Indicator:	**Self-reported Diagnosed Diabetes (I1)**
Domain:	Chronic Conditions
Sub-domain:	Diabetes
Demographic group:	Women aged 18-44 years.
Data resource:	Behavioral Risk Factor Surveillance System (BRFSS) http://www.cdc.gov/BRFSS/
Data availability:	Core item - available in all states annually.
Numerator:	Female respondents aged 18-44 years who reported ever being told by a doctor that they have diabetes. Women with gestational diabetes would be included in the numerator, but women with pre-diabetes or borderline diabetes would not.
Denominator:	Female respondents aged 18-44 years who did or did not report ever having been told by a doctor that they have diabetes (excluding unknowns and refusals).
Measures of frequency:	Crude annual prevalence and 95% confidence interval, weighted using the BRFSS methodology (to compensate for unequal probabilities of selection, and adjust for non-response and telephone non-coverage).
Period of case definition:	Lifetime.
Significance:	In 2007, the median percent of all participating states and territories for female BRFSS respondents reporting ever being told by a doctor that they have diabetes was equal to 9.9% (8.1% "Yes"; 1.8% "Yes, pregnancy-related").[1] Diabetes is the sixth leading cause of death in the United States, and is capable of causing serious health complications including heart disease, blindness, kidney failure, and lower-extremity amputations. In addition, gestational diabetes can cause serious problems for both mothers and babies. Because preconceptional and prenatal control of diabetes reduces the risk of congenital malformations, pregnancy loss, and perinatal mortality, the Clinical Work Group of the Select Panel on Preconception Care recommends that all diabetic women of reproductive age be counseled before pregnancy about the importance of diabetes control.

Limitations of indicator:	Indicator is based on self-reported data that were not confirmed by a physician. However, self-reported diabetes data from BRFSS has consistently yielded high reliability and moderate validity, which is also consistent with other research demonstrating underreporting of diabetes.[3]
Related Healthy People 2010 Objective(s):	5.4. Increase the proportion of adults with diabetes whose condition has been diagnosed. Target: 80% 5-8. Decrease the proportion of women with gestational diabetes.

References:

1. Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey Data. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2007.
2. Dunlop AL, Jack BW, Bottalico JN, et al. The clinical content of preconception care: women with chronic medical conditions. Am J Obstet Gynecol 2008; 199(6 Suppl 2):S310-27.
3. Nelson DE, Holtzman D, Bolen J, Stanwyck CA, Mack KA. Reliability and validity of measures from the Behavioral Risk Factor Surveillance System (BRFSS). Soc Prev Med 2001; 46 Suppl 1:S3-42.

Indicator:	**Pre-pregnancy Diabetes (I2)**
Domain:	Chronic Conditions
Sub-domain:	Diabetes
Demographic group:	Women aged 18-44 having a live birth.
Data resource:	Pregnancy Risk Assessment Monitoring System (PRAMS). http://www.cdc.gov/prams/
Data availability:	Core item – available in all PRAMS states annually.
Numerator:	Respondents aged 18-44 years who reported ever being told by a doctor, nurse or health care worker that they had Type 1 or Type 2 diabetes before the pregnancy that resulted in their most recent live birth. Women with pre-diabetes or borderline diabetes should not be included in the numerator.
Denominator:	Respondents aged 18-44 years who reported that they had or had not ever been told by a doctor, nurse or health care worker that they had Type 1 or Type 2 diabetes before the pregnancy that resulted in their most recent live birth (excluding unknowns and refusals).
Measures of frequency:	Crude annual prevalence and 95% confidence interval, weighted using the PRAMS methodology (to compensate for unequal probabilities of selection, and adjust for non-response and telephone non-coverage).
Period of case definition:	Lifetime.
Significance:	Based on 2005 PRAMS data, 10.4% of women having a live birth reported experiencing diabetes; 23.1% of these women reported pre-existing diabetes.[1] Women with diabetes are at an increased risk for complications during pregnancy, and are more likely than non-diabetic women to experience adverse infant health outcomes such as large for gestational-age birth weight and birth defects.[2,3] Macrosomia (i.e., large for gestational age) increases the risk of labor complications, cesarean delivery, intracranial hemorrhage, shoulder dystocia, and respiratory distress. Because preconceptional and prenatal control of diabetes reduces the risk of congenital malformations, pregnancy loss, and perinatal mortality, the Clinical Work Group of the Select Panel on Preconception Care recommends that all diabetic women of reproductive age be

	counseled about the importance of diabetes control before pregnancy and appropriately treated to achieve diabetes control.[4]
Limitations of indicator:	Women experiencing a fetal death or abortion are excluded. These data are self-reported, were not confirmed by a physician and may be subject to misclassification bias. In addition, there is no means to differentiate between Type 1 and Type 2 diabetes.
Related Healthy People 2010 Objective(s):	5-1. Increase the proportion of persons with diabetes who receive formal diabetes education. Target: 60%. 5-2. Prevent diabetes. 5-4. Increase the proportion of adults with diabetes whose condition has been diagnosed. 5-8. Decrease the proportion of pregnant women with gestational diabetes.

References:

1. Centers for Disease Control and Prevention. Pregnancy complications and perinatal outcomes among women with diabetes -- North Carolina, 1989-1990. MMWR, Nov. 05, 1993 / 42(43):847-51.
2. Temple RC, Aldridge VJ, Murphy HR. Prepregnancy care and pregnancy outcomes in women with type 1 diabetes. Diabetes Care 2006; 29:1744-49.
3. Clausen TD, Mathiesen E, Ekbom P, et al. Poor pregnancy outcome in women with type 2 diabetes. Diabetes Care 2005, 28:323-28.
4. Dunlop AL, Jack BW, Bottalico JN, et al. The clinical content of preconception care: women with chronic medical conditions. Am J Obstet Gynecol 2008 Dec;199(6 Suppl B):S310-27.

Indicator:	**Hypertension (I3)**
Domain:	Chronic Conditions
Sub-Domain:	Hypertension
Demographic Group:	Women aged 18-44 years.
Data resource:	Behavioral Risk Factor Surveillance System (BRFSS). http://www.cdc.gov/BRFSS/
Data availability:	Core item - available in all states in odd years only.
Numerator:	Female respondents aged 18-44 years who reported ever being told by a doctor, nurse, or other health professional that they have high blood pressure. Women with high blood pressure during pregnancy would be included in the numerator, but women with borderline high blood pressure or pre-hypertension would not.
Denominator:	Female respondents aged 18-44 years who reported that they had or had never been told by a doctor, nurse, or other health professional that they have high blood pressure (excluding unknowns and refusals).
Measures of frequency:	Crude annual prevalence and 95% confidence interval, weighted using the BRFSS methodology (to compensate for unequal probabilities of selection, and adjust for non-response and telephone non-coverage)
Period of case definition:	Lifetime.
Significance:	In 2002, national data estimate that 3% of women of reproductive age had hypertension.[1] As the number of pregnancies among women aged 35 years and older increases, this proportion is likely to grow. Pregnancies among women with chronic hypertension can lead to preeclampsia or eclampsia, damage to the central nervous system, and kidney damage.[2,3] Potential life threatening conditions related to chronic hypertension during pregnancy include preterm delivery, intrauterine growth retardation, placental abruption, and fetal demise.[4] The Clinical Work Group of the Select Panel on Preconception Care recommends that all women of reproductive age with chronic hypertension be counseled before pregnancy about medication management and about the maternal and infant risks associated with hypertension during pregnancy.[5]

Limitations of indicator:	Estimates are based on self-reported hypertension, which has not been confirmed by a physician. Studies have reported high reliability for this BRFSS item.[6] However, based on studies comparing self-reports with clinical data, validity is deemed to be moderate as self-reported hypertension status may result in an underestimate of true hypertension prevalence.[7] However, this underestimation is consistent with other research.[6]
Related Healthy People 2010 Objective(s):	12-9. Reduce the proportion of adults with high blood pressure. Target: 16%

References:

1. U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau, Women's Health USA 2002. Rockville, MD: U.S. Department of Health and Human Services; 2002.
2. Report of the National High Blood Pressure Education Program Working Group on High Blood Pressure in Pregnancy. Am J Obstet Gynecol 2000; 183:S1-22.
3. Agency for Healthcare Research and Quality. Management of chronic hypertension during pregnancy. Evidence Report/Technology Assessment no. 14. AHRQ publication no. 00E011. Rockville, MD: Agency for Healthcare Research and Quality; 2000.
4. Ferrer RL, Sibai BM, Morrow CD, Chiquette E, Stevens KR, Cornell J. Management of mild chronic hypertension during pregnancy: a review. Obstet Gynecol 2000; 96:849-60.
5. Dunlop AL, Jack BW, Bottalico JN, et al. The clinical content of preconception care: women with chronic medical conditions. Am J Obstet Gynecol. 2008 Dec;199(6 Suppl B):S310-27.
6. Nelson DE, Holtzman D, Bolen J, Stanwyck CA, Mack KA. Reliability and validity of measures from the Behavioral Risk Factor Surveillance System (BRFSS). Soc Prev Med 2001; 46 Suppl 1:S3-42.
7. Joint National Committee. Hypertension prevalence and the status of awareness, treatment, and control in the United States: final report. Hypertension 1985; 7:456-468.

Indicator:	**Pre-pregnancy Hypertension (I4)**
Domain	Chronic Conditions
Sub-domain	Hypertension
Demographic group:	Women aged 18-44 years having a live birth.
Data resource:	Pregnancy Risk Assessment Monitoring System (PRAMS). http://www.cdc.gov/prams/
Data availability:	Core item - available in all PRAMS states annually.
Numerator:	Respondents aged 18-44 years who reported having high blood pressure during the 3 months before they became pregnant with their most recent live born infant. Women with borderline high blood pressure or pre-hypertension should not be included in the numerator.
Denominator:	Women who did or did not report having high blood pressure during the 3 months before they became pregnant with their most recent live born infant (excluding unknowns and refusals).
Measures of frequency:	Crude annual prevalence and 95% confidence interval, weighted using the PRAMS methodology (to compensate for unequal probabilities of selection, and adjust for non-response and telephone non-coverage)
Period of case definition:	3 months before the pregnancy resulting in the most recent live birth.
Significance:	In 2002, national data estimate that 3% of women of reproductive age had hypertension.[1] As the number of pregnancies among women aged 35 years and older increases, this proportion is likely to grow. Pregnancies among women with chronic hypertension can lead to preeclampsia or eclampsia, damage to the central nervous system, and kidney damage.[2,3] Potential life threatening conditions related to chronic hypertension during pregnancy include preterm delivery, intrauterine growth retardation, placental abruption, and fetal demise.[4] The Clinical Work Group of the Select Panel on Preconception Care recommends that all women of reproductive age with chronic hypertension be counseled before pregnancy about medication management and about the maternal and infant risks associated with hypertension during pregnancy.[5]

Limitations of indicator:	The PRAMS survey excludes women with fetal death or abortion. Based on studies making comparisons with clinical data, self-reports of hypertension status may underestimate hypertension prevalence.[6]
Related Healthy People 2010 Objective(s):	12-9. Reduce the proportion of adults with high blood pressure. Target: 16%

References:

1. D'Angelo D, Williams L, Morrow B, et al. Preconception and interconception health status of women who recently gave birth to a live-born infant, Pregnancy Risk Assessment Monitoring System (PRAMS), United States, 26 reporting area, 2004. MMWR Surveill Summ 2007; 56:1-35.
2. Jain L. The effect of pregnancy-induced and chronic hypertension on pregnancy outcome. J Perinatol 1997; 17:425-27.
3. Thorngren-Jereck K, Herbst A. Perinatal factors associated with cerebral palsy in children born in Sweden. Obstet Gynecol 2006; 108:1499-1505.
4. Barton J, Sibai B. Prediction and prevention of recurrent preeclampsia. Obstet Gynecol 2008; 112:359-72.
5. Dunlop AL, Jack BW, Bottalico JN, et al. The clinical content of preconception care: women with chronic medical conditions. Am J Obstet Gynecol 2008; 199(6 Suppl 2): S310-27.
6. Joint National Committee. Hypertension prevalence and the status of awareness, treatment, and control in the United States: final report. Hypertension 1985; 7:456-468.

Indicator:	**Asthma (I5)**
Domain:	Chronic Conditions
Sub-domain:	Asthma
Demographic group:	Women aged 18-44 years.
Data resource:	Behavioral Risk Factor Surveillance System (BRFSS). http://www.cdc.gov/BRFSS/
Data availability:	Core item - available in all states annually.
Numerator:	Female respondents aged 18-44 years who reported that they had ever been told by a doctor, nurse, or other health professional that they had asthma and reported that they still have asthma.
Denominator:	Female respondents aged 18-44 years who reported that they had or had not ever been told by a doctor, nurse, or other health professional that they had asthma.
Measures of frequency:	Crude annual prevalence and 95% confidence interval, weighted using the BRFSS methodology (to compensate for unequal probabilities of selection, and adjust for non-response and telephone non-coverage)
Period of case definition:	Current.
Significance:	Asthma affects at least 8.2% of pregnant women and 9.4% of women of reproductive age in the United States.[1] For about 30% of women with asthma, the severity of the disease worsens during pregnancy.[2] While outcomes of pregnancy in which the woman's asthma is mild or well-controlled are usually good, severe and poorly controlled asthma during pregnancy may be associated with an increased likelihood of premature delivery, the need for cesarean delivery, preeclampsia, growth restriction, other perinatal complications, and maternal morbidity and mortality.[3] Furthermore, subsequent pregnancies tend to follow a course similar as the first pregnancy with respect to status of asthma severity.[4] The Clinical Work Group of the Select Panel on Preconception Care recommends that women of reproductive age with asthma be counseled about the importance of achieving asthma control prior to pregnancy and the potential for their asthma control to decline during pregnancy.[2] The panel also recommends that those women with poor control of their asthma

	be encouraged to use effective birth control until symptom control is achieved.[2] Finally, preventive therapy with inhaled corticosteroids is highly recommended for women with chronic asthma who are planning to become pregnant or who could become pregnant as use of these medications prior to pregnancy has been shown to reduce the rate of asthma-related health care utilization during pregnancy.[4]
Limitations of indicator:	Estimates are based on self-reported current asthma status, which has not been confirmed by a physician. The validity of self-reported asthma in BRFSS is currently unknown. There is no information about the severity of asthma, whether the asthma is controlled, and whether medications that are safe during pregnancy are being used to control asthma.
Related Healthy People 2010 Objective(s):	24-1. Reduce asthma deaths. 24-2. Reduce hospitalizations for asthma. 24-3. Reduce hospital emergency department visits for asthma. 24-4. Reduce activity limitations among persons with asthma. 24-6. Increase the proportion of persons with asthma who receive formal patient education as an essential part of the management of their condition. 24-7. Increase the proportion of persons with asthma who receive appropriate asthma care. 24-7a. Increase the proportion of persons with asthma who receive written asthma management plans from their health care providers.

References:

1. Kwon HL, Belanger K, Bracken MB. Asthma prevalence among pregnant and childbearing-aged women in the United States: estimates from national health surveys. Ann Epidemiol 2003;13:317-24.
2. Dunlop AL, Jack BW, Bottalico JN, et al. The clinical content of preconception care: women with chronic medical conditions. Am J Obstet Gynecol 2008; 199(6 Suppl B):S310-27.
3. Asthma in pregnancy. ACOG Practice Bulletin No. 90. American College of Obstetricians and Gynecologists. Obstet Gynecol 2008;111:457-64.
4. Schatz M, Dombrowski MP, Wise R, et al. Asthma morbidity during pregnancy can be predicted by severity classification. J Allergy Clin Immunol 2003;112:283-8.