

Prepregnancy Care: A Shared Responsibility

The effective management of pregnancies complicated by diabetes is a shared responsibility—an equal partnership between health care professionals and a responsible woman. Over the last 30 years, major advances in our understanding of the pathophysiology and care of diabetes has led to the hope that pregnancy outcomes for women with diabetes would be similar to the outcomes for women without diabetes as stated in the goal of the Saint Vincent's Declaration in 1989 (1). Unfortunately this has not been realized with the risk of congenital malformations, stillbirths, and neonatal death remaining as high as 3–10 times that of the background population (2–5).

For over a decade, major evidence-based guidelines have called for the counseling of women of child-bearing age with diabetes about the need for family planning and excellent control prior to conception (6–9). Also, preconception care provides the opportunity for the woman and her health caregivers to evaluate nutritional needs, the presence and extent of any micro-/macrovascular complications, and to adjust medications or diabetes management plans before pregnancy occurs.

Ideally, every woman with known diabetes would not only have prepregnancy counseling but actually receive effective prepregnancy care. This has been an elusive goal that is underlined in the article by Murphy et al. (10) in this issue of *Diabetes Care*. These investigators developed a remarkable “marketing” plan, which included a website, lively and encouraging pamphlets mailed directly to potential patients, as well as local and community educational activities for health professionals. Disappointingly, only 27% of the eligible women with pregestational diabetes actually presented for prepregnancy care. This mirrors similar attempts in Maine (34%) using a statewide community-based educational program for health providers and Ohio (37% in the third 5-year phase of a 15-year program) to optimize access and use of prepregnancy counseling and care (11,12). In the Ohio study, as in the study by Murphy et al., improvement in

pregnancy care equated with improvement in adverse pregnancy outcomes.

Thus, a care gap exists between “desired” and “real” prepregnancy care. The suggested reasons for this gap include socioeconomic deprivation, ethnic differences in the risks and use of the health care system, or difficulties with health literacy (3,13–15). Murphy et al. observed that some women became pregnant faster than expected after discontinuing contraception or instituting lifestyle changes and thus had not yet achieved optimal control or changed medications. Logistical and financial concerns also played roles as well as previous negative relationships with health professionals. There was also a fear of disappointment or a desire for minimal medical input to maximize positive pregnancy experiences (15,16).

Only about half of women with type 1 diabetes receive prepregnancy care with little evidence of improved outcomes over the last 10 years (4,10). The normal glucose values in pregnancy (mean A1C 5.3% and upper limit of normal under 5.7%) are achieved by few women, and the goal A1C of under 6% remains elusive (4,17). Achievement of this level of glucose control without hypoglycemia requires a truly expert and experienced health care team and a highly motivated and knowledgeable woman with type 1 diabetes. The significant knowledge and attention to detail needed concerning nutrition, insulin self-adjustment, and use of frequent glucose monitoring information with frequent injections and/or pump therapy can prove to be beyond the woman's capabilities; others lack the needed motivation to intensify their management adequately. Indeed, such demands of knowledge and motivational methods may prove to be even beyond the abilities of their team of health professionals. Not all women will have access to adequately experienced teams in specialized centers who can work with them to achieve such control or family support integral to effective self-care. Additionally, advanced technologies such as continuous glucose monitoring and pump therapy may be required in order to safely achieve such normal glucose levels, and these technologies

may be unavailable for economic or pragmatic reasons to many women with type 1 diabetes (18,19).

The prevalence of type 2 diabetes is rising worldwide in women of childbearing age, and their care is generally in the hands of primary-care physicians (20). Thus, fewer women with type 2 diabetes relative to type 1 diabetes are seen in multidisciplinary prepregnancy clinics and, although most guidelines—including the International Diabetes Federation's Global Diabetes in Pregnancy Guideline—recommend insulin as optimal therapy ideally initiated prior to pregnancy, the reality is that this is often not done (3,7,10,13). A recent review of maternal and fetal outcomes in type 1 and type 2 diabetic women suggests that, although women with type 2 diabetes generally have had the disease for a shorter period of time, have and can achieve better glucose control in the pregnancy, and have lower rates of diabetes complications, they have equally poor outcomes (21). Yet women with type 2 diabetes who access prepregnancy care can safely achieve normal glycemia in pregnancy with much less effort, as discussed in a recent review (22).

Interestingly, it was the outcomes of the women with type 2 diabetes in the study of Murphy et al. that experienced statistically significant improvements that helped to reduce overall adverse outcomes (10). For women with type 2 diabetes, the congenital malformation rate fell from 12.3 to 4.4%, perinatal mortality fell from 6.2 to 0.9%, and any serious adverse outcome fell from 16.4 to 5.3%, whereas in all these subcategories, there was very little change for women with type 1 diabetes. The importance of the reported study is that it shows that access to prepregnancy counseling and care does reduce adverse pregnancy outcomes by about 80% (odds ratio 0.2 [95% CI 0.05–0.89]; $P = 0.03$) (10).

For women with type 1 diabetes, not only do we need to improve their use of and access to prepregnancy care, but we need to continue to improve management techniques to safely achieve levels of glucose control in our efforts to improve out-

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