

# CPQCC

## California Perinatal Quality Care Collaborative

### DESIGN AND ACCOMPLISHMENTS 1997 - 2015

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P.I., CPQCC , CMQCC



# Perinatal Profiles: Ca MCH / UCB

Table C. Regional Summary Statistics

Region (MCH Code)	Regional Statistics					
	Cohort					1993-97
	1993	1994	1995	1996	1997	
Total births	24,689	24,117	23,758	23,231	23,123	118,918
Live births	24,573	23,999	23,654	23,138	23,027	118,391
28-day survivors	24,503	23,926	23,598	23,087	22,973	118,087
<b>Race/ethnicity (%)</b>						
White	43.5	43.1	43.0	40.8	39.9	42.1
Hispanic	22.8 ↓	23.0 ↓	24.0 ↓	26.2 ↓	26.4 ↓	24.4 ↓
Black	18.7 ↑	18.2 ↑	17.3 ↑	16.3 ↑	16.6 ↑	17.5 ↑
Asian/Pacific Islander	14.3 ↑	14.9 ↑	15.1 ↑	15.9 ↑	16.4 ↑	15.3 ↑
Other	0.7	0.7	0.7	0.7 ↑	0.7	0.7
<b>Low birthweight (%)</b>						
Low birthweight	7.1	7.3	6.7	6.9	6.8	7.0
Very low birthweight	1.1	1.2	1.0	1.0	1.1	1.1
<b>Maternal characteristics (%)</b>						
Medi-Cal delivery	45.6	45.5	45.4	44.8	40.4	44.4
Teenage mothers	3.9	3.8	4.1	3.8	3.8	3.9
Incomplete high school	22.8	23.0	22.2	22.6	21.2	22.4
<b>Prenatal care (%)</b>						
First trimester	80.6	81.7	82.8	83.8	85.1	82.8
Third trimester	2.7	2.9	2.9	2.4	2.3	2.6
None	0.8	1.0	0.8	0.6	0.8	0.8
Unknown	2.1 ↑	1.1 ↑	1.2 ↑	1.6 ↑	1.4 ↑	1.5 ↑
<b>Method of delivery (%)</b>						
Primary C-section	12.4	13.0	11.4	11.9	12.1	12.2
Repeat C-section	7.6	6.8	6.6	6.6	6.8	6.9
Vaginal after C-section	2.6	2.7	2.6	2.7	2.1	2.5
<b>Records with missing data (%)</b>						
	9.0 ↑	5.2	7.4	10.0 ↑	11.3 ↑	8.6 ↑
<b>Mortality among births in region compared to births statewide (rates per 1,000)</b>						
<b>Fetal mortality (#)</b>						
Observed rate	116	118	104	93	96	527
Expected rate	4.7	4.9	4.4	4.0	4.2	4.4
Standardized ratio	0.95	1.03	0.94	0.86	0.97	0.95
<b>Neonatal mortality (#)</b>						
Observed rate	70	73	56	51	54	304
Expected rate	2.8	3.0	2.4	2.2	2.3	2.6
Standardized ratio	0.85	0.91	0.81	0.74 ‡	0.80	0.83 ‡

TOP DOWN

PASSIVE  
REPORT

WHAT TO  
DO ??

# CPQCC 1997 - 2015

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- A Group of Public and Private CA Leaders in Healthcare, Committed to Improving Care and Outcomes for the State's Pregnant Mothers and Newborns
- Organized in 1997
  - CA Maternal and Child Health Branch (MCH) Branch and CA Children's Services (CCS)
  - CA Association of Neonatologists (CAN)
  - Vermont Oxford Network, Inc. (VON)

David and Lucile Packard Foundation

# CPQCC MAJOR GOAL

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To Improve the Quality and Outcomes of  
Perinatal Healthcare in California

# CPQCC OBJECTIVES

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Develop ***Collaborative Network*** of Public and Private Obstetric and Neonatal Providers, Insurers, Public Health Professionals and Business Groups to ***Support a System for Bench Marking and Performance Improvement Activities*** for Perinatal Care

# ORGANIZATIONAL PHILOSOPHY

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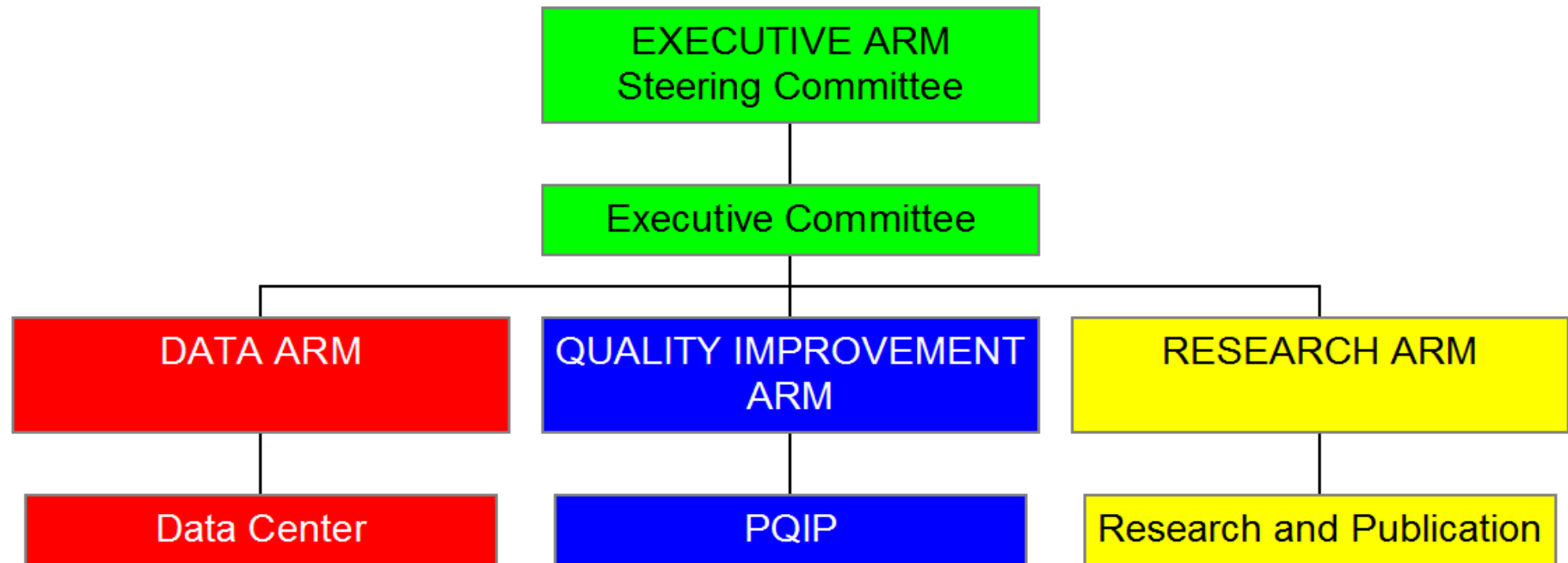
- Quality improvement is a worthwhile activity
- Bottom up approach
- Maximize value for members and stakeholders

# STAKEHOLDER VALUE

- ***CA Association of Neonatologists (CAN)***
  - Impact of Funding Restrictions
  - Input on Inevitable Report Carding
  - Organized CQI as a Possibility
- ***State Maternal and Child Health Branch MCH***
  - Need for Morbidity Assessment
- ***CA Children's Health Services (CCS)***
  - Need for NICU Medical Quality Assurance
- ***Pacific Business Group on Health (PBGH)***
  - Consumer-Oriented Quality Assessment
- ***Packard/Vermont Oxford Network (VOI)***

# Organizational Structure

Organization Chart Title





# CPQCC EXECUTIVE

## COMMITTEE

- California Association of Neonatologists (CAN)
- District IX , Perinatal Section , AAF
- American College of Obstetricians and Gynecologists
- Maternal and Child Health Branch (MCH)
- California Children's Services (CCS)
- Office of Vital Records
- Office of Statewide Health Planning and Development
- Pacific Business Group on Health
- David and Lucile Packard Foundation
- Vermont Oxford Network, Inc. (VON)
- Health Insurance Plans of California
- Hospital Council

# CPQCC Member NICUs care for over 90% of all NICU admissions in California

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***In 2014 we had 17,407 admissions in 132 NICUs  
40% were out-born  
68% > 1500 grams***

2014:	NICUs	<=1500 Grams	> 1500 Grams
Community	77	3,152	4,929
Regional	23	1,918	5,719
Intermediate	16	235	579
Undesignated	16	296	579
Total	132	5,601	11,806

# QUALITY IMPROVEMENT: THE CHALLENGE

**DATA**

*Development of High -Quality, Reliable Data*



**INFORMATION**

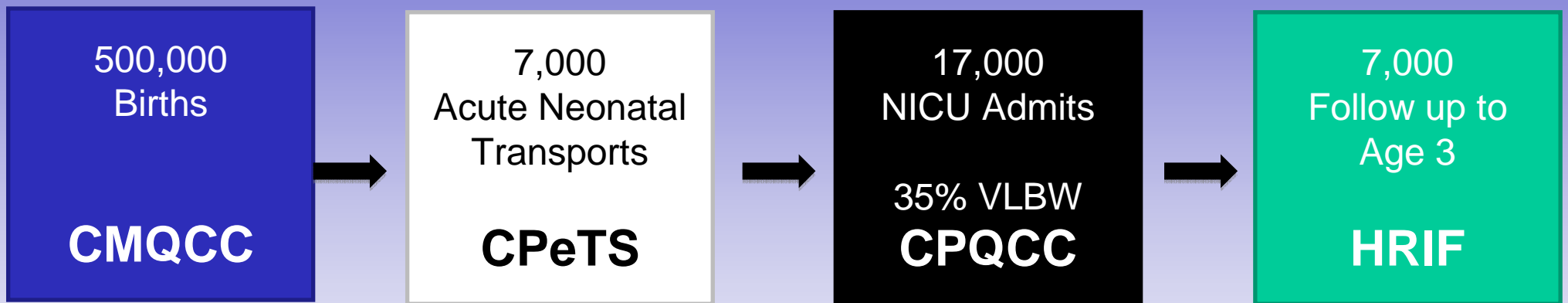
*Development of Risk-adjustment Methods  
Reports That Inform and Motivate Work*



**ACTION**

*Support Perinatal Providers in Their Work  
Of Improving Perinatal Care and Outcome.*

# THE CPQCC/CMQCC Data Center



## Vital statistics linked birth/infant death and hospital discharge record linkage for epidemiological studies.

Herrchen B<sup>1</sup>, Gould JB, Nesbitt TS.

### + Author information

#### Abstract

A methodology for linking vital statistics linked birth/death data and hospital discharge data is described. The resulting data set combines information on a neonate's sociodemographic characteristics, prenatal care, and mortality aspects and connects it to detailed health outcome and resource utilization data, thus establishing an extensive database for epidemiological studies. In the absence of a universal identifier common to both databases, our linkage strategy relied on using a virtual identifier based on variables common to both data sets. In the case of multiple incidences of the same virtual identifier we used secondary health status information to optimize the likelihood of linking low birth weight or premature infants in one database to infants of similar health status in the other while randomizing cases in which no secondary information was present. Applying our method to the 1992 California birth cohort, we could link 563,114 out of 571,189 eligible births (98.59%). Of these links, 91.2% were established on the basis of unique virtual identifiers. The link was internally consistent and no bias was evident when comparing variable distributions for all single live births in the vital statistics linked birth/death file and linked births in the linked vital statistics linked birth/death and hospital discharge file. Multiple imputation techniques showed that the prediction error incurred by randomization was negligible. Even though computationally intensive, our method for linking the vital statistics linked birth/death file and the hospital discharge file appeared to be effective. However, it is important to be aware of the limitations of the resulting data set, in particular the fact that it cannot be used for tracking individual cases. The method provides a database suitable for a variety of perinatal epidemiological analyses, such as descriptive studies of disease distribution in neonates, studies of the geographic distribution of disease, and studies of the relationship between risk and outcome.

# Developing a Neonatal Transport Database for California

Review of the literature listed well over  
100 important variables

# The **IDIS** approach to data base development

- **Improvement Driven Information Set**

- Decide exactly what you want to improve.
  - Key Informants + Stakeholder Focus Groups
- Determine what data elements are needed to inform each specific improvement ( The Action Base ).
- Design a report that will stimulate and facilitate Quality Improvement Activity (The Promoters)

# 2005 Focus Groups & Key Informants: Major Issues/Potential Indicators

- Difficult to obtain transport
  - Initiation of transport to acceptance interval
- Too long a wait for the team to arrive
  - Acceptance to out the door time
  - Acceptance to arrival interval
  - Acceptance to arrival change in clinical status
- Team competency not always optimal
  - Arrival to completion change in clinical status
- Underutilization of maternal transport
  - Admit to delivery interval
  - Prenatally diagnosed congenital defects
  - How many births had to be transferred
- Delayed decision to transport infant
  - Birth to initiation of transport interval
  - Condition at Referral



# Too long a wait for the team to arrive

Acceptance to out the door time

Acceptance to arrival interval

Acceptance to arrival change in clinical status

**Table 6: Time from Acceptance to Team Departure for Referring Hospital, *Emergent Transports Only***

Time Difference	Center		CPQCC Network	Same CCS Level
	n	%	%	%
<b>All Infants Transferred In</b>	138	100.0	100.0	100.0
<b>Up to 30 minutes</b>	16	11.6	19.8	18.6
<b>31 - 60 minutes</b>	66	47.8	50.9	53.8
<b>1 - 2 hours</b>	48	34.8	19.7	17.3
<b>2 - 4 hours</b>	4	2.9	6.3	6.8
<b>4 - 8 hours</b>	4	2.9	2.2	2.3
<b>&gt; 8 hours</b>	0	0.0	1.1	1.2
<b>Mean</b>	1hrs 5min		1hrs 12min	1hrs 13min
<b>Median</b>	50min		45min	44min

**How does this transport team compare ???**

**Does the network need improvement ???**

# QUALITY IMPROVEMENT: THE CHALLENGE

DATA



INFORMATION

*Development of Risk-adjustment Methods  
Reports That Inform and Motivate Work*





Improving the Quality of  
NICU Care using State-of-the-Art  
Collaborative Quality  
Improvement Methods

CALIFORNIA PERINATAL QUALITY CARE COLLABORATIVE - CPQCC  
e-mail: [support@cpqcc.org](mailto:support@cpqcc.org) phone: 650-721-1844

Links to: [CPQCC Help Desk](#) [Main CPQCC Website](#) [CPQCC Data Entry](#)

## CPQCC Reports - Logon

User ID:

Password:

[Forgot Password](#)

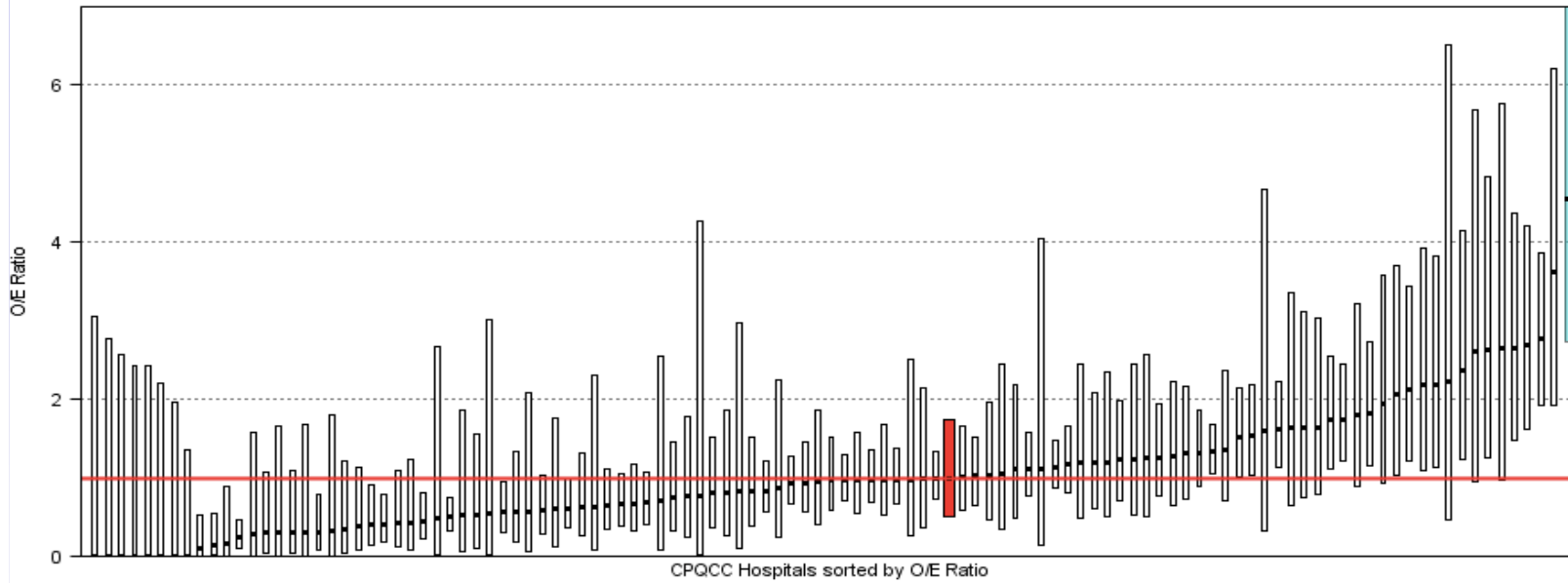
# Role of Measurement To Know How Well You are Doing

	Center (N = 229)			CPQCC (N Centers = 131)			Center-Network Comparison
	N	%	Last Year %	% Median	% Lower Quartile	% Upper Quartile	
<b>Body Temperature at NICU admission</b>							
< 36°C (Hypothermic)	41	20.2	28.1	2.8	0.6	7.4	H •
36-36.4°C (Cold Stressed)	44	21.7	18.0	16.1	11.1	21.7	↔
> 36.4°C	118	58.1	53.9	82.1	70.9	87.5	• ↔
Total	203	100.0	100.0				
<b>Patent Ductus Arteriosus</b>							
PDA (VON 2011 def)	6	2.6	1.7	3.2	0.0	9.1	↔
PDA (expanded def)	30	13.1	8.4	19.4	11.8	25.5	↔
Indomethacin	2	6.7	13.3	20.8	0.0	45.8	• ↔
Ibuprofen	0	-	100.0				
PDA Ligation	9	30.0	20.0	3.0	0.0	14.3	↔ •
<b>Necrotizing Enterocolitis</b>							
Necrotizing Enterocolitis	3	1.3	0.6	1.3	0.0	2.5	•
Necrotizing Enterocolitis at this Center	3	1.3	0.6	1.1	0.0	2.2	•
NEC Surgery	1	33.3	0.0	0.0	0.0	58.3	↔ • ↔
<b>Gastro Intestinal</b>							
Focal GI Perforation	4	1.7	4.0	0.3	0.0	1.7	•
Focal GI Perforation at this Center	3	1.3	2.3	0.3	0.0	1.4	•

Notes:

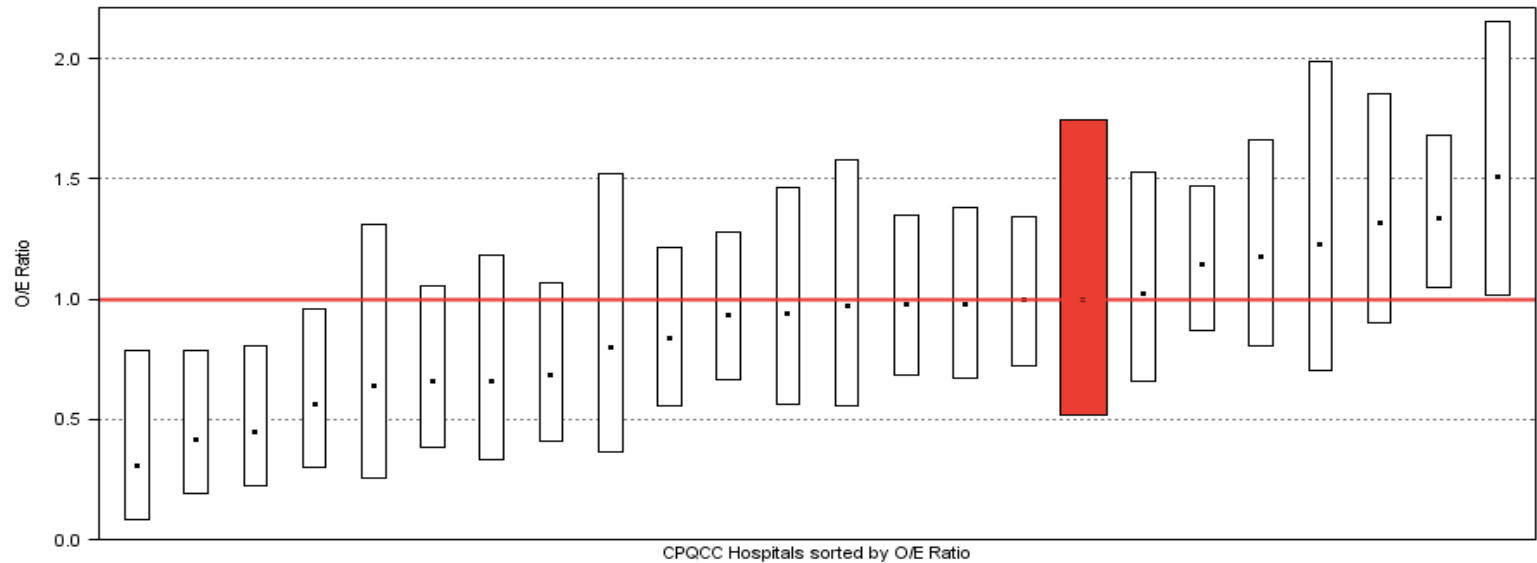
### Center O/E Ratio Comparison Chart, 2011-2013

O/E ratios are based on data submitted for the 3 most recent closed out years.  
Demo Center is highlighted in red. Bars extending beyond chart limits appear in cyan.



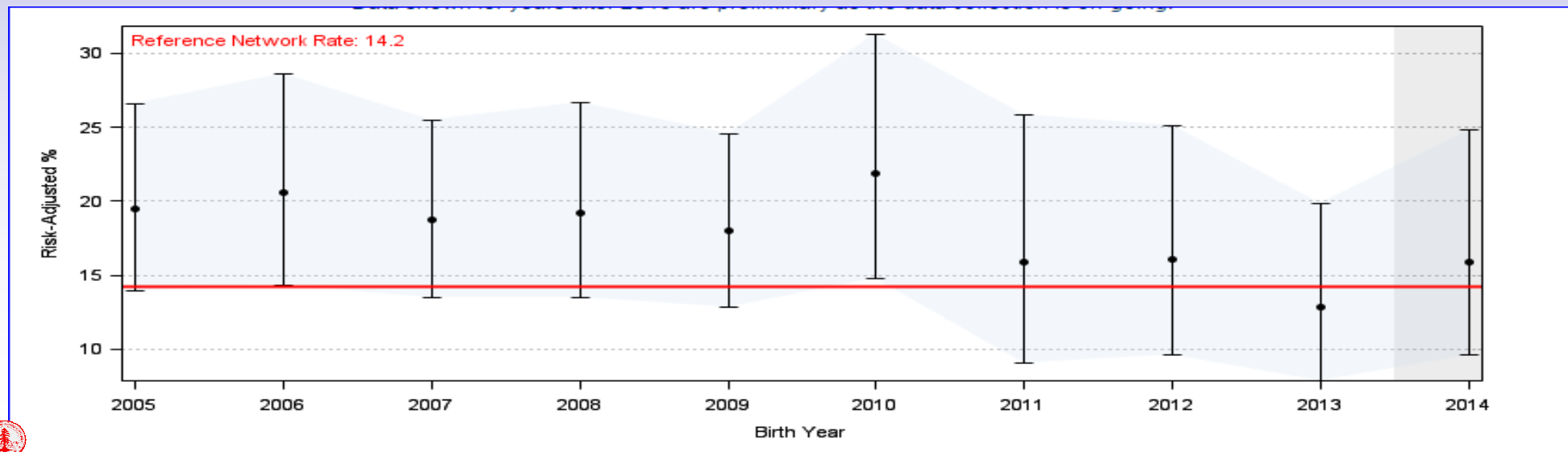
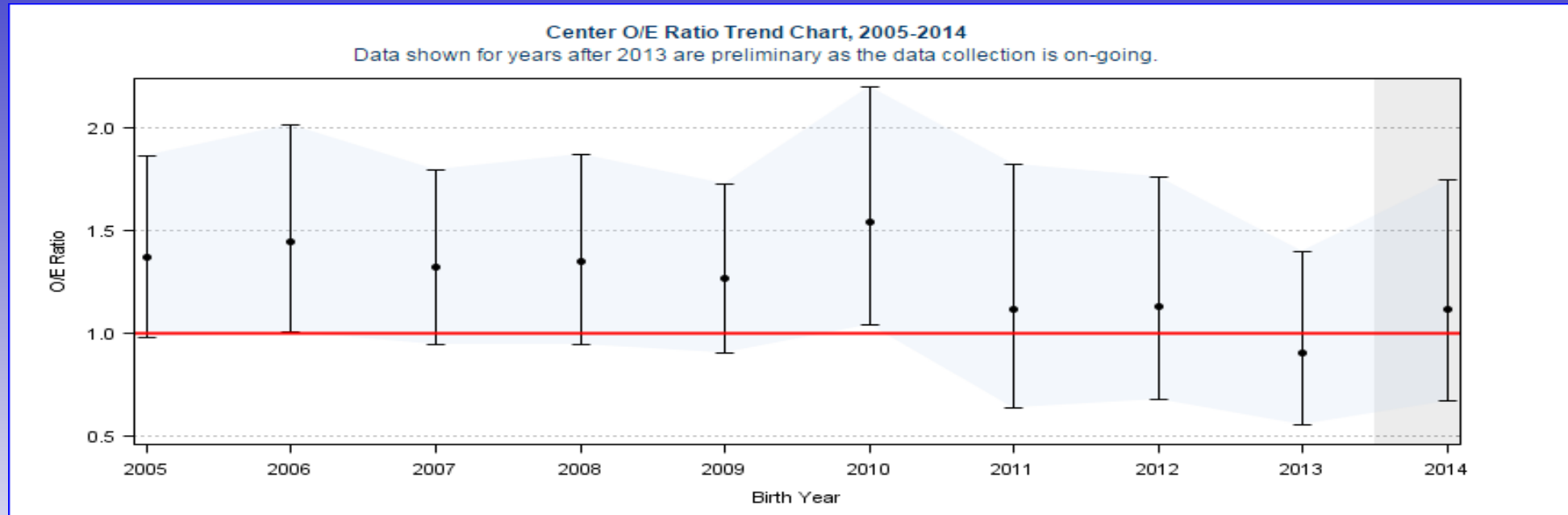
### Center O/E Ratio Comparison Chart for Regional NICUs, 2011-2013

O/E ratios are based on data submitted for the 3 most recent closed out years.  
Demo Center is highlighted in red. Bars extending beyond chart limits appear in cyan.



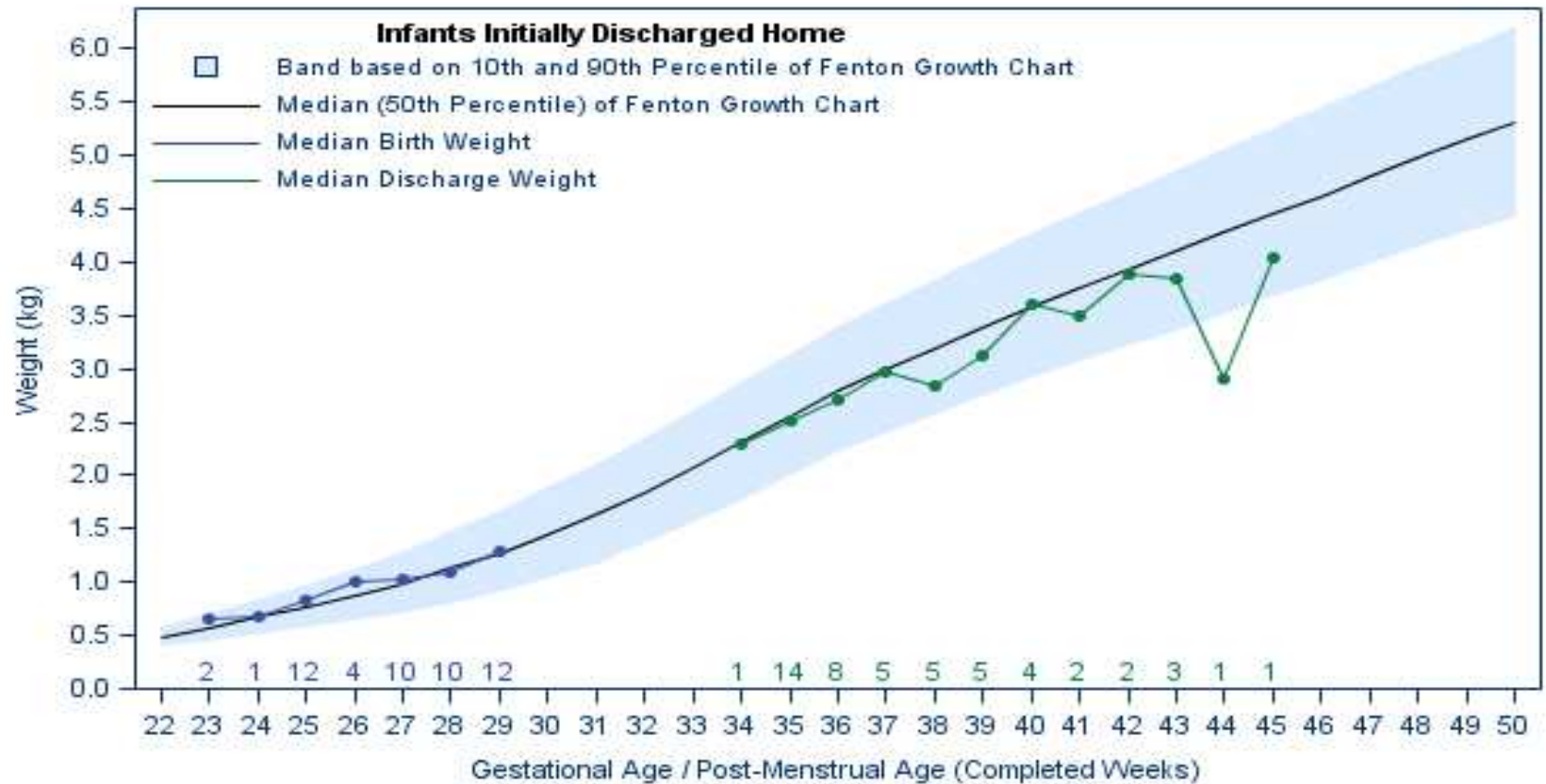
# Topic Use The Standardized Table/Chart to Track Your Progress

## Example: Postnatal Steroids For CLD as O/E or as Rates



# Growth

## I. Growth Trajectories for Infants 22 to 29 Weeks Admitted to NICU, 1/1/2013 to 12/31/2013

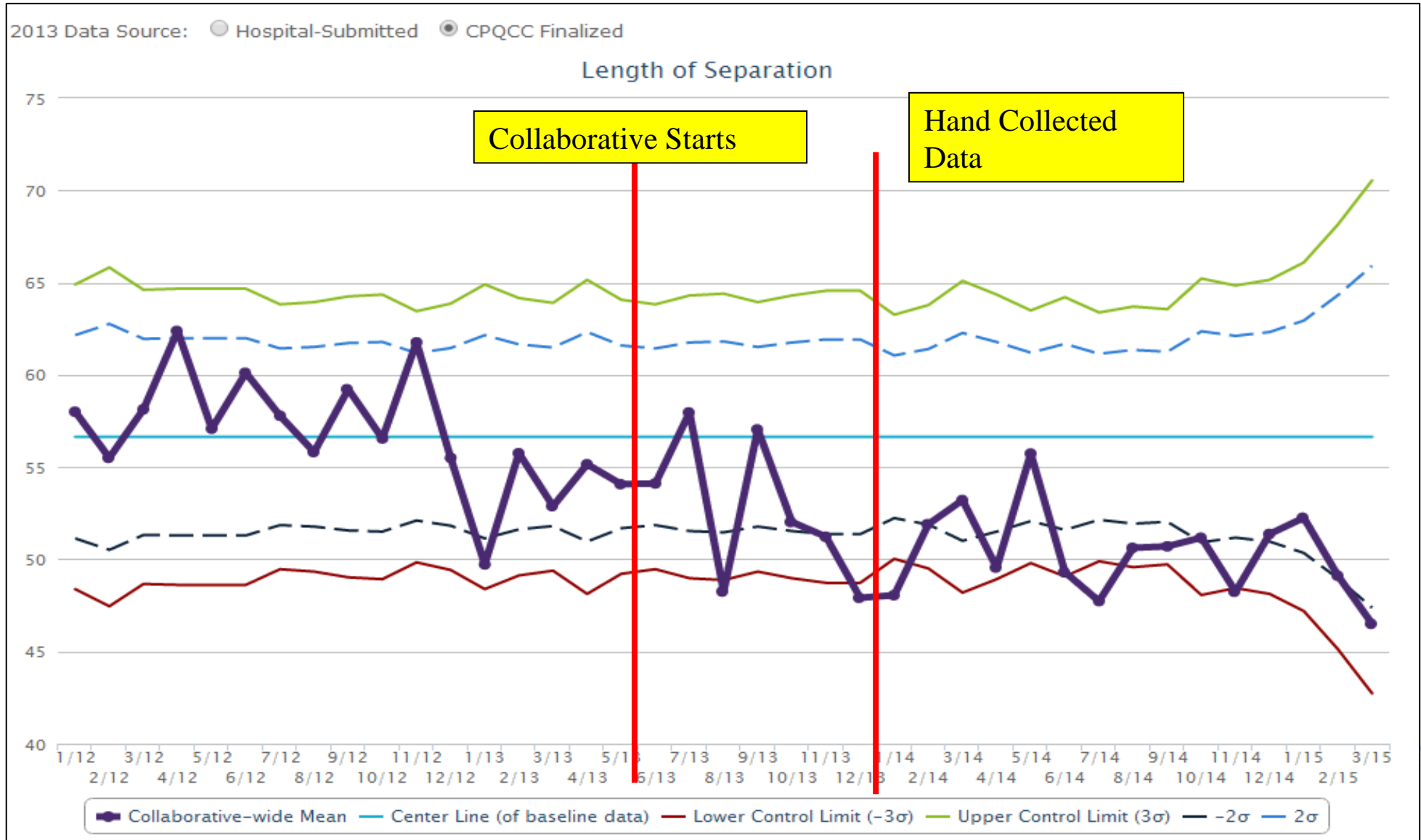




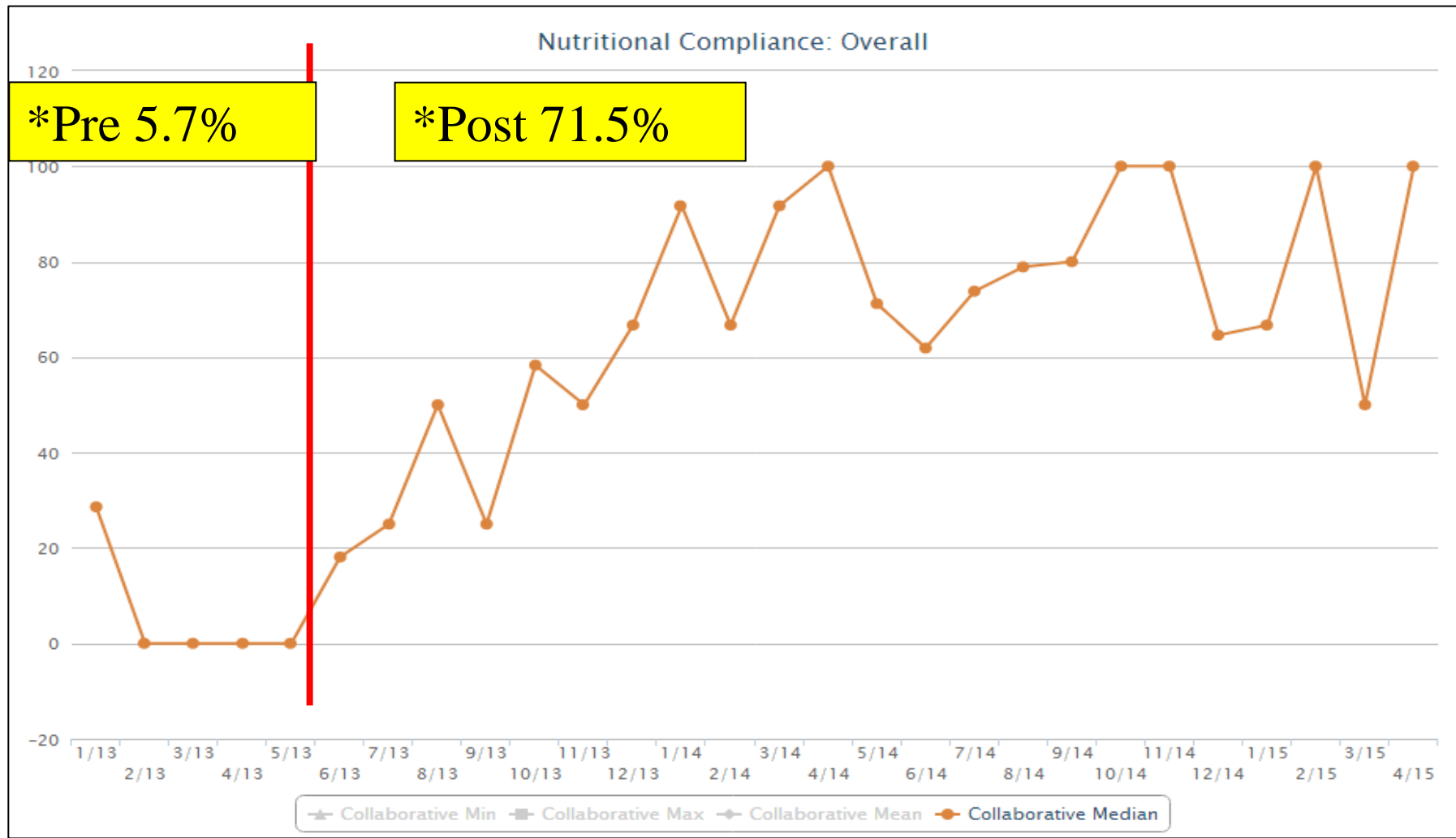
	NICU ( [REDACTED] )		All NICU Centers					Comparison with All NICU Center Data
	Total Seen Cases : 70		Total Seen Cases : 2054					
	Num	%	Num	%	% Median	% Lower Quartile	% Upper Quartile	
<b>MEDICATIONS AND EQUIPMENT SINCE LAST VISIT</b>								
<b>Child Take Medications Since Last Visit</b>								
No	52	74.3%	1213	59.1%	60.0%	33.3%	84.8%	
Yes	18	25.7%	832	40.5%	40.0%	15.0%	66.1%	
<b>Child Take Medications Since Last Visit Details</b>								
Anti Reflux Medication	7	38.9%	111	13.3%	0.0%	0.0%	22.2%	
Nutrition Supplements	4	22.2%	234	28.1%	12.2%	0.0%	44.4%	
Inhaled Bronchodilators (inter.)	4	22.2%	288	34.6%	33.3%	0.0%	57.3%	
Inhaled Bronchodilators (daily)	4	22.2%	106	12.7%	0.0%	0.0%	22.2%	
Diuretics	2	11.1%	24	2.9%	0.0%	0.0%	0.0%	
Antibiotics/Antifungal	2	11.1%	173	20.8%	0.0%	0.0%	25.0%	
Inhaled Steroids (daily)	2	11.1%	131	15.7%	0.0%	0.0%	28.3%	
Other	1	5.6%	147	17.7%	0.0%	0.0%	25.0%	
Oxygen	1	5.6%	40	4.8%	0.0%	0.0%	0.0%	
Inhaled Steroids (inter.)	1	5.6%	94	11.3%	0.0%	0.0%	14.0%	
<b>Child Use Equipment Since Last Visit</b>								
No	66	94.3%	1777	86.5%	93.9%	75.0%	100.0%	
Yes	4	5.7%	272	13.2%	5.7%	0.0%	25.0%	
<b>Child Use Equipment Since Last Visit Details</b>								
Enteral Feeding Equipment	3	75.0%	48	17.6%	0.0%	0.0%	36.7%	
Other	2	50.0%	23	8.5%	0.0%	0.0%	0.0%	

Data to assess if your innovations  
to  
improve quality are working

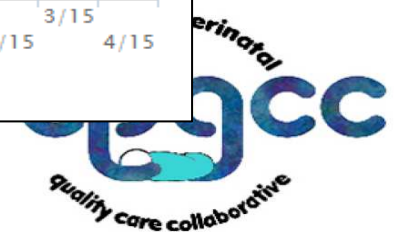
# LOS at Discharge (with CPQCC 2012, 2013 data) 05.21.15



## Compliance to Nutrition Best Practices (All) (As of 05.21.15)



\*mean of monthly medians (p=0.0000002)



# QUALITY IMPROVEMENT: THE CHALLENGE

INFORMATION



**ACTION**

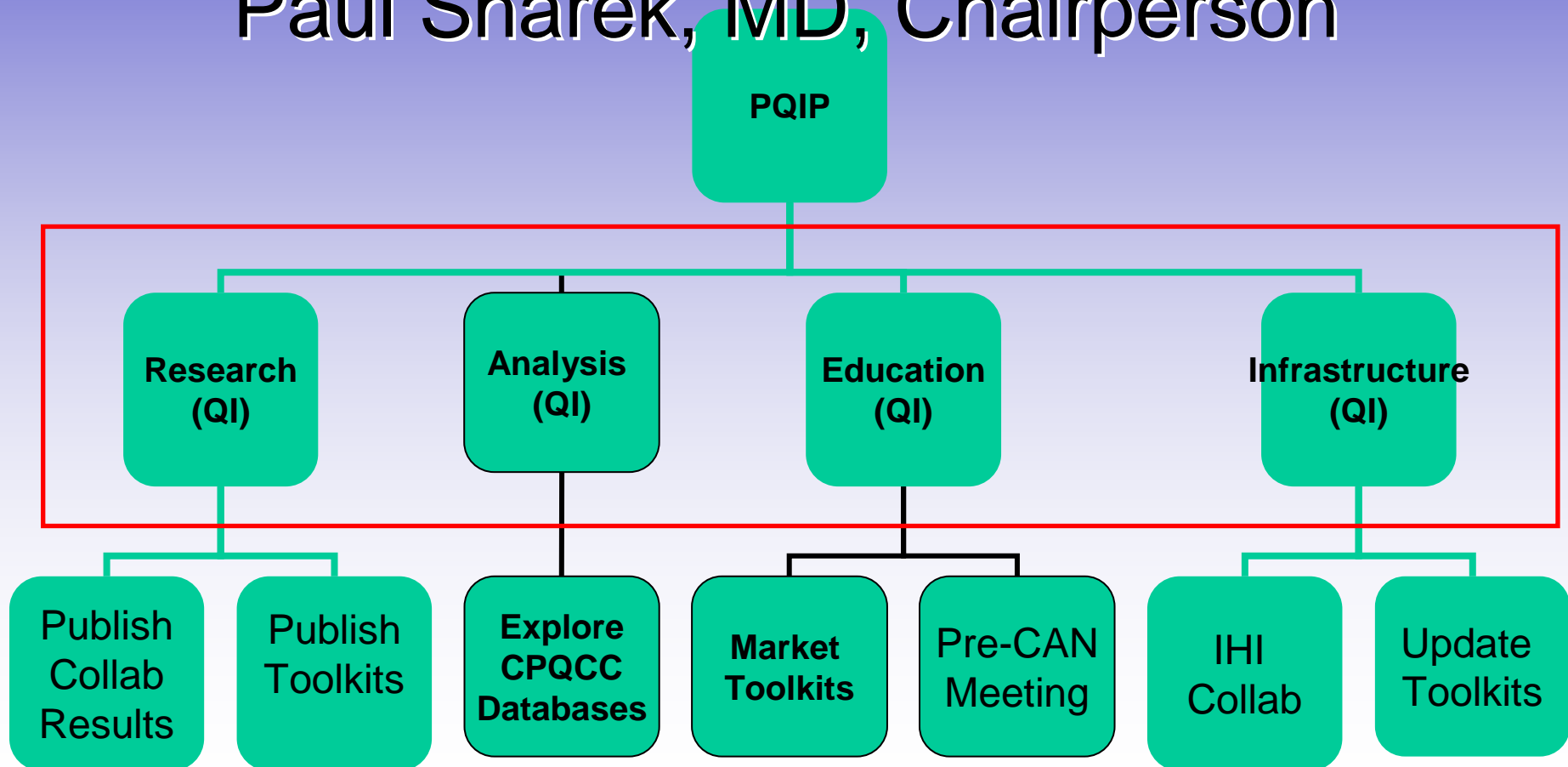
***Support Perinatal Providers in Their Work  
Of Improving Perinatal Care and Outcomes***

# PERINATAL QUALITY IMPROVEMENT PANEL:

- Neonatology
- Maternal Fetal Medicine
- Perinatal Nursing
- California State Regional Perinatal Programs
- California State Maternal and Child Health Program
- California State Childrens Services
- Invited Content Experts: Pulmonary Rx , Pharmacy, Etc.

# PQIP Organizational Structure to Accelerate Statewide Quality Improvement 2007-

Paul Sharek, MD, Chairperson





# PQIP

(Quality Arm of CPQCC)

## PQIP Committee and CY 2014 Goals

### Analysis

- Develop at least one "One Click" CPQCC PowerPoint report
- Develop list of research and QI opportunities resulting from a detailed review/analysis of CPeTS database

#### Volunteers: 28hrs

- Chair: MD - 10hrs
- Members:**
- 6 MDs - 4hrs
- 1 Fellow - 4hrs
- 1 Data Manager - 4hrs
- 1 Data Analyst - 4hrs
- PQIP Rep - 2hrs

### Education

- Establish uniform bibliography format for future and updated toolkits
- Plan 2015 Pre-CAB Day

#### Volunteers: 20hrs

- Chair: MD - 10hrs
- Members:**
- 5 MDs - 4hrs
- 3 RNs - 4hrs
- PQIP Rep - 2hrs

### QI Infrastructure

- Continue with update/development of QI toolkits
- Consult and pilot test Q.I. mentoring program

#### Volunteers: 16.5hrs

- Chair: MD - 10hrs
- Members:**
- 7 MDs - 4hrs
- 1 RN - .5hrs
- PQIP Rep - 2hrs

### Research

- Complete Writing and submission of PDA supplemental data study
- Develop Qualitative Study on ROP Screening

#### Volunteers: 28hrs

- Chair: MD - 10hrs
- Members:**
- 9 MDs - 4hrs
- 2 Fellows - 4hrs
- 1 Data Manager - 4hrs
- 1 Data Analyst - 4hrs
- PQIP Rep - 2hrs



# 2015-16 GOALS-Education Committee

1. Establish uniform format for future and updated Toolkits –including bibliography (Endnotes, JAMA format)
2. Develop resource page on the CPQCC website that supports access to generic quality improvement materials including but not limited to, written publications, outreach, and video presentations. (blending w/above goal)
3. Involve new committee members with ongoing projects. New members expressed interest with developing educational materials (P. Paz and A. Joshi – Uniform toolkit format)
4. Pre-CAN 2016 plan ahead



# CPQCC QI Initiatives For Which Toolkits Are Available

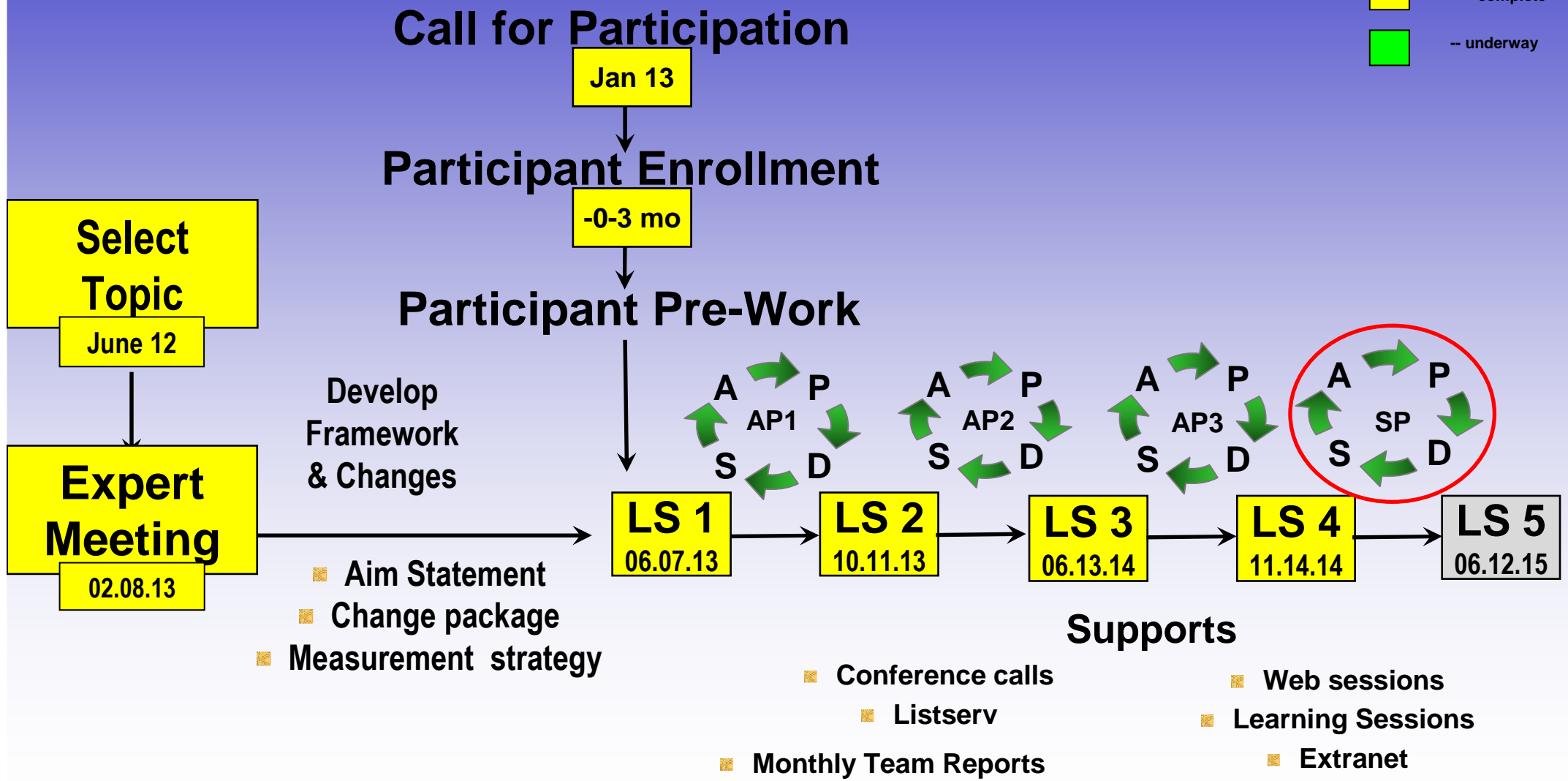
[www.cpqcc.org](http://www.cpqcc.org)

- Antenatal Steroids (***underuse***) - released 10/00; revised 7/01; pending 3/09
- Postnatal Steroids (***overuse***) - released 2/03; revised 8/03; pending 8/09
- Nosocomial Infections (***misuse***) - released 5/02; revised 8/03; replaced by Neonatal Hospital Acquired Infection Prevention - released 3/07 ; revised 2/08
- Improving Initial Lung Function - released 5/01; revised 7/01; pending 5/09
- VLBW Nutritional Support Parts 1&2 - Part I released 2/04 ; revised 11/08  
Part II released 3/05; revised 11/08
- Perinatal Group B Streptococcus Prevention - released 9/04; revised 9/08
- Severe Hyperbilirubinemia Prevention - released 10/05; pending 11/09
- Perinatal HIV Prevention - released 3/06; currently under revision; revised 9/08
- Delivery Room Management, VLBW Baby - released 10/06; pending 2/10
- Care and Management of the Late Preterm Infant - released 4/07; per



# Collaborative #4 (“The 18-month-ers”; n=20)

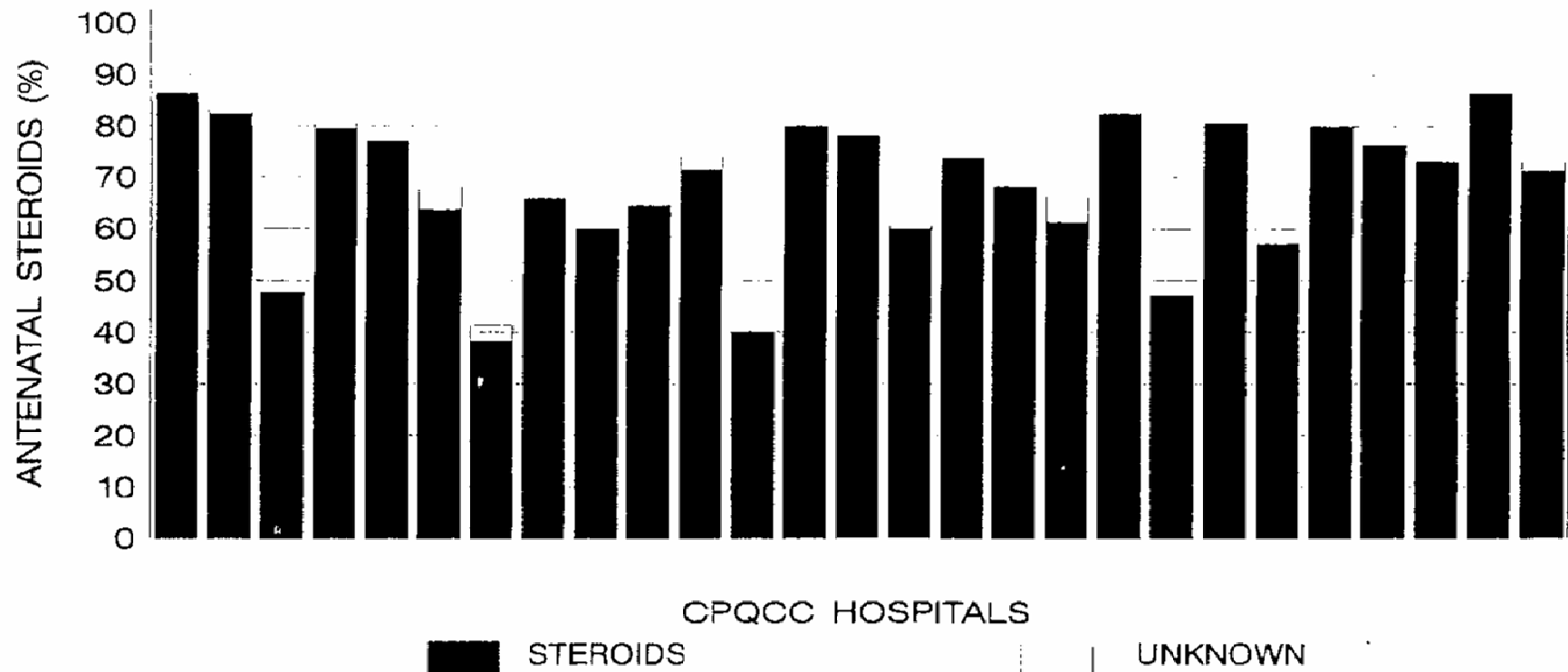
## Optimizing LOS in NICUs QI Collaborative



# CPQCC Guiding Principles

1. Each initiative must have an AIM statement agreed upon by all Participants.
2. Participants Must Submit monthly process, outcome, and balancing measures.
3. Participants must conduct standardized Process Audits

**ANTENATAL STEROIDS**  
**INFANTS 501–1500 GRAMS, BORN 01/01/1998 TO 12/31/1998**  
**VERMONT OXFORD NETWORK**  
**CALIFORNIA PERINATAL QUALITY CARE COLLABORATIVE**

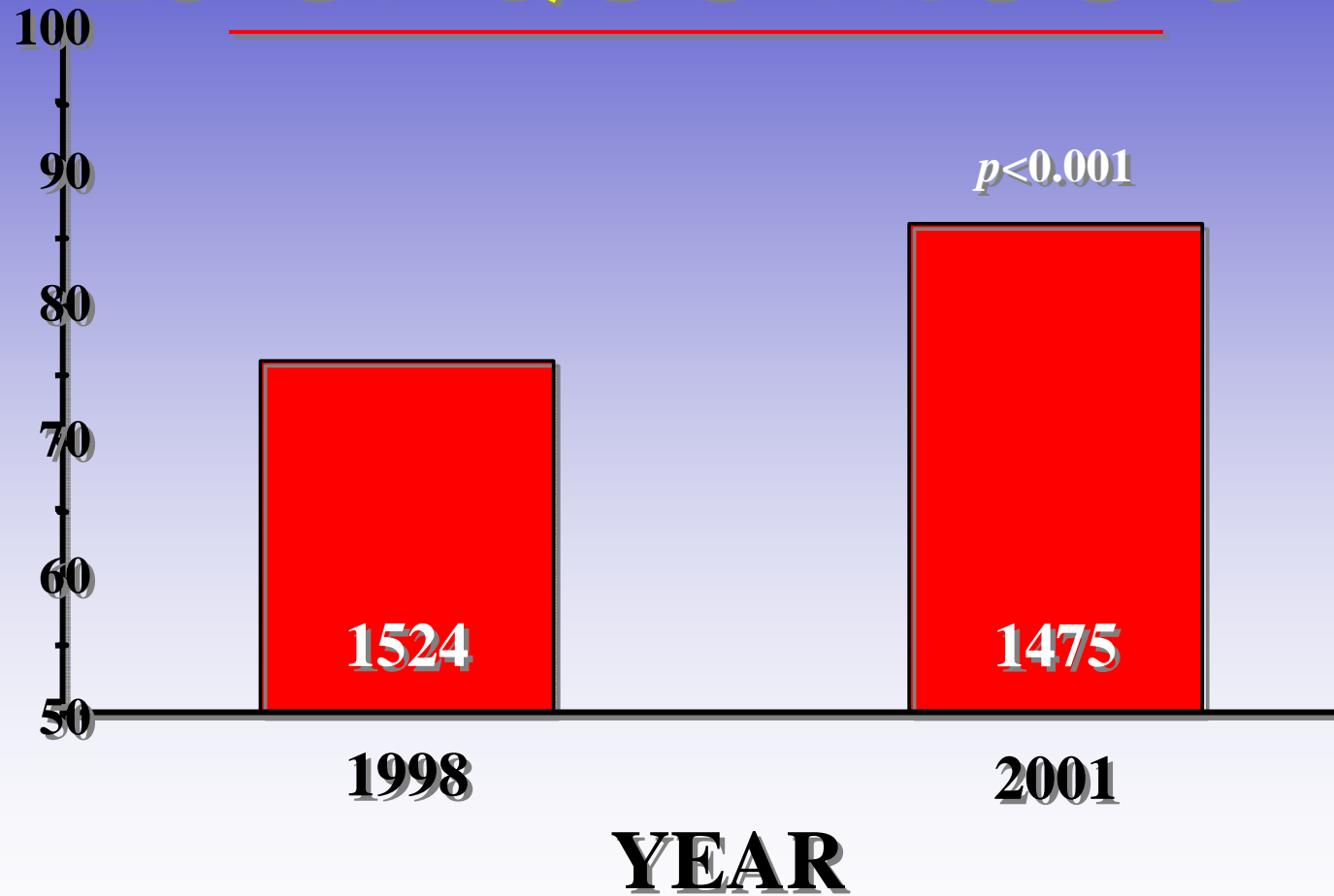


NETWORK MEDIAN (QUARTILES) : 71.7% (62.2%, 78.9%)  
 CPQCC MEDIAN (QUARTILES): 73.2% (60.4%, 80.0%)

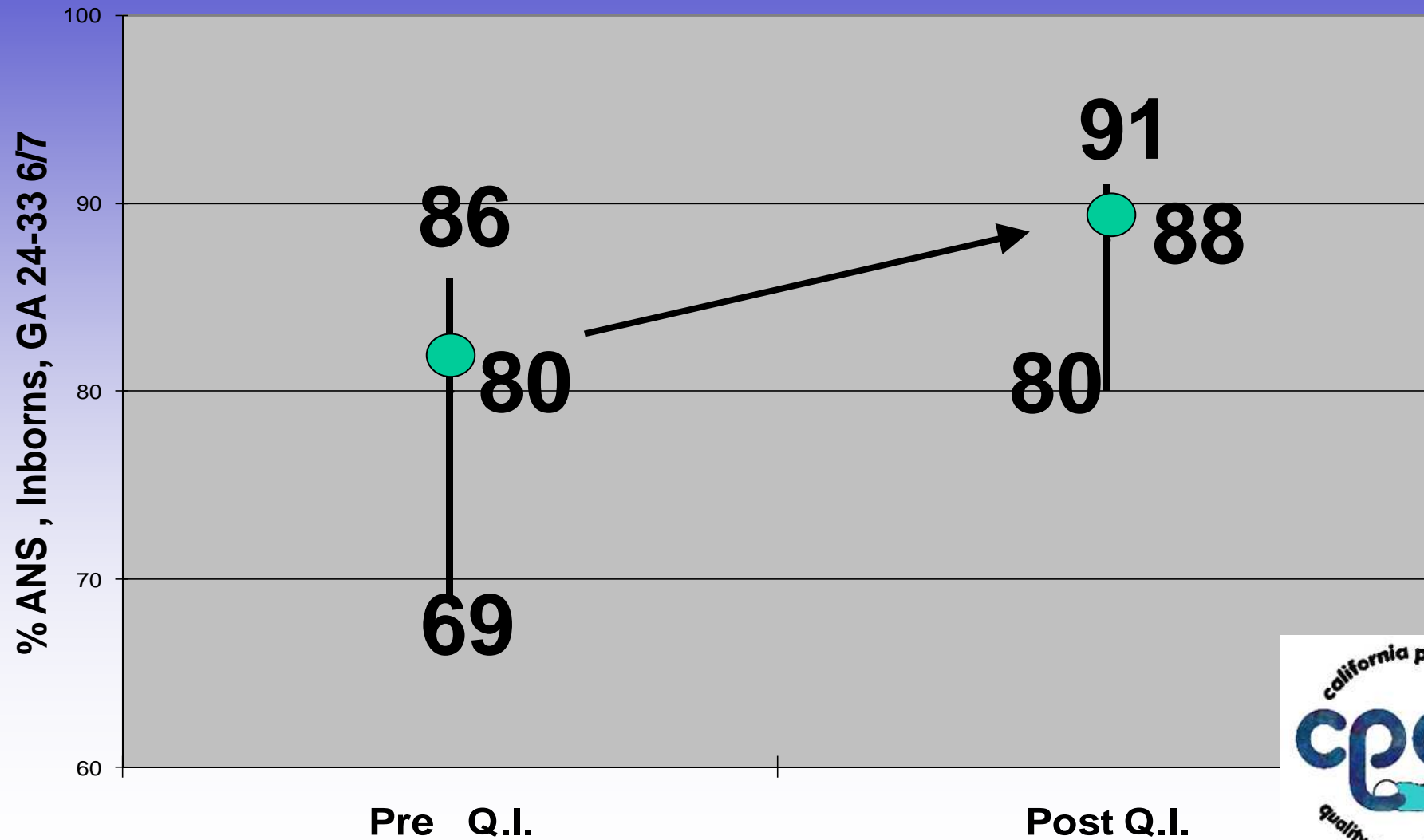
PRINT DATE: 09/29/1999  
 FIGURE 2.2

# ANTENATAL STEROIDS 25 CPQCC NICU'S

PERCENT 24-33 WKS



## Move the Median and Narrow the IQR



# PQIP Collaboratives and Research

1. **Collaborative #1 - CABS I Reduction (n=19 sites)**
  - 75.4% decrease in CABS I infections in less than 750 gms
  - 35.7% decrease in CABS I Infections in 751-1000gms
  - 41.7% decrease in CABS I infections in 1000-1500gms
  - 48.7% decrease in CABS I infections in 1501- 2500 gms
  - 78.9% decrease in CABS I infections in >2500 gms
2. **Collaborative #2 – Breastmilk Nutrition (n=11 sites)**
  - increase in patients discharged to home on breastmilk
3. **Collaborative #3 - Delivery Room Management (n= 24 sites) vs NICU QI (n=36+ sites)**
  - each group had reduced hypothermia from baseline to post-intervention
4. **Collaborative #4 - Optimizing LOS Collaborative (n = 25) Ongoing till 6/2015**
  - statistically significant decrease in LOS across 25 sites
5. **PQIP Research**
  - Multiple QI related publications



# QUALITY IMPROVEMENT: THE CHALLENGE

**DATA**

*Development of High -Quality, Reliable Data*



**INFORMATION**

*Development of Risk-adjustment Methods  
Reports That Inform and Motivate Work*



**ACTION**

*Support Perinatal Providers in Their Work  
Of Improving Perinatal Care and Outcome.*

# CPQCC Research

- Quality Improvement Science
- Risk Identification / Unmet Needs
- Perinatal Outcomes

## Original research

# Exposure to Leadership WalkRounds in neonatal intensive care units is associated with a better patient safety culture and less caregiver burnout

J Bryan Sexton<sup>1,2</sup>, Paul J Sharek<sup>3,4,5</sup>, Eric J Thomas<sup>6</sup>, Jeffrey B Gould<sup>3,4,7</sup>,  
Courtney C Nisbet<sup>3,4</sup>, Amber B Amspoker<sup>8,9</sup>, Mark A Kowalkowski<sup>8,9</sup>,  
René Schwendimann<sup>2,10</sup>, Jochen Profit<sup>3,4,7</sup>

 Author Affiliations

**Q.I. Science**

### Correspondence to

Dr Jochen Profit, Department of Pediatrics, Section of Neonatology, Stanford University, 1265 Welch Road, x115, Stanford, CA 94305, USA; [profit@stanford.edu](mailto:profit@stanford.edu)

Published in final edited form as:

*J Pediatr.* 2012 November ; 161(5): 819–823. doi:10.1016/j.jpeds.2012.04.020.

## Factors Associated with Failure to Screen Newborns for Retinopathy of Prematurity

**Lisa Charo Bain, MD,**  
University of California, San Francisco

**R. Adams Dudley, MD, MBA,**  
University of California, San Francisco

**Jeffrey B. Gould, MD,** and  
Stanford University

**Henry C. Lee, MD**  
University of California, San Francisco

# Risk Identification / Unmet Needs

### Abstract

**Objectives—**To evaluate ROP screening rates in a population-based cohort; To identify characteristics of patients that were missed.

**Study design—**We used the California Perinatal Quality Care Collaborative data from 2005-2007 for a cross sectional study. Using eligibility criteria, screening rates were calculated for each hospital. Multivariable regression was used to assess associations between patient clinical and socio-demographic factors and the odds of missing screening.

**Results—**Overall rates of missed ROP screening decreased from 18.6% in 2005 to 12.8% in 2007. Higher gestational age (odds ratio [OR] 1.25 for increase of one week, 95% confidence interval [CI] 1.21-1.29), higher birth weight (OR 1.13, 95% CI 1.10-1.15), and singleton birth (OR 1.2, 95% CI 1.07-1.34) were associated with higher probability of missing screening. Level II NICUs and NICUs with lower volume were more likely to miss screenings.

**Conclusion—**Although ROP screening rates improved over time, larger and older infants are at risk for not receiving screening. Furthermore, large variations in screening rates exist among hospitals in California. Identification of gaps in quality of care creates an opportunity to improve ROP screening rates and prevent impaired vision in this vulnerable population.

# Perinatal Outcomes

Pediatric Pulmonology

## Determinants of Chronic Lung Disease Severity in the First Year of Life; A Population Based Study

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**Summary.** Objectives: First, create a clinical severity score for patients with chronic lung disease of infancy (CLDi) following neonatal intensive care unit (NICU) stay. Second, using California wide population-based data, identify factors associated with clinical severity of CLDi at 4–9 months corrected gestational age (CGA). Study Design: Pediatric pulmonologists ranked and weighted eight factors reflecting clinical severity of CLDi. Utilizing these data we scored and assigned these to 4–9 month old CGA moderate/severe bronchopulmonary dysplasia (BPD) infants, born <30 weeks gestational age (GA), within the California High Risk Infant Follow up (HRIF) program. Infants were studied relative to factors from the California Perinatal Quality Care Collaborative (CPQCC). Results: We received survey responses from 43/88 pediatric pulmonologists from 28/53 North American training centers who are experts in CLDi. Strong agreement between ranking (72–100%) of respiratory system parameters and weighting (out of 100 points weighting was within 20 points) was observed with severity of CLDi. Data from 940 CLDi premature infants <30 weeks GA were obtained. Infants with severe CLDi scores at 4–9 months CGA (relative to a zero score) showed positive associations with being male, odds ratio[OR] = 2.45[confidence interval (CI) 1.26–4.77], >30 ventilator days, OR = 3.82 (1.30–11.2), postnatal steroids OR = 3.94 (1.94–7.84), and a surprising inverse association with retinopathy of prematurity stage 3–4, OR = 0.24 (0.09–0.67) Conclusions: The CLDi clinical severity score allowed for standardized assessment of pulmonary morbidity, and evaluation of risk factors in the NICU for CLDi following NICU discharge. These observations point to risk factors associated with CLDi outcomes at 4–9 months CGA.

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