## **Use of Telemedicine in Perinatal Care**

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## **Disclosure Statement**

### Dr. Sanjay Mitra

Financial— No relevant financial relationship exists.

*Nonfinancial* — Central Advisor Council Member for WV Perinatal Partnership: Receives no compensation as member of this council.

### Cathy Richards, RN, EMT-P, MCCN

Financial— No relevant financial relationship exists

Nonfinancial— No relevant nonfinancial relationship exists.

### Christy Dixon, RRT, RN

*Financial*— No relevant financial relationship exists *Nonfinancial*— No relevant nonfinancial relationship exists.

# Objectives

- \* Health Care disparity in Perinatal Care
- \* Perinatal Care Status & Outcome in the state of West Virginia
- \* Review of the Golden Hour
- Technology in transport to overcome some of the barriers

## WV Statistics

- \* Almost 21,000 babies are born in the state of West Virginia every year.
- \* 40% of live births occur in three statewide level III/IV care perinatal center.
- \* 73 % of the birthing centers in the state have less than 750 deliveries /year.
- \* Almost 8 to 10 % of newborn infants in the state are admitted to level III/IV care NICU.

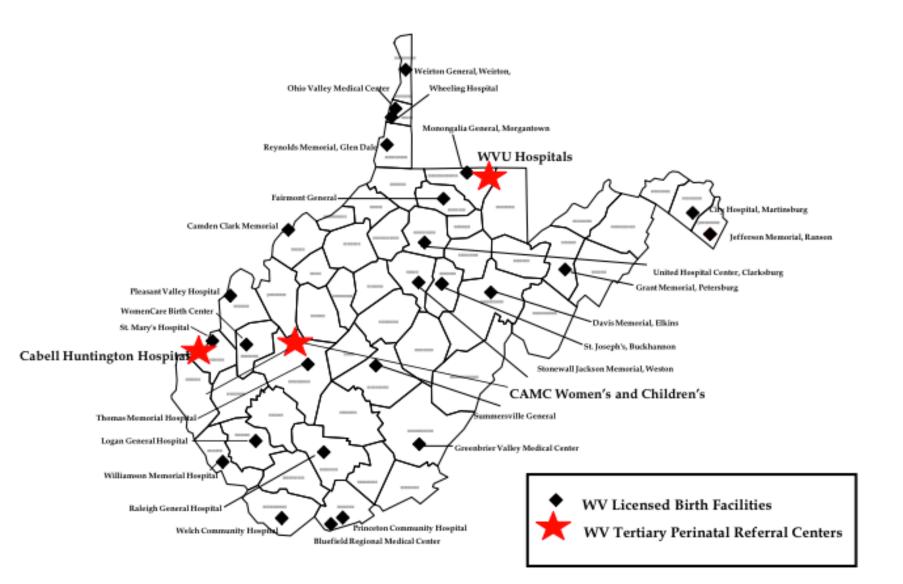
# Definition

- Health disparities are preventable differences in the burden of disease, injury, violence, or opportunities to achieve optimal health that are experienced by socially disadvantaged populations.
- Populations can be defined by factors such as race or ethnicity, gender, education or income, disability, geographic location (e.g., rural or urban), or sexual orientation.

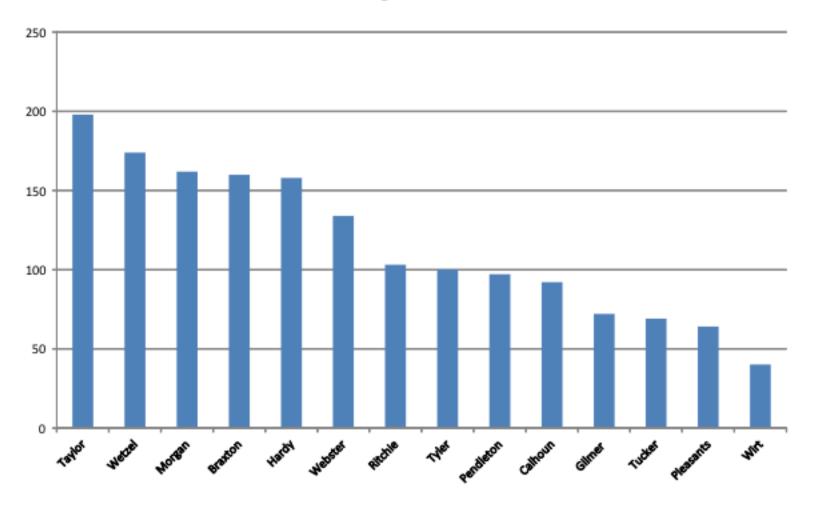
# Factors causing Health disparity

- \* Poverty
- \* Environmental threats
- \* Inadequate access to health care
- \* Individual and behavioral factors
- \* Educational inequalities

#### Locations of West Virginia Licensed Birth Facilities in 2012

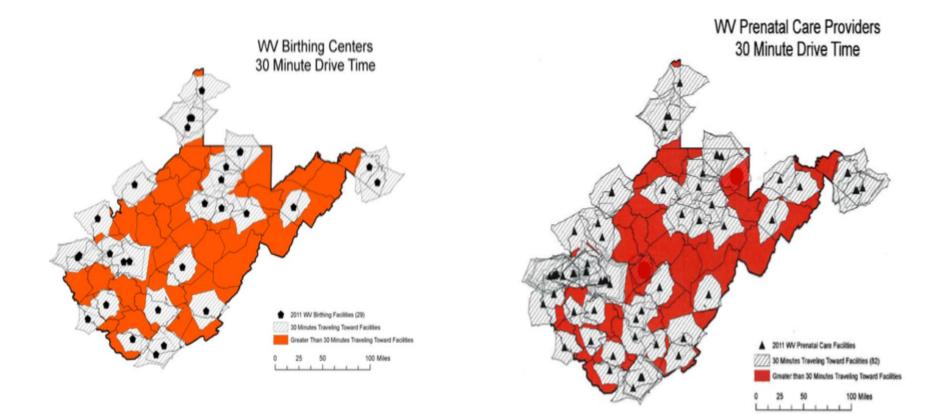


## Number of Births in Counties with No Maternity Services in 2009

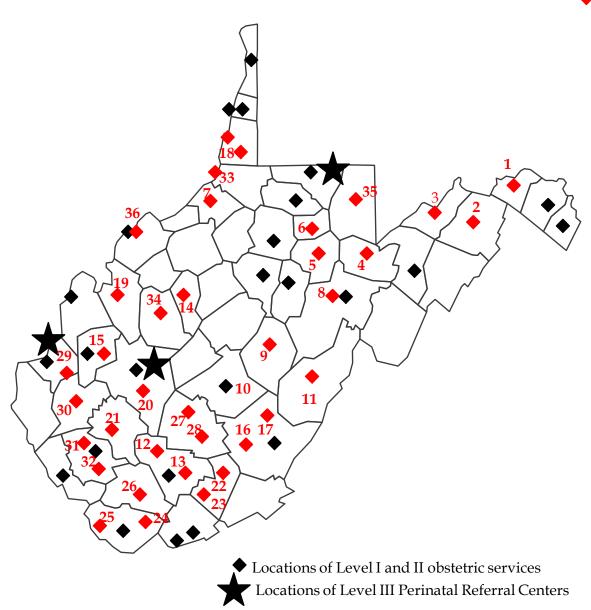


2013 WV Births by Hospital					
Hospital	# Births	Hospital	# Births		
Appalachian Regional	57	Princeton Community Hospital	697		
Berkeley Medical Center	1,101	Raleigh General Hospital	1,275		
Bluefield Regional	622	Reynolds Memorial Hospital	96		
Cabell Huntington	2,733	Ruby Memorial Hospital	1,571		
Camden Clark	1,707	St. Mary's Hospital	398		
САМС	2,669	St. Joe's (Buckhannon) Hospital	295		
Davis Memorial	331	Stonewall Jackson Hospital	314		
Fairmont General	419	Summersville Regional Med. Ctr	316		
Garrett County Memorial	280	Thomas Memorial Hospital	1,085		
Grant Memorial	263	United Hospital Center	986		
Greenbrier Valley Medical Ctr	571	Weirton Medical Center	571		
Jefferson Memorial	257	Welch Emergency Hospital	70		
Logan Regional	332	Wheeling Hospital	1,275		
Monongalia General	1,088	Williamson Memorial Hospital	100		
Ohio Valley Medical Center	303	Woman Care	7		
Pleasant Valley	146				

# Maternal Health Provider Shortage Areas

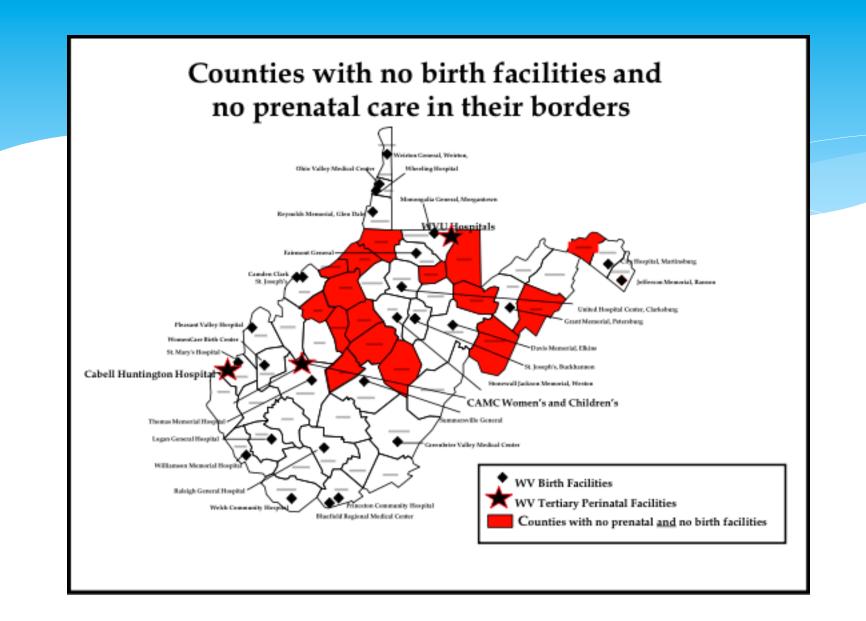


## Locations of Open and Closed Birth Facilities



#### Birth Facilities That Have Closed Since 1976

- 1. Morgan City War Memorial
- 2. Hampshire Memorial
- 3. Potomac Valley Hospital
- 4. Tucker County Hospital
- 5. Broaddus Hospital
- 6. Grafton City Hospital
- 7. Sistersville General Hospital
- 8. Memorial General Hospital, Elkins
- 9. Webster County Hospital?
- 10. Richwood Community Hospital?
- 11. Pocahontas Memorial Hospital
- **12.** New River Birth Center
- 13. Appalachian Regional Hospital
- 14. Calhoun General Hospital
- 15. Putnam General Hospital
- 16. WVSOM Birth Center
- 17. Rainelle Medical Center Birth Center
- 18. Dr. Vincent's Birth Center
- 19. Jackson General Hospital (2004)
- 20. Women's Health Center Birth Center
- 21. Boone Memorial Hospital
- 22. Hinton Hospital
- 23. Summers County Hospital
- 24. Stevens Clinic
- 25. Doctors' Memorial
- 26. Wyoming General Hospital
- 27. Montgomery General
- 28. Oak Hill Hospital
- 29. Guthrie Hospital
- 30. Lincoln County Clinic
- 31. Holden Hospital
- 32. Man Appalachian Regional
- 33. Wetzel County Hospital (closed 2006)
- 34. Roane General Hospital (closed 2009)
- 35. Preston Memorial Hospital (Closed 2011)
- 36. St. Josephs, Hospital Wood County merged with Camden Clark Memorial Hospital
- 37. Reynolds Memorial Hospital (2012)



# Prenatal Care Shortage Areas delivering at Stonewall Jackson

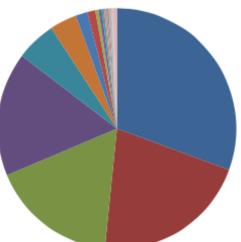
Levell

### Braxton

### Gilmore

#### WV Locations Where Braxton Women Gave Birth

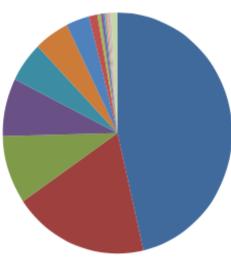
2004-2009



#### Stonewall Jackson Memorial Hospital

- C.A.M.C. Women & Children's Hospital
- St. Joseph's Hospital (Upshur)
- Summersville Memorial Hospital
- United Hospital Center
- WVU Hospitals, Inc.
- Thomas Memorial Hospital
- Raleigh General Hospital
- Cabell-Huntington Hospital
- Roane General Hospital
- Monongalia General Hospital
- Braxton County Memorial Hospital
- Fairmont General Hospital

#### WV Locations Where Gilmer Women Gave Birth 2004-2009

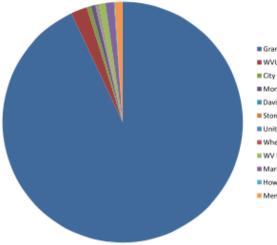


- Stonewall Jackson Memorial Hospital
- St. Joseph's Hospital (Upshur)
- United Hospital Center
- WVU Hospitals, Inc.
- C.A.M.C. Women & Children's Hospital
- Camden-Clark Memorial Hospital
- Roane General Hospital
- Fairmont General Hospital
- Summersville Memorial Hospital
- Thomas Memorial Hospital

# Prenatal Care Shortage Areas delivering at Grant Memorial Levell

### Hardy

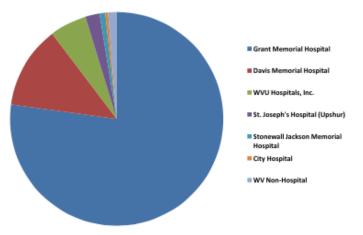
WV Locations Where Hardy Women Gave Birth 2004-2009



- Grant Memorial Hospital
- WVU Hospitals, Inc.
- City Hospital
- Monongalia General Hospital
- Davis Memorial Hospital
- Stonewall Jackson Memorial Hospital
- United Hospital Center
- Wheeling Hospital
- WV Non-Hospital
- Maryland:
- Howard County General Hospital, Inc.
- Memorial Hospital of Cumberland, Inc.

### Pendleton

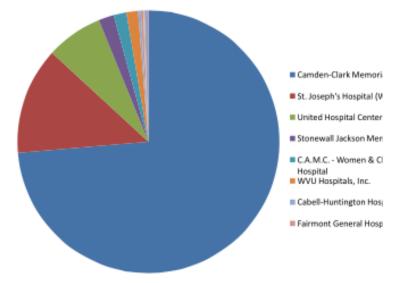
#### WV Locations Where Pendleton Women Gave Birth 2004-2009



# Prenatal Care Shortage Areas delivering at Camden Clark Level I

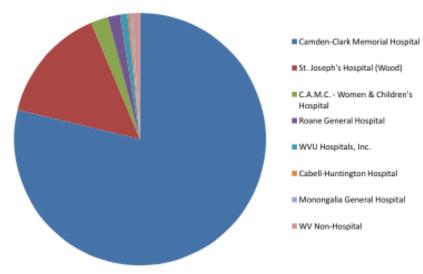
### Richie

#### WV Locations Where Ritchie Women Gave Birth 2004-2009



#### WV Locations Where Wirt Women Gave Birth 2004-2009

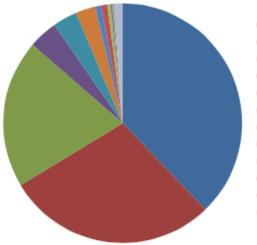
Wirt



# Prenatal Care Shortage Areas delivering at Camden Clark Level I

### Calhoun

#### WV Locations Where Calhoun Women Gave Birth 2004-2009

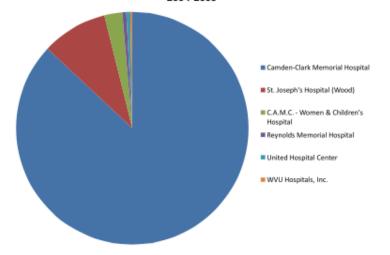


#### Camden-Clark Memorial Hospital

- Roane General Hospital
- C.A.M.C. Women & Children's Hospital
- St. Joseph's Hospital (Wood)
- Stonewall Jackson Memorial Hospital
- Thomas Memorial Hospital
- United Hospital Center
- WVU Hospitals, Inc.
- Cabell-Huntington Hospital
- Greenbrier Valley Hospital
- Ohio Valley Medical Center
- St. Joseph's Hospital (Upshur)

#### WV Locations Where Pleasants Women Gave Birth 2004-2009

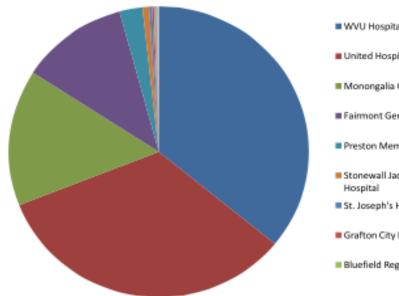
Pleasants



# Prenatal Care Shortage Areas delivering at UHC Levell

### Taylor

WV Locations Where Taylor Women Gave Birth 2004-2009



WVU Hospitals, Inc.

- United Hospital Center
- Monongalia General Hospital
- Fairmont General Hospital
- Preston Memorial Hospital
- Stonewall Jackson Memorial
- St. Joseph's Hospital (Upshur)
- Grafton City Hospital
- Bluefield Regional Medical Center

# Status on Prenatal Care and Outcomes

## The State of Perinatal Health in West Virginia 2006-2013

*Low Birth Weight (<2,500 GMS) Among WV Residents* 

\* 2006 9.8% \* 2011 9.6% \* 2012 9.2% \* 2013 (preliminary) 9.4%

Data Source: WV Health Statistics Center, Vital Statistics System

## Teen Pregnancy in West Virginia

# 

### What goes wrong when teens have babies:

- **Dropping Out.** One in three girls cites pregnancy as her reason for dropping out of high school.
- Poverty. The poverty rate for kids born to teenage mothers who have never married and did not graduate from high school is 78%, compared to 9% of children born to married women over 20 who are high school graduates.
- Unhealthy Babies. Children born to teen mothers are at higher risk of being born under weight and dying within their first year of life. They are less likely to get the emotional and intellectual stimulation they need for healthy child development.



## What we can do:

		Teen pregnancy r
Monongalia	14.01	in WV and the
Gilmer	22.30	
Brooke	25.82	rates began
Pleasants	29.96	parity betw
Pendleton	30.66	
Upshur Hancock	31.23 33.19	became
Jefferson	33.43	graph t
Tucker	34.15	county
Putnam	34.62	birth
Ohio	36.00	
Morgan	37.58	1,00
Pocahontas	38.94	is c
Marion	39.36	wi
Doddridge	39.89	
Mineral	41.55	bi
Monroe	41.56	
Jackson	41.90	
Marshall	43.11	
Ritchie	43.52	
Berkeley	43.85	
Wayne	44.29	
Summers	45.03	
Barbour	45.09	
Greenbrier	46.68	
Preston	46.97	
Roane	47.00	
Wirt	47.62	
Mason	47.64	
Taylor	47.97	
Harrison Hampshire	48.38 49.25	
Cabell	49.23	
Hardy	49.77	
Wood	51.60	
Braxton	51.93	
Randolph	52.32	
Tyler	52.46	
Kanawha	53.21	
Wetzel	55.38	
Lincoln	55.53	
Webster	56.01	
Raleigh	56.02	
Grant	56.86	
Nicholas	57.32	
Lewis	59.03	
Wyoming	59.18	
Logan	62.83	
Mercer	65.69	
Calhoun	66.56	
Fayette	68.32	
Boone	70.48	
Clay	71.20	
Mingo	79.45	
McDowell	95.76	

rates have been dropping nation. But in 2006, WV's to worsen, and the disween WV and the nation much greater. The bar to the left shows each Monongalia v and its rate of teen age 15-19, per Hampshire 00. The map olor-coded ith the irs. Pendleto Kanawha Pocahonta 1-15 Eavette 16-31 Greenbri 32-47 Raleigh 48-55 Wyoming WV vs US Teen Pregnancy Rate 50 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010



Implement the state's comprehensive sex education curriculum
Give young people a credible vision of a positive future

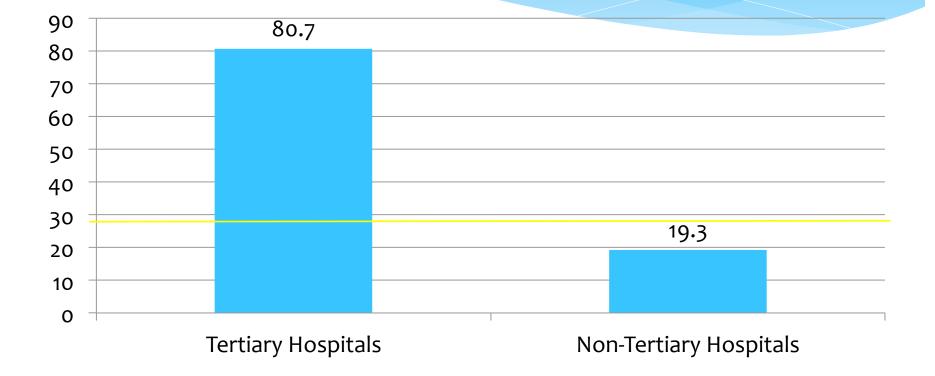
Help parents succeed as sex educators
Help adults provide good information about how to reduce risk-taking behaviors • Create community-wide action plans for teen pregnancy prevention

## Very Low and Low Birth Weight By Age of Mother, WV Residents

Age Of Mother	2006 % Very Low and Low BW	2012 % Very Low and Low BW	2013* % Very Low and Low BW
10-14	18.2%	12.5%	9.5%
15-17	12.5%	12.0%	10.1%
18-19	11.3%	10.5%	11.3%
20-24	10.7%	9.0%	9.1%
25-29	8.9%	8.2%	8.9%
30-34	9.1%	9.0%	9.0%
35+	8.6%	11.2%	11.0%

Data Source: WV Health Statistics Center, Vital Statistics System

## Percentage of Very Low Birth Weight Infants (450-1499 gm) by Place of Birth, 2000-2009



Data Source: WV Health Statistics Center, Vital Statistics System

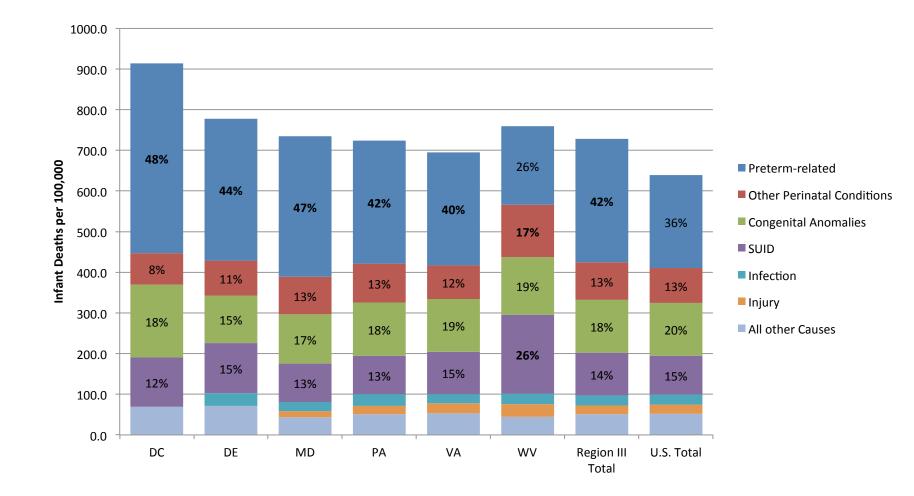
## WV Birth Outcome Rankings, 2013

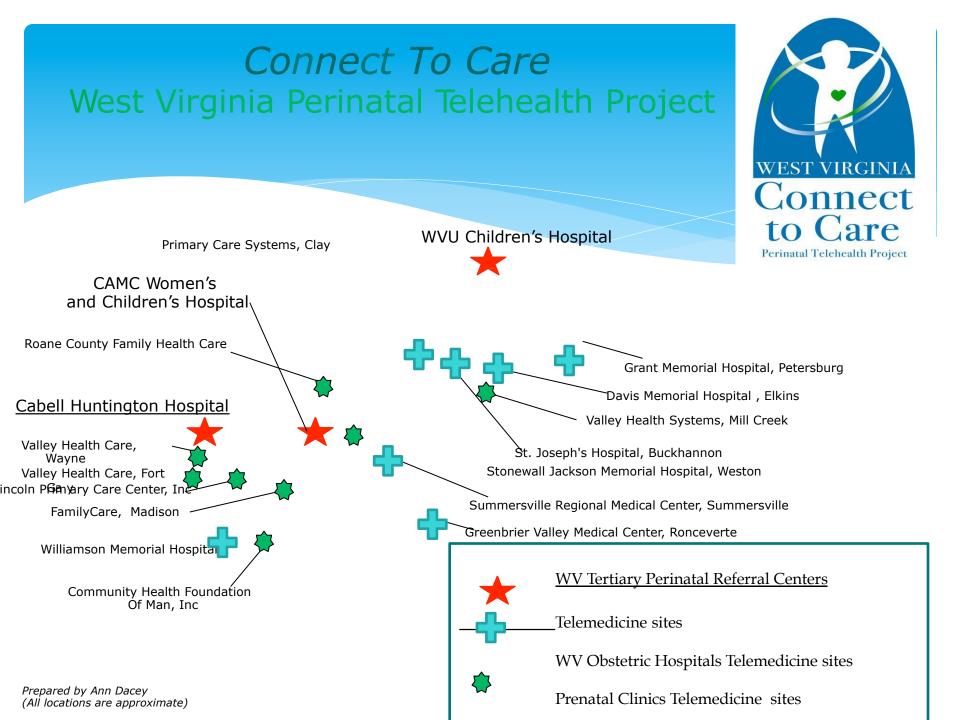
Birth Outcome	WV	U.S.	WV Rank
Cesarean Delivery	35.9%	32.8%	6 <sup>th</sup>
Preterm Births	12.4%	11.5%	13 <sup>th</sup>
Low Birth Weight	9.2%	8.0%	7 <sup>th</sup>
Very Low Birth Weight	1.5%	1.4%	18 <sup>th</sup>
Teen Birth Rate	44.1 per 1,000	29.4 per 1,000	6 <sup>th</sup>

#### Data Source: National Center for Health Statistics

## Infant Mortality Rates

### Mortality Rates by Cause,<sup>\*</sup> 2008-2010





# The Golden Hour

The standardized, evidence-based process of care for the VLBW infant in the first hour of life to prevent complications that may have lifelong effects on the infant.

**Immediate** 

\* Hypothermia
 \* Intraventricular
 Hemorrhage

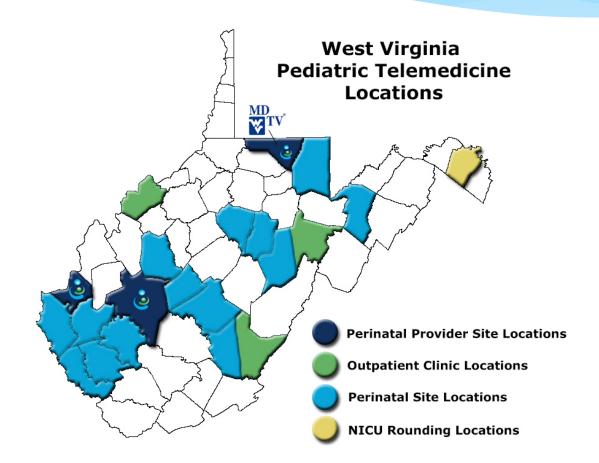
### <u>Sequelae</u>

- \* Chronic Lung Disease
- Retinopathy of Prematurity
- \* Death
- \* Neurodevelopmental Impairment

# Care During Golden Hour

- Critically sick neonate needs immediate ICU care for better outcomes.
- \* Birthing centers (Level I/II) needs immediate assistance and transfer
- Level III/IV perinatal care centers send team to assist and transfer to the center equipped with desired level of care
- \* Delay can occur due to poor weather conditions and travel time.

## WV Pediatric Telemedicine Services



WVUMedicine Children's Transport Team & Telemedicine

\* WVUMedicine Children's Transport Program integrated telemedicine into transport request.

\* Assists birthing centers in the stabilization of critically care sick infant while transport is en route.

\* Provides family centered care.

# Case Study 1

- \* 31 weeks gestational age
- \* Significant respiratory distress syndrome, who required immediate ventilator assistance and transfer to NICU.
- \* Hazardous road conditions due to snowstorm.
- Telemedicine equipment assisted NICU team to assess infant's color, perfusion, vital signs, chest radiographs and compliance loops on the ventilator.
- \* Assisted stabilization at referring center.
- \* Infant was transferred once weather condition improved.
- \* Outcome: The infant required ventilator support for two days only and hospital LOS was less than two months in our NICU.

# Advantages of Telemedicine

- Telemedicine proved to be an effective tool to improve communication, patient care and ultimately improve outcomes of patients with utmost safety of patient and transport crew.
- Ability for tertiary care and community hospitals to utilize telemedicine in the neonatal and pediatric transport requests



\* Cost

- \* Infrequency of use
- \* Proficiency/Education
- \* Portability

## **Perinatal Outreach Education**

- To improve outcomes for mothers and babies through educational programs and quality improvement activities for regional perinatal care providers.
- \* Collaboration with the Division of Neonatology, Maternal-Fetal Medicine and MDTV to offer education to providers in level I and II perinatal centers.

## **Statistics**

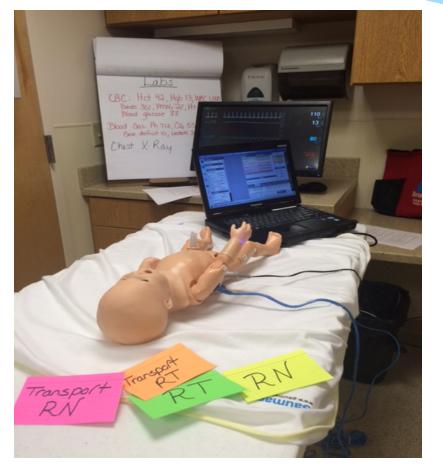
\* There is limited data about use of simulation during the golden hour to improve outcomes

\* Helping Babies Breathe Study

## **Benefits of Simulation**

- Promotes Teamwork
  - \* Teams utilize the same equipment and supplies
- \* Develops Communication Skills
- \* Improves Confidence
- \* Improves Performance
- \* Improves Outcomes
- \* Safety

# This is Baby Hal



\* Loaned to us by WV Perinatal Partnership

- \* Purchased a monitor
- WVU Steps helped our team with the software application
- Perinatal outreach simulation to improving outcomes

## In Summary

 Perinatal education team utilizes simulation based case scenarios on optimization of the care during golden hour. Perinatal education team has recently integrated distant learning via use of simulation and telemedicine.

# Special Thanks

- \* WV Perinatal Partnership
- \* WVU Steps
- \* Staff at Grant Memorial Hospital
- \* MDTV
  - Cindy Barnes , MDTV Program Manager
  - \* Donovan Monday ,MDTV/ITCSS

Unity is strength... when there is teamwork and collaboration, wonderful things can be achieved.

Mattie Stepanek

## Perinatal Outreach Team

