

Study of Infant Mortality TRICARE Beneficiaries Fort Riley, Kansas

LTC Paul Benne, MD, MPH
SPC John Makinwa, BS, MBA, DrPH Candidate
November 2011

Objectives

- Update of infant mortality in Kansas
- Describe the Infant Mortality Rate (IMR) of the Fort Riley area
- Discuss contributors to IMR
- Discuss possible community collaboration

Definitions

- Two calculations methods of Infant Mortality Rate:
 1. Simplest, universally adopted method = Infant deaths in a given year divided by the total number of live births in the same year multiplied by 1,000
 - Cross-sectional data
 - Data/statistics presented in the KDHE, Bureau of Epidemiology and Public Health Informatics' Annual Summary and Kansas Information for Communities (KIC)

Definitions

Cohort rate = Infants born in a given year are followed through their first birthday and the number of deaths that occur to these infants are noted and used as the numerator for the cohort IMR (*linked births-deaths file*)

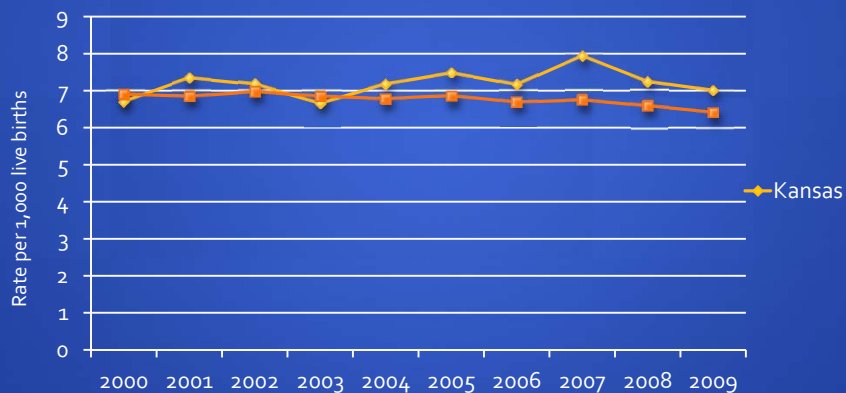
- Birth cohort – Birth for a given year are linked with infant deaths that occurred in the year of birth or the next year.
- Death cohort – Deaths for a given year are linked with births that occurred in the same year or previous year.

Numbers using different methodologies will not match

Infant Mortality Rates 2011

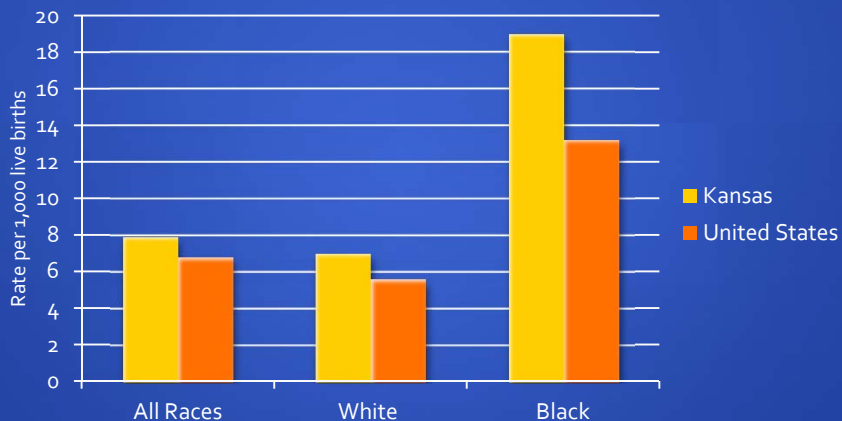
- 2011 projected IMR in US 6.1 (CIA)
- There are 46 governments that have better IMRs
- US rates are higher than many third world countries

Infant Mortality Trends 2000-2009



U.S. 2008, 2009 preliminary data
 Source: Bureau of Epidemiology and Public Health Informatics, KDHE; National Center for Health Statistics

Infant Mortality Rates by Race 2007



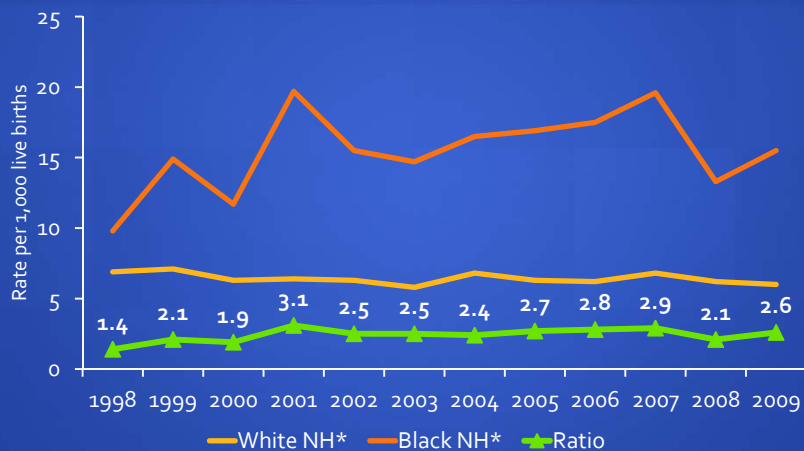
Source: National Vital Statistics Report: Volume 58, Number 19

Kansas Ranked Worst among States for Black Infant Mortality Rate (IMR), 2007

States	Black IMR
Kansas	18.98
Oklahoma	18.03
District of Columbia	16.61
Missouri	16.48
Michigan	16.39
Rhode Island	16.00
Indiana	15.99
Tennessee	15.74
Virginia	15.41
Wisconsin	15.18
USA	13.24

Source: National Vital Statistics Report: Volume 58, Number 19

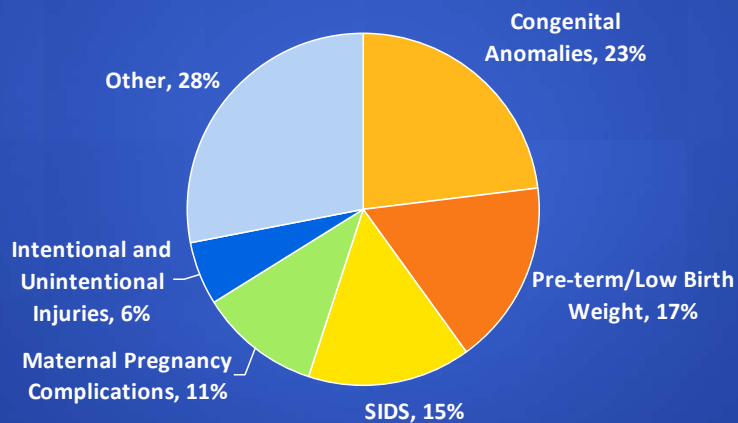
Black non-Hispanic and White non-Hispanic Infant Mortality Rates & Ratio, 1998-2009



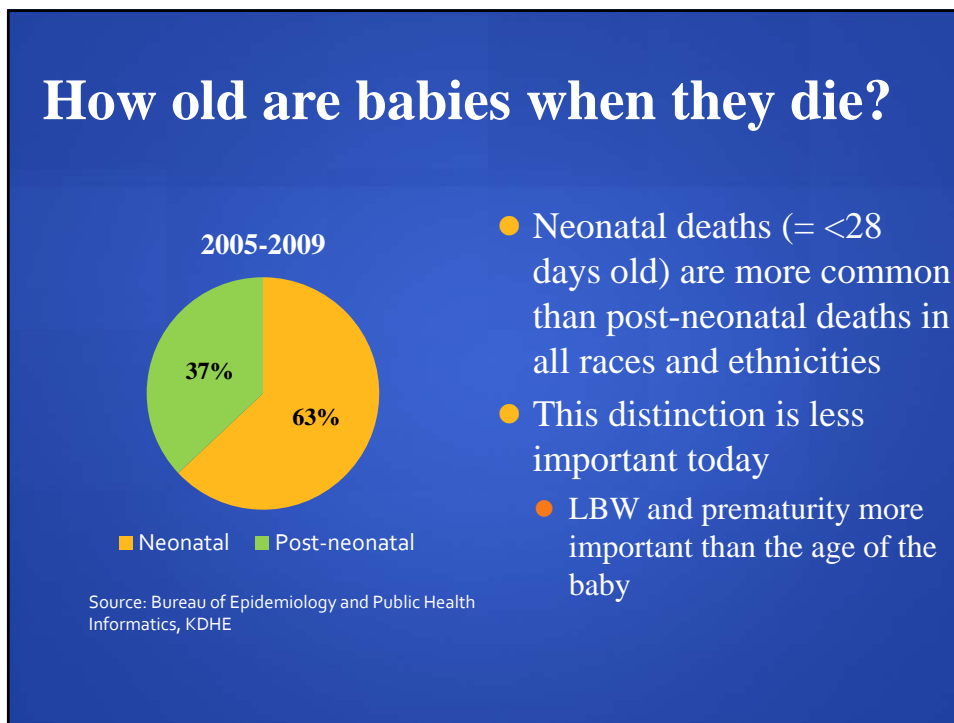
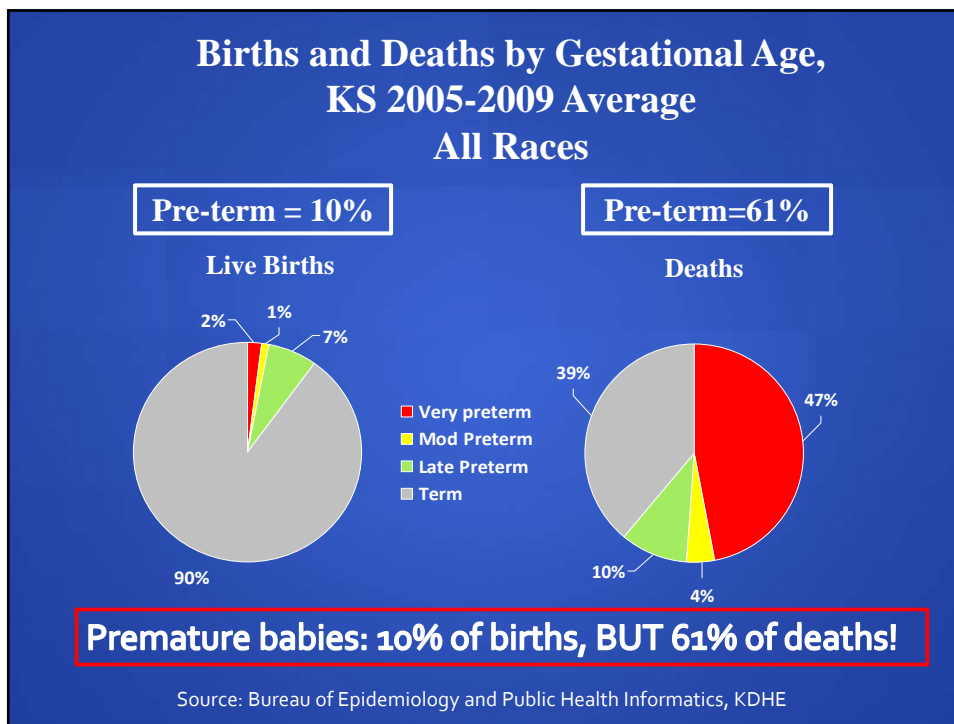
*NH: Non-Hispanic

Source: Bureau of Epidemiology and Public Health Informatics, KDHE

Infant Deaths by Cause of Death Kansas, 2005-2009



Source: Bureau of Epidemiology and Public Health Informatics, KDHE



Our Question

Based on cross-sectional data, 2005 to 2009 :

Kansas IMR
7.37/1,000 live births
(CI95 7.00-7.74)

Geary/Riley County IMR
8.50/1,000 live births
(CI95 6.69-10.66)

Fort Riley
(TRICARE)
IMR
?

92% of Fort Riley TRICARE births occur to residents of either Riley or Geary County

Source: Bureau of Epidemiology and Public Health Informatics, KDHE

Study Subjects

TRICARE beneficiaries
live births in Fort Riley,
Kansas area (2005- 2009)
N= 4715

Beneficiaries included resident live births where TRICARE was the delivery payor (2005-2009) .

Fort Riley Area defined as:

<u>County</u>	<u>Births</u>	<u>County</u>	<u>Births</u>
Chase	0	Marshall	7
Clay	70	Morris	18
Cloud	6	Ottawa	7
Dickinson	147	Pottawatomie	91
Geary	2101	Riley	2226
Lyon	8	Wabaunsee	22
Marion	8	Washington	4

Total Live Births 4715

Characteristics of Fort Riley, KS TRICARE Beneficiaries (2005-2009)

	Hospital	Irwin	(%)	Other	(%)	Total	(%)	Kansas
		3660	77.6	1055	22.4	4715	100	
Maternal Race: White NH		2572	70.3	806	76.4	3378	71.6	71.8
Hispanic		431	11.8	83	7.9	514	10.9	16
Black NH		415	11.3	93	8.8	507	10.8	6.8
Other/Multi NH		128	3.5	38	3.6	166	3.5	1.7
Asian/PI NH		85	2.3	29	2.7	114	2.4	2.7
Native Am NH		28	0.8	6	0.6	34	0.7	0.7
Maternal Age : <15 years		2	0.1	0	0	2	0	0.1
15-19		282	7.7	98	9.3	380	8.1	10.3
20-24		1645	44.9	444	42.1	2089	44.3	27.4
25-29		1110	30.3	304	28.8	1414	30	30.3
30-34		450	12.3	129	12.2	579	12.3	20.9
35-39		147	4.0	73	6.9	220	4.7	9
40-44		24	0.7	7	0.7	31	0.7	1.9

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	Hospital	Irwin	(%)	Other	(%)	Total	(%)	Kansas
		3660	77.6	1055	22.4	4715	100	
Maternal Education: <HS		217	5.9	85	8.1	302	6.4	1.3
HS		1046	28.6	306	29	1352	28.7	18.9
>HS		2397	65.5	657	62.3	3054	64.8	24
Unknown		0	0	7	0.7	74	0.1	55.9
Maternal Risk: Smoking		502	13.7	209	19.8	711	15.1	16.1
Unmarried		322	8.8	83	7.9	405	8.6	37.3
Gestational Hypertension		22	0.6	42	4	64	1.4	3.9
Gestational Diabetes		26	0.7	37	3.5	63	1.3	3.8
Ecclampsia		50	1.4	4	0.4	54	1.1	0.2
Previous Preterm Birth		4	0.1	40	3.8	44	0.9	2.9

Characteristics of Fort Riley, KS TRICARE Beneficiaries (2005-2009)

	Hospital	Irwin	(%)	Other	(%)	Total	(%)	Kansas
		3660	77.6	1055	22.4	4715	100	
Birth Weight: <1500 kg		11	0.3	43	4.1	54	1.1	1.4
1500-2499		97	2.7	141	13.4	238	5	5.9
2500+		3551	97	871	82.6	4422	93.8	92.7
Prenatal Care: 1 st Trimester		2922	79.8	788	74.7	3710	78.7	69.1
2 nd Trimester		603	16.5	195	18.5	798	16.9	19.7
3 rd Trimester		111	3	42	4	153	3.2	3.7
Unknown		22	0.6	19	1.8	41	0.9	6.4
None		2	0.1	11	1	13	0.3	1.1
Cause of Death: Other		9	50	8	47	17	48.6	28
Congenital		6	33	7	41	13	37.1	23
Respiratory		0	0	2	12	2	5.7	-
SIDS		2	11	0	0	2	5.7	15
Infection		1	5	0	0	1	2.8	-

Analysis of Direct and Network Births Fort Riley, KS (2005-2009)

	Direct Care Irwin Army Births	Percent	Network Care Off Post Births	Percent
Total delivery	3730	100	1119	100
Vaginal delivery (w/o cc)	2377	63.7	595	53.2
Cesarean section (w/o cc)	492	13.2	284	25.4
Complicated delivery (Vag & C-cc)	861	23.1	240	21.4

Source: Medical Management Database, Irwin Army Community Hospital

Infant Mortality Rate: TRICARE Beneficiaries at Fort Riley Area, KS 2005-2009

Live births = 4715

Deaths = 35

IMR = $35 / 4715 * 1000 = 7.42$ CI95 (5.17 - 10.32)

Infant death= Death of an infant before his or her first birthday

Infant mortality rate= Number of infant deaths per 1,000 live births.

**Average Infant Mortality Rates (IMR) for
Fort Riley TRICARE Beneficiaries with Delivery on
Post vs. Off-Post (2005-2009)
Live Births= 4,715**

<u>Delivery Location</u>	<u>Live Births</u>	<u>Deaths</u>	<u>IMR (CI95)</u>
Post (Irwin)	3,660	18	4.92 (2.91 - 7.77)
Off -Post (Other)	1,055	17	16.11 (9.39 - 25.8)

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Wisconsin	15.18
USA	13.24

Source: National Vital Statistics Report: Volume 58, Number 19

Infant Mortality Rate: TRICARE beneficiaries at Fort Riley Area, KS 2005-2009

Black NH Live births	= 507
IMR	= 18.98
Projected Deaths	= 9
Observed Deaths	= 1

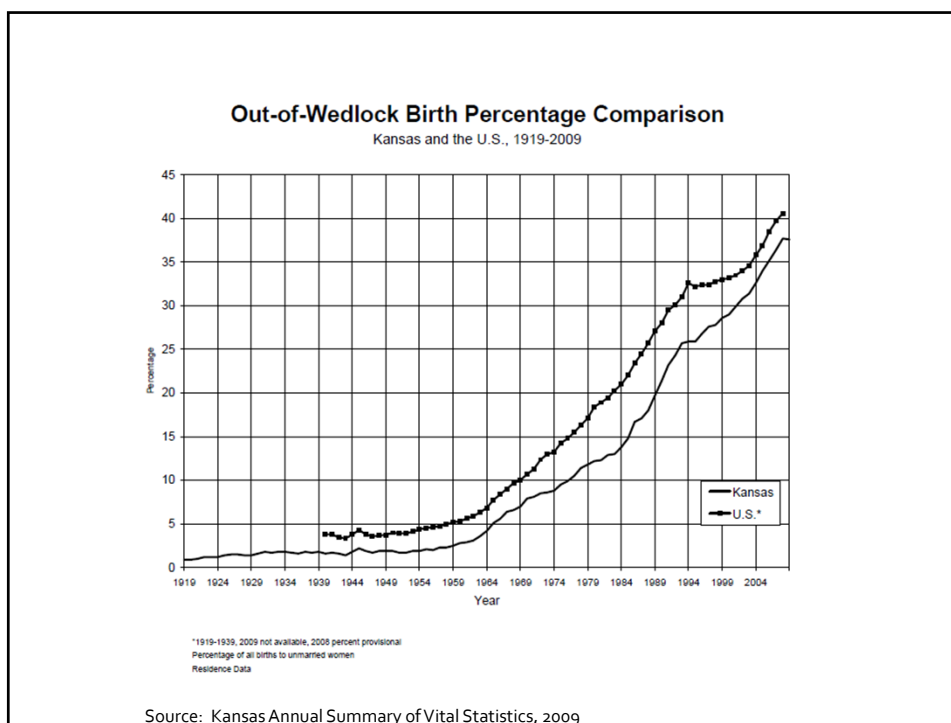
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Military Infant Mortality Rate

- **Kansas TRICARE IMR (birth cohort):**
 - 5.77/1,000 live births CI95 (4.25- 7.64)
- **Other study has had consistent finding of reduced Black NH infant deaths (rate cut in half)***
- **Research focusing on possible sociologic effect of military culture**

* Hicks Lundquist et al, Race and Preterm Births: A Protective Effect of the Military?
National Science Foundation SES 0751505, publish pending



Summary

- KS IMR is higher than in most other states
 - Rates are higher in KS than U.S. for all race and ethnic groups (especially Black NH)
- Causes of infant deaths mimic those in other states: Prematurity and LBW are key factor
- Fort Riley facility IMR significantly lower although high risk referred outside facility
- Protective effect against infant mortality particularly for Black NH in the military setting and consistent with other study on preterm delivery

Support Partner Programs

- Kansas Blue Ribbon Panel on Infant Mortality
- PPOR analysis from KDHE
- FIMR programs in the state
- March of Dimes
 - Prematurity conference
 - Prematurity Coalition
- SIDS Network of Kansas
 - Safe Sleep video
 - Presentation at Conferences KAAP, KAFP

Acknowledgements:

SPC John Makinwa
US Army, Fort Riley

Mr. Greg Crawford
Ms. Jamie Kim
Ms. Carol Moyer
Kansas Department of Health and Environment

Dr. Dennis Cooley
Kansas Blue Ribbon Panel on Infant Mortality

Point of Contact for Study:
Paul Benne, MD, MPH
Lieutenant Colonel, Medical Corps
600 Caisson Hill Rd
Fort Riley, KS 66442
785 239 7323