The prevalence of urolithiasis has been rising internationally over recent decades and the number of interventions has increased [1,2]. The increased prevalence and intervention carry a significant cost. In this month’s issue of European Urology, Antonelli et al. have calculated the predicted costs of managing stone disease in the United States in the year 2030 using three parameters: population growth, predicted obesity trends, and estimated increases in diabetes [3]. The authors estimate that 16 years from now, >$5 billion/yr (in 2014 prices) will be spent on stone disease in the United States [3]. This compares with annual US direct treatment costs for bladder cancer (the most costly of all cancers) of approximately $3 billion [4].

As the authors acknowledge, this is likely to represent a significant underestimate of the future costs of stone disease. Additional factors will inflate these costs: increased stone detection rates, dietary changes, and trends towards ureteroscopy away from lithotripsy. Furthermore, because the majority of stone formers are in the working age group, the indirect costs due to lost productivity are considerable.

Detection of stones is likely to rise. Increasing numbers of patients are undergoing computed tomography (CT) scans for diagnosis and screening of nonstone disease. Approximately 8% of patients in the United States undergoing CT colon screening had an asymptomatic renal stone [5] and many of these subsequently become symptomatic. As CT utilisation continues to increase, more stones will be detected and referred for treatment.

Epidemiology suggests that Western diets (high in meat and low in fruit and fibre) put patients at greater risk for stone disease [6]. Trends in meat consumption suggest that more patients will be at risk of forming stones. The stone treatment selected will also have a significant bearing on cost. Cost analysis data comparing shock wave lithotripsy (SWL) and ureteroscopy are equivocal, but there has been a significant move towards ureteroscopy and away from SWL in many countries worldwide. If this trend continues, it is likely to have an impact on overall cost of treatment.

Predictive studies allow us to stand back, reflect, and try to plan for the future. If we accept that the trends in obesity, diabetes, and population growth are inevitable, what can the urologic community do to address the increasing burden of stone disease?

Historically, urologists have been in the vanguard of developing and delivering minimally invasive diagnostic and treatment techniques (eg, lithotripsy, flexible lower and upper tract endoscopy, and laparoscopic and robotic surgery). Thirty-five years ago, the advent of the HM3 lithotripter transformed the landscape of stone treatment. To meet the spiralling demand and cost of stone disease, our profession, in partnership with engineers and industry, must drive technological improvements in lithotripsy, endourologic surgical techniques, and new treatment modalities. These technological advances must go hand in hand with appropriately planned service provision, which will require training of adequate numbers of stone surgeons.

Determining the true economic costs of stone disease is complicated by variable, regionally determined reimbursement rates, and availability of equipment and expertise. The large budget spent on stone disease treatment warrants high-quality multicentre studies to better inform allocation of resources. Alongside treatment efficacy, we need better...
data to compare safety, complication rates, cost, and patient satisfaction amongst all of the treatment options.

Finally, treatment is only half the battle. The study by Antonelli et al. [3] focuses our attention on the need for preventive strategies. Recent American Urological Association guidelines on medical management advocate a more proactive approach, focusing on personalized evaluation to predict stone risk and so better inform lifestyle changes and therapeutic measures to prevent recurrence [7].

Conflicts of interest: Ben Turney is a co-director of StoneScreen. John Reynard has nothing to disclose.

References


