

*Before, Between & Beyond Pregnancy*  
**The National Preconception Curriculum and Resources Guide  
for Clinicians**

**Annotated Articles Guiding Preconception Care  
of Women with Diabetes**

**Ashley Hickman, MD**  
**Department of Obstetrics and Gynecology**  
**University of North Carolina at Chapel Hill**

**Renal Insufficiency/Nephropathy**

*Reece, EA., Coustan, DR., Hayslett, JP., Holford, T., Coulehan, J., O'Connor, TZ., Hobbins, JC. Diabetic nephropathy: Pregnancy performance and fetomaternal outcome. Am J Obstet Gynecol 1988; 159: 56-66.*

**Synopsis:** A retrospective review of 31 pregnancies complicated by diabetic nephropathy and delivered at Yale-New Haven Hospital between 1975 and 1984 was undertaken. The purpose of the study was to determine the impact of diabetic nephropathy on maternal blood chemistry and renovascular function during pregnancy, to assess maternal and neonatal outcomes, and to evaluate maternal and infant status at long-term follow-up. Patients were classified as having renal insufficiency if creatinine level was >1.2 or creatinine clearance was <90 ml/min. Proteinuria was categorized as “mild” (300-499 mg/24 hours), “moderate” (500-3000mg/24 hours), and “severe” or “nephrotic syndrome” (>3gm/24 hours).

During the study period 36 women had Type 1 diabetes and diabetic nephropathy. First trimester spontaneous abortion occurred in 3 (8%) and elective termination occurred in 2 (6%). Of the remaining 31 women, 12 (39%) had evidence of nephropathy before pregnancy. At the initial visit, 9 (29%) of the patients had mild proteinureay, 14 (45%) were classified as moderate, and 8 (26%) had severe proteinuria. Renal insufficiency was also observed in 12 (39%) of the women. Other evidence of vascular complications in included proliferative retinopathy in 68% of the women.

As the pregnancy progressed, 36% developed preeclampsia. Complications for the fetus included stillbirths at 24-28 weeks gestation (6.5%), major congenital anomalies (10%), preterm delivery (32%), and small for gestational age (16%). Primary cesarean section was performed in 48.5% with the indication for 50% of these women being non reassuring fetal heart rate. Despite these complications, infant survival was 94% overall,

and when corrected for congenital anomalies, it was 97%. Mean gestational age at delivery was 36 weeks.

Twenty-seven of the 31 women were followed for an average of 3 years (range 0.5-9 years). Four (13%) required dialysis, two (6%) received renal transplants, and the remaining 21 (68%) had adequate renal function.

The natural course of diabetic nephropathy and progression to end stage renal disease in this cohort did not appear to be adversely affected by the pregnancy when compared to patients with Type 1 diabetes and proteinuria who had not experienced a pregnancy.

Posted March, 2008; reviewed April, 2009