EUROPEAN UROLOGY 76 (2019) 752–753

available at www.sciencedirect.com
journal homepage: www.europeanurology.com

European Association of Urology

Platinum priority – editorial

referring to the article published on pp. 743–751 Of this issue

Resilience of men and the gap hypothesis of quality of life: Health utility outcome measurement in prostate cancer

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Success in cancer treatment has resulted in at least half of patients diagnosed across the developed world in 2019 realistically being able to expect to be alive in 2029. Progress has not been uniform across all malignancies, with lung, pancreatic, and central nervous system tumours sadly lagging behind others. Urological cancers, in general, are at the other end of the spectrum, with 10-yr survival of ≥50% for bladder and kidney cancers, >80% for prostate cancer, and approximately 98% for testicular tumours. The trend towards sustained increases in duration of survival is exemplified by prostate cancer, with tripling of 10-yr survival from 25% to 84% over the last 40 yr in the UK [1].

Prolonged survival alongside greater life expectancy results in an ever-rising prevalence of cancer survivors (currently more than 16 million in the USA) [2]. Health and social care economies are recognising the changing care needs of this growing cohort in society. Methodological approaches are being developed to define the quality of survival for those living with and beyond cancer [3–5]. To track and respond to the long-term impact of cancer, innovative quality-of-life metrics are needed and have been introduced in some jurisdictions [6]. Whenever possible, outcome assessments need to adopt standardised approaches to support comparative effectiveness research and meaningful cost-effectiveness analyses across populations. Utility measurement is one such approach, in which scores indicate a person's preferences for specific health states. The scores are calculated via identification of a set of health states of interest and then assigning value to these using the standard gamble approach, traded time-off, or visual analogue scales. The EQ5D is an example of a generic utility score favoured by the National Institute for Health and Care Excellence (NICE) in the UK to assign value to health technologies using the quality-adjusted life years model [7].

In this issue of *European Urology*, Jeong and colleagues [8] report on their laudable activities to overcome one of the fundamental weaknesses of utility value–based assessment of health technologies: Preference values in utility scores, such as the EQ5D, are generated from healthy populations who do not have personal experience of the health condition/state under consideration. To address this, the authors derived utility scores from a nested cohort of survivors forming part of the prospective CaPSURE cohort. The paper provides a very thoughtful review of the strengths and weaknesses of the standard gamble methodology in deriving utility scores.

Jeong et al identified high "prostate cancer health" and "overall health" utility scores as well as higher specific functional outcomes, indicating better self-reported health and function, among prostate cancer survivors than previously predicted by values assigned from healthy populations. The results are most gratifying and concur with the growing literature on long-term outcomes for men living with and beyond prostate cancer which suggests that the majority of men adapt and cope well with specific functional outcomes such as sexual, bladder, and bowel morbidities [4]. Of course, as the paper appropriately identifies, the nested cohort of men studied are not representative of all men with prostate cancer: Very few of the study population had active, progressive, or metastatic disease, <7% were non-white, and only 5% were younger than 60 yr at the time of evaluation. We previously showed that younger and very old men report worse health-related

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DOI of original article: https://doi.org/10.1016/j.eururo.2019.07.012.

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https://doi.org/10.1016/j.eururo.2019.07.046

quality of life than those aged 65–84 yr living with and beyond prostate cancer [4].

Jeong et al [8] suggest that their results point to the resilience of men after diagnosis of prostate cancer, with adaptation to their health status even if this involves impaired function. While the results are reflective of men at a median of 9 yr after diagnosis and the majority of whom originally had early-stage disease at diagnosis, the finding is consistent with the LAPCD study evaluating 35 000 men at 18–42 mo after diagnosis with all stages of cancer [4], which revealed that men with stage 1–3 disease self-reported similar health-related quality of life to that expected for members of the general population, whilst 25% of those with stage 4 disease reported similar results.

So how can we explain this intuitively difficult finding of maintained self-perceived health-related quality of life among men living with and beyond diagnosis of prostate cancer when the potential adverse physical, psychological, and social consequences of the illness and required treatments are well documented? In 1984, Professor Sir Ken Calman suggested “quality of life measures the difference at a period of time between the hopes and expectations of an individual and that individual’s present experiences” [9]. At first glance we might suggest that on this basis, living with and beyond a cancer diagnosis would reduce quality of life. However, Calman postulated that some individuals are able to “have a good quality of life despite serious illness either by reducing their expectations and being satisfied with what they have, or by being able to rise above the problems by personal growth and development.” This view may be supported by the fact that both Jeong et al and LAPCD report on men who have had time to come to terms with their diagnosis and are likely to have completed any required radical treatments with time to recalibrate and learn to live with any residual functional deficit.

At scale, robust evaluations of health outcomes are increasingly demonstrating the resilience of men with prostate cancer. Calman’s “gap hypothesis” helps us to conceptualise how this might arise. Equally as important, it should generate a note of caution against overcongratulation on the success of clinical care. We still need to strive to minimise the potential adverse late effects of cancer treatments, as it may be the growth of the individual, rather than a lack of negative health consequences of treatments, that facilitates the finding of sustained good quality of life.

Conflicts of interest: The author has nothing to disclose.

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