



that a high rate of premature births in pregnant women with bacteriuria was limited to those whose bacteriuria either relapsed after treatment or proved unresponsive to therapy. Patients whose infections cleared completely usually did not have an excessively high rate of premature delivery or other morbidity. Because recurrent disease is frequently associated with evidence of renal involvement, it appears that renal involvement *per se* predisposes toward excess perinatal risk, rather than the persistent bacteriuria.¹⁰ In short, since the early treatment of bacteriuria prevents symptomatic disease, its prevention should substantially decrease the incidence of premature births accompanying symptomatic pyelonephritis.

Bacteriuria in schoolgirls. Although bacteriuria is clearly prevalent among schoolgirls, it is not known whether this may present an eventual health hazard. Screening surveys have shown that between 1-2% of schoolgirls have infected urine.^{3-5,7} Approximately 30% also had vesicoureteral reflux, and 26% exhibited radiologic evidence of pyelonephritic scarring.^{4,7} Most had little or no history suggesting previous urinary tract infection. Pyelonephritic changes are thought to develop from the combination of covert bacteriuria and vesicoureteral reflux. Pyelonephritic scarring is probably nonprogressive unless it is associated with severe vesicoureteral reflux.²⁰ Most vulnerable in this respect are children under the age of five,²¹ since renal scarring is more likely to occur when the kidney is not fully grown. Persistent bacteriuria in children is associated with a genitourinary abnormality in 5-40% of cases.¹

Bacteriuria and hypertension. Kass estimates that 10-20% of hypertensive females may have an associated bacteriuria. However, it is not clear whether the bacteriuria itself leads to hypertension, or

whether the renal vascular disease and resulting kidney damage predispose toward secondary infection. Available data favor the hypothesis that bacteriuria is associated with hypertension directly, rather than indirectly through secondary infection.¹

Catheterization and bacteriuria. Urinary infection acquired during the puerperium or after gynecologic surgery frequently is due to catheterization. Brumfitt et al²² studied 320 women known to have had sterile urine before delivery. Of women who were not catheterized, 4.7% developed infected urine during the puerperium. In contrast, 9.1% of the women catheterized only once for specimen collection developed urinary infection. Of those in whom catheterization was performed for clinical reasons, 22.8% developed bacteriuria. In women with urinary retention, the incidence rose to 40.6%. The majority remained asymptomatic, and the urinary infection either resolved spontaneously or cleared following one course of chemotherapy.

Catheterization following gynecologic surgery is also associated with a high incidence of urinary infection, especially in those with indwelling catheters and open drainage. In contrast to the rapid response of urinary infections during the puerperium, bacteriuria that develops after pelvic surgery frequently persists. Simmons and Baker²³ studied 47 women who had undergone vaginoplasty six years previously; in 31.9%, significant bladder infection was discovered. In all instances, infection was attributable to operation and catheterization. Although such infections usually do not produce serious renal damage, the sequence of catheterization followed by bacteriuria, pyelonephritis, bacteremia and, ultimately, death has been reported.¹ Such complications can be prevented by applying appropriate techniques in carrying out