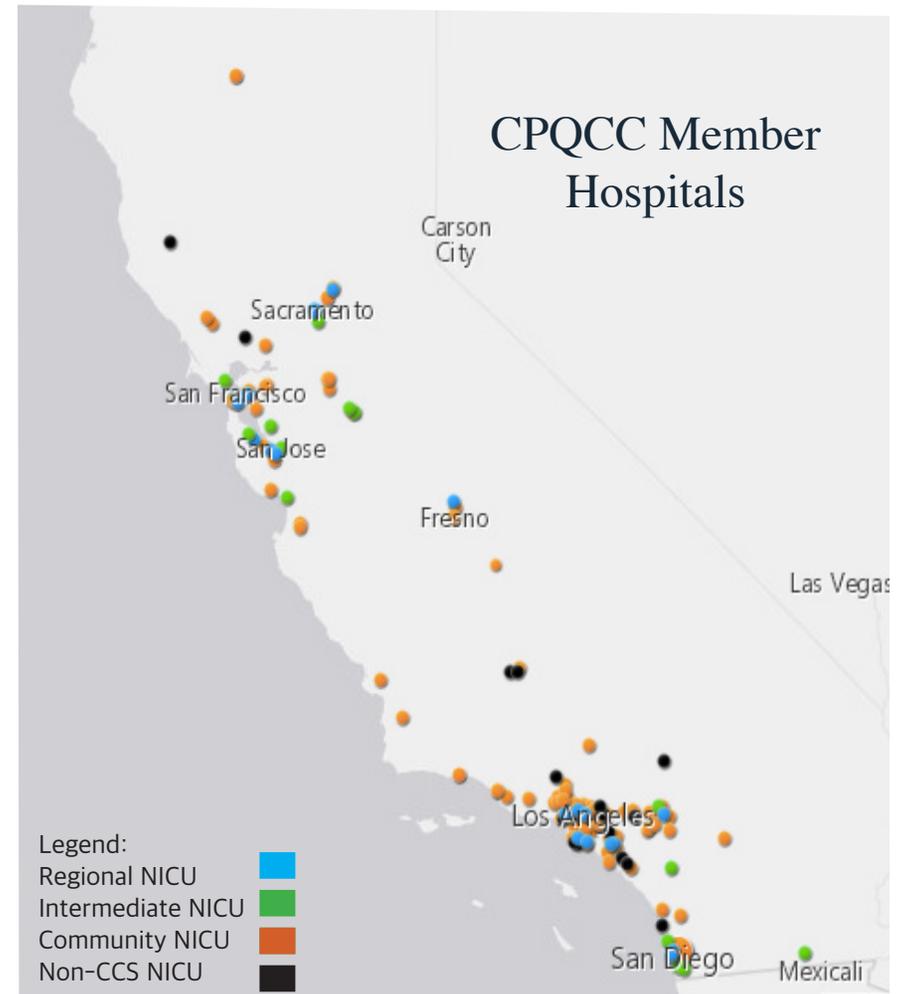
### CPQCC (NICU) Crown

Submit all deliverables by their designated deadlines



## Data Categories:

- Demographics
- Maternal History
- Birth Defects
- Respiratory
- Infections
- Neurological
- Disposition
- Hyperbilirubinemia
- Transport



CPQCC includes 138 member hospitals, representing over 90% of NICUs in California.

CPQCC Partner Organizations

American Academy of Pediatrics (AAP), District IX  
American College of Obstetricians and Gynecologists (ACOG)  
California Association of Neonatologists (CAN)  
California Department of Public Health - Maternal, Child, Adolescent Health Branch (CDPH - MCAH)  
California Department of Health Care Services - California Children's Services (CDHCS - CCS)  
California Office of Vital Records (OVR)  
California Office of Statewide Health Planning and Development (OSHPD)  
California Perinatal Transport System (CPeTS)  
David and Lucile Packard Foundation  
March of Dimes (MOD)  
Pacific Business Group on Health (PBGH)  
Regional Perinatal Programs of California (RPPC)  
Vermont Oxford Network (VON)

The **California Maternal Quality Care Collaborative (CMQCC)** is a multi-stakeholder organization that drives improvement in maternal and infant outcomes through rapid-cycle data analytics and collaborative action. CMQCC operates a Maternal Data Center where birth certificate data are linked to patient discharge data.

The **California Perinatal Transport System (CPeTS)** provides collection and analysis of perinatal and neonatal transport data for regional planning, outreach program development, and outcome analysis. Since its inception there has been a steady increase in the quality of acute neonatal transport in California.

The **CPQCC/CCS High Risk Infant Follow-up (HRIF) Quality of Care Initiative** monitors the needs and outcomes of California's High Risk Infants and their families through age 3. In order to optimize their care and developmental outcomes, The HRIF program was established to identify infants who might develop CCS-eligible conditions after discharge.

500,000  
Births



CMQCC

17,000  
NICU  
Admits  
(35%  
VLBW)



CPQCC

7,000  
Acute  
Neonatal  
Transports



CPeTS

7,000  
Follow  
Up to  
Age 3



HRIF

# PQIP

The Perinatal Quality Improvement Panel (PQIP) is a permanent committee, led by CPQCC Director of Quality, Dr. Paul Sharek, who has expertise in the area of quality improvement. PQIP analyzes CPQCC data and reviews relevant publications. PQIP defines indicators and benchmarks, recommends quality improvement objectives, provides models for performance improvement, and assists providers in a multi-step transformation of data into improved patient care.

## Courtney Nisbet, RN, MS

CPQCC QI Program Manager



### ***In your own words, what is your role with PQIP?***

“My role is to help facilitate, offer PQIP members a forum so they can discuss, brainstorm, and look at CPQCC data to identify opportunities for state-wide quality improvement. From this valuable data, we are able to help our CPQCC members.”

### ***What is your most rewarding experience with PQIP?***

“Working side-by-side with all of my PQIP colleagues and making a difference to improve the quality of care for newborns and mothers in California.. Also, working with our member hospitals in the trenches of the NICUs and determining how we can improve care.”

### ***What motivates your continued involvement with CPQCC?***

“(I am) motivated by my colleagues. They tirelessly give their time to CPQCC so we can in turn help our members. Their amazing ideas lay the ground work for what quality improvement projects we can offer members to help improve quality of care in NICUs across the state.”

## Richard Bell, MD

PQIP Member, Neonatologist



### ***What motivates your continued involvement with PQIP?***

“The drive to make things better in my own NICU. And the people on PQIP are my friends, not just academic associates. I enjoy being with them.”

### ***What is your favorite part of working with PQIP?***

“Everyone who is involved with PQIP has taken the skills they learned from that experience and applied them to other NICUs, into other venues and opportunities. A lot of lessons learned in PQIP/CPQCC we have learned to input in the developing world. We started to teach QI as the center of the whole process (in international teaching and work with Helping Babies Breathe). It’s made an incredible difference.”

### ***How has PQIP changed from its inception until now?***

“There has been a learning curve with PQIP, how to leverage and improve the pace of change over the state.. There is a lot more involvement; CCS reports used to be done by hand. There were stacks of data to look at without the bandwidth to look at it. Now there is a finely tuned instrument for each NICU to see where we can make a huge change.”

# Quality Improvement Toolkits



**#1**

Antenatal  
Corticosteroid  
Therapy



**#2**

Improving  
Initial Lung  
Function



**#3**

Postnatal  
Steroid  
Administration



**#4**

Nutritional  
Support of the  
VLBW Infant



**#5**

Severe  
Hyperbilirubinemia  
Prevention



**#6**

Perinatal HIV  
Prevention



**#7**

Delivery Room  
Management



**#8**

Neonatal Hospital  
Acquired Infection  
Prevention



**#9**

Care and  
Management of  
the Late Preterm



**#10**

Neonatal  
Therapeutic  
Hypothermia

## The Antenatal Corticosteroid Therapy Toolkit



Launched in 2000, this was the first toolkit created and distributed by CPQCC. In 1998, only 25 percent of CPQCC hospitals administered ANS at the recommended rate, which was determined to be 85%.

Following CPQCC improvement strategies over the next five years, 75 percent of the hospitals were found to be administering ANS at or above the recommended rate. The toolkit continues to be used widely, with 1,379 new downloads from 2014-2016.

A close-up photograph of a woman with dark dreadlocks smiling warmly at a baby. The woman is on the left, and the baby is on the right. The baby is wearing a striped shirt and has its mouth open in a joyful expression. A teal arrow-shaped banner is overlaid on the left side of the image, containing the text 'The Results' in white serif font.

# The Results

# CPQCC/ CCS Collaborative Outcomes:

## Health Care Associated Infections

Collaborative efforts of 19 NICUs reduced catheter-associated blood stream infections (75.4% decrease in infants < 750 grams) from 1.2008 to 2.2009.

## Breastmilk Nutrition

Collaborative efforts of 11 NICUs increased breastfeeding of very low birth weight infants (54.6% to 64.0%) and decreased NEC rates (7.0% to 2.4%) from 10.2009 to 10.2012.

## Delivery Room Management

Collaborative efforts of 24 participating NICUs decreased hypothermia (39% to 21%), decreased delivery room intubation (53% to 40%) and delivery room surfactant (37% to 20%) from 6.2011 to 6.2012.

## Optimizing Length of Separation

Collaborative efforts of 25 participating NICUs decreased length of separation (56 days to 48 days) and decreased postmenstrual age at discharge (37.2 weeks to 36.5 weeks) from 6.2013 to 11.2014.

## *Special Thank You to Barbara Murphy, Executive Director of Perinatal Programs*

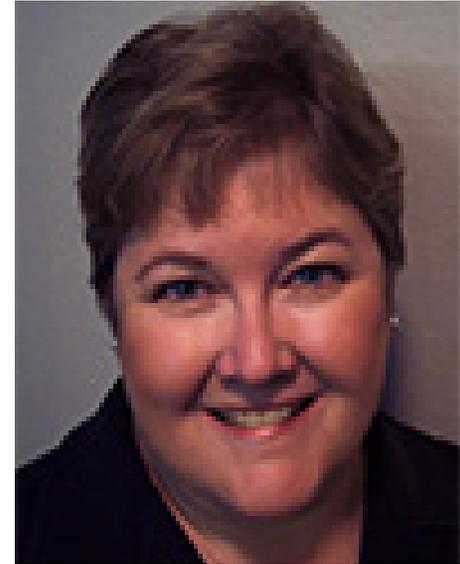
Barb began her career at Stanford in 1988 as an outreach educator. She soon became involved in CPQCC and was a vital force in forming the perinatal programs from the ground up into what they are today. As she departs from CPQCC to live in Wisconsin near her grandchildren, she has made an indelible impact as the Executive Director of Perinatal Programs.

With a background in nursing, Barb has successfully leveraged data to drive quality improvement throughout California. Through an interview with Barb, we were able to delve into her experiences with CPQCC. In her own words, “we could look at the data and see we have a problem with this particular issue and we could come up with a toolkit, which we did, and we would teach people how to do it at the bedside. It became clear that what we were doing had a direct impact on the babies. They were actually doing better, living longer, having better outcomes-and the moms too. It felt purposeful.” She also noted the most rewarding aspect of her work with CPQCC: “I actually go out to CPQCC hospitals throughout the state and teach them how to read their reports and how to identify opportunities. I come away from those feeling very satisfied because that is where rubber hits the road. And then you can look later and see that things have improved. It really makes this worth it.”

The positive effects of CPQCC, under Barb’s leadership, have extended beyond state lines. “It wasn’t just in California, which is big enough, California has half a million births a year. What happens here has an impact all over the country. All of a sudden states across the country wanted to get involved. They were trying to do the same things. We would consult or give talks and try to help other people do this and that got interesting because the reach was kind of bigger than just our state.” Barb’s leadership has been recognized on both the state and national level. “About 6 years ago we received a CDC grant, with CMQCC and CPQCC, because the CDC was very interested in promoting the development of this kind of collaborative in states all over the country. Last year, the CDC decided to put together a national network of perinatal quality collaborates. They established an executive committee and Jeff and I are on it.”

Barb also highlighted the staff who are critical to the success of CPQCC. Collectively, “what we did in California, we have evidence that shows we did some amazing work, has expanded way beyond. And it’s fun and it has made a huge difference.”

Thank you Barb for your tremendous leadership and commitment to improving the quality of care for mothers and their babies across the state and the nation!



# Thank you

## CPQCC Staff

Jeffrey B. Gould, MD, MPH Principal Investigator  
Susan R. Hintz, MD, MS Co-Principal Investigator, HRIF-QCI  
Henry C. Lee, MD, MS Co-Principal Investigator, CPQCC  
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Renee Triolo Program Assistant

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Jeffrey Horbar, MD  
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Richard Powers, MD  
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Terri Slagle, MD  
David K. Stevenson, MD

## Perinatal Quality Improvement Panel (PQIP)

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D. Lisa Bollman, RN, MSN, CPHQ  
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Joseph Schulman, MD, MS  
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Terri A. Slagle, MD

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Susan C. Weber, PhD

## CPeTS Executive Committee

D. Lisa Bollman, MSN, RNC  
Ronald S. Cohen, MD  
Kevin Van Otterloo, MPA

# California Perinatal Quality Care Collaborative 1997-2017



Rugmini Shaw, David Stevenson, Jeffrey Gould, Maridee Gregory,  
Patricia Shiono, Ron Arigano, Dilip Bhatt

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