

Maternal and Infant Health

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Maternal and Infant Health

Utah continues to have the highest total fertility rate and birth rate in the United States. Each year in Utah there are at least 46,000 births, the majority of which result in healthy mothers and infants. The total fertility rate measures the average number of children a woman would have in her lifetime. The birth rate is the number of births per year of 1,000 residents in the population.

Historically in the United States and Utah, maternal, fetal and infant death rates have been decreasing. In 1998, there were 202 fetal deaths and 257 infant deaths in Utah.¹ On the other hand, low birth weight rates are experiencing a slightly increasing trend.

In recent years, improved technology has contributed to reductions in maternal, fetal and infant deaths. While we do not fully understand the causes of increasing low birth weight rates, the majority of low birth weight infants have been born prematurely. Better identification of risk factors has played a role in reducing adverse pregnancy outcomes, such as the link between folic acid intake and reduced risk for neural tube defects.



Selected maternal and infant health measures have been chosen as indicators to gain a sense of the overall health status of Utah's mothers and infants. The indicators presented in this report include:

- Fertility Rate
- Birth Rate
- Unintended Pregnancy
- Teen Pregnancy
- Prenatal Care
- Low Birth Weight
- Breastfeeding
- Neural Tube Defects
- Infant Mortality
- Maternal Mortality

Figure 1:

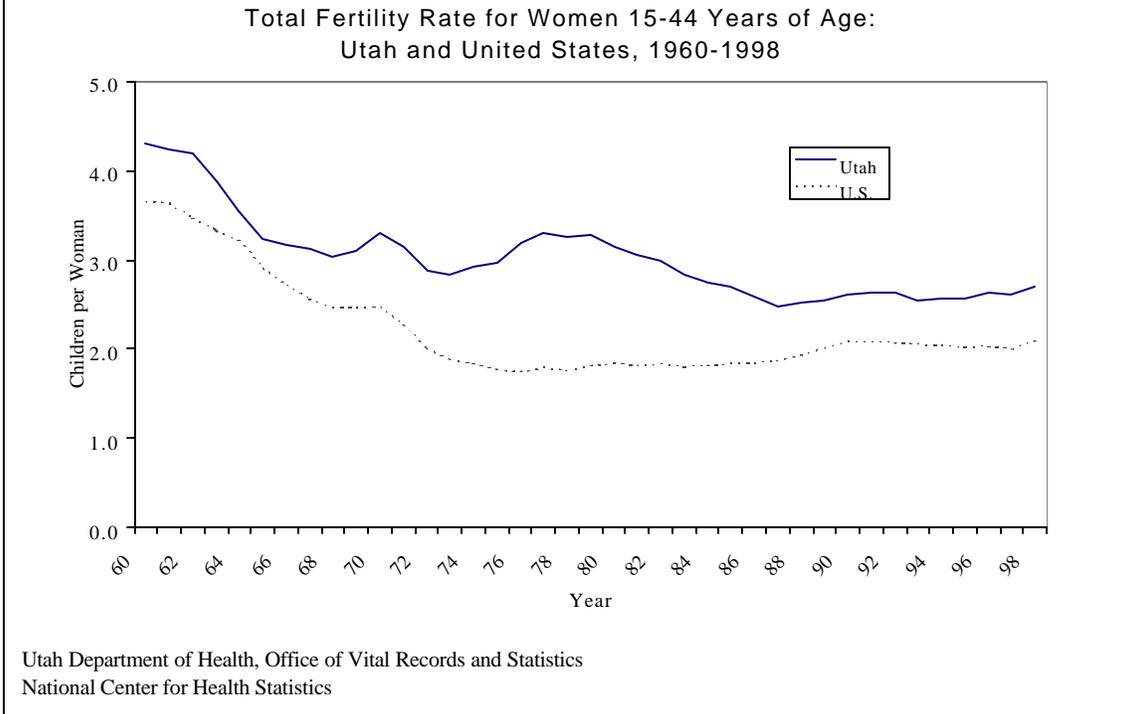
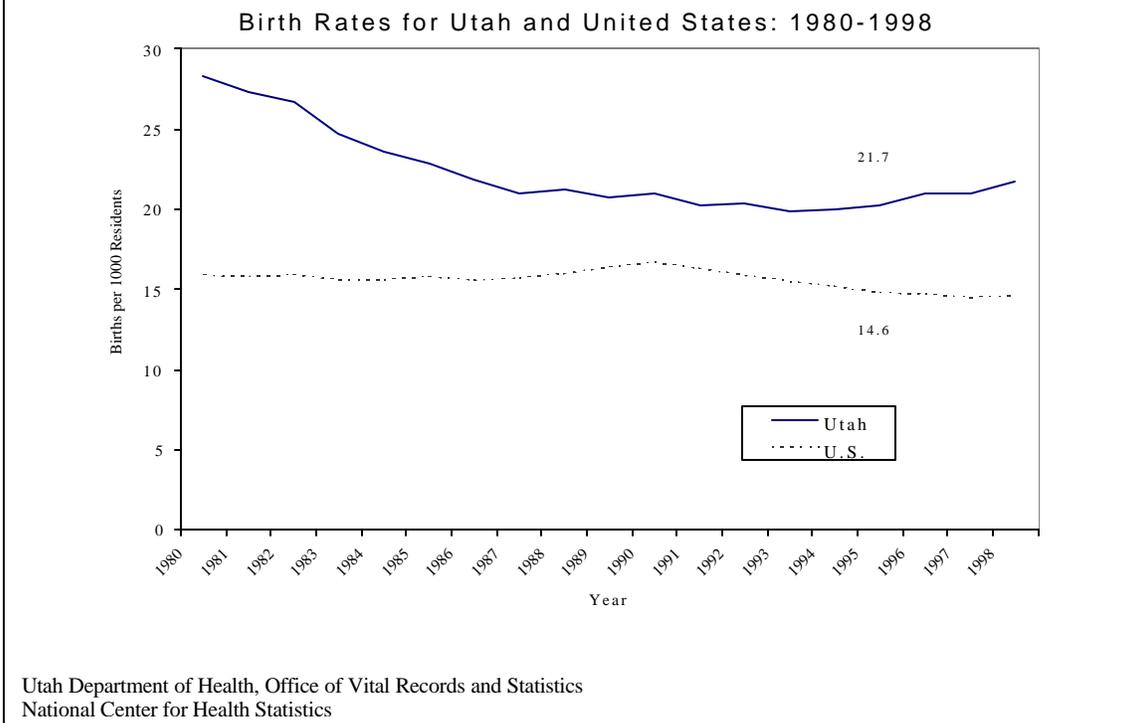


Figure 2:



Unintended Pregnancy

Definition: Unintended or unplanned pregnancy is a pregnancy that was either mistimed or unwanted at the time of conception.³

How are we doing? In the U.S. between 1987 and 1994, the unintended pregnancy rate decreased by 16% from 54 to 45 per 1,000 women of reproductive age.⁴ The only Utah information currently available on unintended pregnancy is from data collected by the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). Early in 1997, a one-day sample of 16,653 women enrolled in Utah's WIC Program revealed that approximately 54% of their pregnancies were unplanned.⁵ The Utah Pregnancy Risk Assessment Monitoring System (PRAMS) is collecting on-going data on the intent of pregnancy among Utah women. These data should be available in 2001.

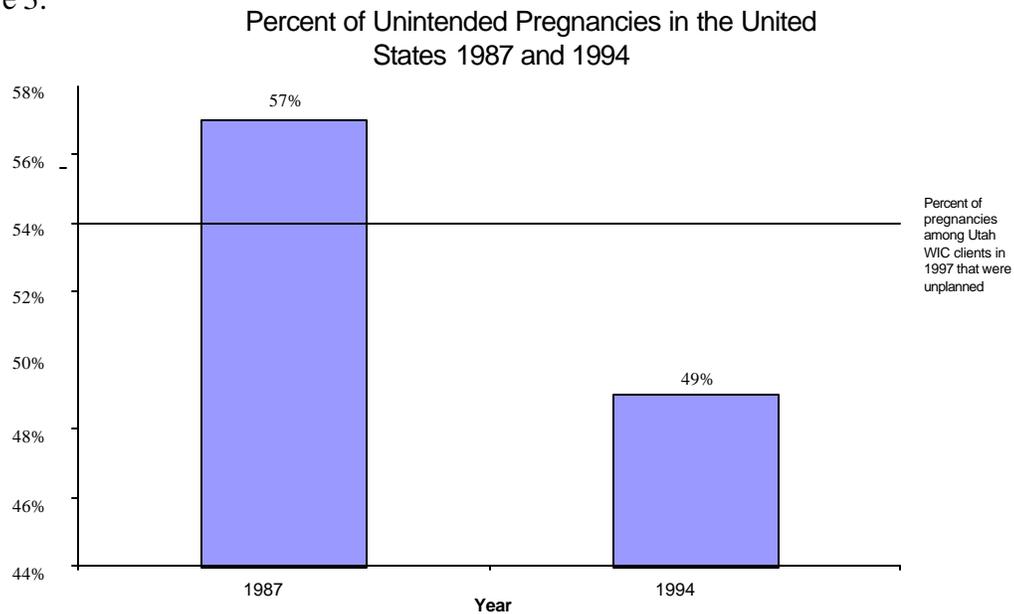
How does Utah compare with the U.S.? In the U.S. in 1994, forty-nine percent of pregnancies were unintended. Of these, 54% ended in abortion. Forty-eight percent of women aged 15-44 in 1994 had at least one unplanned pregnancy sometime in their life. The unintended pregnancy rate was highest among women 18-24 years of age, unmarried, low income, and Black or Hispanic.⁴ No Utah data are available.

National Objective: By 2010, increase the proportion of pregnancies that are intended to 70%.²

CFHS Objective: To obtain PRAMS data to establish a baseline.

Why is it important? Unintended pregnancy is costly to both the individual involved and to society as a whole. As noted above, 54% of unintended pregnancies end in abortion. As stated in The Best Intentions, "Although abortion has few long-term negative consequences for women's health, resolving an unintended pregnancy by abortion can often be a sobering and emotionally difficult experience that no woman welcomes."³ The highest rates of unintended pregnancy are often experienced by those for whom caring for an unplanned child may have the greatest negative impact – unmarried and low-income women. A woman experiencing an unwanted birth is more likely to delay entry into prenatal care until after the first three months of pregnancy or to receive no prenatal care at all. She is more likely to be physically abused and her relationship with her partner is more likely to dissolve. Educational and career goals may be curtailed and the infant may be more likely to be exposed to tobacco or alcohol prior to birth, to be born with low birth weight (less than 2,500 grams. or 5 ½ lbs.), to die prior to its first birthday, to be abused, or to receive insufficient resources for

Figure 3:



Henshaw, S. K. (Jan./Feb. 1998). Unintended Pregnancy in the United States. *Family Planning Perspectives*, 30(1), 24-29.
Utah WIC Client Survey, 1997

healthy development. The impact of a mistimed pregnancy is similar although not as great.³ Unplanned pregnancy also precludes the mother from participating in preconceptional (prior to conception) care such as adequate folic acid intake and identification and treatment of medical conditions, such as diabetes.

What are the risk factors? The incidence of unintended pregnancy is greater among the following groups:⁴

- ✓ Unmarried women
- ✓ Low-income women
- ✓ Teenagers
- ✓ Women over age 40
- ✓ Black or Hispanic women

The following smaller subgroups may have higher rates of unintended pregnancy than the nation as a whole:³

- ✓ Homeless women
- ✓ Heavy abusers of alcohol and illegal drugs

- ✓ Teens who have dropped out of school and engage in multiple high-risk behaviors

What are we doing? Community and Family Health Services (CFHS) promotes abstinence among teens as a means of preventing unintended pregnancy. A pamphlet on family planning resources in Utah has been developed and distributed throughout the state to public agencies, private providers, and at numerous health fairs. All local health districts have received inservices on emergency contraception along with provider handouts on the topic. Public health nurses have been educated in utilization of non-traditional settings to provide family planning information. Health maintenance organizations (HMOs) contracting with Health Care Financing (Medicaid) are required to provide information on the right of women to choose any Medicaid provider for

receipt of family planning services. All HMOs have been urged to provide family planning information to prenatal clients prior to delivery, including information on emergency contraception.

using a contraceptive method during the month they became pregnant. ♦

Contextual information:

By state law government agencies are unable to provide information on, or referral to, family planning services to unmarried minors (under the age of 18) without parental consent, unless the minor is a Medicaid recipient. Legislation requiring insurance companies in Utah to cover prescription contraceptives has twice failed passage. Some local health departments receive no local funding for their family planning services and conservative local health boards and communities make most local health departments unwilling to promote routine or emergency contraception services. The Division of Health Care Financing (Medicaid) is studying the feasibility of extending Medicaid coverage for family planning services to postpartum women up to one year following a covered delivery.

Related measures:⁴

- ✓ Nationally, between 1987 and 1994, the proportion of unintended pregnancies ended by abortion increased from 50% to 54%.
- ✓ Nationally, among teens, from 1987 to 1994, the rate of unintended births increased slightly from 37 per 1,000 to 39 per 1,000.
- ✓ Nationally, in 1994, among women whose unplanned pregnancies ended in abortion, 58% had been

Teen Pregnancy

Definition: The teen pregnancy rate is reported as the number of live births and abortions per 1,000 adolescent females. The teen pregnancy rate currently reported is likely an underestimate of the actual rate because it excludes miscarriage, estimated to be 20% of live births and abortions.⁷

How are we doing? Since 1991, Utah's teen pregnancy rate has been gradually declining.⁷ In 1998, there were 26.8 pregnancies per 1,000 15-17 year old females and 69.9 pregnancies per 1,000 18-19 year old females.⁸

How does Utah compare with the U.S.? Teen pregnancy rates in Utah are lower than those for the U.S. In 1997, 52.9 pregnancies occurred for every 1,000 15-19 year old U.S. females, while only 44.2 pregnancies occurred for every 1,000 15-19 year old females in Utah. However, the 1997 birth rate for White Utah teens was 47/1,000 adolescent females. This is higher than the birth rate for U.S. White teens, 46/1,000 adolescent females.⁷

Why is it important? Teen pregnancy has serious consequences for individuals, families, and communities. Children born to an adolescent mother are likely to encounter additional health risks when compared with children born to older mothers. Teen pregnancy is associated with inadequate prenatal

National and CFHS Objective: By 2010, reduce pregnancies among adolescent females to no more than 46 pregnancies per 1,000.

U.S. baseline: 72 pregnancies per 1,000 females ages 15 to 17 years in 1995.⁶

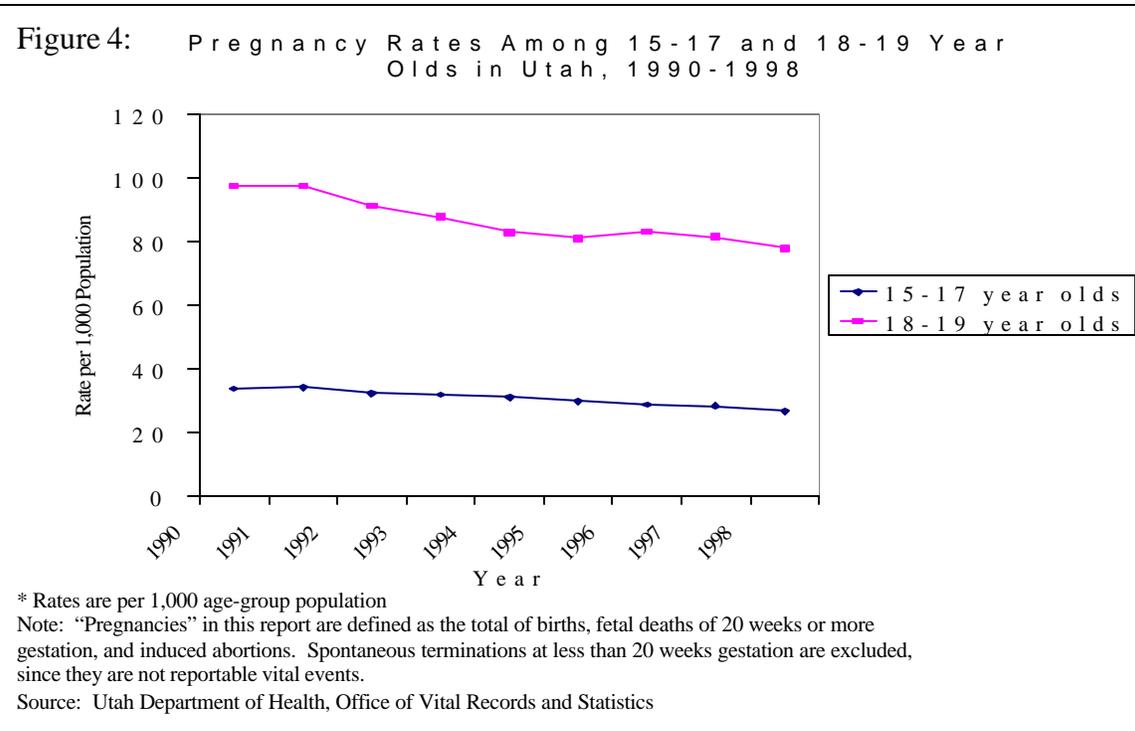
Utah baseline: 26.8 pregnancies per 1,000 females ages 15 to 17 years in 1998.

care, repeat teen pregnancies, and higher rates of low birth weight and infant mortality. In addition, teen pregnancy is associated with poverty, high costs of health care and public assistance, and low educational attainment. Giving birth as a teen places a woman at risk for socioeconomic disadvantage throughout her lifetime.

What are the risk factors? Sexual activity places teens at risk for pregnancy. Teens who earn "C" or lower grades, who smoke tobacco, drink alcohol, use drugs, and date steadily are more likely to be sexually active. Teens who have suffered sexual abuse are also at greater risk for sexual activity and becoming pregnant. Teens who smoke, are of low socioeconomic status and members of ethnic and racial minority groups may be at greater risk for teen pregnancy.⁷

What are we doing? CFHS promotes teen pregnancy prevention activities through the Reproductive Health Program, which include:

- 1) Providing district specific data to local health departments regarding teen pregnancy



- 2) Analyzing data to identify characteristics of Utah teens who become pregnant
 - 3) Participating with Utahns Concerned With Adolescent Pregnancy and Parenting
 - 4) Promoting abstinence education only and motivational programs to youth between the ages of 9 and 14
 - 5) Promoting prenatal care and education through Baby Your Baby, the Pregnancy Riskline, the Reproductive Health Program, and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)
- ✓ 3,237 abortions occurred in Utah in 1998; 19% of these were performed on teens.⁹
 - ✓ In 1997, it was estimated that 48% of female high school students had engaged in sexual intercourse in the U.S. This information is not available for Utah.¹⁰
 - ✓ In Utah in 1997, 54% of births to females 15-17 years old and 60% of births to females 18-19 years old were financed by the Medicaid program. Overall, Utah's Medicaid Program finances approximately 28% of Utah's total births.⁷ ♦

Related measures:

- ✓ 62% of teen births and 17% of all births in Utah in 1998 were to unmarried women.⁸

Prenatal Care

Definition: Prenatal care (PNC) is health care and other services available to pregnant women. Pregnant women may use PNC services during pregnancy to promote positive lifestyle behaviors including risk-specific referrals and obstetrical care until the onset of labor and delivery. Adequate PNC is usually defined as starting care in the first three months of pregnancy and at least 9 visits for women giving birth to full-term infants after 40 weeks.

How are we doing? The percentage of Utah mothers who received prenatal care (PNC) in the first trimester increased from 81.2 percent in 1990, to an all time high of 85.1 percent in 1994, but declined to 79.7 percent in 1998.¹¹

How does Utah compare with the US? The proportion of all pregnant women who received PNC in the first trimester of pregnancy increased nationally from 75.8 percent in 1990 to 82.5 percent in 1997. Among select populations, the proportion increased over that period as follows: for Black women, from 60.6 to 72.3 percent; for American Indian/Alaskan Native women, from 57.9 to 68.1 percent; for Hispanic women reporting Hispanic origin, from 60.2 to 73.7 percent.¹² Overall, Utah women were slightly more likely to start PNC in the first trimester than all women nationally during 1997. The rates among Utah's select populations also showed an increase during the same period: for

National and CFHS Objective:

By 2010, increase to at least 90 percent the proportion of all pregnant women who begin prenatal care in the first trimester of pregnancy.

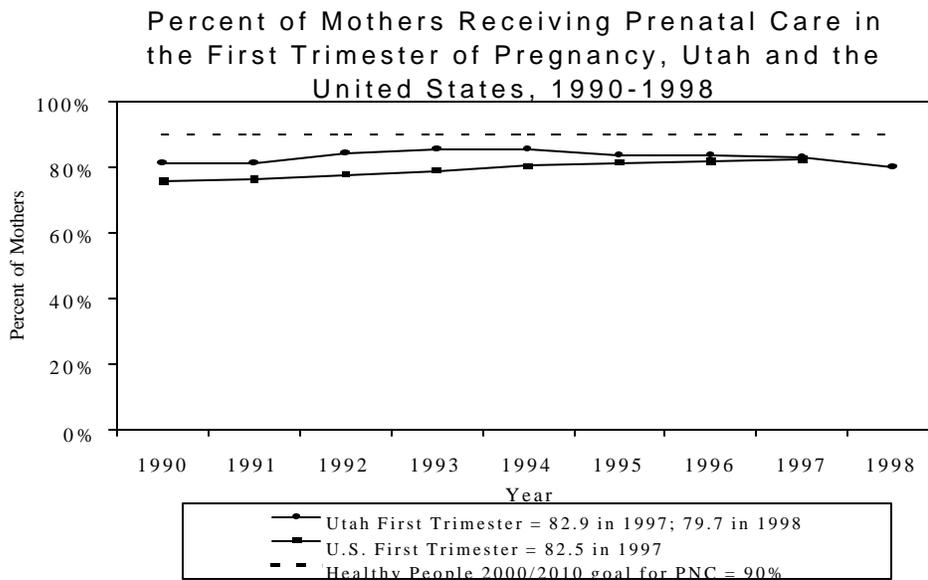
U.S. baseline: 82.5 percent of live births in 1997.

Utah baseline: 82.9 percent of live births in 1997

Black women, 61.0 in 1990 to 70.0 in 1997; Native American women, 50.7 in 1990 to 58.7 in 1997; Hispanic women, 61.9 in 1990 to 62.8 in 1997. Despite these increases, Utah rates for these select populations continue to lag behind U.S. rates, which may be partly explained by small numbers.

Why is it important? One purpose of PNC is to decrease the number of infants born too soon (pre-term birth), too small (low birth weight), and to prevent maternal and infant morbidity and mortality. PNC includes three major components: risk assessment, risk reduction or treatment for medical conditions, and education. Each of these components can contribute to reductions in perinatal morbidity and mortality by identifying potential risks and helping women to address behavioral factors, such as smoking and alcohol use that contribute to poor outcomes. PNC is more likely to be effective if women begin receiving care early in pregnancy. In addition, more than one-quarter of births in the United States are financed by Medicaid.¹³ Expenses related to childbirth have become the single largest component of employer's private plan health care costs (10-40%), so tracking the cost-

Figure 5:



Utah Department of Health (2000, January). Maternal and child health internet query module. Utah home page [On-line]. Available: <http://hlunix.hl.state.ut.us/matchiim/main/>
 U.S. Department of Health and Human Services (1999). Healthy People 2000 Progress Review. Available: <http://www.odphp.osophs.dhhs.gov/pubs/hp2000/PROGRVWmaterinfant/maternalprog.html>

benefits of prenatal care is of interest for promotion purposes.

What are the risk factors? A woman is more likely to seek early and adequate PNC if her pregnancy is planned. Women less likely to access care in their first trimester include:

- ✓ Women <20 years of age
- ✓ Non-Hispanic Black women
- ✓ Hispanic women
- ✓ Women with <12 years of education
- ✓ Women who have had more than 1 child

The risk of poor birth outcomes is greatest among the youngest mothers. Less than half of all pregnant women under age 15 receive adequate prenatal care.

What are we doing? CFHS promotes PNC through the Reproductive Health Program and other state programs within the Bureau of Maternal and Child Health. Some activities include:

- ✓ Analysis of data to identify characteristics of Utah women and their utilization of PNC
- ✓ Providing health district-specific data to local health departments regarding PNC utilization
- ✓ Production and distribution of resource list of community services
- ✓ Education of prenatal care providers on smoking cessation programs and resources
- ✓ Full-time nurse consultant that collaborates with local health departments on content of PNC

- ✓ Media campaigns, web site, and literature distribution on importance of early PNC
- ✓ Pregnancy Risk Assessment Monitoring System (PRAMS)
- ✓ Wee Care case management of pregnant women
- ✓ Pregnancy Risk Line
- ✓ Baby Your Baby campaign

Related measures: During 1989-1997, the national percentage of women with delayed or no PNC decreased from 25% to 18%, with improvement in both delayed PNC (from 22% to 16%) and in no PNC (from 2% to 1%). Data from 1997 national PRAMS indicated that 56% of women with delayed or no PNC wanted to begin PNC earlier. Reasons for delayed or no PNC varied by racial/ethnic group, age or method of payment for PNC. The most common reasons for not receiving care earlier was, “I didn’t know that I was pregnant,” and, “I didn’t have enough money to pay for my visits.” ♦

Low Birth Weight

Definition: Low birth weight is defined as weighing less than 2500 grams (5.5 pounds). Very low birth weight is defined as weighing less than 1,500 grams (3 pounds 5 ounces).¹⁴

How are we doing? In Utah, low birth weight has increased from 5.4% in 1986 to 6.8% in 1998, moving away from the Healthy People 2010 Objective of 5.0%.¹⁴

How does Utah compare with the U.S.? Nationally, low birth weight has increased as well from 6.8% in 1986 to 7.5% in 1997. Utah trends parallel this increase.¹⁴

Why is it important? Low birth weight increases the risk for infant mortality and morbidity. As birth weight decreases, the risk for death increases. Low birth weight infants who survive often require intensive care at birth, may develop chronic illnesses, and later may require special education services. Health care costs and length of hospital stay are higher for low birth weight infants. Utah data indicate that for infants weighing between 1500 and 2499 grams costs are 6 times higher, and almost 85 times higher for newborns with a birth weight less than 1500 grams.¹⁴

National and CFHS Objective: By 2010, reduce low birth weight to no more than 5.0% of live births and very low birth weight to no more than 0.9% of live births.

U.S. baseline: 7.6% of live births were low birth weight, and 1.4% were very low birth weight in 1998.⁶

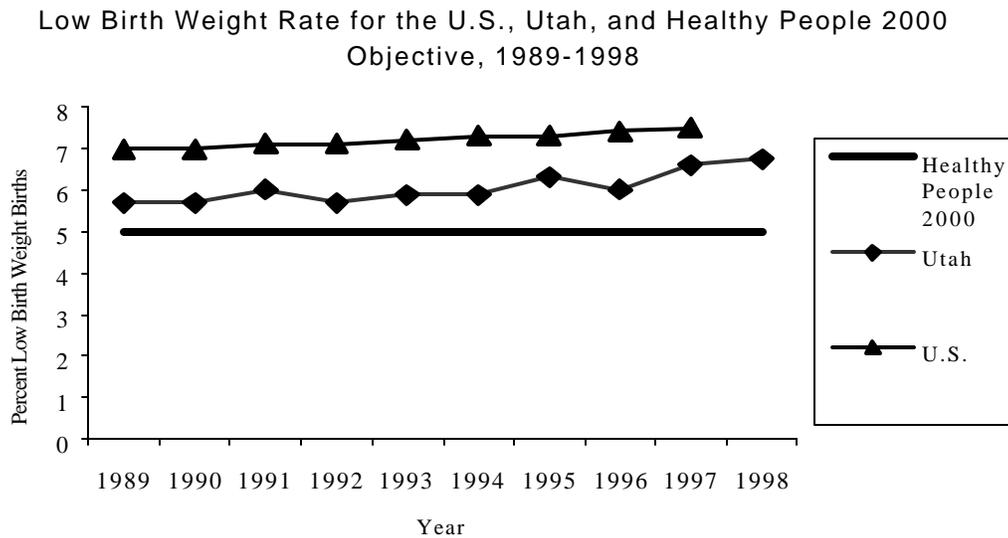
Utah baseline: 6.8% of live birth were low birth weight and 1% were very low birth weight in 1998.

What are the risk factors?

- ✓ Maternal age: mothers younger than 25 and older than 39
- ✓ Maternal chronic disease, such as hypertension
- ✓ Maternal obstetric family history, such as having been born low birth weight themselves
- ✓ Race and ethnicity: Utahns who are Black, Hispanic, or Asian-Pacific Islanders have higher rates of low birth weight than the general population of Utahns
- ✓ Multiple gestation (i.e. twins)
- ✓ Low pre-pregnancy weight
- ✓ Tobacco or alcohol use during pregnancy
- ✓ Lack of or inadequate prenatal care
- ✓ Short intervals between pregnancies
- ✓ Previous pregnancy resulting in a low birth weight infant
- ✓ Low income
- ✓ Low educational attainment
- ✓ Being unmarried¹⁴

What are we doing? Unfortunately, since little is known about effective

Figure 6:



Utah Department of Health (1999). Office of Vital Records and Statistics
National Center for Health Statistics, CDC

strategies to reduce low birth weight, it is difficult to impact the rates. However, in December of 1999, the Utah Department of Health produced a report on low birth weight in Utah. This report, complete with recommendations, has been sent to hospitals, local health departments, and health care providers in Utah. In addition, the Division of Community and Family Health Services is working to reduce tobacco use during pregnancy, and promote preconceptional health care. Additional research on pregnancy infections and prepregnancy weight is being performed. The Perinatal Mortality Review Program collects information about deaths related to prematurity and low birth weight to identify potential preventive measures.¹⁴

Contextual information: In 1997, Governor Michael O. Leavitt initiated a statewide volunteer effort, Utah's Promise, setting a goal to reduce the number of low birth weight infants born in Utah by 10 percent to "give Utah children a healthier start."¹⁴

Related measures:

- ✓ Preterm birth is a large contributor to low birth weight; 67% of low birth weight infants in Utah were born preterm (before 37 weeks of gestation)
- ✓ Intrauterine growth retardation (IUGR) is a contributor to low birth weight; 57% of low birth weight infants in Utah born between 1987 and 1997 also experienced IUGR.¹⁴ ♦

Breastfeeding

Definition: Breastfeeding is the practice of feeding mother's breast milk to an infant on the average of at least once a day.

How are we doing? Breastfeeding initiation rates have increased in the state of Utah over the last 10 years. However, duration rates at 6 months have declined over the last two years.

How does Utah compare with the U.S.? In 1998 the CDC Pediatric Nutrition Surveillance System reported the breastfeeding initiation rate in the U.S. was 49.2% compared with Utah initiation rate of 84.7%. In 1998 the CDC Pediatric Nutrition Surveillance System reported the breastfeeding duration rate at 6 months postpartum in the U.S. was 19.6% compared with Utah duration rate of 24.6%.

Why is it important? Extensive research, especially in recent years, documents compelling advantages to infants, mothers, families, and society from breastfeeding and the use of human milk for infant feeding. These include nutritional, immunological, developmental, psychological, social, economical, and environmental benefits.

What are the protective factors? Breastfeeding provides significant social and economical benefits to the

National and CFHS Objectives: By 2010, increase to at least 75% the proportion of mothers who breastfeed their babies in the early postpartum period.

By 2010, increase to at least 50% the proportion of mothers who breastfeed until their babies are 6 months old.

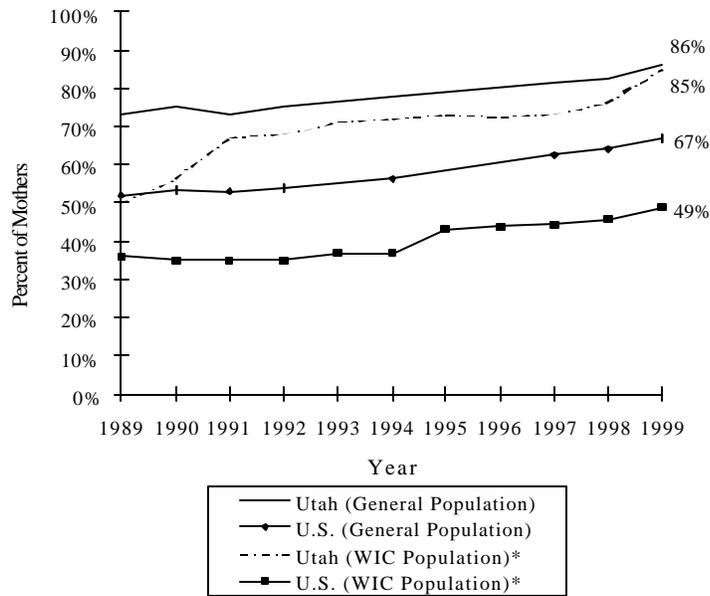
By 2010, increase to at least 25% the proportion of mothers who breastfeed until their babies are 1 year old.

U.S. baseline: 60% during early postpartum period and 22% at 6 months in 1996; 8.6% of singleton infants breast fed at 1 year in 1990-93.

nation including reduced health care costs and reduced employee absenteeism for care attributable to child illness. Research shows human milk and breastfeeding of infants provides advantages with regard to general health, growth, and development while significantly decreasing risk for a large number of acute and chronic diseases in infants including:

- ✓ Incidence and/or severity of diarrhea
- ✓ Respiratory infections
- ✓ Otitis media
- ✓ Bacteremia
- ✓ Bacterial meningitis
- ✓ Botulism
- ✓ Urinary tract infection
- ✓ Necrotizing enterocolitis
- ✓ Sudden Infant Death Syndrome
- ✓ Diabetes mellitus
- ✓ Crohn's disease
- ✓ Ulcerative colitis
- ✓ Lymphoma
- ✓ Allergic diseases
- ✓ Chronic digestive diseases
- ✓ Enhanced cognitive development

Figure 7:
Percent of Mothers who Breastfeed, Utah, U.S., and
WIC Populations, 1989-1999



Mother's Survey, Ross Products Division, Abbott Laboratories, Utah and National Population Survey
*CDC WIC data

There are numerous studies that indicate possible health benefits to mothers. Breastfeeding increases levels of oxytocin resulting in less postpartum bleeding and more rapid uterine recovery. Lactating women may have an earlier return to prepregnancy weight, delayed resumption of ovulation with increased child spacing, improved bone remineralization postpartum with reduction in hip fractures, and reduced postmenopausal cancer and premenopausal breast cancer.

What are we doing? The WIC Program and the Wee Care Program promote breastfeeding initiation and duration. Activities include:

- 1) Staff training including comprehensive training for a

Certified Lactation Educator in each WIC agency

- 2) Providing breast pumps and other supportive devices to WIC and Public Employees Health Program (PEHP) moms
- 3) Peer counselor training and support
- 4) Extensive breastfeeding education for clients including classes and individual counseling
- 5) Supportive clinic environments including qualified well-trained staff, breastfeeding rooms, posters, absence of formula promotion materials
- 6) Community outreach and collaboration projects.

In addition, many WIC and Wee Care staff are members of the Utah Coalition to Promote Breastfeeding.

Contextual information:

Currently, the WIC Program and Wee Care Program work to protect, promote, and support breastfeeding. In order to meet the Healthy People 2010 Objectives, the programs plan to work closely with other health department programs, and outside agencies such as hospitals, other medical/health providers, community groups, universities, and private businesses.

Related measures:

- ✓ 1998 National Ross Mother's Survey reports U.S. breastfeeding initiation rates at 64.3% and 6 month rates at 28.6%.
- ✓ 1998 National Ross Mother's Survey reports Utah breastfeeding initiation rates at 82.8% and 6 month rates at 47%.
- ✓ The 1998 CDC Pediatric Surveillance System reports the highest prevalence of breastfeeding initiation in Utah is among White mothers (77.6%) followed by Hispanic mothers (74.2%). The lowest prevalence of breastfeeding initiation in Utah is among Native American or Alaskan Native mothers (64.8%).♦

Neural Tube Defects

Definition: Neural tube defects (NTDs) are malformations involving the brain and spinal cord which form very early in the embryonic period. The most frequently occurring NTDs are meningocele (spina bifida) and anencephaly. Two other NTDs that occur much less frequently are encephalocele and craniorachischisis. Both are lethal conditions.

How are we doing? Utah prevalence of NTDs has decreased over the past several years. This decrease has coincided with the identification of a preventive measure that reduces the risk of neural tube defects – the intake of folic acid prior to conception.

Why is it important? NTDs are serious birth defects that affect an estimated 4,000 pregnancies each year in the United States.¹⁵ However, women can substantially decrease the risk for this birth defect by consuming 400 micrograms (0.4 mg) of folic acid per day before conception and during early pregnancy. The neural tube is fully closed 30 days after conception. It is during these first 30 days that a defect may occur, which is before a woman may recognize she is pregnant. In September 1992, the Public Health Service (PHS) recommended that all women of childbearing age who are capable of becoming pregnant consume 400 micrograms of folic acid daily.¹⁶

National and CFHS Objective:

By 2010, reduce the occurrence of spina bifida and other neural tube defects (NTDs) to no more than 3 new cases per 10,000 live births.

U.S. baseline: 6 new cases of spina bifida or another NTD per 10,000 live births in 1996.

Utah baseline: 8.6/10,000 in 1994
Recent data: 6.6/10,000 in 1998

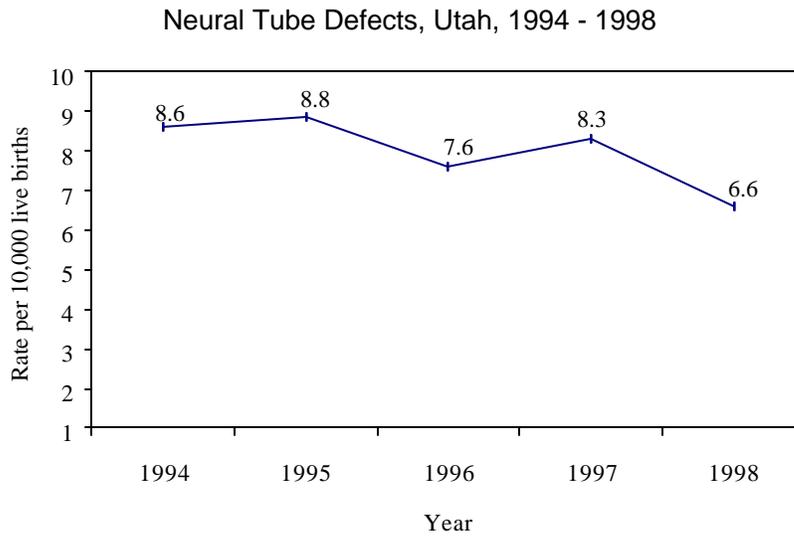
What are the risk factors?

Although NTDs may occur with aneuploidy (abnormal number of chromosomes), the majority occur as an isolated malformation without known risk factors. There are certain ethnic groups that place one at greater risk (Sikh heritage) but this is not found in Utah (or if so, it is rare). There are single gene disorders that may influence outcome, but again, these are also rare events.

What are we doing? Reducing neural tube defects is a priority for CFHS because of the preventable nature of the condition. The Division of CFHS has a two-fold approach to preventing NTDs: 1) monitoring rates, and 2) education regarding prevention. CFHS tracks the rate of NTDs per 1,000 births each year and participates in the Folic Acid Education Campaign.

The Folic Acid Education Campaign has been educating women in their childbearing years, as well as health care providers in the state to take

Figure 8:



Utah Department of Health, Bureau of Vital Records and the Utah Birth Defect Network database, 1994-1998

adequate amounts of folic acid prior to conception and during early pregnancy. This education campaign has been ongoing since January 1996. ♦

Infant Mortality

Definition: Infant mortality (IM) is defined as the death of an infant before his or her first birthday. The infant mortality rate per 1,000 live births is computed by dividing the number of infant deaths for a given period by the number of live births for the same period and then multiplying by 1,000.

How are we doing? The U.S. infant mortality rate has declined approximately tenfold during the last century from an estimated 97.3/1000 live births in 1900 to 9.2/1000 live births in 1990. Despite this large decline, the problem of infant mortality remains substantial. During 1998, 257 Utah infants died, each death representing a tragedy for parents, siblings, and other family members.

How does Utah compare with the US? Utah's infant mortality rate was 5.7/1000 live births in 1998, compared to a rate of 7.2/1000 live births for the U.S. as a whole. However, there are populations in Utah whose rates far exceed the state average. For instance, during the years 1996-1998, the Black rate was 10.7/1000 live births and the Native American rate was 10.3/1000 live births.

Why is it important? Infant death is a critical indicator of the health of a

National and CFHS Objectives: By 2010, reduce infant deaths to no more than 4.5/1,000 live births per year.

U.S. baseline: 7.2/1000 live births per year, 1998.

Utah baseline: 5.7/1,000 live births per year, 1998

Decrease the disparity between the Black and Native American infant mortality rates and the White infant mortality rate to a ratio of 1.3 to 1 in 2001.

Utah baseline: As of 1994-96: 2.5 to 1
Recent data 1996-98: 1.6 to 1

population. It reflects the overall state of maternal health, as well as the quality and accessibility of primary health care for pregnant women and infants.

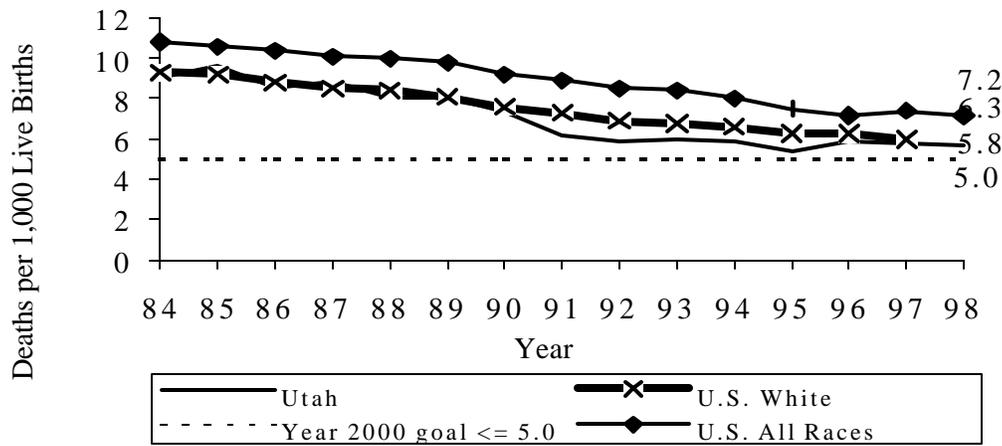
What are the risk factors?

According to a recent analysis from the National Center for Health Statistics data, infant mortality rates were higher for infants whose mothers

- ✓ began prenatal care after the first trimester of pregnancy
- ✓ were teenagers
- ✓ were 40 years of age or older
- ✓ did not complete high school
- ✓ were unmarried
- ✓ smoked during pregnancy

Infant mortality was also higher for male infants, multiple births, and infants born preterm or at low birth weight. In fact, in 1996, 64% of all infant deaths occurred to the 7.4% of infants born at low birth weight.

Figure 9: Infant Mortality Rates for Utah and United States, 1984-1998



Utah Department of Health, Office of Vital Records (UT) and National Center for Health Statistics, DHHS (U.S.)

What are we doing? Activities planned for 2001 include:

- ✓ Reviewing data obtained from the Pregnancy Risk Assessment Monitoring System (PRAMS) and the Perinatal Mortality Review Program (PMRP) to identify modifiable risk factors for infant mortality and develop appropriate interventions
- ✓ Making health information available on-line for researchers, students, health care professionals and the general public to increase awareness of factors associated with infant death (i.e. The Maternal and Child Health Information Internet--Query Module (MatCHIIM) database and the Reproductive Health Program website)
- ✓ Public education regarding danger signs of pregnancy and the importance of prompt action when recognized
- ✓ Continuing education to promote the Back to Sleep Campaign and

other sleeping safety issues and disseminate findings related to the reduction of SIDS and postneonatal deaths

- ✓ Educating prenatal health care providers to help pregnant clients cease smoking to reduce the postneonatal mortality rate and reduce low birth weight births which contribute to neonatal mortality.

Related measures and information: The leading causes of infant mortality in Utah during 1998 were: perinatal conditions, congenital anomalies, Sudden Infant Death Syndrome, and injuries. Four programs within the division are actively conducting continuous surveillance on all of these infant death causes. Through analysis of data and review of individual death cases, interventions are being identified to prevent these tragedies in the future.¹⁷ ♦

Maternal Mortality

Definition: A maternal death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy irrespective of the duration and site of the pregnancy caused by, related to, or aggravated by the pregnancy or its management but not from accidental or incidental causes. Maternal deaths should be divided into two groups:

1. Direct obstetric deaths: Those resulting from obstetric complications of the pregnant state from interventions, omissions, incorrect treatment, or from a chain of events resulting from any of the above.
2. Indirect obstetric deaths: Those resulting from previous existing disease that developed during pregnancy and which were not due to direct causes, but was aggravated by physiological effects of pregnancy.

How are we doing? Utah's maternal mortality has decreased from 36 deaths per year in 1940 to a range of 0-7 deaths per year between 1980 and 1998. In 1998 the maternal mortality rate in Utah was 6.6/100,000 live births. Figure 10 illustrates a sharp increase in maternal mortality between 1988 and 1992. This is due to the adoption of a broader definition of maternal mortality. A recent report estimated that misclassification of maternal deaths accounted for 1.3 to 3 times the rate reported in vital statistics records alone.¹⁸ The same

National and CFHS Objective:

By 2010, reduce maternal deaths to 3.3 per 100,000 live births (if other sources of maternal mortality data besides vital statistics are used, a 50% reduction in maternal mortality is the intended target.)¹

U.S. baseline: 8.4 maternal deaths per 100,000 live births in 1997.

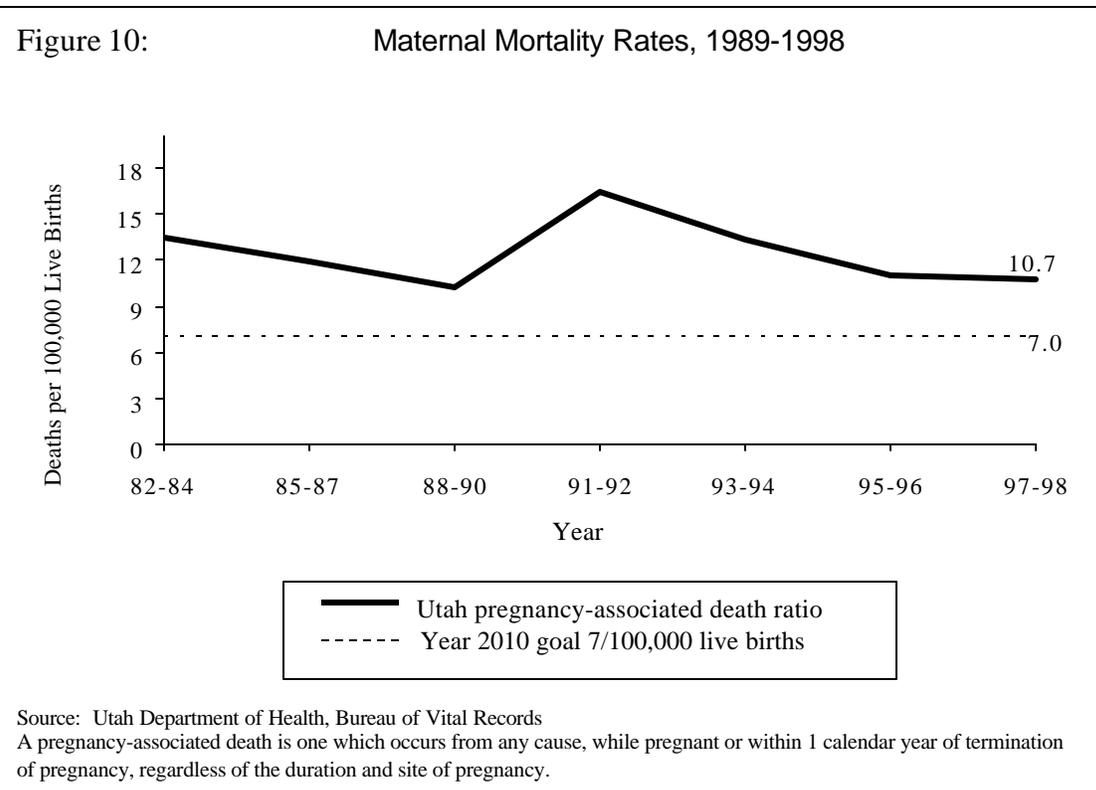
Utah baseline: 4.6 maternal deaths per 100,000 live births in 1997

Recent data: 6.6 maternal deaths per 100,000 live births in 1998.

report adds that inclusion of deaths causally related to pregnancy that occur between 43 and 365 days postpregnancy can increase the number of maternal deaths identified by 5%-10%.

How does Utah compare with the US? Utah's maternal mortality rate is lower than the U.S. rate of 8.4 maternal deaths/100,000 live births (1997). Since 1982 in the United States no progress has been made toward achieving the Healthy People 2000 goal of 3.3 maternal deaths/100,000 live births. The United States has not reached an irreducible minimum in maternal mortality. The World Health Organization (WHO) estimates demonstrate that 20 countries have reduced maternal mortality levels to below that of the United States.¹⁹

Why is it important? Although the number of maternal deaths is relatively



low, the number represents outcomes of only the most severe of pregnancy-related complications. Understanding the characteristics of women who die as a result of pregnancy complications and the risk factors for pregnancy-related death is essential if we are to develop strategies to prevent both mortality and severe morbidity.

What are the risk factors? Pregnancy related mortality for Black women is consistently higher than for White women. Older women, particularly women ages ≥ 35 years, are also at increased risk for pregnancy-related deaths. Women who received no prenatal care compared to those who received “adequate” prenatal care also had a higher risk of pregnancy-related mortality.

What are we doing? Activities planned for 2001 include:

- ✓ Maternal mortality surveillance through the Perinatal Mortality Review Program
- ✓ Encourage providers to assess for risk of Factor V Leiden (intergenerational history of blood clots during pregnancy) and if positive history, perform laboratory screening to identify those women at risk of pulmonary embolism
- ✓ Encourage prenatal care providers caring for women with histories of chronic disease to consult and refer to appropriate specialists during pregnancy
- ✓ Provide education regarding the importance of screening pregnant patients for a history of depression and referring as appropriate,

especially during the postpartum period

- ✓ Collaborate with the Office of Health Care Statistics and the Office of Vital Records of the Utah Department of Health to expand the process for identification of pregnancy-associated deaths through record linkage using the hospital discharge database.

Related measures and information:

Utah has adapted the CDC/ACOG Maternal Mortality Study Group's new terms to better classify maternal deaths. They are as follows:

- ✓ A pregnancy-associated death is one which occurs from any cause, while pregnant or within 1 calendar year of termination of pregnancy, regardless of the duration and the site of pregnancy.
- ✓ A pregnancy-related death is a pregnancy-associated death resulting from 1) complications of the pregnancy itself, 2) the chain of events initiated by the pregnancy that led to death or 3) aggravation of an unrelated condition by the physiological or pharmacological effects of the pregnancy that subsequently caused death.

In addition to introducing these terms, the CDC/ACOG definitions also extend the interval between termination of pregnancy and death from 42 days to 1 year. With the advent of intensive care units and advanced life support systems, a limitation of 42 days does not include all pregnancy-associated deaths. Utah's Prenatal Mortality Review Program has adapted these recommendations for their surveillance of maternal deaths. ♦

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¹⁵ CDC. Surveillance for anencephaly and spina bifida and the impact of prenatal diagnosis -- United States, 1985-1994.

¹⁶ CDC. *Recommendations for the use of folic acid to reduce the number of cases of spina bifida and other neural tube defects*. MMWR 1992;41 (no. RR-14).

¹⁷ National Center for Health Statistics. Monthly Vital Statistics Report, Vol. 46, No. 12, Supp. August, 1998.

¹⁸ Berg, C.J.; Atrash, H.K.; Koonin, L.M. *Pregnancy-related mortality in the United States, 1987-1990*. Obstet Gynecol 1996; 88:161-7.

¹⁹ World Health Organization. WHO revised 1990 estimates of maternal mortality: a new approach by WHO and UNICEF. Geneva, Switzerland: World Health Organization, 1996; WHO/FRH/MSM/96.11.