**Colorado's Collaborative Strategies to Improve Health of Women and Children**

**"***The life course approach is how we are embracing future initiatives, and we are looking at all the multiple points along the way—from establishing healthy eating patterns in the prenatal and postpartum period to breastfeeding—and on down the road [with the aim of] getting to healthier adults."*
*—Mandy Bakulski, Maternal Wellness Director, Colorado Department of Public Health and Environment*

In 2009, 8.8 percent of babies born in Colorado were classified as low birth weight, higher than the U.S. rate of 8.2 percent and significantly higher than the state with the lowest rate of 5.8 percent. According to a 2009 report from the state's Prenatal Plus Program, "Low birth weight is one of Colorado's most critical health problems."

Mirroring the national trend, Colorado's rate has been inching up steadily: Between 1995 and 2005, the percentage of babies born with low birth weight increased by nearly 6 percent, according to the Colorado Department of Public Health and Environment (CDPHE).

The public health implications of this trend are far-reaching, as described in the 2009 report: "The health and quality of life for low birth weight infants often are compromised for many years, resulting in substantial cost to families and society related to increased medical needs, long-term learning problems, dependence on programs that serve special-needs individuals, and ongoing challenges to families caring for low birth weight infants."

This trend cannot be reversed with a simple or short-term fix. Just as the problem crosses program lines, so too does the solution. With nearly 40 percent of Colorado births resulting from unintended pregnancies, public health strategies that focus on improved wellness for every woman—and not just women who are pregnant or intend to be pregnant—offer valuable opportunities to achieve multiple public health goals, including healthier women, infants, and children. In addition to low birth weight babies, maternal and child wellness strategies address myriad other problems, including excessive weight gain among pregnant women (which is associated with detrimental health outcomes for mother and child), gestational diabetes, and childhood obesity among moms and children. According to the 2011 CDPHE report, "Reducing risk factors and promoting protective factors, regardless of pregnancy intention, is critical for the health of all women of reproductive age and any potential offspring."

**Public Health Strategies Address Causes for Low Birth Weight Babies**

Two separate CDPHE studies—one in 2000 and another in 2010—drew the same conclusions: the top modifiable factors in low weight births for both time periods were prenatal smoking and inadequate weight gain by pregnant women. Women who do not gain adequate weight during pregnancy are more likely to deliver a low birth weight baby compared with women who gain enough weight. The 2000 report "Making Progress on Tipping the Scales: Weighing in on Solutions to the Low Birth Weight Problem in Colorado" found that one in eight low weight births were attributed to inadequate maternal weight gain, and, similarly, one in eight low weight births could be attributed to prenatal smoking. In addition to the problem of *inadequate* weight gain, like the rest of the nation, Colorado has seen a spike in the numbers of pregnant women with excessive weight gain, which is also associated with detrimental health outcomes for mother and child.


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Addressing problems throughout the reproductive life span offers multiple opportunities for working across programs and leveraging staff and funding resources. The CDPHE's comprehensive strategy not only targets the most preventable causes for low birth weight babies but also invests resources into broad health promotion strategies for adolescent girls and women. According to Maternal Wellness Director Mandy Bakulski, "MCH programs are integrated actively and intentionally for women of reproductive age and children, and chronic disease is involved as issues overlap and as we see areas for integration."

*Healthy Baby Campaign*. In 2001, the CDPHE launched the Healthy Baby Campaign to move the dial on Colorado's low birth weight problem. The initiative informed providers and women about the risks of inadequate prenatal weight gain and smoking during pregnancy and provided tools and resources to help women stop smoking and gain an appropriate amount of weight. With its emphasis on tobacco cessation and appropriate weight gain, the campaign has been a natural platform for collaboration among the CDPHE's maternal wellness, tobacco prevention, and nutrition programs, as well as other programs that work with the MCH population, including the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), Medicaid, and home visiting programs.

In 2004, the campaign launched a Healthy Baby pilot program in nine counties; a program evaluation found that the program resulted in a significant improvement in the inadequate weight gain rate for the participating counties. Since 2000, the campaign partners have disseminated information and tools to more than 800 providers, 32 healthcare practices, and 5,000 consumers. Recently, the campaign has focused on informing providers about Institute of Medicine recommendations for healthy weight gain by literally putting the information at their fingertips with a gestational wheel (the kind that are often found in a doctor's pocket to calculate pregnancy due dates) that the Maternal Wellness Unit modified to include weight gain guidelines . According to Linda Archer, maternal wellness project specialist, the tool has not only helped providers incorporate evidence-based practice, but has also spread the word about the campaign to providers throughout the state.

In addition to "pounding the pavement" to reach healthcare providers, Archer says that the program publicizes the message by working with community partners, including WIC and other health department programs that offer classes to pregnant women. According to Bakulski, "We try to make sure that the mom is getting the same message at the same time no matter what kind of health provider she is seeing."

Without sustained funding, the Healthy Baby Campaign has transitioned to a social marketing campaign that includes a website and educational materials aimed at providers, women, and policymakers. The maternal wellness staff members develop and update resources and identify opportunities to partner with other programs around areas of common interest. In addition to the focus on prenatal tobacco cessation, the Healthy Baby campaign messages are aligned with the obesity program's efforts to reduce early childhood obesity. Promoting appropriate weight gain among pregnant women is a key strategy for reducing early childhood obesity, because women who gain excessive weight during pregnancy are more likely to have children at risk for obesity. According to Archer, the campaign's message is to "gain an appropriate amount of weight," since gaining too much and too little both present health risks for mom and baby.

*Prenatal Plus Program*. The Prenatal Plus Program addresses the multiple factors that contribute to low birth weight, including behavioral, nutritional, and psychosocial risks. The Medicaid-funded program provides care coordination, nutrition, and mental health counseling to high-risk, Medicaid-eligible pregnant women. Program recipients report significant drops in smoking during pregnancy, psychosocial problems, and drug and alcohol use during pregnancy. In addition, 72 percent of women that entered the program with inadequate weight gain reported that they gained the recommended amount of weight before they delivered their baby.

Although the program has been successful, only 19 percent of eligible women received services in 2009. According to the 2009 report, "Increasing provider participation could result in significant health benefits for more clients and greater cost savings for Medicaid."

*Colorado Quitline Services for Medicaid and Pregnant Patients*. Smoking among pregnant women and women enrolled in Medicaid involves multiple programs and populations and is therefore a natural fit for collaboration. According to the Tobacco Education, Prevention, and Cessation Program (TEPCP), compared to women who are not enrolled in Medicaid, women with Medicaid coverage are twice as likely to smoke before becoming pregnant and nearly four times as likely to use tobacco during pregnancy and postpartum.

With 2010 American Recovery and Reinvestment Act (ARRA) grant funds, TEPCP funded efforts to enroll Medicaid and pregnant women in Colorado QuitLine, a free, phone-based program that features coaching calls, text messaging support, and rewards for participation for pregnant women. The funds have strengthened the connection between the Maternal Wellness Program and TEPCP. A portion of ARRA funds support staff time from the Maternal Wellness Program. In addition, an advisory group comprised of Maternal Wellness, Prenatal Plus, WIC, and TEPCP representatives, as well as other state, nonprofit, marketing, and healthcare representatives, provide leadership for the initiative.

Colorado QuitLine features tailored materials for Medicaid clients, pregnant women, and uninsured women. Clinics throughout the state receive comprehensive materials, including brochures, posters, and referral forms in English and Spanish.

Although evaluation findings are not yet available, Emma Goforth from the TEPCP says that anecdotal evidence and provider surveys have supplied some early information about what works and what needs improvement. Initial feedback suggests that the enhancements for pregnant women—which include additional personal coaching calls and ongoing access to the same, specially trained counselor—have worked well.

Increasing enrollment and provider referrals is an important area for improvement. Although the percentage of QuitLine callers who are pregnant or Medicaid enrollees has increased since the campaign began, it is still a relatively small percentage of all callers, with just 4 percent reporting that they are pregnant and 17 percent reporting that they are enrolled in Medicaid.

Ensuring that providers are making referrals and that QuitLine materials are replenished and available in health clinics are ongoing challenges. "Continual reminders do seem to be crucial, especially if clinics don't have systems in place," Goforth says. "Outreach and marketing to keep it fresh and on the radar is important."

**Mixed Results: Smoking on the Decline, Inadequate Weight Gain Remains Constant**

Over the last decade, Colorado has made headway in reducing smoking levels among pregnant women. However, according to a 2010 analysis, there has been no change in the percentage of pregnant women who gained an adequate amount of weight during pregnancy. According to a 2011 CDPHE press release, "Although Colorado has made remarkable improvements in reducing smoking during pregnancy, dropping from 11.6 percent to 8.7 percent, no improvements were made in women gaining enough weight during pregnancy," says Jillian Jacobellis, former Prevention Services Division director at the CDPHE.

The Healthy Baby Campaign moved the dial on low birth weight babies in Colorado while the program and its outreach efforts were funded. However, without continued funding and staff to sustain the "push" of the campaign, the low birth weight rate crept up. "It wasn't sustained, which is the challenge," Bakulski says. "We saw a drop in the weight gain rate with the initial push," but without sustained resources and staff going out to doctor's offices, "we haven't been able to sustain it."

A combination of funding, policy change that supported smoking cessation goals (e.g., a cigarette tax and clean indoor air policy), and dedicated staff working on smoking cessation paved the way for sustainable results. The percentage of low weight births attributed to smoking dropped significantly in the last decade, dropping from one in 14 in the 1995-1997 findings to one in eight in the 2007-2009 period.

**Moving Forward: Life Course Approach Provides New Opportunities to Improve MCH Outcomes**

Colorado's work to date has provided important lessons for moving forward. According to Michelle Hansen, self-management services director, successful and sustained collaborations need to be formalized into a program area's work plan. Although a collaborative spirit is part of the culture, everyone suffers from limited time and resources. "No one program or unit can be as effective as collaborative work can be with several programs and varied expertise involved, but it needs to be targeted work," says Hansen.

In addition, Hansen says that partnerships between program areas need to focus on evaluation and continuous improvement: "It's important to have continual evaluation around pre-determined objectives." Engaging multiple perspectives in the evaluation and quality improvement process is key. "By working with others, you can build a more robust plan than if you were developing it on your own," Hansen says.

Moving forward, preconception and interconception health offer multiple opportunities for collaboration. When the obesity program performed a literature review in 2010, it identified gestational weight gain as one of the main contributors to childhood obesity. According to Bakulski, "We knew it was an important area, but the literature review identified that it was one of the most evidence-based ways to address childhood obesity." As a result, Bakulski says that the Maternal Wellness Program and the Healthy Baby Campaign have an important place at the table with obesity prevention efforts. In their preconception health work, Bakulski says that they will focus on healthy weight before women conceive. "The life course approach is how we are embracing future initiatives," she says. "We are looking at all

the multiple points along the way—establishing healthy eating patterns in prenatal and postpartum, breastfeeding—and on down the road [with the aim of] getting to healthier adults."

**For more information on Colorado's chronic disease and MCH integration and related initiatives:**

Colorado Department of Public Health and Environment
http://www.cdphe.state.co.us

CDPHE Chronic Disease Prevention Services Division
http://www.cdphe.state.co.us/pp/chronicdisease/index.html

CDPHE Women's Health Unit
http://www.cdphe.state.co.us/pp/womens/index.html

CDPHE Maternal Wellness Unit
http://www.cdphe.state.co.us/pp/womens/prenatal.html

CDPHE Tobacco Education, Prevention, and Cessation Program
http://www.cdphe.state.co.us/pp/tobacco

Healthy Baby Campaign Website
http://www.healthy-baby.org/index.html

"Making Progress on Tipping the Scales: Weighing in on Solutions to the Low Birthweight Problem in Colorado"
http://www.cdphe.state.co.us/pp/womens/resources/MakingProgressOnTippingTheScales.pdf

"CDPHE Health Watch: How Healthy Are Colorado Women of Reproductive Age? An Evaluation of Preconception Risk and Protective Factors"
http://www.cdphe.state.co.us/hs/pubs/Preconception3.pdf

Colorado QuitLine Resources for Medicaid and Pregnant Women
http://www.cdphe.state.co.us/pp/womens/obsmoking/SmokingandPregnancy.html