

# **FIMMRR**

## **Fetal/Infant Mortality & Morbidity Review Registry**

### **A Potential New Public Health Tool**

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# FIMMRR

**As obliged, and as in most  
presentations on Public  
Health topics,**

**“No Conflict of Interest”**

# FIMMRR

## OBJECTIVES

At the conclusion of this talk, participants will be able to:

- ❖ Describe how perinatal sentinel events can be identified, reviewed and tabulated in a database.
- ❖ Describe how the analysis of the tabulated data can identify risk factors that justify interventions.
- ❖ Discuss how monitoring the database over time can measure the impact of interventions.

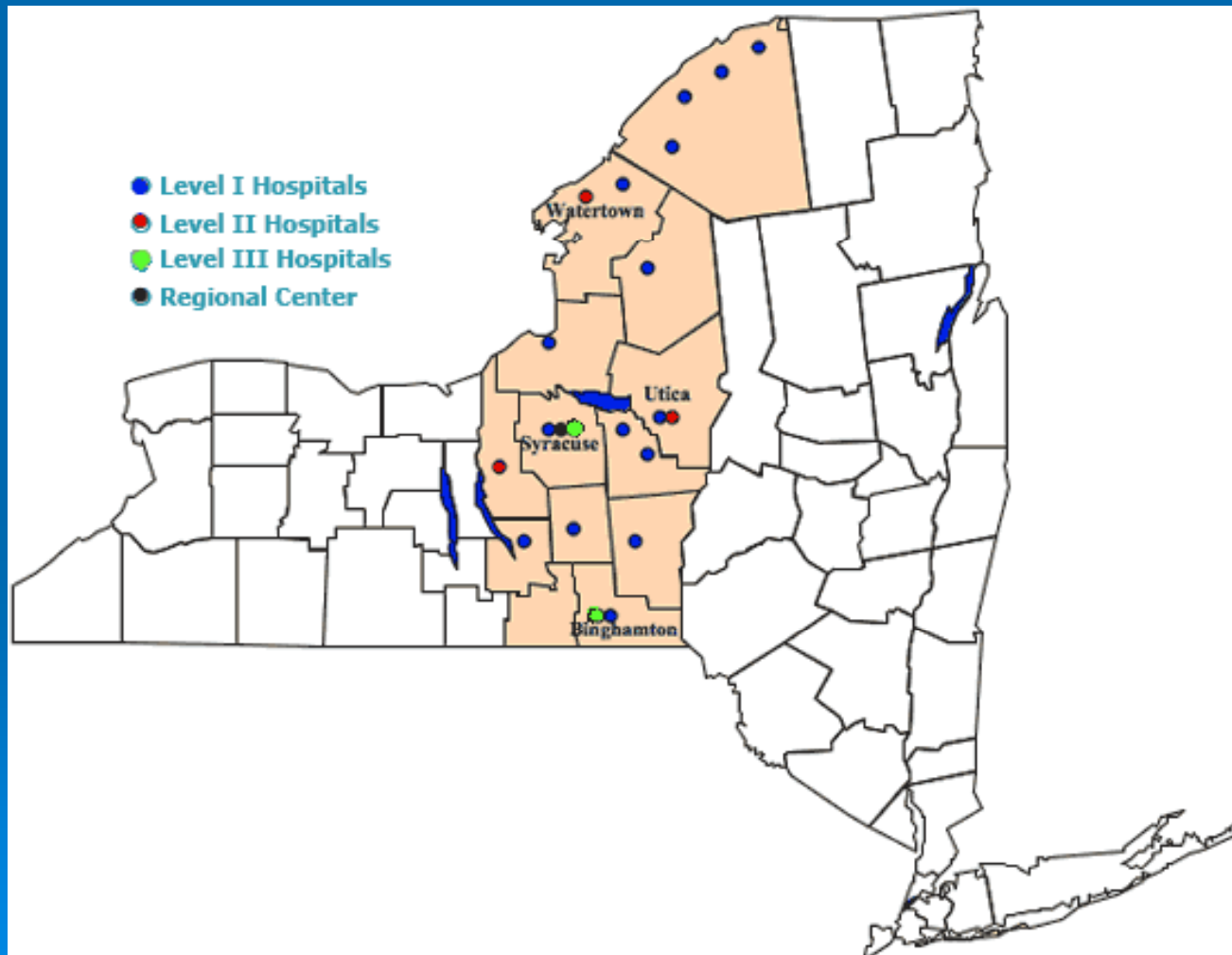
# FIMMRR

## Definition

- F - Fetal
- I - Infant
- M - Mortality
- (M) - Morbidity
- R - Review
- (R) - Registry

# FIMMRR

The Central New York Region consists of a 13 county area spanning from St. Lawrence County in the North to Broome and Tioga counties in the South and includes 21 birth hospitals.



# FIMMRR

## THE COMPONENTS OF THE CHALLENGE

- Intra-Uterine Fetal Death (IUFD) -  $\geq 20$  wks gestation and without voluntary terminations of pregnancy
- Neonatal Death (NND) -  $\leq 28$  days
- Perinatal Mortality (IUFD+ NND) - 20 weeks gestation - 28 days
- Post Neonatal Death (P-NND) - 29 - 365 days
- Infant Mortality (NND+P-NND) - Birth to 365 days
- Extremely Low Birth Weight (ELBW) -  $< 1,000$  grams

# FIMMRR

## MORE DETAILS

- **Deaths are based on year of birth**
- **Deaths are only for live births and fetal deaths  $\geq 300$  grams**
- **Deaths are only for live births and fetal deaths  $\geq 20$  weeks gestation**
- **Post-discharge infant mortality may be incomplete because of a lack of a mechanism for 100% ascertainment**

# FIMMRR

## Concept

- Detailed, accurate data on each poor outcome
- De-identified regarding patient and provider
- Primary records reviewed for completeness/accuracy
- Entered into anonymous Registry
- Standard reports and analyses are fed back to Hospital QA and through them to providers
- Summary reports also made to relevant health agencies
- Certain analyses have significant Public Health implications
  - for example:



# FIMMRR

Preliminary Report. Not for release without permission.

Deaths among infants born 1/1/2006 to 12/31/2010 Weight  $\geq$  300 grams and Gestational Age  $\geq$  20 weeks only.

Central New York Region	Year of Birth		
	2006-2008	2007-2009	2008-2010
Live Births (LB)	58798	58938	58374
Total Live Births (LB) + Fetal Deaths (FD)	59175	59338	58763
FD rate/1000 LB + FD	6.4	6.8	6.7
NND rate/1000 LB	3.7	3.9	3.5
Perinatal Mortality rate/1000 LB + FD	10.1	10.7	10.1
Post Neonatal Mortality rate/1000 LB*	0.9	0.9	0.9
Infant Mortality rate/1000 LB*	4.6	4.8	4.4
*Incomplete ascertainment of Post-Neonatal Deaths			

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Deaths among infants born 1/1/2006 to 12/31/2010; Weight  $\geq$  300 grams and Gestational Age  $\geq$  20 weeks only.

Central New York Region	Year of Birth		
	2006-2008	2007-2009	2008-2010
Race: White			
Live Births (LB)	49981	49813	49097
Total Live Births (LB) + Fetal Deaths (FD)	50271	50126	49398
FD rate/1000 LB + FD	5.8	6.3	6.1
NND rate/1000 LB	3.2	3.3	3.0
Perinatal Mortality rate/1000 LB + FD	9.0	9.6	9.1
Post Neonatal Mortality rate/1000 LB*	0.8	0.7	0.7
Infant Mortality rate/1000 LB*	4.0	4.0	3.7
*Incomplete ascertainment of Post-Neonatal Deaths			

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Deaths among infants born 1/1/2006 to 12/31/2010. Weight  $\geq$  300 grams and Gestational Age  $\geq$  20 weeks only.

Central New York Region	Year of Birth		
	2006-2008	2007-2009	2008-2010
Race: Black			
Live Births (LB)	4307	4396	4298
Total Live Births (LB) + Fetal Deaths (FD)	4373	4462	4363
FD rate/1000 LB + FD	15.3	15.0	15.1
NND rate/1000 LB	11.3	11.5	9.0
Perinatal Mortality rate/1000 LB + FD	26.5	26.4	24.0
Post Neonatal Mortality rate/1000 LB*	3.1	3.7	4.5
Infant Mortality rate/1000 LB*	14.4	15.2	13.5
*Incomplete ascertainment of Post-Neonatal Deaths			

# FIMMRR

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Central New York Region	Year of Birth		
	2006-2008	2007-2009	2008-2010
Disparity B/W			
FD rate/1000 LB + FD	2.6	2.4	2.5
NND rate/1000 LB	3.5	3.5	3.0
Perinatal Mortality rate/1000 LB + FD	2.9	2.8	2.6
Post Neonatal Mortality rate/1000 LB*	3.9	5.3	6.4
Infant Mortality rate/1000 LB*	3.6	3.8	3.6
*Incomplete ascertainment of Post-Neonatal Deaths			

# FIMMRR

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Dominant Cause of Death	Fetal Deaths (n=635)	Percent
<b>Abruptio Placenta/Infarct</b>	<b>153</b>	<b>24.1%</b>
Fetal Anomaly/Chromosomal Abnormality	105	16.5%
Cord Accident/Cord Prolapse	60	9.4%
Extreme Prematurity/ Immaturity	44	6.9%
Chorioamnionitis	42	6.6%
Twin-Twin Transfusion Syndrome	29	4.6%
Feto-Maternal Hemorrhage	19	3.0%
Intrauterine Growth Restriction	12	1.9%
Chronic Hypertension/Preeclampsia	10	1.6%
Diabetes	10	1.6%
Perinatal TORCH	8	1.3%
Ruptured Uterus	8	1.3%
Non-Immune Hydrops	6	0.9%
Intrapartal asphyxia	5	0.8%
Other	20	3.1%
Unexplained	104	16.4%

# FIMMRR

- **Among patients with placental abruption with IUFD, 47% were smokers.**
- **Among patients with placental abruption with or without IUFD, 36% were smokers.**
- **Among mothers who smoked, 1.3% had placental abruption.**
- **Among mothers who did not smoke, 0.6% had placental abruption.**
- **Population attributable risk calculation shows that 19% of placental abruption could be eliminated if smoking were eliminated.**



**SMOKING INTERVENTION IS JUSTIFIED**

# FIMMRR

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<b>Dominant Cause of Death</b>	<b>Neonatal Deaths (n=354)</b>	<b>Percent</b>
Overwhelming Immaturity	185	52.3%
Congenital Anomaly/Chromosomal Abnormality	88	24.9%
Sepsis/Viral	30	8.5%
Perinatal Asphyxia	11	3.1%
CNS Hemorrhage	7	1.9%
SUID/Trauma/Accident	6	1.7%
Hyaline Membrane Disease	5	1.4%
Other	21	5.9%
Unexplained	1	0.3%

# FIMMRR

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<b>Dominant Cause of Death</b> Among infants born 2006-2009 to Residents of Onondaga County Only	<b>Post-Neonatal Deaths (n=46)</b>	<b>Percent</b>
<b>Sudden Unexpected Infant Death (SUID)</b>	<b>26</b>	<b>56.5%</b>
Congenital Anomaly/Chromosomal Abnormality	9	19.6%
Sepsis	4	8.7%
Metabolic Disease	2	4.3%
Overwhelming Immaturity	1	2.2%
Trauma/accident	1	2.2%
Other	3	6.5%



# FIMMRR

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<b>Sudden Unexpected Infant Death (SUID)</b>	<b>n=26</b>	<b>Percent</b>
<b>Unsafe Sleep Environment</b>	<b>23</b>	<b>88.5%</b>
Bed /Sleep Surface Sharing	16	
Bedding Problems	10	
Prone Sleeping	7	
SIDS	2	7.7%
Hyperthermia	1	3.8%
Other Associated Risk Factors		
Smoking in Household	15	57.7%
Substance Abuse in Household	9	34.6%

# FIMMRR

- **The major cause of Post Neonatal Infant Death is SUID.**
- **The proportion of them among Black infants is greater than would be expected.**
- **The rate of Post Neonatal Infant Mortality is increasing among Black infants.**



**SAFE SLEEP INTERVENTION IS JUSTIFIED**  
**including special attention to the Black community**

# FIMMRR SUMMARY

- **FIMMRR is a do-able expansion of the Vital Records approach to public health assessment and monitoring of maternal and infant health.**
- **Especially valuable when used in conjunction with the Statewide Perinatal Data System (SPDS).**
- **Could/should be used for public health research and education.**

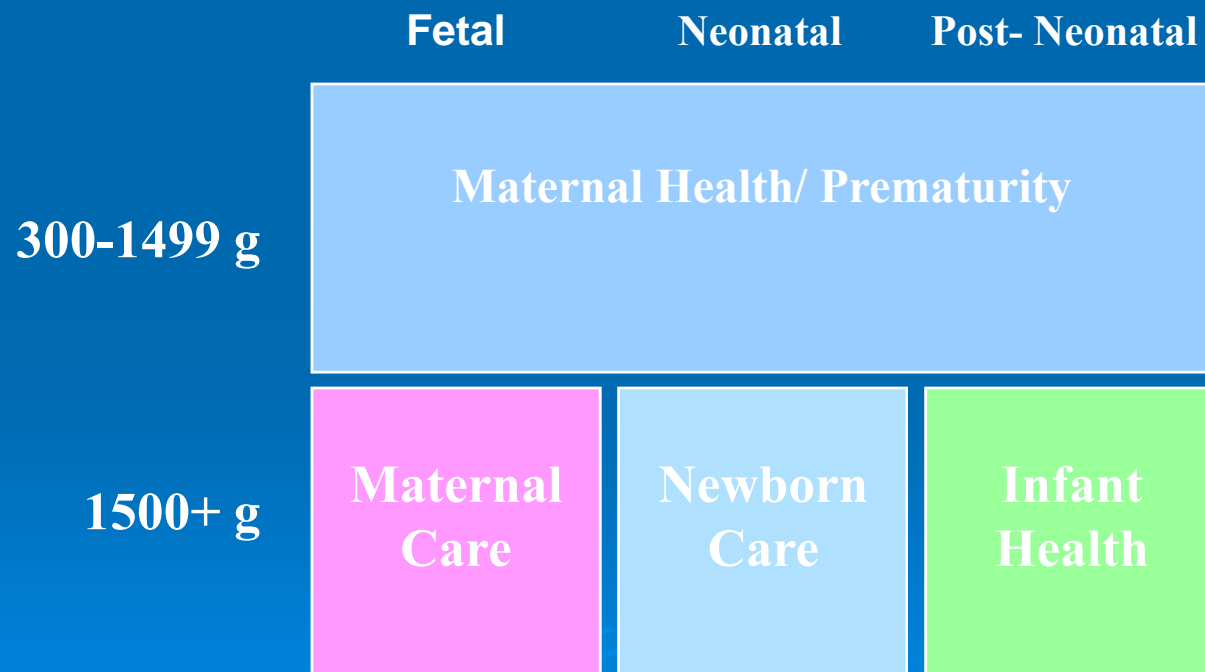
# THANK YOU!

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# The cells in the PPOR MAP HELP INDICATE THE ACTIONS NEEDED

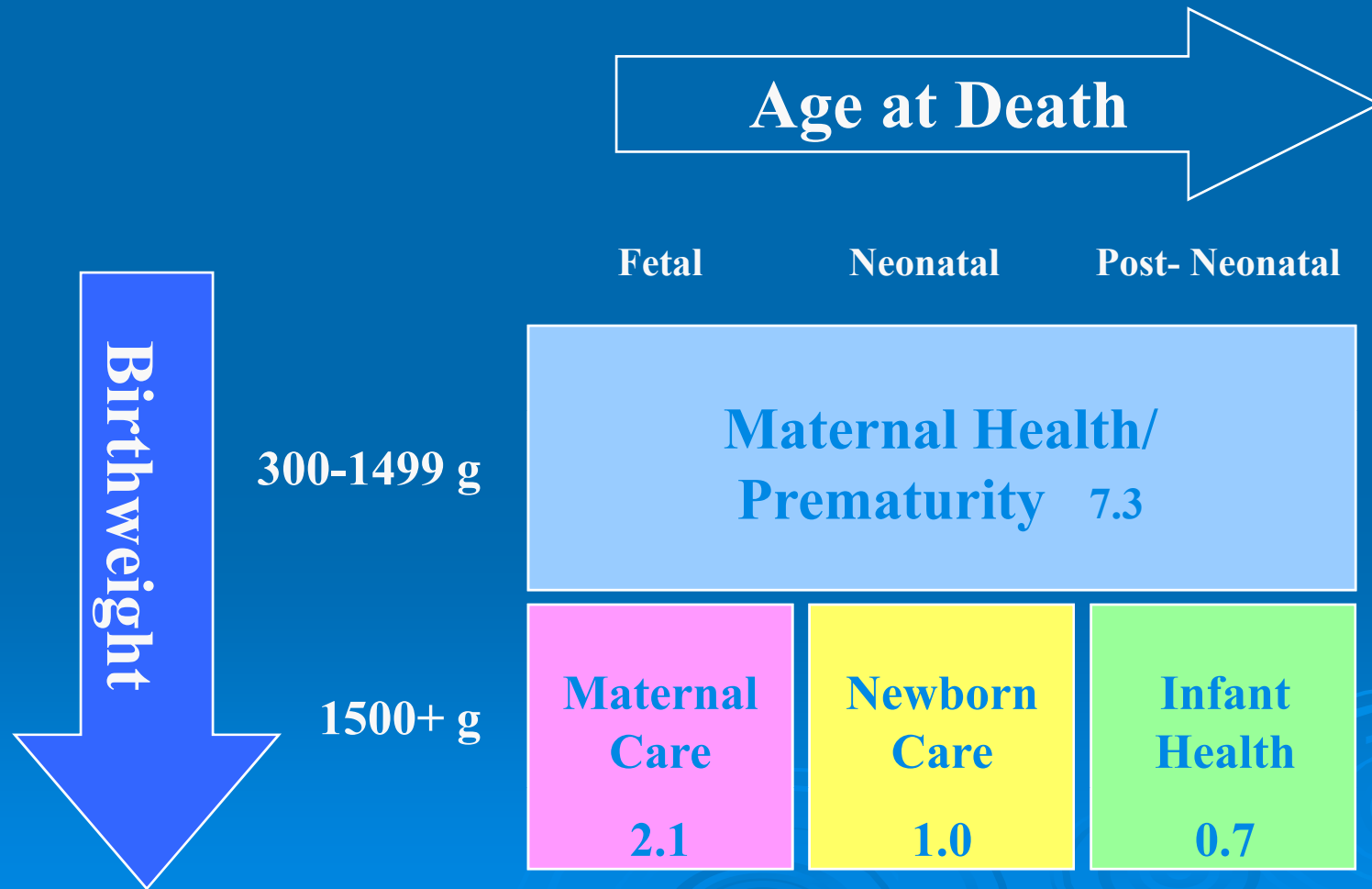


These four groups are given labels that suggest the primary preventive direction for the deaths in that group.

# Map of Fetal-Infant Mortality Rates

Central New York Region 2006-2009  $\geq 300$  grams only

**Overall Fetal-Infant Mortality Rate 11.1** per 1,000 Live Births & Fetal Deaths



# From Data to Potential Action

