



Development & Evaluation of the Forthcoming AHRQ Neonatal Quality Measures

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Overview of the AHRQ Quality Indicators

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AHRQ Quality Indicators (QIs)

- **Pediatric Quality Indicators –**
 - Phase I
 - Adapted pre-existing AHRQ measures
 - Released February 2006
 - Phase II
 - Novel indicators
 - Researched existing pediatric measures
 - Focused on neonatal measures



Neonates: important & unique

- In CA (in 2000)
 - 437,500 hospital births
 - Over \$1.5 billion spent on hospital births
 - 2.1% of newborns weighed <2000g (highly probable NICU admissions)
 - Over \$730 million spent on infants weighing <2000g
- Medical concerns, risks of mortality & morbidity different in Neonates/NICU



AHRQ Neonatal QI development

- Literature review to identify previously developed quality measures from various researchers and organizations (e.g., the California Perinatal Quality Care Collaborative, JCAHO, CHCA, and the National Perinatal Information Center)
 - Grade III & IV intraventricular hemorrhage (IVH)
 - Retinopathy of prematurity (ROP)
 - Necrotizing enterocolitis (NEC)
 - Meconium aspiration syndromes (MAS)
 - Nosocomial blood stream infections (BSI)
 - Neonatal mortality



AHRQ Neonatal QI development

- **ICD-9-CM coding review**
 - To ensure correspondence between clinical concept and coding practice
- **Empirical analyses**
 - To explore alternative definitions
 - To assess nationwide rates and hospital variation
 - To develop methods to account for differences in risk
- **Dealing with Bias**
 - Exclude patients at risk for:
 - Complications present on admission
 - Non-preventable complications
 - Stratification – risk groupings



Clinical panel review

- Intended to establish consensual validity
- Modified RAND/UCLA Appropriateness Method (“nominal group” or “modified Delphi”)
- Panel included 3 neonatologists, 1 neonatal nurse, 2 perinatologists, 1 family physician nominated by national provider organizations
- All panelists rated all assigned indicators on:
 - Overall usefulness for quality improvement
 - Overall usefulness for public reporting
 - Likelihood of being preventable
 - Likelihood of being due to medical error or negligence
 - Likelihood of being clearly charted in medical records
 - Extent to which indicator is subject to case mix bias



Clinical panel process

- Pre-conference ratings; comments and suggestions solicited
- Individual ratings returned to panelists with distribution of ratings and other panelists' comments/suggestions
- 2-hour conference call moderated by non-clinician and attended by note-taker, focusing on high-variability items and panelists' suggestions
- Suggestions adopted only by consensus
- Post-conference ratings; comments and suggestions solicited



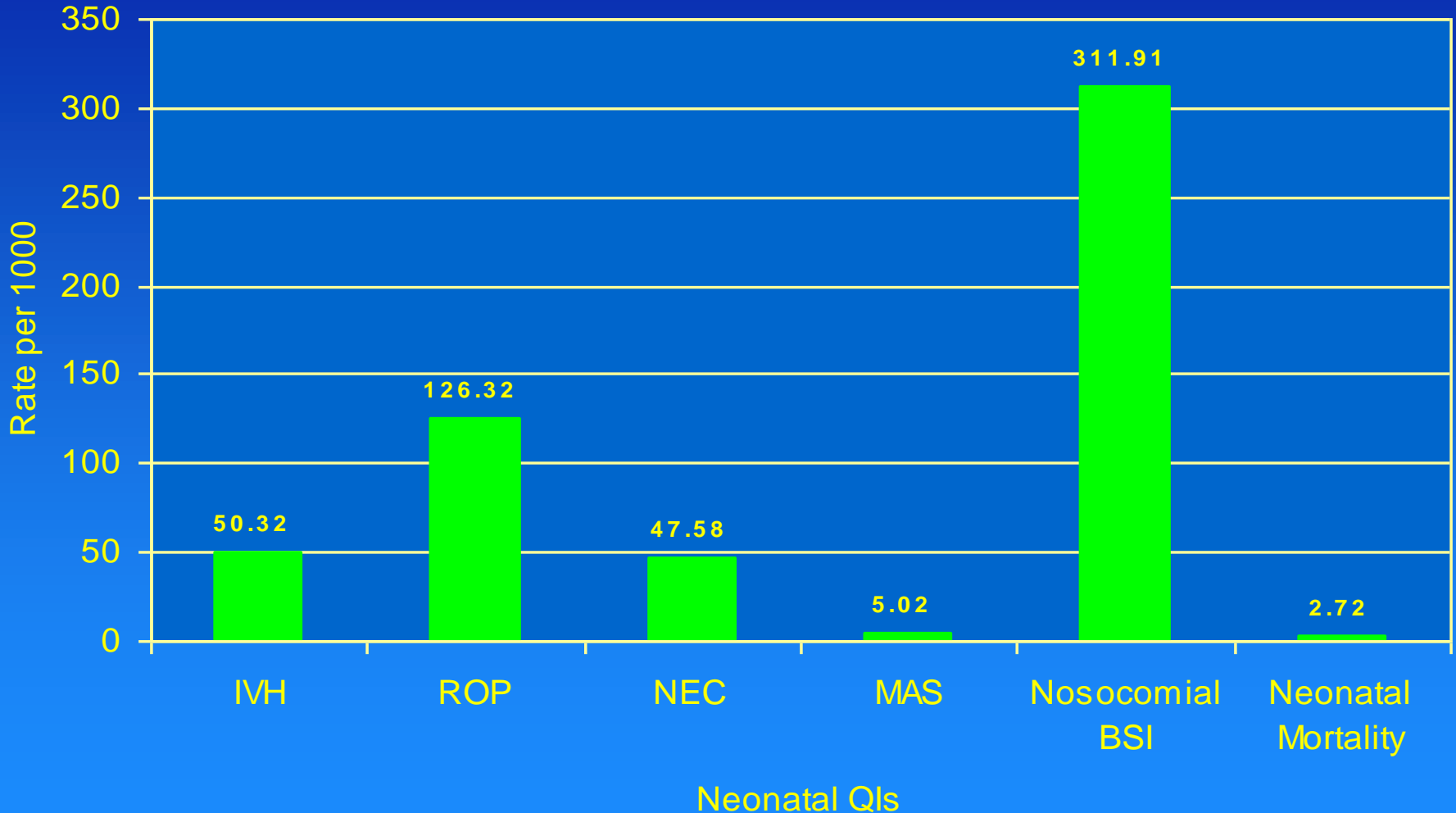
AHRQ Neonatal QIs – Brief Summary

Measure	Birthweight Limits		Inclusions		Exclusions	
	500-1499g	≥1500g	Inborns	Transfers (<2 d/o)	Principal Dx	Other
IVH (Grade III & IV)	Yes	No	Yes	No	No	Pts. transferred out at <1 week
ROP	Yes	No	Yes	Yes	No	Pts. transferred out, or died at <1 week
NEC	Yes	No	Yes	Yes	Yes	None
MAS	No	Yes	Yes	No	No	None
Nosocomial BSI	Yes	If death, major surgery, ventilation, or transfer in/out	Yes	Yes	Yes	Length of stay <2 days
Neonatal Mortality	Yes	Yes	Yes	Yes	No	1. Transfers to another hospital 2. Dx of Tri 13, or 18, anencephaly, & polycystic renal dz.



AHRQ Neonatal QI Rates: 2003 KID

Events per 1000 population at risk

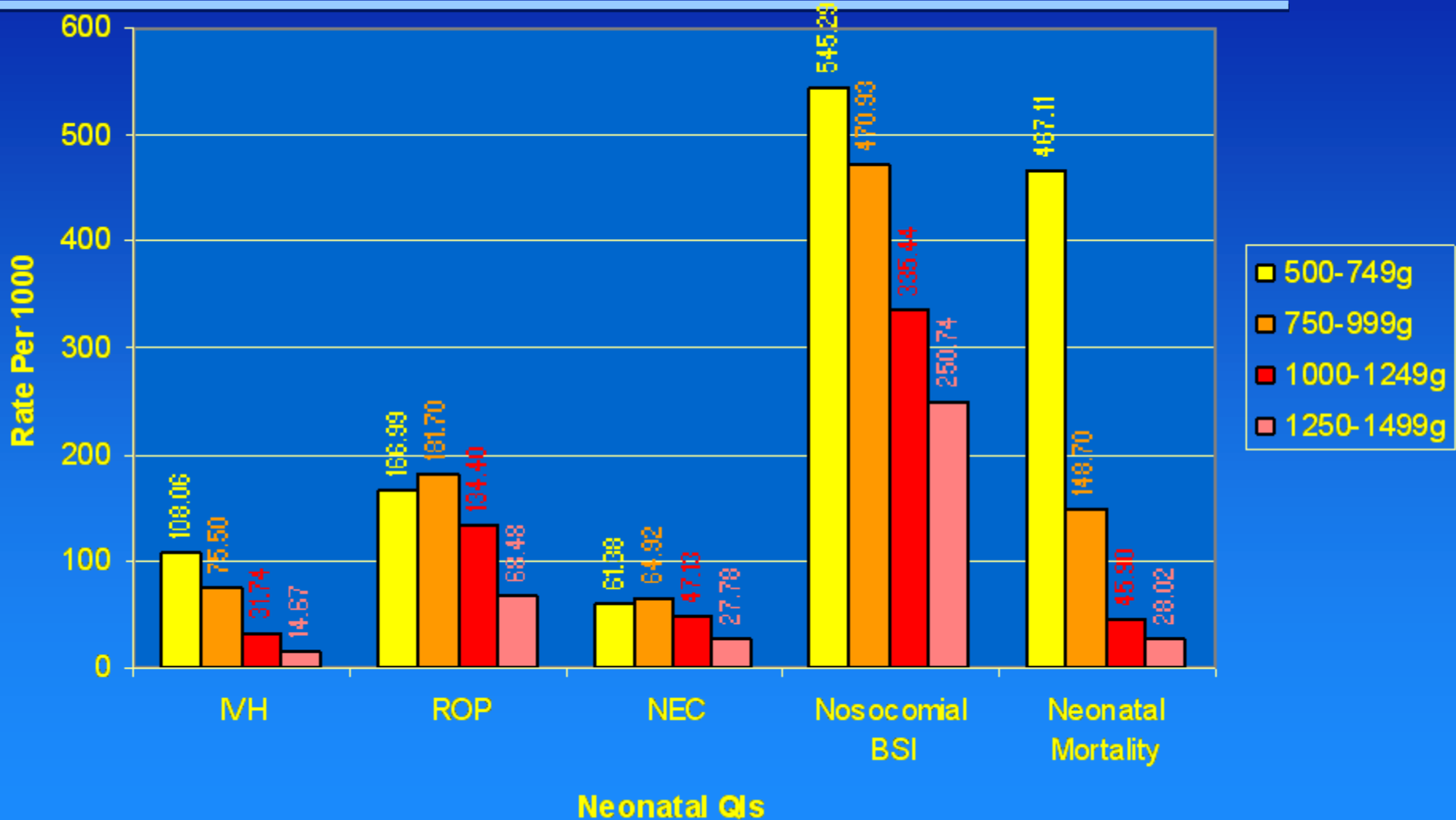


Kids' Inpatient Database 2003. AHRQ Healthcare Cost and Utilization Project.



AHRQ Neonatal QI Rates: 2003 KID

Events per 1000 population at risk – with birthweight groupings for <1500g





AHRQ Neonatal QIs: Ratings Process

Endorsement requirements - Median score of ≥ 7 (on 1-9 scale), without significant disagreement, on either of two questions:

Useful for quality improvement?

Useful for comparative reporting?

Measure	Quality Improvement?	Comparative Reporting?
IVH	7*	6.5
ROP	4	3
NEC	6	6
MAS	3	3
Nosocomial BSI	8	8
Neonatal Mortality	6	7

* Significant disagreement on ratings amongst panelists



Unendorsed Neonatal QIs: Concerns

- Uncertain preventability of the outcome
- Lack of specificity of existing ICD-9 codes
 - “Necrotizing enterocolitis” (777.5)
 - “Retrolental fibroplasia” (362.21)
- Limitations of administrative data (lack of detailed clinical information linked to uncertain diagnosis)



Risk Adjustment

- Risk adjustment under development
- Testing models based on:
 - Gender
 - Birthweight
 - Singleton vs. multiple
 - Congenital abnormalities
 - Grouped by risk



Conclusions & Implications

- AHRQ measures for nosocomial BSI and neonatal mortality are forthcoming
- Potential to help prioritize quality improvement efforts for neonates
- Non-endorsed measures have potential as research tools to identify and investigate “best practices”
- Coding changes are needed to improve the acceptability of other potential indicators



Future Work

- Further development on risk adjustment
- Official release anticipated Winter 2008
- Validation work using partnerships with providers
- Submission for NQF endorsement
- Propose coding changes



Acknowledgments

- Data used: KID 2003. Healthcare Cost and Utilization Project (HCUP), Agency for Healthcare Research and Quality.
- We gratefully acknowledge the data organizations in participating states that contributed data to HCUP that we used in this study: the Arizona Department of Health Services; California Office of Statewide Health and Development; Colorado Health and Hospital Association; CHIME, Inc. (Connecticut); Florida Agency for Health Care Administration; Georgia Hospital Association; Hawaii Health Information Corporation; Illinois Health Care Cost Containment Council; Iowa Hospital Association; Kansas Hospital Association; Maryland Health Services Cost Review Commission; Massachusetts Division of Health Care Finance and Policy; Missouri Hospital Industry Data Institute; New Jersey Department of Health and Senior Services; New York State Department of Health; Oregon Association of Hospitals and Health Systems; Pennsylvania Health Care Cost Containment Council; South Carolina State Budget and Control Board; Tennessee Hospital Association; Utah Department of Health; Washington State Department of Health; and Wisconsin Department of Health and Family Services.