

Neonatal Outcomes in Very Low Birth Weight Infants

The Regional Medical Center (The MED)

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First unit 1966-70



Second unit 1970-77







NEWBORN CENTER 2007 Mortality INBORN OR OUTBORN

	LIVED	DIED	TOTALS
INBORN	974	37 (3.7%)	1011
OUTBORN	58	10 (14.7%)	68
TOTALS	1032 (95.6%)	47 (4.4%)	1079

NEWBORN CENTER 2007 SURVIVAL BY RACE INBORN

	LIVED	DIED	TOTAL
• AFRICAN AMERICAN	726	27 (3.6%)	753
• CAUCASIAN	120	6 (4.8%)	126
• HISPANIC	12	4 (3.0%)	132
• TOTAL	974	37 (3.7%)	1011

NEWBORN CENTER 2007 SURVIVAL BY RACE OUTBORN

	LIVED	DIED	TOTAL
• AFRICAN AMERICAN	31	9 (22.5%)	40
• CAUCASIAN	25	1 (3.8%)	26
• HISPANIC	2	0 (0.0%)	2
• TOTAL	58	10 (14.7%)	68

A **16 year old** African-American woman delivers an extremely premature infant at **25 weeks** gestational age.

No prenatal care

She had a baby at the MED **less than a year ago**

She was on birth control pills but failed to see a doctor to get refills

Dropped out of school (could not afford day care for the child; grand mother did not qualify for state aid due income above threshold).

Mom has a 19 years old sister who also has a child

Baby's father is not in school and is the father for both children.

Deliveries to Teen Age Moms

Maternal Age (years)

10-14

15-17

18-19

Total births	37	464	729
NICU admissions	7	87	143

A **34 year** old African-American mother delivered an infant at term. She gave a history of **cocaine** and **marijuana** use during pregnancy. This is her **12th Child** and was admitted to the intensive care unit for respiratory distress.

She **lost custody** of all her previous **11 children** due to her lengthy history of substance abuse.

Her children reside with family members except for the last child who was placed in foster care.

She has **7th grade** education and has history of mental health problems in addition to substance abuse. **She lives alone**.

She also revealed that she had been **raped** by a family member that may have resulted in the birth of her first child.

Her **12th child** also was placed in **foster care** after discharge from hospital.

Immediate family members unable to care for more children.

**Maternal Substance Abuse
(mostly cocaine and Marijuana) 107**

Low Birth Weight 74

DCS Referrals 65

Foster Care 15

24 years mother from Guatemala, delivers a preterm infant, **second delivery within a year**. No prenatal care

Her previous infant, also preterm, died after several months in the intensive care nursery at the MED due to a **genetic disorder of the nervous system**.

She and her husband are **undocumented aliens** and speak only Spanish.

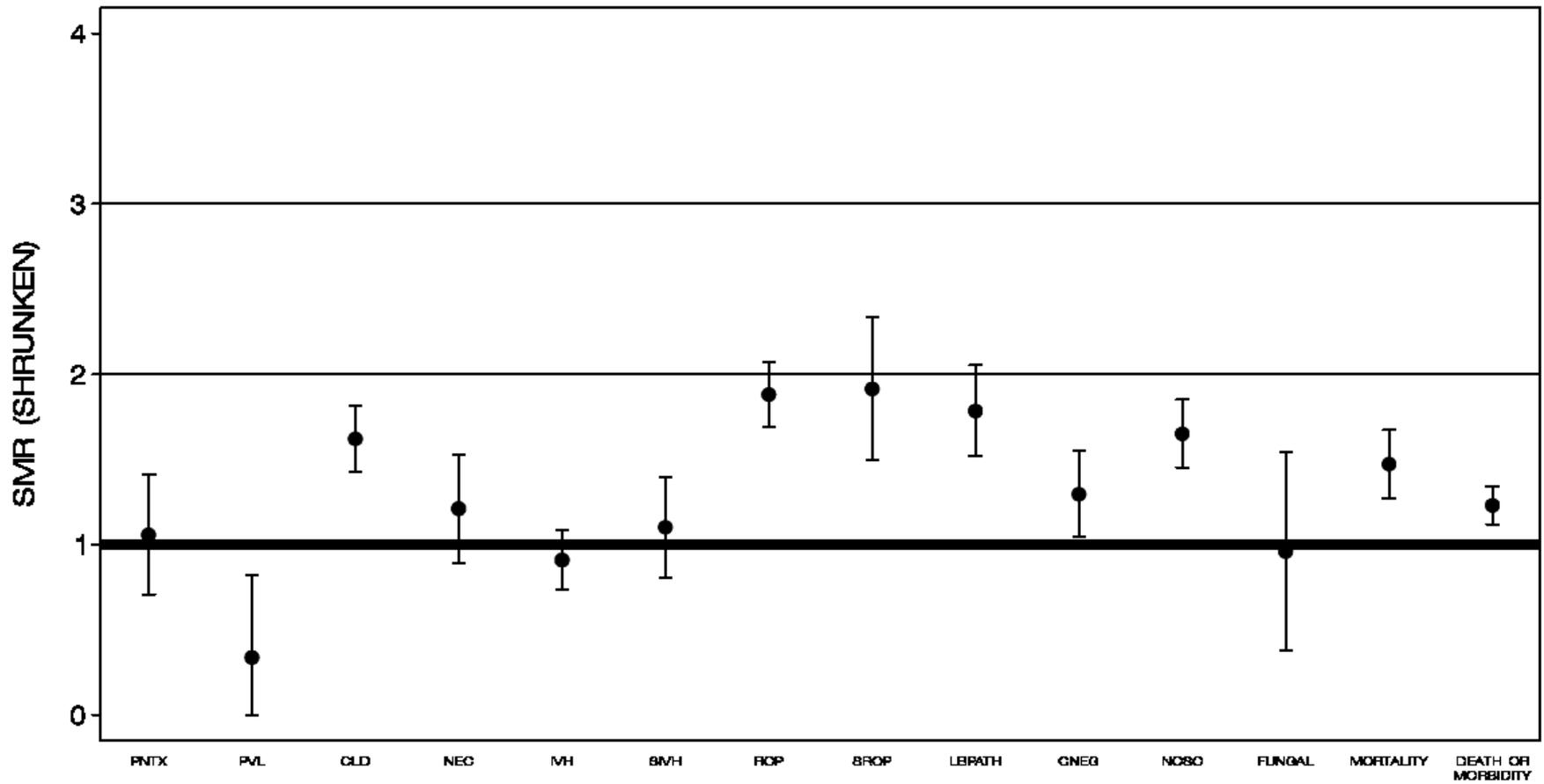
This infant also appears to have similar genetic disorder and placed on ventilator at birth for lack of breathing effort.

Two weeks into hospitalization, both parents were **arrested**, for speeding under influence and altercation with police, and **incarcerated**.

The parents were brought to the hospital in **shackles and cuffs** to discuss with specialists their infant's deteriorating condition

Life support was withdrawn soon after the discussion as the infant's condition was lethal and incurable.

STANDARDIZED MORBIDITY AND MORTALITY RATIOS (SMR), CENTER 362
SHRUNKEN ESTIMATES FOR THE THREE YEAR PERIOD 2002 TO 2004
INFANTS 501 TO 1500 GRAMS



VERTICAL BARS REPRESENT THE 95% CONFIDENCE INTERVAL FOR THE SMRs





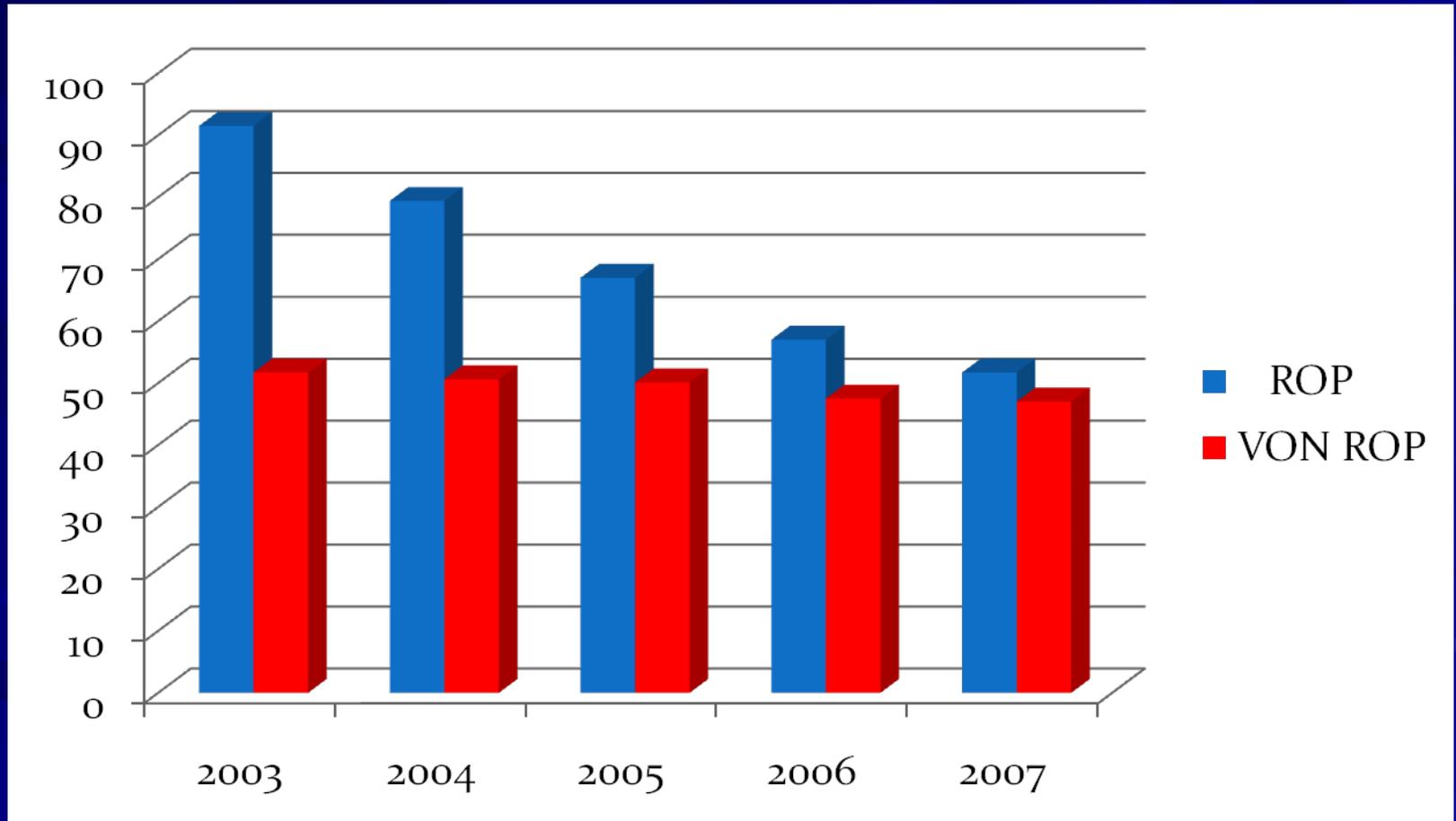




New oxygen monitoring guidelines

- Alarm **limits** were set at **85-95%** and target oxygen saturations at **90-95%** in all infants **≤1500 gm** birth weight requiring supplemental oxygen.
- Weaning no more than **2-5%** at a time, but could be done frequently until infant maintains oxygen saturations between 90-95% for more than 10 minutes.
- Increase FIO_2 by only **5-10%** if required after suctioning. Observe infant for 5-10 minutes after procedure and wean infant to base line FIO_2 .

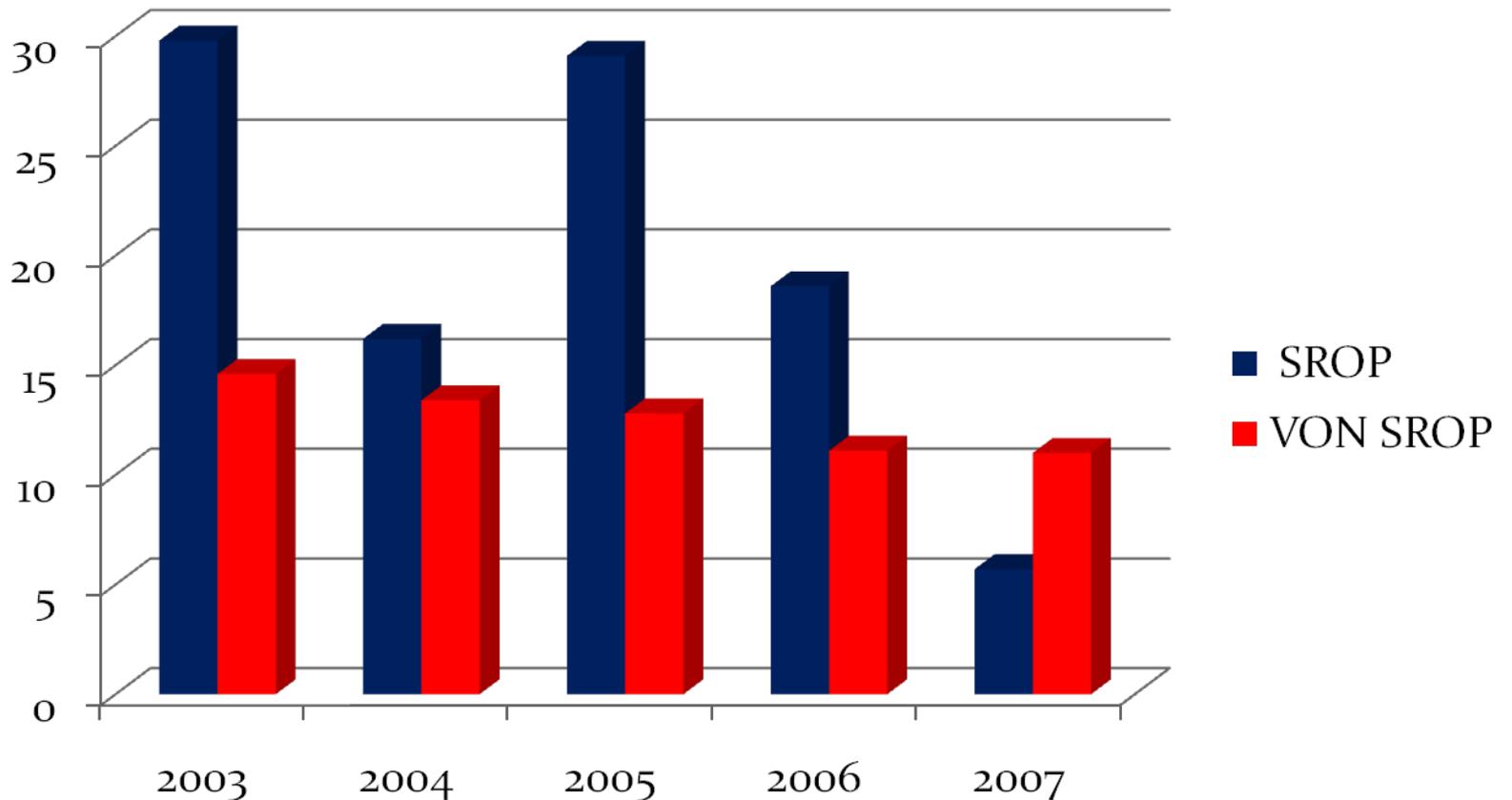
ROP vs. Vermont oxford network



Percent
ROP

Severe ROP vs. Vermont Oxford Network

Percent
Severe
ROP



Results

	2003-2005 (pre) N=213	2006(interv ention) N=87	2007(post) N=87
ROP	69%	56%	52%*
severe ROP	22%	18%	6%*
CLD	49%	33%	29%*

* $P < 0.0001$ compared to pre-intervention group

	2003-2005 (pre) N=213	2006(Intervention) N=87	2007 (post) N=87
ROP(SMR)	1.71(1.53-1.89)	1.14(0.88-1.41) *	1.27(0.99-1.55)*
Severe ROP(SMR)	2.24(1.83-2.65)	1.78(1.24-2.32)	0.82(0.22-1.43)*
CLD(SMR)	1.61(1.42-1.80)	0.97(0.70-1.25*	1.09(0.79-1.39)*

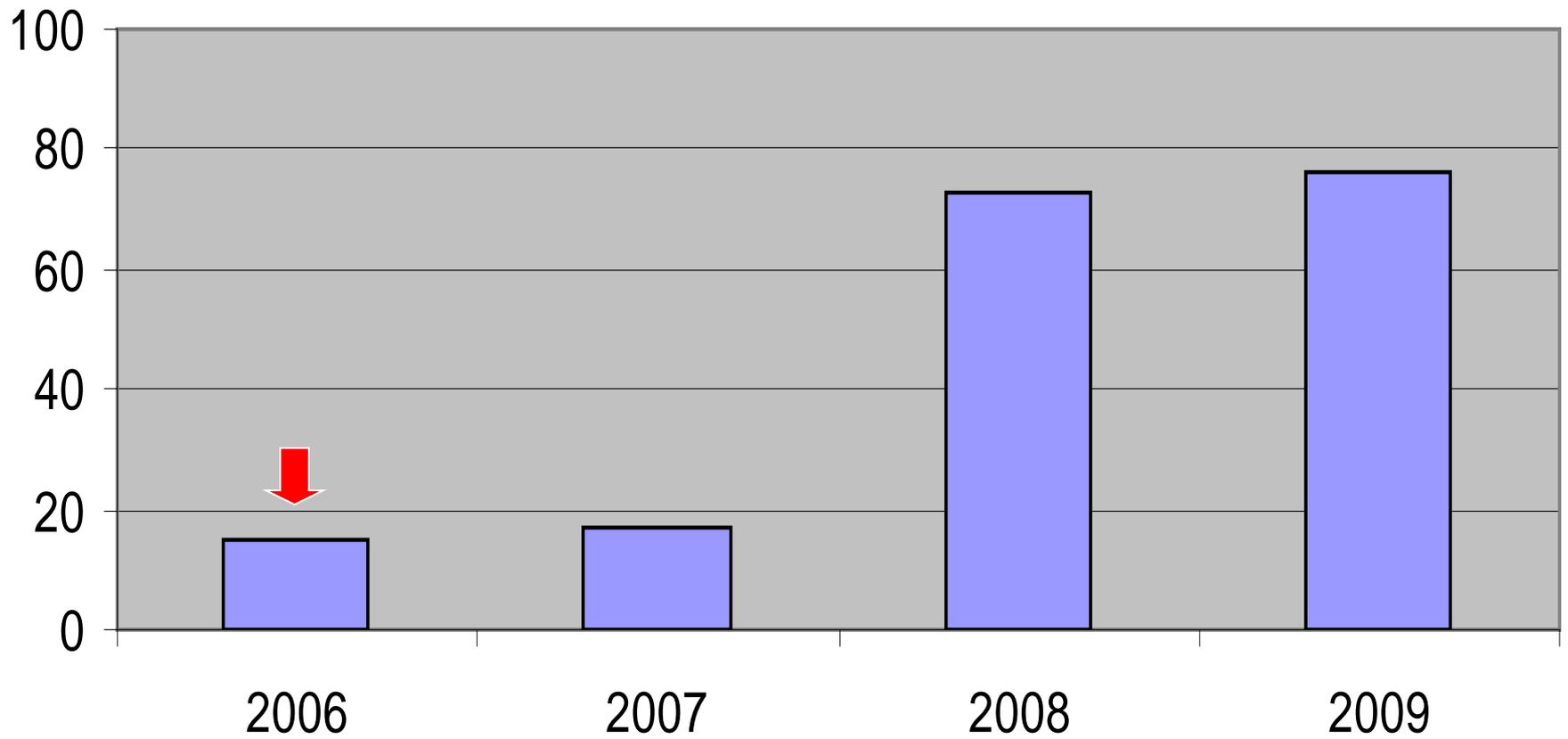
*SMR- Standardized Morbidity Ratio from risk adjusted outcome measures includes race, sex, multiple births, Apgars , birth defects, gestational age, birth location, comparable to Vermont Oxford Network database.

Lactation Support

- **April 2007** – Hired a dedicated Lactation Consultant
 - Daily rounds with dietitian, nurses, and physicians, one-one contact with mothers, persistent unit presence
- **June 2007** – Mandatory staff education on **breastfeeding**, human milk collection and storage, and implementation of policies and procedures.
- **February and March 2008** – replaced breast pumps with two phase double pumps and collaborated with **TennCare** to provide these to all NICU mothers
- **April 2008, August 2008, January 2009** – Various **conferences** with national speakers for physicians and nurses
- **August 2008** - Unit assessment by **national expert** on breastfeeding
- **March 2009** – Joined **TIPQC** and agreed to lead Tennessee in efforts to improve breastfeeding for NICU babies
- **April 2009** – Lactation Consultant expert presentation to Obstetricians for early information for mothers to breastfeed

Neonatal ICU Breastfeeding Rate

The Med



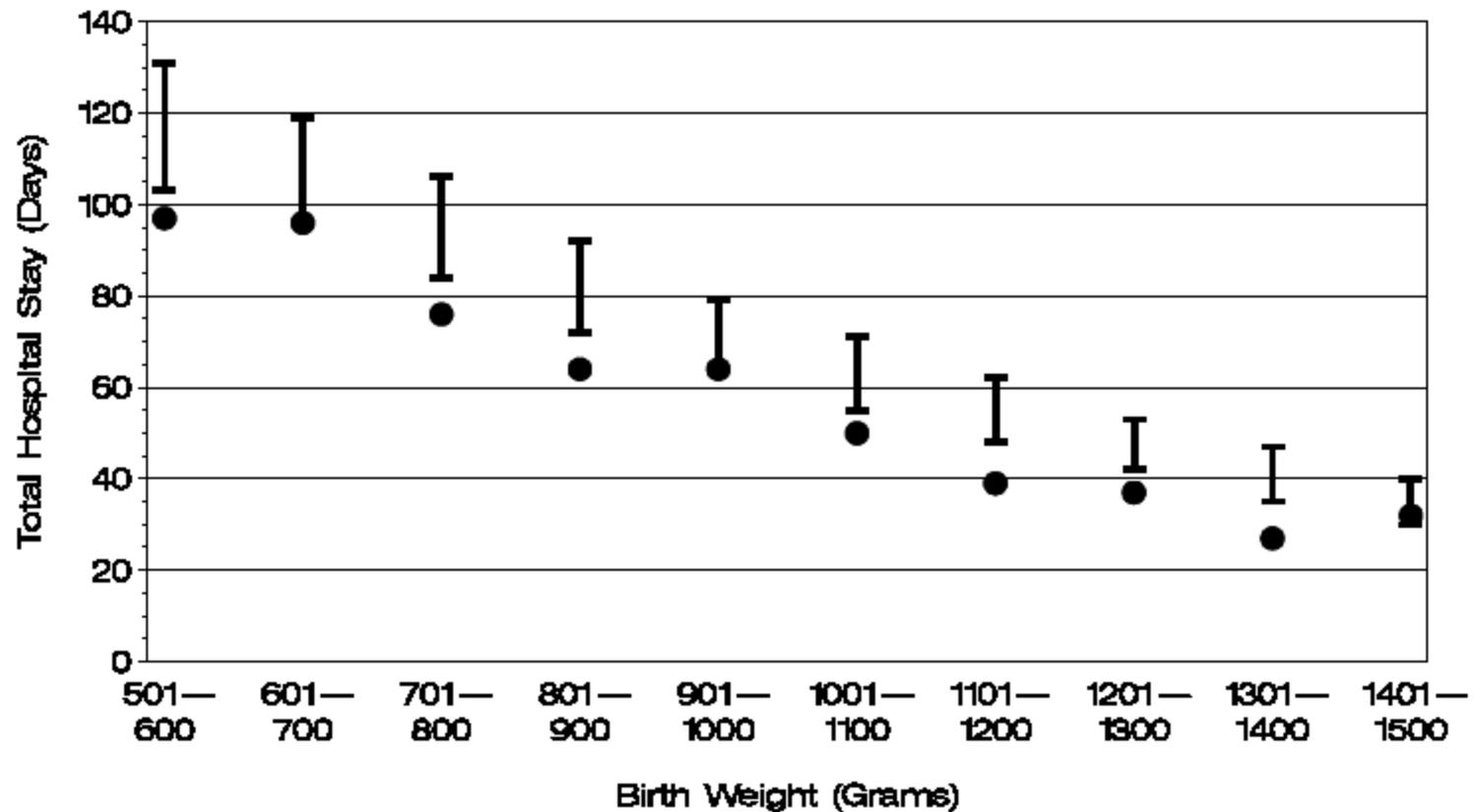
Center 362 and TIPQC - TN Values
Key Performance Measures - All VLBW Infants

Measure	Center (2007)			TIPQC - TN (2007)			
	Cases	N	%	N	%	Q1	Q3
Mortality	51	241	21.2%	1,432	14.7%	10.3%	18.9%
Death or Morbidity	129	241	53.5%	1,432	55.3%	47.4%	60.4%
Chronic Lung Disease	41	188	21.8%	1,215	31.7%	21.8%	35.1%
CLD, Infants < 33 Weeks	38	161	23.6%	1,136	33.2%	22.2%	35.1%
Pneumothorax	5	235	2.1%	1,421	3.9%	2.1%	4.8%
Late Bacterial Infection	31	212	14.6%	1,347	15.9%	7.3%	17.3%
Coagulase Negative Staph	41	212	19.3%	1,347	17.1%	10.9%	20.0%
Nosocomial Bacterial Infection	64	212	30.2%	1,347	26.4%	20.0%	27.7%
Fungal Infection	4	212	1.9%	1,347	1.6%	0.0%	2.4%
Any Late Infection	65	212	30.7%	1,347	26.9%	20.0%	28.3%
Intraventricular Hemorrhage	41	210	19.5%	1,316	32.0%	20.0%	40.0%
Severe IVH	14	210	6.7%	1,316	11.2%	7.5%	18.0%
ROP	58	155	37.4%	904	41.8%	20.0%	51.1%
Severe ROP	5	155	3.2%	904	7.2%	0.0%	11.1%
Cystic PVL	1	210	0.5%	1,325	2.9%	0.0%	5.0%
NEC	13	235	5.5%	1,421	10.1%	5.5%	13.8%
Extreme LOS (survivors only)	6	190	3.2%	1,221	3.8%	2.0%	5.3%

Vermont Oxford Network 2007 VLBW QMR for Center 362

MEDIAN TOTAL HOSPITAL STAY BY BIRTH WEIGHT

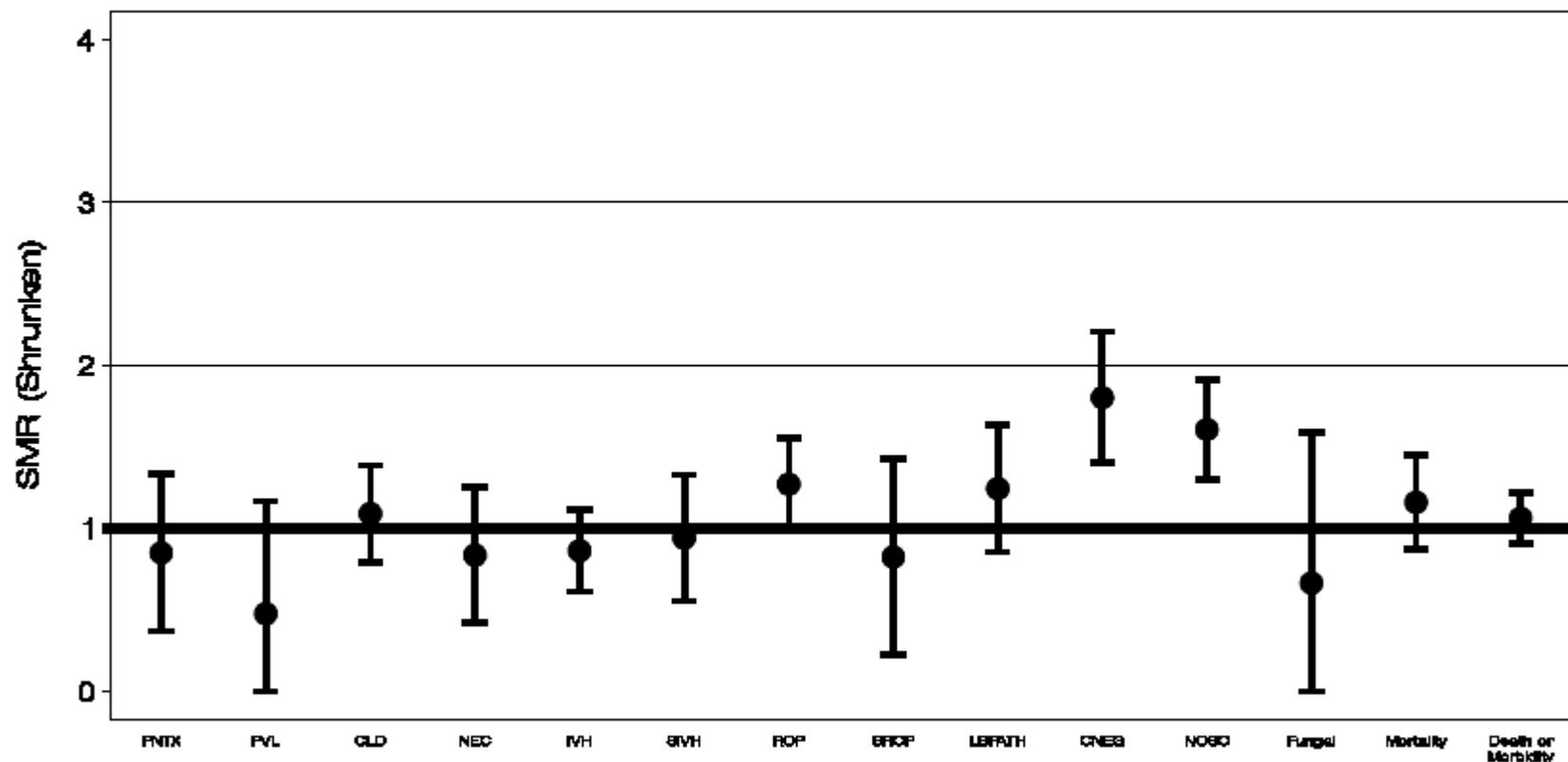
Surviving Infants 501–1500 Grams Born in 2007



Vertical bar represents Network quartiles at all data centers.

Vermont Oxford Network 2007 VLBW QMR for Center 362

SHRUNKEN STANDARDIZED MORBIDITY AND MORTALITY RATIOS (SMR)
Infants 501–1500 Grams Born in 2007



Vertical bars represent the 95% confidence interval for the SMRs.

