

Stillbirth and Birth Defects Michigan 2004-2011

Background

After a pregnancy loss, women and their loved ones, often wonder:

- Why did it happen to my family?
- What caused it?
- Can anything be done to prevent a future loss?

They may be unable to ask these and other important questions due to grief, guilt and confusion.

Unfortunately, stillbirth is one of the most common adverse outcomes of pregnancy. Stillbirth has a profound impact on the family and community, which may go unrecognized due to the nature of the loss.

A stillbirth is a fetal death that occurs at twenty or more weeks' gestation.¹ An estimated seven stillbirths occur for each 1,000 live births in the United States. They account for about half of all perinatal deaths (fetal plus neonatal deaths).¹ The definition of stillbirth varies among studies, states, and nations (e.g., at or after 16, 20 or 24 weeks gestation; see page 3 for the Michigan definition). When the definition includes fetal weight, this

may also vary (e.g., weighing from 350, 400 or 500 grams and more).¹

Therefore, it can be difficult to compare rates and risk factors across programs.

Many risk factors have been described, including: certain maternal conditions and health behaviors; problems related to the placenta or umbilical cord; and multiple gestation; as well as conditions affecting the health of the fetus (Table 1.).

Birth defects may be apparent in 15-20% and found in 25-35% of cases with autopsy.² For most stillbirths, the cause is unknown.

Published guidelines for management recommend: a) complete perinatal and family history; b) physical examination of the fetus, placenta, umbilical cord, and membranes; c) autopsy; and d) laboratory studies to identify the cause.³

Clear and compassionate guidance must be given concerning the value of medical investigations to identify

the maternal and fetal factors that contributed to the event. In some cases, no definitive cause will be found. However, in those cases where causes are identified, the

Category	Risk Factors	Examples
Maternal	Chronic health conditions	Diabetes mellitus, hypertension, obesity
	Infections	Chlamydia, listeria
	Environmental exposures, e.g., medications, behaviors	Painkillers, smoking
Fetal	Genetic syndromes, birth defects	Down syndrome, congenital heart disease (CHD)
Maternal-Fetal	Multiple gestation, placental function, umbilical cord	Circulation, hemorrhage, stricture

Table 1. Risk factors for stillbirth.²

impact on future medical management may be profound. Understanding the causes and consequences of stillbirth contributes to better overall maternal and child health practices, as well as individual care.

Stillbirth is a significant occurrence, on par with 'sentinel events' like the

death of an infant or mother.⁴ The loss reflects the physical health, as well as the social and emotional wellbeing of the mother and her family. Thus, stillbirth is an

☞ A sentinel event is an unexpected occurrence involving death or serious physical or psychological injury, or the risk thereof.

—Joint Commission, 2013⁴

important public health indicator. Failure to adequately investigate and address the root causes of stillbirth leads to underestimates of the impact of maternal morbidities

and lost opportunities to improve outcomes. The Michigan Department of Community Health's (MDCH) system for fetal death tracking and the occurrence of birth defects in these stillbirths is covered in the remainder of this report.

Stillbirth and Birth Defects in Michigan 2004-2011

In order to describe the occurrence of birth defects in stillbirth, Michigan fetal death records in which a birth defect was indicated were analyzed. Thirteen specified conditions and 'other' were collected under the item 'congenital anomalies of the fetus'. With IRB approval, specific variables were assessed, being: the demographics of the fetus, the mother and the father; the presence of birth defects; maternal morbidity, and additional risk factors.

From 2004-2011, a total of **5,827** stillbirths were reported. Including only those reports consistent with the MDCH definition of stillbirth, **1,068** indicated the presence of a birth defect (**18.3%**; range of 14.8% to 24%). The **specified conditions** most often recorded were Down syndrome (also known as Trisomy 21), congenital heart disease (CHD), and anencephaly. Most reports indicated 'other congenital anomaly' (Table 2). Some specified these 'other' conditions, such as fetal hydrops, Trisomy 13, Trisomy 18 and Triploidy, all of which are known risks for stillbirth and/or perinatal death. Some stillbirth records had

more than one condition reported. Thus, the condition total is greater than the total stillbirths. The **sex of the fetus** was reported female (49%) slightly more often than male (47%). In 4%, of records fetal sex was not reported or was unknown.

The timing for most (66%) of these losses was

before or at 28 weeks **gestational age**. Of the two percent (2%) that occurred post dates (after 40 weeks gestation), more than half were reported to have a chromosomal anomaly, Down syndrome being the most frequent. **Autopsy** was performed or planned for only about 31% of cases.

Condition	Frequency (%; n)
Down syndrome	12% (128)
Congenital Heart Disease -Cyanotic	10% (111)
Anencephaly	<1% (10)
Other congenital anomaly*	8% (83)
Suspected chromosomal condition	27% (284)
Other congenital anomaly*	39% (412)

* not collected 2004-2006
Table 2. Fetal conditions most reported in fetal death cases, MDCH 2004-2011.

Demographics

Considering **maternal age**, a greater proportion of women 35 years or older (20%) than is seen for live births overall (13%) experienced a fetal death with a reported birth defect. Fourteen percent (14%) of women were less than 21 years old at the time of the loss. One percent (1%) were age 15 years or younger. All **rac**es were represented among these women; the majority were white, non-Hispanic (64%). Seventeen percent (17%) were black, non-Hispanic. This compares to 69% and 12% of live births, respectively. **Maternal education** was often not reported or unknown (18%). About 15% had less than a high school education. The proportions holding a high school diploma or GED (18%); having some college (19%); and holding a bachelors degree (17%) were similar to one another. **Regionally**, the Detroit metro area of Wayne, Macomb, and Oakland counties accounted for 37% of all live births during this period, and contributed 43% of the stillbirths reported with a birth defect.

Maternal Risk Factors

In the majority of these stillbirths, no maternal risk factor was reported (75%). Those most often reported were '**previous preterm birth**' in five percent (5%) and '**other previous poor outcome**', in seven percent (7%) of the mothers. Both **pre-pregnancy diabetes** and **pre-pregnancy hypertension** were reported in 3 percent (3%). **Gestational diabetes** and **gestational hypertension** both were reported in 4 percent (4%) of the mothers. Of note, twenty percent (20%) of women who experienced pre-pregnancy diabetes or pre-pregnancy hypertension were reported to have had a prior poor pregnancy outcome. **Alcohol use during pregnancy** was noted in two percent (2%) of the records. **Infections during pregnancy** were reported as 'present and/or treated'. They were noted in about

eleven percent (11%) of these records, **chlamydia** being the most common (1-2%). Chlamydia is a risk for pregnancy loss with no known risk for birth defects.⁵

Stillbirth reports provide information essential to the measurement of perinatal health, and the development and evaluation of programs to improve pregnancy outcomes... The usefulness of these reports relates directly to the completeness in reporting these significant events and to the care taken in collecting and reporting on each.

—MDCH, Vital Records and Health Statistics

Stillbirth Reporting in Michigan

The Michigan Public Health Code Act 368 of 1978, as amended, being Section 333.2834 of Michigan compiled law (MCL), establishes that MDCH requires reporting of a fetal death within 5 days by the facility where the delivery occurred.

Michigan law defines when the delivery of a stillbirth is reportable in

section 333.2803 as *“the death of a fetus which has completed at least 20 weeks of gestation or weighs at least 400 grams; The fetus must be separated from the mother, i.e., delivered, to be reportable.”*

If the delivery occurs en route to a facility, the staff at the attending facility has the responsibility to

report the event. If there is no medical attendant, the medical examiner has this responsibility. Since June 2003, completed reports are filed and retained in the state vital records repository as a permanent legal record of the event. Parents may request a certificate of stillbirth from MDCH.

Solving the Puzzle

The risk for stillbirth, like the risk for maternal and infant mortality, and adverse outcomes such as preterm birth, low birth weight, and birth defects, can be reduced by better access to appropriate care before and between, as well as during, pregnancy. Preconception health is the health of women prior to conception. Interconception health is the time from delivery until the next pregnancy. These are the optimal times to address health conditions and promote healthy behaviors.

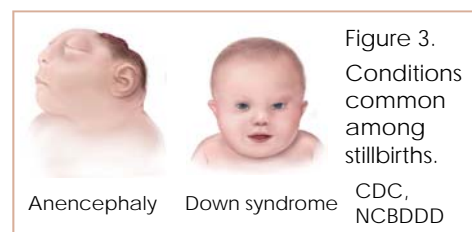
When unexplained, the chance of experiencing a subsequent stillbirth is about 1%.³ In our assessment of these reports, we saw evidence of

opportunity to modify risks that contribute both to the pregnancy loss and to the occurrence of a birth defect.

For example, anencephaly and spina bifida, severe defects of the brain and spine called neural tube defects (NTD), were noted in eight to nine percent (8-9%) of reports. Fifty percent (50%) or more of NTD may be prevented if a woman takes 400 micrograms (mcg) of folic acid daily beginning prior to pregnancy. Ten times the standard amount—4,000 mcg—is recommended to lower the ~3% chance for a subsequent NTD-affected pregnancy.⁵

Pre-pregnancy diabetes type 1 and

type 2 in a woman, when poorly controlled, is linked to a three times or greater risk for all types of birth defects in the fetus, such as nervous system, limb, and heart defects.⁶ When diabetes is well-controlled before and during pregnancy, this risk moves closer to the baseline population risk of 3-5%. Understanding the causes of stillbirth creates opportunities for prevention, as well as empathy, reassurance and support.³



Promising Practices

Two Healthy People 2020 objectives address stillbirth.

These are: a) reduce the rate of fetal deaths at or after 20 weeks gestation, and b) reduce perinatal deaths (28 weeks gestation to 7 days after birth), each by ten percent—from the 2005 national rates of 6.2 and 6.6 per 1,000 live births respectively—by the year 2020. Michigan estimates show a decrease for both during 2004-2011. Perinatal death rates remain higher than the national average at 9.9 per 1,000 live births, however.

The **good news** is that providers can lower the risk for stillbirth by using the same practices that lower infant

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mortality and improve other maternal and neonatal outcomes. In nearly every instance, these strategies also lower the risks for birth defects.

Better maternal, child and family health begins with a reproductive plan. MDCH leads many programs that serve Michigan's most vulnerable people. Helping women and couples better plan pregnancy is the most cost effective and efficient way to protect the health of our future children.

The Michigan Pregnancy Risk Assessment Monitoring System (PRAMS) provides data for developing, implementing, and evaluating strategies for healthier birth outcomes. Explore Michigan's progress at www.michigan.gov/mcheipi, [Preconception Health](#).



Key Messages

- ❧ **Women and families do not have to face the loss alone.** Tomorrow's Child is an organization that offers support to families who have experienced a pregnancy loss or infant death. They maintain a contact list of Michigan support groups. Go to www.tomorrowschildmi.org.
- ❧ **Fetal autopsy and placental examination are essential** to provide optimal guidance for future pregnancy management. Genetic and other laboratory testing is often key.
- ❧ **Improved health before and between pregnancies can improve outcomes.** Women and families can find help from their providers and various state programs. Find program information online at www.michigan.gov/mdch.
- ❧ **Provider practice makes a difference in client health choices.** Taking a few minutes to identify health goals and address barriers helps women make healthier choices for themselves and their families.

State and National Resources

- ◆ **MI Fetal and Infant Mortality Review (FIMR) Program:** www.michigan.gov/mdch/0,1607,7-132-2942_4911_4912-12563--,00.html
- ◆ **MDCH Infant Mortality Prevention:** www.michigan.gov/InfantMortality
- ◆ **Tomorrow's Child:** www.tomorrowschildmi.org
- ◆ **MI Healthier Tomorrow:** www.michigan.gov/mihealthiertomorrow
- ◆ **Healthy People 2020:** <http://healthypeople.gov>
- ◆ **National Preconception Health Campaign Materials:** www.cdc.gov/preconception/showyourlove
- ◆ **MI Birth Defects Registry:** www.michigan.gov/mdch/0,4612,7-132-2944_4670--,00.html
- ◆ **MI Preconception Health Data and Statistics:** www.michigan.gov/mchept
- ◆ **MI Compiled (Fetal Death Reporting) Law:** [www.legislature.mi.gov/\(S\(gfpnyvjuf02me2junjrtt145\)\)/mileg.aspx?page=GetMCLDocument&objectname=mcl-333-2834](http://www.legislature.mi.gov/(S(gfpnyvjuf02me2junjrtt145))/mileg.aspx?page=GetMCLDocument&objectname=mcl-333-2834)
- ◆ **MI Fetal Death Reporting Forms:** www.michigan.gov/mdch/0,4612,7-132-2945_5221-67443--,00.html
- ◆ **MI Parental Stillbirth Certificate Request Form:** www.michigan.gov/documents/Stillbirth_70005_7.pdf

Mobile Sites:

- ◆ **Text4Baby:** www.text4baby.org
- ◆ **MI Healthy Baby:** www.mihealthybaby.mobi

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