

# The Patient-Centered Medical Home and Preconception Care: An Opportunity for Internists

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The patient-centered medical home is defined by the American College of Physicians as a comprehensive approach for delivering medical care to patients. Internists have the role of caring for patients from adolescence through adulthood and have the opportunity to deliver preconception care. *Preconception care* is the promotion of the health and well-being of a woman and her partner before pregnancy. The goal is to improve pregnancy-related outcomes through interventions that occur before conception and before the patient would ordinarily seek prenatal care. Using the model of the patient-centered medical home, internists can provide comprehensive preconception care to improve the health of women before pregnancy and thus to decrease the risk of adverse pregnancy outcomes.

**KEY WORDS:** patient-centered; preconception; pregnancy outcome.

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As physicians working on the front lines of primary care, internists are strategically positioned to address the comprehensive health care needs of their patients. The American College of Physicians defines *doctor of internal medicine* as a “doctor for adults”.<sup>1</sup> In this role, internists care for patients from adolescence through old age, focusing on treatment and prevention of disease. The American College of Physicians recently forged a partnership with the American Academy of Family Physicians, the American Academy of Pediatrics, and the American Osteopathic Association to support the patient-centered medical home as an approach to the provision of comprehensive primary care.<sup>1</sup> This approach to care is summarized by seven essential principles: a personal physician, a physician-directed medical practice, a whole-person orientation, the coordination and integration of care across the complex health-care system, quality and safety, enhanced access to care, and a payment structure that recognizes the added value provided to patients who have a patient-centered medical home.<sup>1</sup> In this model, the patient receives comprehensive medical care from a physician who is willing to provide and coordinate care across the health-care continuum. Although the concept is evolving, the goal is to

foster a long-term doctor-patient relationship to encourage patient-centered, cost-efficient, and high-quality care.

Internists who provide comprehensive primary care using the model of the patient-centered medical home have the opportunity to interact with female patients throughout their reproductive life. *Preconception care* is the promotion of the health and well-being of a woman and her partner before pregnancy.<sup>2</sup> The provision of preconception care affects not only the health of the patient, but also the health of future generations, and is therefore concordant with the principles of the patient-centered medical home. Preconception care is an essential component of comprehensive, preventive health care. The goal is to improve pregnancy-related outcomes through interventions that occur before conception and before the patient would ordinarily seek prenatal care.<sup>3</sup>

Even though prenatal care has improved in the United States, adverse pregnancy outcomes are still a serious public health issue.<sup>4</sup> The Centers for Disease Control and Prevention (CDC) recently published recommendations for improving preconception health and health care in the US.<sup>5</sup> These recommendations are intended to improve the health of women before pregnancy and thus to decrease the risk of adverse pregnancy outcomes.<sup>5</sup> One goal of the US government's Healthy People 2000 report was for 60% of primary care physicians to provide preconception care.<sup>6</sup> In contrast, the Healthy People 2010 report no longer includes specific objectives for preconception care, but it does contain several objectives that address preconception health issues.<sup>7</sup>

Preconception care is an essential element of successful pregnancy outcomes because fetal development can be affected by behaviors or exposures that occur before the patient realizes she is pregnant.<sup>2</sup> The annual medical examination or the periodic office visit with an internist provides an opportunity for evaluation of risky patient behavior or exposures and for review of the patient's preconception health. A recent study<sup>8</sup> found that women prefer to receive information about preconception health care from their primary care physicians. Unfortunately, the same study also found that fewer than 40% of the surveyed patients had discussed preconception care with their primary care physicians. Clearly, this gap in patient expectation and delivery of preconception health care provides an opportunity for the examination of factors that affect the delivery of preconception care. Physicians without experience or training in preconception care may be reluctant to address these important issues with patients. Ideally, preconception health care would be an essential element of the patient-centered medical home.

In 2006, the CDC, in collaboration with the Preconception Care Work Group and the Select Panel on Preconception Care,

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**Table 1. Key Recommendations to Improve Preconception Health**

Area of focus	Recommendation
Individual responsibility throughout life	Encourage each woman and every couple to have a reproductive life plan
Consumer awareness	Increase public awareness of the importance of preconception health behaviors and increase individuals' use of preconception care services with information and tools appropriate for various age, literacy, health literacy, and cultural or linguistic contexts
Preventive visits	As a part of primary care visits, provide risk assessment and counseling (education and health promotion) to all women of childbearing age to reduce risks related to the outcomes of pregnancy
Interventions for identified risks	Increase the proportion of women who receive interventions as a follow-up to preconception risk screening, focusing on high-priority interventions (i.e., those with high impact and sufficient evidence of effectiveness)
Interconception care	Use the interconception period to provide intensive interventions to women who have had a prior pregnancy end in an adverse outcome (e.g., infant death, low-birth-weight child, or preterm birth)
Prepregnancy check-ups	Offer, as a component of maternity care, one prepregnancy visit for couples planning pregnancy
Health coverage for low-income women	Increase Medicaid coverage among low-income women to improve access to preventive health, preconception, and interconception care
Public health programs and strategies	Infuse and integrate components of preconception health care into existing local public health and related programs, including emphasis on women with prior adverse pregnancy outcomes
Research	Augment knowledge related to preconception health
Monitoring improvements	Maximize public health surveillance and related search mechanisms to monitor preconception health

*Modified from Dunlop AL, Jack B, Frey K. National recommendations for preconception care: the essential role of the family physician. J Am Board Fam Med. 2007;20:81-4. Used with permission*

published national recommendations for preconception health care.<sup>5</sup> These recommendations are intended to address adverse birth outcomes in the US (e.g., preterm and low-birth-weight deliveries, infant deaths, and birth defects). The CDC recommendations are straightforward, well organized, and easily accessible to physicians practicing in a busy outpatient environment. A complete review of the existing evidence and background information can be found on the CDC Web site.<sup>5</sup> Table 1 summarizes the ten key recommendations in the CDC report. Evidence supports specific interventions to reduce adverse pregnancy outcomes. Select risk factors and possible interventions are outlined in Table 2. Physicians who provide ongoing care to patients are accustomed to reviewing immunizations and recommended screening procedures with their patients. Preconception health care could easily be added to the list of health-care maintenance concerns usually addressed at the time of the periodic health examination. Alternatively, physicians may choose to identify patients of reproductive age who would benefit from preconception health care and schedule them for a separate

appointment geared only toward preconception health care. In some practices, physicians may want to offer group sessions for interested patients.

Preconception care provides patients and physicians with the opportunity to work in a collaborative partnership to optimize a woman's health before pregnancy. Almost one-half

**Table 2. Preconception Interventions With Evidence of Improving Pregnancy Outcomes**

Intervention	Proven health effect
Folic acid supplementation	Reduces occurrence of neural tube defects by two-thirds
Rubella vaccination	Provides protection against congenital rubella syndrome
Diabetes mellitus management	Substantially reduces the 3-fold increase in birth defects among infants of diabetic women
Hypothyroidism management	Adjusting levothyroxine dosage early in pregnancy protects proper neurologic development
Hepatitis B virus vaccination for at-risk women	Prevents transmission of infection to infant and eliminates risk to woman of hepatic failure, liver carcinoma, cirrhosis, and death due to hepatitis B virus infection
HIV and AIDS screening and treatment	Allows for timely treatment and provides women (or couples) with additional information that can influence the timing of pregnancy
STD screening and treatment	Reduces the risk of ectopic pregnancy, infertility, and chronic pelvic pain associated with <i>Chlamydia trachomatis</i> and <i>Neisseria gonorrhoeae</i> and also reduces the possible risk to the fetus of fetal death and physical and developmental disabilities, including mental retardation and blindness
Maternal PKU management	Prevents babies from being born with PKU-related mental retardation
Oral anticoagulant use management	Switching women's medication from teratogenic anticoagulants (i.e., warfarin) before pregnancy avoids harmful exposure
Antiepileptic drug use management	Changing to a less teratogenic treatment regimen reduces harmful exposure
Isotretinoin use management	Preventing pregnancy in women who use isotretinoin, or ceasing its use before conception, eliminates harmful exposure
Smoking cessation counseling	Completing smoking cessation before pregnancy can prevent smoking-associated preterm birth, low birth weight, or other adverse perinatal outcomes
Eliminating alcohol use	Controlling alcohol binge drinking or frequent drinking before pregnancy prevents fetal alcohol syndrome and other alcohol-related birth defects
Obesity control	Reaching a healthy weight before pregnancy reduces the risks of neural tube defects, preterm delivery, diabetes mellitus, cesarean section, and hypertensive and thromboembolic disease associated with obesity

*AIDS, acquired immunodeficiency syndrome; HIV, human immunodeficiency virus; PKU, phenylketonuria; STD, sexually transmitted disease*  
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of all pregnancies in the US are unplanned, so a discussion of preconception health is appropriate for all women with reproductive potential.<sup>4</sup> A discussion about preconception care may also encourage female patients to develop a reproductive road map or a reproductive life plan. In keeping with the recently articulated goals of the American College of Physicians, a focus on preconception care provides an opportunity for internists to foster an ongoing relationship with female patients and their partners from menarche to menopause. By familiarizing themselves with current CDC recommendations for preconception health care and adhering to the principles of the patient-centered medical home, internists can position themselves to become leaders in this important area of preventive health care.

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**Conflict of Interest:** None disclosed.

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## REFERENCES

1. American College of Physicians. The Advanced Medical Home: A Patient-Centered, Physician-Guided Model of Health Care. Available at: [http://www.hhs.gov/healthit/ahic/materials/meeting03/cc/ACP\\_Initiative.pdf](http://www.hhs.gov/healthit/ahic/materials/meeting03/cc/ACP_Initiative.pdf). Accessed March 24, 2008.
2. **Frey KA.** Preconception care by the nonobstetrical provider. *Mayo Clin Proc.* 2002;77:469-473.
3. **Jack BW, Culpepper L.** Preconception care: risk reduction and health promotion in preparation for pregnancy. *JAMA.* 1990;264:1147-1149.
4. **David PS, Boatwright EA, Tozer BS, et al.** Hormonal contraception update. *Mayo Clin Proc.* 2006;81:949-954.
5. **Johnson K, Posner SF, Biermann J, et al.** Recommendations to improve preconception health and health care: United States: a report of the CDC/ATSDR Preconception Care Work Group and the Select Panel on Preconception Care. *MMWR Recomm Rep.* 2006;55:1-23.
6. Centers for Disease Control and Prevention. Healthy People 2000: Final Review. Available at: <http://www.cdc.gov/nchs/products/pubs/pubd/hp2k/review/highlightshp2000.htm>. Accessed April 23 2008.
7. **Suellentrop K, Morrow B, Williams L, D'Angelo D,** Centers for Disease Control and Prevention (CDC). Monitoring progress toward achieving maternal and infant healthy people 2010 objectives: 19 states, Pregnancy Risk Assessment Monitoring System (PRAMS), 2000-2003. *MMWR Surveill Summ.* 2006;55:1-11.
8. **Frey KA, Files JA.** Preconception healthcare: what women know and believe. *Matern Child Health J.* 2006;10:S73-S77. Sep, Epub 2006 Jun 8.