ureter is conservative—continuous antibiotic prophylaxis.

Infection. The experimental and clinical evidence increasingly suggests that most renal scarring occurs as a result of urinary infection in infancy. One of the most important roles of the paediatrician, therefore, is to ensure that infections are detected and treated promptly and that antibiotic prophylaxis is carefully maintained throughout infancy.

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D F M THOMAS
*St James's University Hospital
and the General Infirmary, Leeds*

Baby of a schoolgirl

In 1981 in England and Wales 5330 babies were born to girls of 16 years of age or less.¹ Although some of the consequences of the pregnancy and a few facts about the perinatal period are known, reliable information is scanty or non-existent about most aspects of the infants. The known consequences of the schoolgirl pregnancy are all to the disadvantage of the girls, their infants, their families, and society. Marriage is unlikely to solve many of the problems of the pregnant schoolgirl (and in 1981 only 870 of the babies were born within wedlock) and may actually compound the difficulties.

It is widely believed that adolescent pregnancy leads to increased obstetric risk, increased risk of prematurity, and increased risk of perinatal mortality and morbidity. It has also been held that child abuse and neglect are frequent as a result of adolescent childbearing. Until recently, studies looking at the babies of adolescent mothers frequently ignored socioeconomic status and access to medical care and, therefore, the importance of biological versus social factors was unclear.

Pregnancy

Social deprivation is clearly associated with unwanted pregnancy in the teenage mother and this together with physical and psychological immaturity are thought to lead to the poor reproductive performance. The only definite complication associated with age rather than social disadvantage is pregnancy associated hypertension and the incidence of this is higher in school age mothers than in older teenagers. Duenhoeelter *et al*² reported that 34% of schoolgirl mothers develop pregnancy associated hypertension, whereas the incidence in a matched older group of women is 25% ($P<0.01$).

Other obstetric problems are uncommon and out of concern for the mother, obstetricians are reluctant to intervene in pregnancy except in the case of severe pregnancy associated hypertension. This means that in many more adolescent mothers, the pregnancy is prolonged beyond term.³

Neonatal period

The perinatal mortality rate in the babies of schoolgirls is two to three times higher than in the babies of mothers 20 to 30 years of age.⁴⁻⁶ The differences in neonatal mortality result primarily from the excess of low birthweight infants with problems of prematurity born to young mothers because of pregnancy associated hypertension. Low birthweight babies are two to six times as common in adolescent mothers⁴⁻⁶ but the weight specific perinatal mortality rates are not increased.⁵ Lawrence and Merritt⁶ suggest that 85% of these low birthweight infants are preterm and 15% small for gestational age, and that the reduction in birthweight is strongly associated with low socioeconomic class, smoking, alcohol, drugs, and inadequate prenatal care. The overall incidence of infants with lethal congenital malformations seems to be low, however, meningomyelocele and hydrocephalus are increased.⁷ The question of whether the high, low birthweight rate is due in any way to a biological disadvantage (that is, the mothers being biologically immature and unable to carry their babies to term) or solely due to the lack of prenatal care, is still not satisfactorily answered. There is general agreement that schoolgirls who become pregnant are largely a socially disadvantaged group, more likely to smoke, drink, and get genital infections, and in urban United States to take hard drugs. They also avoid routine

prenatal care. Adolescent mothers if they decide to keep their pregnancy, usually also decide to keep the infant. Only one of 92 teenage mothers in the Bristol Booking Study had her baby adopted⁸ and this is also the current North American experience.⁹ Once born, the infants are less likely to be breast fed.⁸

Infants of adolescent mothers are widely felt to have a less satisfactory psychological, intellectual, and neurological development than infants of older mothers. Most attribute this to a disorganised upbringing but a study by Thompson *et al*¹⁰ suggested that newborns of adolescent mothers might in some way be intrinsically different from the newborn of the older mother. They found that the infants of adolescent mothers at 2 and 5 days of life were significantly less capable of responding to social stimuli; they were less alert, less able to control motor behaviour or to perform integrated motor activities, and were less cuddly. A poorly equipped mother and a poor socioeconomic environment compound the apparent biological problems of the infant. Are these differences due to differences in maternal sensitivity, responsiveness, and skills or do they reflect differences in the infant's innate competencies? Certainly it is well recognised that a mother's sensitivity and responsiveness to her infant's behaviour in the early neonatal period will affect her infant's development and behaviour and that this will, in turn, influence her own later behaviour in the relationship. The fact that differences are evident at between 2 and 5 days of age indicates that a constitutional or reproductive causality is the likely origin.

Problems of infancy

Many schoolgirl mothers have unrealistic expectations about developmental milestones and have punitive child rearing attitudes that affect their infant's development.¹¹ It has been postulated that these attitudes together with the poor relationship of the mother to her infant may increase the risk of non-accidental injury.¹² Sixty six per cent of teenage mothers return to one or other of their own parents' homes after delivery and this may improve the infant's life chances.⁶ The infants are less likely to be immunised and less likely to be attended by health visitors, both because their mothers are more mobile than older mothers and also because as infants they are less likely to be taken to health clinics.⁸ One of the major catastrophes of infancy is the sudden infant death syndrome (SIDS). The incidence in the babies of schoolgirls is probably up to six times greater than in mothers 10 years older and probably accounts for a third of all deaths in the

first year of life.^{5, 8} It seems likely that this is the only complication in infancy that is significant once socioeconomic disadvantage is matched. Babson and Clarke⁵ and Taylor *et al*¹³ found that, in addition to SIDS, there is also an age related incidence of infections, accidents, violence, and other causes of death. By contrast, death from congenital abnormality is unrelated to maternal age.

Later childhood

Taylor *et al*¹³ showed that in the first 5 years of life the children of teenage mothers are more likely to be admitted to hospital than the children of older mothers. The admissions follow accidents (poisonings, burns, and superficial injuries and lacerations) and also gastrointestinal problems. The admission rate is increased, even after allowance for a variety of social and biological factors.

The later intellectual development of the babies of schoolgirls has been investigated. Baldwin and Cain⁹ showed consistent deficits in their cognitive development. This is more noticeable in male infants. Less consistent effects were found in social and emotional development and school adjustment. When the socioeconomic status of the teenage mother is matched with older mothers, the differences are hardly significant, so it seems likely that the mother's age itself is not the cause but that other factors associated with early child bearing such as educational and economic disadvantage and the greater likelihood of marital break up, have greater significance. They found that the quality of mothering was largely dependent on how much support the teenage mother received from her family, especially from her husband or her mother. Kellam *et al*¹⁴ in a longitudinal study of social adaptation and psychological well being, reported that the negative effect of the teenage mother could be ameliorated by the presence of a father or grandmother in the household. Mother alone families were at highest risk. Hardy *et al*¹⁵ found that the children of adolescent mothers at 7 and 12 years of age performed less well in school and had a reading age 0.4 years below the children of older mothers. At age 8 and 10, these children were both more dependent on their mothers and more distractable. In contrast King and Fullard,¹² assessing adolescent mothers' skills in parenting their infants, found that contrary to popular beliefs, teenagers were average in most aspects of their parenting, thus sweeping condemnations of teenagers are not appropriate.

Outlook

The baby of the schoolgirl is at considerable risk and

it is essential to understand how social and environmental factors relate to the causes of postnatal death. The social and environmental disadvantages that often affect young mothers are well known; incomplete education, fewer financial and other support services, inadequate knowledge of appropriate health care, and the lack of parenting skills may limit the ability of the immature mother to care for her child. Obstetricians and paediatricians must learn to recognise the considerable risks of these patients at the stage of antenatal care and bring in appropriate support services and education. Field *et al*¹¹ reported on the beneficial effects of intervention programmes. Parent training was provided for 80 teenage parents, half were visited twice weekly in their homes and instructed in care giving, the other half were trained as paid teachers' aids in a medical school infant nursery. Growth and development during the first two years were superior for the infants whose mothers received training as teachers' aids. Repeat pregnancies were fewer and return to work or school more frequent for the infant nursery mothers, most of whom subsequently pursued nursing aid careers.

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NEIL MCINTOSH
Department of Child Health,
St George's Hospital,
London SW17 0QT