The projected burden of knee osteoarthritis in New Zealand: healthcare expenditure and total joint provision—a response

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We thank Professors Gywnne-Jones and Hooper for their correspondence in regard to our projections of demand for total knee joint replacement (TKR) to 2013–2038.[1] They are correct that the estimates are based on the first TKR, and any revision of that TKR, for primary osteoarthritis (OA) in the population resident in New Zealand as of 2013. The estimates do not include unicompartmental knee replacements (UKR), subsequent contralateral TKR or TKR for indications other than primary OA.

The main purpose of our analysis was to investigate to what extent healthcare costs (including TKR demand) will increase as a result of increasing population obesity in New Zealand.[2] This focus required delimiting the population to that for which we had reliable population data and evidence of the association between obesity, OA and those effects. These delimitations were reported in the paper (and its supplementary material), and our correspondents are right to point out that they must be explicitly acknowledged when interpreting the estimates, such as when making important decisions about workforce planning and formulating strategies for mitigating the public health burden of OA. Based on our reported proportional increases, the total number of knee replacements required by 2038 may exceed 13,300, an increase of around 6,000 or more than 80% from 2013.

It is worth noting, as reported in our paper, that our projections are based on increasing demand for TKR due to projected changes in population ageing and obesity rates, and do not capture "supply side" changes in health sector funding or ability to perform the number of surgeries required. The significant increase in funding for elective orthopaedic surgeries ($30 million over three years) made in Budget 2015 explains much of the remaining difference (after accounting for our inclusion criteria as above) between projected and actual provision of TKR in 2017.

We agree with our correspondents' interpretation, as originally made by Hooper et al,[3] that continuing to meet the increasing demand for provision of TKR in New Zealand will be enormously challenging, even insurmountable, based on these independently validated current projections.[1,3] When taking into account the additional surgeries demanded by indications outside our base case delimitations (ie, subsequent contralateral TKR surgeries [around 25% of TKRs[4]], UKR surgeries and arthroplasties for reasons other than primary OA, eg, rheumatoid arthritis, trauma, other pathology etc. [which account for around 15% of TKRs[4]]), the implications for workforce training and health system planning are stark.

The projected future burden of OA is alarming. Among the top 20 causes of disability-related life-years lost in adults, many (such as cardiovascular causes and cancer) have shown decreases between 1990 and 2018, but OA has shown among the greatest rises.[5] This is largely driven by people living longer with OA, rising obesity rates, increasing injury rates and earlier onset of OA. Restricted relative supply of

TKR would further add to the tally. Acknowledging that OA is a chronic, long-term condition, it is clear that a unidimensional, ambulance-at-the-bottom-of-the-cliff approach will not be adequate. We agree with our correspondents that a more coordinated approach that includes prevention, public health initiatives and effective non-operative treatments, including body-weight management and exercise therapy at the early- and mid-stages of OA, as well as adequate provision of optimally-timed TKR for advanced-stage OA, all have an important role in the management of knee OA.

Our research centre plans to host a New Zealand Osteoarthritis Summit in June 2020, where attendees will propose and plan a course of action to help address the rising burden of OA, and the response to it of the New Zealand public healthcare system. We invite representatives from orthopaedic surgery and all other interested parties to collaborate with us in this initiative.

Competing interests:
Nil.

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