

Where is the “W”oman in MCH?

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Leaders in the United States were alarmed in the early 1980s when it was revealed that the country's ranking in infant death among developed countries had slipped from 10th in 1960 to 19th in 1980.^{1,2} Health and public policy leaders took action and initiated many national programs to help improve pregnancy outcomes (much of the efforts at the time had been towards the care of women during pregnancy and helping women enter prenatal care early). In 1981, 6 lead organizations (the American College of Obstetricians and Gynecologists [ACOG], the March of Dimes, the American Academy of Pediatrics [AAP], the American Nurses Association, the National Congress of Parents and Teachers, and the US Public Health Service [US PHS]) established an informal coalition called “Healthy Mothers Healthy Babies” to improve the quality and to reach public and professional education related to prenatal and infant care.³ In 1987, the US PHS convened a panel of experts that produced the landmark re-

Scientific evidence indicates that improving a woman's health before pregnancy will improve pregnancy outcomes. However, for many years, our efforts have focused primarily on prenatal care and on caring for infants after birth. The concept of preconception care has been identified repeatedly as a priority for improving maternal and infant health. Preconception care is not something new that is being added to the already overburdened healthcare provider, but it is a part of routine primary care for women of reproductive age. Many opportunities exist for preconception intervention, and much of preconception care involves merely the provider reframing his or her thinking, counseling, and decisions in light of the reproductive plans and sexual and contraceptive practices of the patient. With existing scientific evidence that improving the health of “W”omen will improve the health of mothers and children, we must focus on improving the health of “W”omen before pregnancy and put the “W” in Maternal and Child Health.

Key words: maternal and child health, preconception, woman

port titled *Caring for Our Future: The Content of Prenatal Care*.⁴ In 1985, concerned about the lack of progress in the reduction of maternal mortality rates worldwide and the limited attention being given to mothers in Maternal and Child Health (MCH), Rosenfield famously asked “Where is the M in MCH?”⁵ From 1984-1989, the US Con-

gress passed a series of incremental expansions of Medicaid that provided prenatal coverage for more than one million low-income women that Presidents Ronald Reagan and George H.W. Bush signed into law and state governments implemented. In 1991, the Healthy Start Initiative was launched in urban and rural communities where infant mortality rates were 1.5-2.5 times the national average to identify and develop community-based systems approaches to reducing infant deaths by 50% over the next 5 years and to improve the health and well-being of women, infants, children, and their families.⁶

During the last 30 years, the United States has succeeded in providing more focus on the “M”other; the percentage of women who had access to early prenatal care and those who received adequate prenatal care increased from 76.3% in 1980 to 83.9% in 2004.² The United States has succeeded in reducing infant mortality rates from 12.6 deaths per 1000 live births in 1980 to 6.8 in 2004.² However, other developed countries made more progress during the same period, which resulted in further deterioration of the United States ranking in infant deaths, mostly as a result of the increasing proportion of babies who are born

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preterm (from 9.4% in 1981 to 12.3% in 2003) or with low birthweight (from 6.8% in 1981 to 7.9% in 2003); in 2004, the United States ranked 29th among developed countries in infant death.⁷ Efforts to reduce infant mortality rates and to improve pregnancy outcomes have focused primarily on prenatal care and the care of infants after birth. This approach reflects an emphasis on observing and monitoring a woman's health during pregnancy and intervening when and if needed (anticipation and management). However, improving the coverage, content, and use of prenatal care was a necessary, but not sufficient, step in the improvement of pregnancy outcomes in the United States.

Current scientific evidence indicates that, in many cases, the improvement of a woman's health before pregnancy (preconception health and healthcare) will improve pregnancy outcomes for both mother and infant. Many women continue to enter pregnancy in poor health and at risk for poor pregnancy outcomes because of preexisting medical conditions or exposures to teratogenic factors or because proper, scientifically based preventive action (such as folic acid supplementation) has not been taken to prevent adverse pregnancy outcomes.^{8,9} Moreover, millions of women remain at risk for unintended pregnancy. They might lack the knowledge or motivation necessary to carry out their personal plans for childbearing. Today, if we want to achieve further improvements in maternal and infant outcomes, we must act before pregnancy; we must shift the focus from "anticipation and management" in prenatal care into a paradigm of "prevention and health promotion" before pregnancy and throughout a woman's lifespan. Today, it is time to expand the "Healthy Mothers Healthy Babies" model into a "Healthy Women—Healthy Mothers—Healthy Babies" model. It is time to ask the question: where is the "W"oman in MCH?"

Preconception Care is Not a New Concept

Reference to the importance of preconception health and healthcare in the improvement of pregnancy outcomes are

found in documents that are hundreds of years old. For example, in 1825, Dewees¹⁰ stated that "The physical treatment of children should begin as far as may be practicable, with the earliest formation of the embryo; it will, therefore, necessarily involve the conduct of the mother, even before her marriage, as well as during her pregnancy." In recent years, preconception care was first described by Chamberlain^{11,12} as a specialty service for women who had had a previous poor reproductive outcome. It was then described in the United States by the US PHS in the landmark publication *Preventing Low Birth Weight*¹ and later by Moos and Cefalo¹³ at the University of North Carolina. The concept was adopted by the US PHS Expert Panel on the Content of Prenatal Care,^{3,14} which defined its components and emphasized that it is delivered most effectively as part of primary care services.,

Development of the concept was identified as a priority in the 1990s by the US PHS, whose report included, among the health promotion and disease prevention objectives for the year 2000, a recommendation to increase the proportion of primary care providers who offer age-appropriate preconception care and counseling to at least 60%.^{15,16} *Healthy People 2010* includes many objectives that address preconception health. The National Committee on Perinatal Health, which was led by ACOG, AAP, and the March of Dimes, made recommendations for action and offered a prototype preconception screening tool. They encouraged all primary care providers to play an active role in promoting prevention before pregnancy.¹⁷ The "Guidelines for Perinatal Care," which was jointly issued by AAP and ACOG, recommended that "all health encounters during a woman's reproductive years, particularly those that are a part of preconception care, should include counseling on appropriate medical care and behavior to optimize pregnancy outcomes."¹⁸ Other ACOG publications further emphasized the importance of preconception care in the continuum of women's healthcare.¹⁹⁻²¹ In 2002, the March of Dimes suggested that "as the key physician/primary care providers,

the obstetrician/gynecologists must take advantage of every health encounter to provide preconception care and risk reduction before and between conceptions—the time when care really can make a difference."²² The importance of preconception care as a concept was further articulated in family medicine,^{17,23-25} obstetrics and gynecology,^{20,21,26,27} nurse midwifery,²⁸ nursing,²⁹⁻³¹ and public health.³² Canada's National Guidelines on Family-Centered Maternity and Newborn Care devotes an entire chapter to preconception care and describes the multitude of intrinsic and extrinsic factors that influence preconception health. Various settings that are appropriate for the administration of preconception care interventions are discussed as well as a range of social and medical issues that included stress, social support, abuse and violence, healthy lifestyle practices, and nutrition.³³ The American Diabetes Association,³⁴ the American Academy of Neurology,³⁵ and the American Heart Association/American College of Cardiologists³⁶ promulgated recommendations on preconception care in their specialties.

Despite this broad interest in preconception care, there has been only modest progress in the implementation of these concepts into clinical practice and the development of research studies to advance practice. Existing research indicates that most women realize the importance of optimizing their health before pregnancy, whether or not the pregnancy is planned,³⁷ and that most physicians think preconception care is important.³⁸ However, most providers do not recommend routinely or provide preconception care to their patients.³⁹ One randomized clinical trial found that, even when given specific training, physicians did not take action to follow up risks that were identified at the time of a negative pregnancy test.⁴⁰

The Centers For Disease Control and Prevention (CDC) Preconception Health and Health Care Initiative

In November 2004, the CDC Workgroup on Preconception Health and Health Care, working with national ex-

perts and representatives of over 35 national, state, and local organizations, launched the Preconception Health and Health Care Initiative. The CDC workgroup includes representatives of 22 CDC programs that are concerned with the health of women and infants in areas such as infectious diseases, HIV/AIDS, injury prevention, reproductive health, nutrition, smoking, alcohol, birth defects, and genetics. The workgroup has recognized the importance of women's health in improving maternal and infant pregnancy outcomes, the immediate need to facilitate collaboration and coordinate efforts among various organizations across the country, and the need to develop consensus recommendations and to identify and address obstacles and opportunities for the promotion of preconception health and healthcare in all aspects of healthcare (clinical, public health, consumer, policy and finance, and research/surveillance/monitoring).

In June 2005, the CDC convened a group of national experts (the Select Panel on Preconception Care) to develop "Recommendations on Preconception Health and Health Care." The guiding principles, visions, and objectives of the aforementioned initiative and the recommendations for preconception health and healthcare were published in April 2006.⁴¹ The panel's vision is that all women of childbearing age and all men have high reproductive awareness, that all pregnancies are intended and planned, and that all women of childbearing age have health coverage and are screened before pregnancy for risks that are related to adverse pregnancy outcomes. The panel's guiding principle called for improving women's health throughout the lifespan by emphasizing individual behavior and responsibility, with changes in clinical care and public policy to support such women and couples in carrying out their childbearing plans. The panel made a series of recommendations that are aimed at achieving 4 goals: (1) to improve the knowledge, attitudes, and behaviors of men and women related to preconception health; (2) to assure that all women of childbearing age in the United States receive preconception care services that

will enable them to enter pregnancy in optimal health; (3) to reduce risks that are indicated by a previous adverse pregnancy outcome through interventions during the interconception period; and (4) to reduce disparities in adverse pregnancy outcomes.⁴¹ The CDC panel further defined *preconception care* as "interventions that aim to identify and modify biomedical, behavioral, and social risks to a woman's health or pregnancy outcome through prevention and management by emphasizing those factors that must be acted on before conception or early in pregnancy to have maximal impact. Thus, it is more than a single visit and less than well-woman care. It includes care before a first pregnancy or between pregnancies (commonly known as "interconception care")."

The Select Panel recognized that, to promote preconception health and healthcare, there was a need to go beyond developing and publishing recommendations. In June 2006, the CDC established 5 implementation workgroups (clinical, public health, consumer, policy and finance, and research and surveillance) to develop strategies for implementing the recommendations. These groups were to focus on core constituencies in which changes in knowledge, attitudes, and practices could lead to improvements in preconception health and healthcare. The workgroups were charged with fine-tuning and augmenting the proposed action steps, establishing priorities for follow-up action, and agreeing to take leadership for implementation of ≥ 1 action steps.

The clinical workgroup, comprising > 20 physicians and nurses of various specialties, identified the definition of the content of preconception care and provider education as top priorities for the immediate future. The accompanying articles in this supplement are the result of efforts by 36 clinical care providers who worked together for > 2 years to define the clinical content of preconception care.

Rationale for Preconception Care

Clinicians have counseled women regarding risk reduction in preparation for pregnancy for many years as part of rou-

tine preventive health care (eg, advising on avoiding teratogens and seeking family planning and genetic counseling), managing preexisting medical conditions (such as diabetes mellitus, hypertension, and sexually transmitted infections), and delivering preventive interventions (eg, HIV screening and vaccinations). During the past 20 years, there has been a growing realization that the development of a comprehensive program to assess and modify medical, psychosocial, and behavioral risks before pregnancy could prevent poor pregnancy outcomes for women and infants. This kind of care can help women and couples make decisions regarding the timing of conception and can improve their health in readiness for pregnancy.^{1,13,18,27,28,31,32,42-45}

The goal of preconception care is to ensure that a woman and her partner are healthy and that they avoid hazardous exposures and practice healthy lifestyles before pregnancy. Many of the medical conditions, environmental exposures, personal behaviors, and psychosocial risks that are associated with negative pregnancy outcomes can be identified and modified or eliminated before conception. A comprehensive preconception care program has the potential to benefit women who desire pregnancy by reducing risks, promoting healthy lifestyles, and increasing readiness for pregnancy. For women who do not desire pregnancy, a preconception care program can reduce personal health risks and the risk of an unwanted pregnancy.

First and foremost, preconception care is important because it provides an opportunity to optimize the health of the woman independently of whether she becomes pregnant. Moreover, intervention before pregnancy is essential for the optimization of outcomes for the pregnant woman (maternal outcomes), her child, or both. In a committee opinion that was published in 2005, ACOG's Committee on Gynecologic Practice recognized the *Importance of Preconception Care in the Continuum of Women's Health Care*.⁴⁶ The CDC's *Recommendations for Preconception Health and Health Care* call for the improvement of a woman's health by managing preexisting

medical conditions (such as diabetes mellitus, obesity, epilepsy, and hypothyroidism), providing vaccines (such as rubella, hepatitis B), screening and treatment for other conditions (such as HIV/AIDS, sexually transmitted infections), and counseling for some behavioral risks (alcohol use and smoking).⁴¹ Preconception care also provides a window of opportunity to reduce the risk of pregnancy complications that may threaten maternal health. For example, properly managing hypothyroidism before pregnancy reduces the risk of maternal hypertension, preeclampsia, placental abruption, anemia in pregnancy and postpartum hemorrhage; properly managing hypertension before pregnancy reduces the risk of preeclampsia⁴⁷; properly managing overweight and underweight conditions reduces the risk of nutritional deficiencies, postpartum anemia, and cesarean delivery⁴⁸; and screening for and management of chlamydia reduces the risk of pelvic inflammatory disease and ectopic pregnancy.⁴⁹ In certain conditions, however, in which it may be difficult to reduce the increased risk of serious morbidity or death that is associated with preexisting conditions (such as Eisenmenger syndrome and previous peripartum cardiomyopathy), women should be counseled about the life-threatening risks of pregnancy, provided with guidance about options for parenting, and offered avenues to secure appropriate contraception.⁵⁰⁻⁵³

There is substantial evidence that many preconception interventions reduce the risks of adverse pregnancy outcomes that include birth defects, fetal loss, low birthweight, and preterm delivery. Such interventions include the management of maternal conditions (such as diabetes, obesity, phenylketonuria, sexually transmitted infections, hypothyroidism, seizure disorders, HIV),⁴⁶ the counseling of women to avoid certain risks (such as alcohol consumption, smoking, prescription and over-the-counter teratogenic drugs, excess vitamin intake, undernutrition, household and environmental exposures to toxic substances),^{54,55} the counseling of women to engage in healthy behaviors (such as reproductive life planning, folic

acid consumption, proper nutrition),⁴⁷ and the counseling of women about availability of vaccines to protect the infant from the consequences of infections that affect the mother (such as rubella, varicella, hepatitis B).⁵⁶ For most of these interventions, it is very important that the interventions be delivered before pregnancy because many of the risk behaviors and exposures that can affect fetal development and subsequent outcomes have their greatest effect during organogenesis, which is from 17-56 days of pregnancy before women enter prenatal care and often before they even know they are pregnant.^{57,58} This is particularly true in the case of teratogens (such as alcohol) that can cause fetal alcohol syndrome, certain prescription drugs that are known to cause birth defects, and hazardous substances in the workplace and home.

Opportunities for the Delivery of Preconception Services

Preconception health promotion and counseling implies addressing potential precursors to adverse pregnancy outcomes before becoming pregnant. This concept includes the identification of and intervention for medical and psychosocial issues, even before an individual reaches reproductive age. For example, the parent of a child with an inherited hemoglobinopathy would be counseled on the potential risk that the condition could have on their child's offspring. A sedentary teen might be counseled on her risk for obesity and its effect on future fertility and pregnancy outcomes.

Research and data regarding risks point to significant opportunities for health promotion and counseling among women of reproductive age and, in some cases, among men. Preconception guidelines should incorporate practical tools to address family planning that include contraception and birth spacing; the promotion of health education and health literacy; nutrition and weight management; alcohol, tobacco, and substance abuse; environmental and occupational exposures and hazards; risky sexual behaviors; infection risks; optimal management of medical problems; med-

ication benefits and risks; stress reduction; domestic violence; and identification of skilled healthcare teams to address specific issues before pregnancy.

The CDC recommendations emphasize that preconception care is not limited to a single visit to a healthcare provider but that it is a process of care that is designed to meet the needs of a woman during the different stages of her reproductive life. The purpose of preconception care is to promote health throughout the lifespan for women, children, and families. Preconception care offers health services that allow women to maintain optimal health for themselves, to choose the number and spacing of their pregnancies and, when desired, to prepare for a healthy baby.

Thus, preconception care is not something new that is being added to the already overburdened healthcare provider, but it is a part of routine primary care for women of reproductive age. Just as primary care visits devote time to screening and health promotion to reduce cardiovascular disease and cancer, reproductive health promotion should become practiced more routinely during visits.

Many opportunities exist for preconception intervention. All reproductive-aged women are candidates for preconception care; however, preconception care must be tailored to meet the needs of the individual woman. For example, the provision of smoking cessation services is preconception care; choosing a medication for a patient with hypertension is preconception care. Much of preconception care merely involves the provider reframing his or her thinking, counseling, and decision-making in light of the reproductive plans and sexual and contraceptive practices of the patient. With the use of the "every woman, every time" approach, some projects across the country have encouraged primary care providers to ask women routinely about their reproductive plans and needs.⁵⁹

Professional guidelines for those types of clinicians (obstetrician-gynecologists, family practice physicians, internists, certified nurse midwives, and nurse practitioners) who provide the bulk of primary care to women in the United

States recommend routine risk assessment and screening.^{18-20,60-62} Along with risk assessment and screening, professional guidelines call for health promotion education and counseling that are related to reproductive health risks. For women with identified risks, additional counseling, testing, or brief interventions, or a combination thereof, can be carried out in the primary care setting (eg, brief evidence-based office interventions for smoking cessation or changes in prescription medications). Some women will need more intensive interventions and specialty care.

Given that preconception care should occur ideally throughout the lifespan, some recommendations will be more relevant to women at specific stages in their lives and with varying levels of risk. Health promotion, risk screening, and interventions are different for a young woman who has never experienced pregnancy than for a 35-year-old woman who has had 3 children. Women with chronic diseases, previous pregnancy complications, or behavioral risk factors might need more intensive interventions. Women who have experienced a previous adverse pregnancy outcome (eg, fetal death or premature or low birthweight birth) are another population in need of special interventions. Such variability means that the most effective and efficient means of bundling or prepackaging interventions will vary.

Who Provides Preconception Care?

National surveys indicate that 84% of women 18-44 years of age have had a healthcare visit during the past year and that most women of reproductive age obtain preventive health services during any given year,⁶³ all of which offer opportunities to deliver preconception care. Because approximately one-third to one-half of women have > 1 primary care provider (generally a family physician or internal medicine physician and an obstetrician/gynecologist),⁶⁴ all providers who routinely see women for well-woman examinations or other routine visits have an important role to play in improving preconception health. However, approximately only 1 in 6 obstetri-

cian/gynecologists or family physicians provide preconception care to the majority of the women for whom they provide prenatal care.⁶⁵

Because of the wide range of interventions that are included under the umbrella of preconception care, many such interventions can be delivered in both primary care and specialty care practices. More practice opportunities also exist in improving preconception health through wellness care, through care for women with chronic health conditions that are associated with increased preconception risk (eg, maternal diabetes mellitus), and in settings where women seek medical support for 1 specific health risk, such as smoking or obesity. Thus, all clinicians who care for women should be aware of the importance of preconception health promotion and risk assessment that are linked to intervention. This care should include consideration of the potential for pregnancy as a part of usual healthcare for men and for women of reproductive age, and healthcare providers should assess and discuss the implications of a man's or woman's present health status on a possible pregnancy. Attention to the health of prospective parents before they conceive is a natural extension of primary care practice and includes family physicians, pediatricians, general internists, obstetricians/gynecologists, nurse practitioners, and nurse midwives, among others.

Primary care clinicians should include preconception care during all recommended clinical encounters (such as postpartum visits; routine health maintenance; school, work, and family planning visits; pregnancy test visits; and well-child care for another member of the family). Primary care clinicians can also offer men information about responsible fatherhood and sexuality. Men should be engaged in preparing for fatherhood, supporting their partner in contraceptive choices, and using preventive health behaviors.

Preconception care is most effective when the woman and her partner are motivated properly. Many social and cultural influences that include attitudes and values that are projected at home and through the schools, faith commu-

nities, peer groups, and public media and contribute to decisions by men and women during their teenage and early adult years regarding sexuality and childbearing. The receptiveness of couples to preconception care is heightened at certain times, such as during a family-planning visit when a woman is considering starting or stopping a method of birth control, at the time the results of a negative pregnancy test are received, or at the time of a woman's first gynecologic examination.

Barriers to Preconception Care

The slow growth of preconception care can be attributed to the many challenges that are faced in the provision of this care. In a 1990 commentary in the *Journal of the American Medical Association*, Jack and Culpepper⁴² identified the following 7 barriers to the dissemination of preconception care: (1) those women who are most in need of services are those least likely to receive them; (2) the provision of services often is fragmented badly; (3) there is a lack of available treatment services for high-risk behaviors; (4) reimbursement for risk assessment and health promotion activities is inadequate; (5) health promotion messages are not effective unless received by a motivated couple; (6) only a few conditions have data supporting intervention before conception rather than intervention early in pregnancy; and (7) many clinical training programs do not emphasize risk assessment and health promotion skills. These barriers to the delivery of preconception care as part of clinical services are as relevant today as they were at the time they were penned.

For preconception care to be fully realized, there must be fundamental changes in how care is provided to reproductive-aged women.^{59,60} For preconception care to be successful, there must be a shift from the delivery of procedure-based acute care to the provision of counseling-based preventive care. In turn, for this to occur, there must be changes in the financing of medical care and in the education of trainees in the primary care specialties, which are addressed in CDC's *Select Panel on Preconception Care Recommendations*.⁴¹

Comment

Preconception care works; the concept is supported by science, and the logic is straightforward. Although such care has not yet been recommended universally or available, there has been substantial interest nevertheless in recent years to advance the concept.

For many years, healthcare providers, in an effort to improve maternal and infant pregnancy outcomes, have focused on the health of a woman during the latter 5 or 7 months of her pregnancy, instead of focusing on a woman's health across her lifespan to optimize the outcome of her pregnancy. If we hope to achieve better pregnancy outcomes, we must change the way we provide Maternal and Child Health services and add the "W"oman into MCH.

The time for a national discussion about how to better incorporate preconception care and women's health into our healthcare systems is overdue. The need to define the content of preconception care in the realms of clinical care, public health, and consumer awareness is clear. Equally needed is a national strategy to promote the necessary research, clinical demonstration programs, and community-based implementation that will make this care part of the fabric of health and healthcare in the United States. This supplement begins this new and exciting chapter in preconception care. ■

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