CASE NUMBER AND THE FINANCIAL IMPACT OF CIRCUMCISION IN REDUCING PROSTATE CANCER

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INTRODUCTION

Prostate cancer risk is influenced by genetic and other factors, such as a diet high in red meat (1.3-fold increase in risk). As highlighted in various publications, including the BJU International recently [1], the risk also correlates with a history sexually transmitted infections (STIs), most consistently gonorrhoea, but also syphilis, human papillomavirus, and the recently discovered Molony murine leukaemia virus homologue XMRV. Such infections might establish in the prostate a state of chronic active inflammation, which is associated with various cancers. STIs are more common in uncircumcised men, three times more in a recent longitudinal study in New Zealand [2], which could explain why uncircumcised men have been reported to have 1.6–2.0 times the incidence of prostate cancer [3–6].

Although lack of circumcision is only one of several risk factors, we nevertheless examined this particular factor in isolation by calculating, for the first time, the additional cases and costs in the USA from being uncircumcised, and did so across the range of increases in risk that have been reported.

In the USA, ≈17% of men have prostate cancer during their lifetime and the mean age at diagnosis is 70 years (http://www.cancer.gov). The rate of circumcision in men born in 1933–1947 is ≈60% [7]. Based on these values we calculated the lifetime risk of prostate cancer for both a doubling and 1.6 times the risk conferred by a lack of circumcision (Table 1).

The American Cancer Society predicts 234 460 new cases of prostate cancer in 2006. If instead of 60% [7] the circumcision rate had been 100% when these men were infants, the number of cases (before rounding to two significant figures) would have been only 167 471, meaning 66 989 (or 28.6%) fewer for a doubling of risk, implying that lack of circumcision has contributed to 40% more cases of prostate cancer. For a 1.6 times higher risk there would be 24% more cases (Table 1).

We then estimated treatment costs. If we assume the 66 989 cases above are all treated, and with radiation only, at $13 823/patient [8] (compared with $12 250 for radical prostatectomy), the cost can be calculated as $925 million (Table 1). Also shown in Table 1 are the costs for terminal care, at $24 660/patient [8].

A 28.6% reduction in the 27 350 projected total deaths from prostate cancer in 2006 means that there would be 7822 fewer fatalities had the circumcision rate been 100%. This means that terminal care costs would be $193 million lower. Table 1 then shows overall cost after summing these figures.

For an overall risk of 17%, the 234 460 men who will be diagnosed in 2006 are thus from 6 × 234 460 = 1406 760 males born mostly in 1930–1950. A 100% circumcision rate would have required 40% × 1406 760 = 562 704 additional circumcisions. While we have not carried out 'opportunity lost' cost adjustments for these extra circumcisions, we note that the current total cost of infant circumcision, based on 2 million circumcisions at $195 per procedure in the USA, is $390 million [9], i.e. is a third of the $1.1 billion total savings shown in Table 1.

Our analysis shows the number of extra cases of prostate cancer and the financial cost of these arising from the potentially important risk factor of lack of circumcision. However, there are other costs, i.e. incontinence, loss of sexual function, and psychological trauma to patients and their families, but these are less easy to quantify.

Other cost analyses have been conducted in relation to the protection afforded by circumcision from other medical conditions [9], but none of these has dealt with prostate cancer. The latter should be included in future cost-benefit analyses.

We based our analyses on values for the age at which prostate cancer is currently diagnosed. The only information on circumcision rate for this age (70 years) that we could find was from the US National Health and Social Life Survey [7]. Figure 1 in that paper shows that ≈60% of 70-year-old men in the USA are circumcised [7]. However, the rate of circumcision in the 358 men born between 1933 and 1947 varied, being 53% in Conservative Protestants, 64% in Mainline Protestants, 68% in Catholics and 71% in those with no religion [7]. After World War II the circumcision rate in the USA increased to ≈80% for men born in 1947–1962 [7]. For those born in the 1970s, the percentage of men today who are circumcised is 91% [10]. For those born in the 1980s the proportion is 83% [10]. Thereafter the trend has been for a continued increase [11].

Lack of circumcision is just one of several risk factors for prostate cancer. Although circumcision rates are high in the USA and low in Europe, other risk factors, e.g. red meat consumption, differ, meaning a contrasting aetiological spectrum between each region. Our findings are for the single risk factor of lack of circumcision. Thus it would be unwise to compare the total prostate cancer incidence among different countries in relation only to their rate of circumcision.

In conclusion, a 1.6–2.0-fold higher risk of prostate cancer contributed by the lack of circumcision means 45 379–66 989 (24–40%) more cases of this disease in the USA than would be the case were circumcision to be universal. These add an extra cost of $0.8–1.1 billion annually in that country. The cost and case burden we identified might merit attention by medical authorities and governments, as they consider ways of reducing medical costs and the institution of programmes aimed at reducing the incidence of this major cancer in men. Although achieving a 100% rate of circumcision is

TABLE 1 *Current extra cases and costs of prostate cancer in relation to circumcision status in 70-year-old men in the USA in whom the circumcision rate is 60%*

Variable	Risk increase 2×		Risk increase 1.6×	
	Uncircumcised	Circumcised	Uncircumcised	Circumcised
Lifetime risk of prostate cancer	1 in 4.2	1 in 8.4	1 in 4.6	1 in 7.4
Extra cases, %	40		24	
Extra costs, US$ million				
Treatment	925		627	
Terminal care	193		131	
Total	1100		758	

unlikely, our calculations nevertheless illustrate the theoretical potential. Using our values it becomes a simple matter to make estimates based on a specified rate of circumcision of <100%. Different numerators will naturally apply to rate and medical costs in countries other than the USA. We also acknowledge that the decision to circumcise should not be made based on the risk of prostate cancer alone, but should be considered among many other better known conditions in males and in their female sexual partners, the risk of which is reduced by circumcision (reviewed in http://www.circinfo.net). If considering just prostate cancer, such decisions might also consider risk factors such as a strong family history of this disease.

CONFLICT OF INTEREST

None declared.

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Abbreviation: **STI**, sexually transmitted infection.

PLANNING FOR THE FUTURE: CAN THE CORE UROLOGIST PROVIDE SAFE AND EFFECTIVE OUT-OF-HOURS COVER?

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INTRODUCTION

Changes to urological services have led to a major re-think in ongoing training for urological consultants of the future. Currently only 10% of urological outpatients will require surgery, compared with up to three-quarters 15 years ago [1]. The demand for non-surgical urological services has prompted the speciality to propose a 5-year progressive training scheme, due to commence in 2007. This is designed to seamlessly follow on from the second year of the proposed new Foundation Programme of 'Modernising Medical Careers' [2]. In the intervening period, trainees with urological experience intent on a career in urology can be appointed to join this scheme at year 3, hence spending only 3 years before being awarded a Certificate for Completion of Training.

The proposed training changes will produce a new breed of 'generalist' consultant urologists, who will be referred to as 'core urologists'. Recent manpower predictions suggest that we will need a ratio of two-thirds core urologist to one-third urological surgeons. The core urologist is expected to be able to undertake standard diagnostic investigations, most inguino-scrotal and penile work, and basic endoscopic surgery,