Overview

Infant mortality is viewed as a sentinel event that serves as a measure of a community’s general health status as well as its social and economic well-being. High rates of infant deaths persist, and infant deaths still constitute more than half of all deaths occurring in children ages 0 to 19 years in the United States according to the National Center for Health Statistics. During the past decade, communities have witnessed on-going changes in the financing and delivery of health care services, greater attention being given to core public health functions and increased emphasis directed to improving quality and accountability. Faced with these trends and mandates, maternal and child (MCH) advocates have sought to be responsive while assuring that the needs of women, infants, and families continue to be met.

Fetal and Infant Mortality Review (FIMR) is a community process that can address these challenges. Nationwide evidence demonstrates that FIMR is an effective perinatal systems intervention developed by the Academy of Obstetricians and Gynecologists more than two decades ago.

FIMR is used at the community level for assessing, planning, improving and monitoring the service systems and broad community resources that support and promote the health and well-being of women, infants and families. Information from reviews is used to guide programs and policy development and define and maintain quality services and resources. These reviews also enable reviewers to obtain unique information not typically available from vital statistics.

The overall goal of FIMR is to enhance the health and well-being of women, infants and families by improving the community resources and service delivery systems available to them. The FIMR process brings together key members of the community to review information from individual cases of fetal and infant death in order to identify factors associated with those deaths, establish if they represent system problems that require change, develop recommendations for change, assist in the implementation of change and determine community effects.

In Florida, additional steps were added to the FIMR process. One step was to input fetal death certificates along with linked infant birth and death certificates into the BASINET system. This state-wide system enables each FIMR project to report aggregate data pertinent to their individual community. The other step was to input Case Review Team findings after case reviews.

Cases for review were selected based on certain criteria. Information was abstracted from medical, hospital, law enforcement and autopsy records. No information which identifies the family, medical providers or hospitals was included. Case summaries were developed and presented monthly to the Case Review Team (CRT), a multidisciplinary group of community medical and social service professionals. Each month the CRT examined cases to determine medical, social, and other issues that impacted the poor birth outcome.
Fetal Death Data

During the years 2010 through 2012 Orange County Florida recorded 335 resident fetal deaths. Of those deaths, 191 met the criteria of over 25 weeks gestation and weighing 500 or more grams. These 191 fetal deaths were entered into BASINET with 9 of these fetal deaths chosen for more in-depth case review.
Fetal Deaths by Race by Year

The chart above notes the number of fetal deaths input into BASINET for the period January 1, 2010 through December 31, 2012. The three-year period consistently shows that Black and Hispanic fetal deaths accounted for 66.5% of the 191 total fetal deaths recorded in BASINET.
Unmarried women accounted for the majority of fetal deaths recorded in BASINET.
Fetal Deaths by Maternal Education Level

The majority of fetal deaths, 43%, were to women with a high school diploma/GED or less.
Fetal Deaths by Age of Mother

Women between the ages of 20 to 39 accounted for 80.6% of all fetal deaths entered into BASINET.
Women at a normal BMI ranking accounted for 37.7% of all the fetal deaths entered into BAASINET. Obese women accounted for 27.7% of the fetal deaths.
One of the challenges with vital statistics data in this instance is the lack of information noted on the fetal death certificate. One can note that late entry into prenatal care, later than 14 weeks, accounts for 16.2% compared to 51.8% with no information.
Fetal Deaths by Gender

Males accounted for 53.4% of the total fetal deaths entered into BASINET.
Deaths of fetuses at less than 29 weeks gestation accounted for 27.8% of the total fetal deaths entered into BASINET. Fetal deaths from gestational age 29 to 36 weeks accounted for 44.5% of the total fetal deaths entered into BASINET.
Fetal Deaths by Birthweight

The largest numbers of fetal deaths, 37.2%, were in the weight group 500 to 1499 grams (roughly weighing up to 3 lbs., 4 oz.) Those weighing 1500 to 2499 grams (up to 5.5 lbs.) accounted for 28.3% of the total fetal deaths entered into BASINET.
Unknown causes and other causes accounted for 37.7% of the total number of fetal deaths entered into BASINET. It should be noted that placental abruption accounted for 16.8%.
Fetal Deaths by Plurality

Singleton births accounted for 93.2% of the total fetal deaths entered into BASINET.
Infant Death Data

During the three year period, 2010 through 2012, there were a total of 325 infant resident deaths in Orange County. It should be noted that some infant deaths were excluded because they were residents of other counties. All of the resident infant deaths were entered into BASINET utilizing birth and death certificate information. Of these 325 resident infant deaths, 27 cases were selected for more in-depth case review.
Infant Deaths by Race by Year

The chart above notes the number of infant deaths input into BASINET for the period January 1, 2010 through December 31, 2012. The three-year period consistently shows that Black infant deaths accounted for 32.6% of the 325 total infant deaths recorded in BASINET.
Infant Deaths by Mother’s Martial Status

Unmarried women accounted for the majority of infant deaths, 62.2%, recorded in BASINET.
Infant Deaths by Maternal Education Level

The majority of infant deaths, 49.2%, were to women with a high school diploma/GED or less.
Infant Deaths by Age of Mother

Women between the ages of 20 to 39 accounted for 79.4% of all infant deaths entered into BASINET.
Women at a normal BMI ranking accounted for 32.6% of all the infant deaths entered into BAASINET. Obese women accounted for 26.8% of the infant deaths.
Infant Deaths by Maternal Substance Abuse

Of the 325 infant deaths entered into BASINET, 38 records noted some type of substance abuse. These 38 records accounted for 11.7% of the total infant deaths.
One of the challenges with vital statistics data in this instance is the lack of information noted on the infant birth certificates. One can note that late entry into prenatal care, later than 14 weeks, accounts for 12.3% compared to 50.5% with no information.
Males accounted for 60% of the total infant deaths entered into BASINET.
Deaths of infants at less than 29 weeks gestation accounted for 60.3% of the total infant deaths entered into BASINET. Infant deaths from gestational age 37+ weeks accounted for 24.3% of the total infant deaths entered into BASINET.
Infant Deaths by Birthweight

The largest numbers of infant deaths, 37.2%, were in the weight group < 500 grams (454 grams equals 1 lb.) Those weighing 500 to 1499 grams (roughly 1 lb. to 3 lbs. 5 oz.) accounted for 28.0% of the total infant deaths entered into BASINET.
Prematurity accounted for 34.5% of the total number of infant deaths entered into BASINET. It should be noted that other causes accounted for 13.5% and Sudden Unexplained Death in Infancy (SUDI) accounted for 10.5%.
Singleton births accounted for 86.5% of the total infant deaths entered into BASINET.
Neonatal deaths at < 24 hours accounted for 47.1% of all the infant deaths entered into BASINET. Neonatal deaths from 1 day to 28 days accounted for 24.0% of the total infant deaths.
Review Cases Data
Fetal Data

The Case Review Team (CRT) reviewed 9 fetal deaths.

Of these fetal deaths:

- 88.9% were to women aged 20 to 39
- 55.6% were single
- 55.6% had a high school diploma/GED or less
- 33.4% were Hispanic
- 33.4% were smokers
- 44.5% were first pregnancies
- 55.6% had late entry into prenatal care
- 33.3% had a BMI ranking of overweight or obese

Fetal Characteristics:

- 55.6% were male
- 66.7% weighed 2500+ grams (5.5 lbs. or more)
- 55.6% were gestational age 29 to 36 weeks; 44.4% were 37+ weeks
- 100% were singleton births
- 22.2% had congenital anomalies
- 1/3 of the deaths were due to IUFD; 1/3 other causes not listed; 1/3 unknown causes
Infant Data

The Case Review Team (CRT) reviewed 27 infant deaths.

Of these infant deaths:

- 66.7% were to women aged 20 to 39
- 59.3% were single
- 29.6% had a high school diploma/GED or less
- 48.1% were Black
- 7 records showed substance abuse
  - 71.4% were smokers
  - 14.3% used alcohol
  - 14.3% used marijuana
  - 28.6% noted other
- 44.5% were first pregnancies
- 18.5% had late entry into prenatal care
- 7.4% had no prenatal care
- 37.1% had a BMI ranking of overweight or obese

Infant Characteristics:

- 81.5% were male
- 66.7% weighed 1499 grams or less (less than 3.5 lbs.)
- 63.0% were gestational age < 29 weeks; 26.0% were 37+ weeks
- 74.1% were singleton births
- 18.5% had congenital anomalies
- 33.3% lived < 24 hours; 33.3% lived from 1 to 28 days; 33.3% lived from 29 to 364 days
Causes of Death

- 63.0% were premature
- 7.4% were undetermined after autopsy
- 7.4% were sleeping deaths
  - ✓ 100% of those were found sleeping with adults
  - ✓ 100% of those were found sleeping in adult beds with unsafe items
  - ✓ 50% of those were exposed to second-hand smoke
Aggregate Deliberation Summary

Case reviews are conducted by the Case Review Team. Members are presented with a case summary they review and discussion. After the discussion, members utilize the Case Deliberation Form to determine what strengths of the mother, contributing factors, and suggestions members think, if in place, might have made a difference in the birth outcome.

Strengths

- 20% of mothers had father of the baby involve/supportive
- 20% had family support
- 12% of the teen mothers stayed in school during their pregnancy
- 59% of mothers received Healthy Start Prenatal screenings
- 38% received a Healthy Start referral
- 47% of mothers recognized signs/symptoms of preterm labor & sought immediate medical care
- 81% of mothers received grief support from hospital staff
- 78% were referred to a community grief support group

Contributing Factors

- 38% of mothers had pre-existing medical conditions
- 38% of mothers were obese
- 28% of mothers were anemic during their pregnancy
- 16% of mothers had had a previous preterm &/or LBW baby
- 25% of mothers had a history of previous fetal or infant loss
- 28% of the mothers were < 21 years old, 41% of mothers had an infection others than STDs
- 62% of mothers had preterm labor
- 22% of mothers developed a newly diagnosed incompetent cervix
- 34% of mothers did not use community resources when offered
Suggestions

- Women need to be healthy when they get pregnant and have chronic medical conditions under control
- Home visits during pregnancy to monitor status in high risk patients
- HS screenings on initial PNC provider
- Increase understanding of providers and staff about the importance of HS services
- Closer evaluation dietary habits, diet content/nutritional counseling
- Debrief parents 2-3 months after loss to assess understanding of causes/circumstances of death
- Education as to the risks of obesity in pregnancy
- Postpartum depression screening & assessment of grieving status w/ appropriate referrals
- Family planning counseling with script/dose given before discharge
- Information on baby spacing
- Smoking cessation referrals needed for mothers who smoke
- Improve completeness/consistency of medical records
- EMS needs to include notation on fetal heart rate/fetal movement on trip sheet and trip sheet needs to be included in the medical record
- Prenatal resources available in ER