

PERINATAL LESSONS FROM THE PAST

Dr Priscilla White (1900–1989) of Boston and pregnancy diabetes

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A woman doctor in a man's world, Priscilla White dedicated her whole life to the care of diabetic women during pregnancy and to children with this condition. She emphasised the importance of close supervision during pregnancy by a small obstetric and diabetic team. Her classification of diabetes in pregnancy was widely accepted. During her long career she pioneered a number of advances in this field and witnessed a remarkable fall in maternal and perinatal mortality.

Priscilla White was born on 17 March 1900 in Boston, Massachusetts, although the family moved shortly after to Woolaston. When she was a year old, her parents divorced. Her father was a surgeon specialising in otolaryngology, a discipline also later followed by her brother. Priscilla graduated from Quincey High School in 1917 and then entered Radcliffe College, Cambridge to study the liberal arts. There she became an honorary *Phi Beta Kappa*. Then changing direction, she decided to study medicine and entered Tufts University Medical School. Many prestigious medical schools such as Harvard did not admit women at that time. In 1923, she qualified third in her class of 100, which included four women, and served her internship the following year at Worcester Memorial Hospital.^{1 2}

In 1924, White was recruited by Dr Elliott Joslin to work in his famous diabetic clinic at the New England Deaconess Hospital. This was just two years after Banting and Best's introduction of insulin. White had impressed Dr Joslin while a student because of her practice of rising before 5 00 am to work in the metabolic laboratory of a colleague. Almost from the outset, he made her responsible for the supervision of the pregnant women and children with diabetes in his clinic. Of Dr Joslin, White later recalled: "He was a great student who studied all the time. He was acetic in appearance with piercing blue eyes, the kind of person who would have succeeded in anything he did. He became interested in diabetes because his mother was a diabetic. At that time no doctors wanted to treat the disease. People usually died. Dr. Joslin could have been a great actor. He put on fascinating clinics ... Before long he had trained me to teach Harvard medical students. He allowed me to advance in my field (and) included me in ... all phases of his work. There was a strong father-daughter relationship between Dr. Joslin and me. I travelled

with him on lecture tours and I think he felt I should dedicate my life to work with juvenile diabetics and diabetic mothers. He taught me everything."²

Diabetes in childhood and adolescence,³ published in 1932, was White's first major contribution to the literature, although earlier she had written the section on diabetes in pregnancy³ in Joslin's 4th edition of *The treatment of diabetes melitus*.⁴ Subsequently she co-edited the 5th–11th editions of this classic work. The following two extracts are taken from her 1928 contribution.

On coma complicating diabetic pregnancy⁴

"Before insulin, coma was the end-result of the pregnant diabetic. No matter what course was adopted the danger was imminent. Surgical intervention with general anesthesia would precipitate it. Fetal death, which occurred in 50 per cent of the cases prior to insulin, was a source of coma. If the patient came successfully to term, labor accompanied by partial starvation and over-exertion would bring it on."



Figure 1 Dr Priscilla White (1900–1989).

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Effect of diabetes on pregnancy and the baby⁴

"Abortions and miscarriages are said to be frequent ... In our series of 89 pregnancies there were 13 abortions or miscarriages ... The percentage of still-births is high. Fourteen still-births, or 25 per cent, occurred among our 56 pregnancies coming to term. The possible causes for fetal death in utero are many. The size of the baby is one of the greatest dangers ... One can only speculate as to the cause for this phenomenon. The high glucose content of placental blood in diabetes, in contrast to the normally low content in the placental blood of non-diabetic individuals, is possibly an etiological factor. Of our own 14 still-births 2 of the mothers had diabetic complications, 6 had complications associated with pregnancy, and 4 were uncomplicated. Among our living cases not one mother had a diabetic complication and only 3 had a complication of pregnancy. Controlled diabetes is essential to fetal welfare. Diabetic accidents, coma and hypoglycemia, are preventable. Therefore, the number of fetal deaths from diabetic accidents should now be few ... Hypoglycemia is more to be feared than diabetes in the new-born. The infant's blood sugar is low ..."

"The treatment of diabetes in pregnancy is along the very same lines as the treatment of diabetes apart from pregnancy ... There is no harm in moderate undernutrition until term, because thereby the mother will be in better diabetic condition and delivery will be made easier because of a smaller baby ... Small doses of insulin given frequently if necessary are preferable to large doses given at infrequent intervals and hypoglycemia may thus be avoided ... Daily examination of specimens of urine, weekly examinations of the blood sugar during pregnancy, hospitalization a week or more before term, four-hourly urine tests during labor and the puerperium will minimize the diabetic dangers.

Operative deliveries are not contraindicated on the grounds of diabetes. The diabetics of today stand operations well. If the size of the baby cannot be controlled by proper diabetic and general dietetic supervision then an induced labor or Caesarean section may safely be chosen. A short labor with simple operative assistance is far safer than a long exhausting labor. In general, close and persistent supervision of the patient by both internist and obstetrician is the most important part of the treatment. In this way many of the accidents of diabetic pregnancies may be avoided and an increasing number of diabetic mothers will give birth to living babies."

Dr White undertook meticulous research into many aspects of diabetes and in particular into aspects aimed at improving the outcome of pregnancy for both the mother and child. By the time of her retirement the fetal survival rate for diabetic women in the Joslin Clinic had risen from 54% to 97%. In 1945, she introduced female sex hormone therapy for diabetic pregnant women. Although it was popular for a time, a trial failed to provide support and it was later abandoned.⁵ White also delineated the heredity, stages, and treatment of juvenile diabetes, brought a better understanding to the psychosocial aspects of diabetes, and promoted basic research to find a cure for diabetes through the transplantation of islet cells. Perhaps, though, her most important contribution was in devising a classification for diabetes in pregnancy based on the age at onset of the disease, its duration, and the presence of atherosclerotic vascular disease and renal complications^{6,7} (table 1). Later, in

Table 1 White's classification of diabetes in pregnant women⁷

Class of diabetes	Fetal survival (%)
Class A: chemical diabetes	100
Class B: maturity onset (age over 20 years), duration under 10 years, no vascular lesions	67
Class C: age 10–19 years at onset or 10–19 years' duration, no vascular lesions	48
Class D: under age 10 at onset or over 20 years' duration or calcification of vessels of legs or hypertension or benign retinopathy	32
Class E: calcification of pelvic arteries	13
Class F: nephropathy	3

1968, she added a group of patients with proliferating retinopathy. Her classification allowed a partial prediction of the course of an individual diabetic patient during pregnancy and the chances of survival of the newborn infant. It was widely adopted and brought some semblance of order to a previously confused literature in the field.⁸

As assistant professor of medicine, Priscilla White taught at Harvard and Tufts University Medical Schools. Besides the Joslin Clinic, where she was director of the youth division, she held medical positions at Faulkner Hospital and the Hospital for Women in Boston and was consultant to the Boston Floating Hospital, the New England Hospital, and the Children's Medical Clinic. She helped to found the Clara Barton Birthplace Camp for Diabetic Girls, Oxford, in 1932 and for many years attended both this camp and the nearby Elliott P Joslin Camp for Boys with Diabetes in Charlton to provide medical cover.

White received an honorary doctorate of science from Middlebury College and from the Women's Medical College and was made an honorary member of the Royal Belgium Society of Obstetrics and Gynaecology. Cited by Hobart and William Smith College as one of the 12 outstanding women physicians in the world, she was, in 1960, the first woman to be invited to give the Banting Memorial Lecture⁹ and to receive the Banting Medal, the highest scientific award of the American Diabetic Association. In 1971, she was asked to give the Joslin Memorial Lecture to the New England Diabetes Association. She was also invited to lecture in Europe and South America as well as in the United States. On her retirement, she was honoured by her colleagues and the citizens of Boston with a splendid dinner. Similar celebrations and presentations were to follow, given by the Harvard Club and the Massachusetts Medical Society.

Priscilla White, like Joslin, did indeed dedicate her life to the management of diabetes. She was a warm and cheerful person, always an optimist and skilled at putting her patients at ease. Devoted to their welfare, she would often stay with her mothers throughout labour and delivery. As she said of herself: "I was strongly tied to the patient emotionally. When I lost a child I was heartbroken".² Dedicated, indefatigable, and compassionate, yet her gentleness is said to have masked a backbone of steel. She never married, and, during her 50 years of active work, presided over some 2200 deliveries of diabetic women and the management of some 10 000 cases of juvenile diabetes. After her retirement in 1975, she continued to work part-time on the emotional problems of young diabetics. She still lived in her charming pre-revolutionary home in Ashland, Massachusetts, accompanied by her housekeeper and five dachshunds, Rudi, Juli, Juno, Zeida, and Vicki. On 16 December 1989 she had a heart attack and died. She was 89.

REFERENCES

- 1 **Baskett TF.** On the shoulders of giants. *Eponyms and names in obstetrics and gynaecology*. London: RCOG Press, 1996:245–6.
- 2 **The Boston Globe, Massachusetts.** 6 December 1960, 28 November 1974, 4 December 1974, 6 December 1974, 14 May 1975, 21 December 1989.
- 3 **White P.** *Diabetes in childhood and adolescence*. Philadelphia: Lea and Febiger, 1932.
- 4 **White P.** Diabetes in pregnancy. In: Joslin EP, ed. *The treatment of diabetes mellitus*. 4th ed. Philadelphia: Lea and Febiger, 1928:861–72.
- 5 **Peel Sir John.** A historical review of diabetes and pregnancy. *J Obstet Gynaecol Br Commonw* 1972;**79**:385–95.
- 6 **White P.** Pregnancy complicating diabetes. *Am J Med* 1949;**7**:609–11.
- 7 **White P.** Classification of obstetric diabetes. *Am J Obstet Gynecol* 1978;**130**:228–30.
- 8 **Longo LD.** Pregnancy complicating diabetes. *Am J Obstet Gynecol* 1978;**130**:227.
- 9 **White P.** Childhood diabetes: its course and influence on the second and third generations. The Banting Memorial Lecture. *Diabetes* 1960;**9**:345.