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ORIGINAL ARTICLE

The impact of the 6-month waiting target for elective surgery: a patient record study

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Abstract

Aim To quantify the number of patients declined surgery due to scoring below the financial threshold, when presenting for total hip or total knee arthroplasty at two New Zealand District Health Boards (DHBs).

Method Data from patients presenting with hip or knee osteoarthritis at both Whangarei Base Hospital and Hawke's Bay Regional Hospital from June 2012 to June 2013 were reviewed. Data were taken from hospital codes and patient records. The outcome from clinic visits were recorded as well as the patient's New Zealand Orthopaedic Association (NZOA) prioritisation score.

Results A total of 1202 patient records were reviewed: 393 from Whangarei Base Hospital and 809 from Hawke's Bay Regional Hospital. Of the 858 patients where surgery was both desired by the patient and deemed appropriate by the surgeon, 307 (36%) were declined for being below the financial threshold. These patients had a mean NZOA score of 66.42. At Whangarei Base Hospital, 300 patients were referred for surgery and 98 (33%) were declined for being below threshold. The mean NZOA score was significantly higher in the patients booked for surgery (M=70.62) compared with those declined below threshold (M=55.39, $p<0.001$). Of the 497 patients referred for arthroplasty at Hawke's Bay Regional Hospital, 205 (41%) were declined for being below threshold. The mean NZOA prioritisation scores were also significantly higher in the patients booked for surgery (M=76.96) compared to those declined (M=64.66; $p\leq0.001$).

Conclusion 36% of patients who were suitable for hip or knee arthroplasty were declined elective surgery for being below threshold. Many of these patients have significant pain and disability.

Osteoarthritis (OA) is a common condition in New Zealand. The incidence of OA increases with age with a significant rise after the age of 60.[1] With New Zealand's growing and ageing population we can expect OA to become more prevalent in the future.

Total hip arthroplasty (THA) and total knee arthroplasty (TKA) are common procedures performed on patients with OA. These procedures are successful for both the relief of pain and restoration of function. Oxford scores are seen to improve by a mean of 20 points following a THA,[2] and a mean 14 points following TKA,[3] with 89% of patients in New Zealand having good or excellent Oxford scores at 5 years.[4]

With increasing demand for these procedures in New Zealand it seems inevitable that strain will be placed on the public health system. This has been highlighted in the last few years by the New Zealand Government's push to reduce waiting times to a maximum of 4 months by January 2015.[5]

Strategies to reduce wait times may include increasing resources and efficiency. However, wait lists can also be reduced by increasing the score required to qualify for surgery (adjusting the financial threshold). The financial threshold may be adjusted according to individual DHB resources in order to meet waiting time targets.

A recent "high level review" of the elective waiting time goals was performed at the request of the Director General of Health.[5] This review noted that whilst elective waiting times had reduced, no data was collected on the outcome of those patients who did not reach the threshold for treatment. The aims of this study were to review the absolute numbers of patients being referred and accepted for THA and TKA in two New Zealand DHBs, to elucidate the level of pain and disability that was required to reach threshold for surgery, and to look for any differences between these two DHBs.

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Methods

All patients presenting to the orthopaedic service with a diagnosis of either hip or knee OA at both Whangarei Base Hospital and Hawke's Bay Regional Hospital from June 2012 to June 2013 were reviewed. Patients with the words hip or knee in their clinic diagnosis were identified by a coding search, with hospital notes used to confirm a patient's diagnosis of hip or knee OA.

Outcomes from the clinic appointment were then divided into four groups: Booked for surgery, declined below threshold (capacity issues), declined due to medical comorbidities (including patients with elevated Body Mass Index (BMI) or HbA1c), or surgery not indicated or wanted (patients where surgery was not indicated as assessed by the consultant surgeon or registrar, or where the patient did not want to have an operation).

The process of assessing and scoring of patients has some differences between each DHB as explained below. The same NZOA prioritisation score was used for all patients regardless of which DHB they were seen at.

Patients presenting to Whangarei Base Hospital with hip or knee OA are seen in either dedicated new patient clinics or First Specialist Assessments (FSA) and in separate follow-up clinics if further investigation is required after their FSA. Patients are assessed by either a consultant orthopaedic surgeon or registrar and if surgery is deemed appropriate they are scored with the NZOA standardised prioritisation scoring system for hip and knee OA (Appendix 1).

A minimum score is required to meet the threshold for surgery so that it can be performed within the next 6 months (currently transitioning to 4 months by January 2015).[5] This threshold level is variable and is modified subject to the demand and capacity of the DHB to supply surgery within the 6-month time frame.[6] In general, at Whangarei Base Hospital obese patients with a BMI>40 are declined arthroplasty and given advice and assistance to reduce their BMI. Once BMI falls below 40 the patient is then reassessed at a follow-up clinic and re-scored.

Diabetic patients with an HbA1c greater than 60 are referred back to their GP or to a diabetes specialist for optimisation of their glycaemic control. They are reconsidered for arthroplasty once their HbA1c is below 60. Patients who do not make the waiting list due to threshold (capacity) issues are discharged back to their General Practitioner (GP) or given a 6-month clinic follow-up at the discretion of the consultant surgeon involved.

Patients presenting to Hawke's Bay Regional Hospital are seen by a consultant orthopaedic surgeon or a registrar. Clinics are run with both FSA and follow-up patients simultaneously. Patients are assessed by the surgeon and deemed appropriate for either THA or TKA. The patients are then scored by the surgeon or registrar using the NZOA prioritisation scoring tool (Appendix 1) and an application to the waiting list for their surgery is made. Patients are not informed at their clinic visit as to whether or not they have reached the threshold for surgery and they receive a letter from the DHB 2–6 weeks later informing them of their result.

The clinical record of the patients who do not meet the threshold for surgery are reviewed by the consultant surgeon and a decision is made as to whether they are to be seen in an orthopaedic clinic again or discharged back to their GP. There is no formal policy on declining patients for surgery on the basis of BMI or HbA1c.

Where a diagnosis of hip or knee OA was made, the NZOA score was identified, where completed, for all patients referred to the waiting list and subsequently obtaining THA or TKA. The NZOA score for the patients who failed to meet the threshold for surgery, and were submitted to the waiting list was recorded. In the remainder of patients, the NZOA score was not available.

Analysis of the recorded NZOA scores for THA and TKA from both DHBs was performed as an indicator of a patient's pain and disability. These data were analysed using a two tailed t-test to compare differences between both the successful patients and those who failed to meet DHB capacity thresholds for surgery, and also between population groups seen at the two DHBs.

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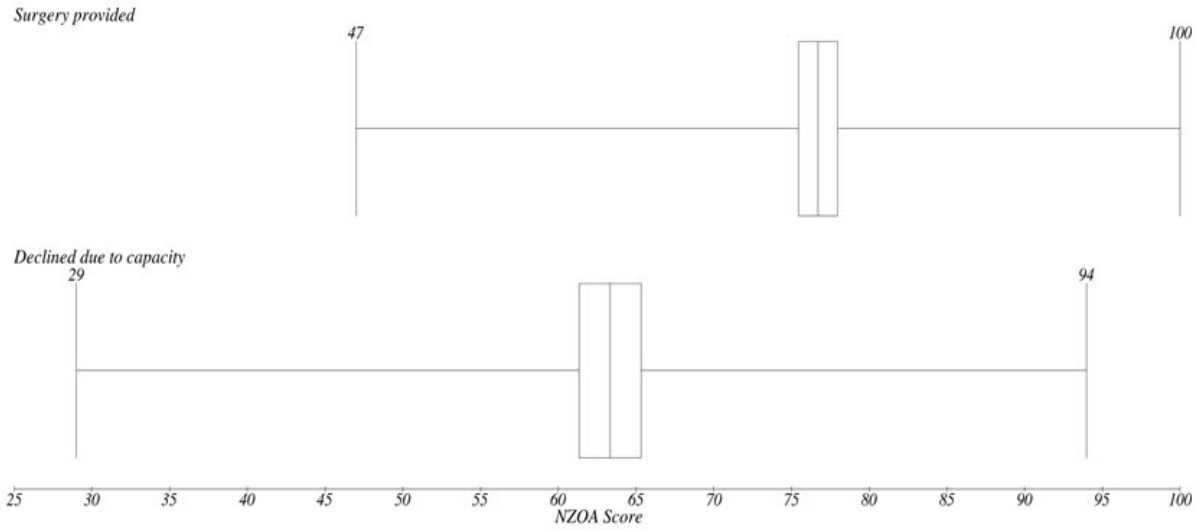
Results

A total of 858 patients across both DHBs were deemed appropriate for surgery from their clinic visit. 307 (36%) of these patients were declined for being below threshold. The mean and range of NZOA scores for patients across both DHBs are shown in Figure 1 with the box representing the 99% confidence intervals and the tails showing the range of scores measured. The mean difference between the two groups is statistically significant ($p \leq 0.01$).

Figure 1. NZOA scores for patients who received surgery versus those declined for being below threshold



2394 patients were initially identified at Whangarei Base Hospital. After a review of notes this number was revised to 393 patients presenting with a diagnosis of hip or knee OA. NZOA prioritisation scores were available for 254 of these patients.

Table 1 shows the absolute numbers of patients in each category and the mean score on the NZOA prioritisation scoring tool. A total of 15 patients had their surgery declined due to an elevated BMI>40. One patient died of an unrelated cause whilst awaiting arthroplasty. Only four NZOA scores were available for analysis in the surgery not indicated or wanted category in Whangarei. Analysis of this category was therefore excluded.

5433 patients were initially identified at Hawke's Bay Regional Hospital. Following a key word search and review of notes, 809 patients were identified as presenting with hip or knee OA. NZOA prioritisation scores were available for 549 of these patients, all of whom were initially submitted to the waitlist.

Table 2 shows the patients outcome by category and their mean NZOA prioritisation score. At least 13 who were declined surgery had obesity listed as one of the contributing reasons. One patient died of an unrelated cause whilst on the waiting list and a further five patients died of unrelated causes whilst under surveillance by the orthopaedic department for their OA.

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Table 1. Outcome of outpatient clinic for Whangarei DHB patients with hip and knee osteoarthritis

Category	Number of patients	Percentage of those presenting for operative consideration	Mean NZOA prioritisation score
Booked for surgery	200	51	70.56
Declined (Below threshold)	98	25	55.39
Declined (Medical reason)	40	10	72.25
Declined (Surgery not indicated)	55	14	
Total	**393**	**100**	

Table 2. Outcome of outpatient clinic for Hawke's Bay DHB patients with hip and knee osteoarthritis

Category	Number of patients	Percentage of those presenting for operative consideration	Mean NZOA prioritisation score
Booked for surgery	292	36	76.91
Declined (Below threshold)	205	25	64.66
Declined (Medical reason)	56	7	80.58
Declined (Surgery not indicated)	256	32	
Total	**809**	**100**	

Patients who were either booked for surgery or declined below threshold had significantly worse NZOA prioritisation scores ($p \leq 0.0001$) at Hawke's Bay Regional Hospital compared with Whangarei Base Hospital as shown in Figure 2 and Figure 3.

Figure 2. NZOA scores showing patients booked for surgery, by hospital

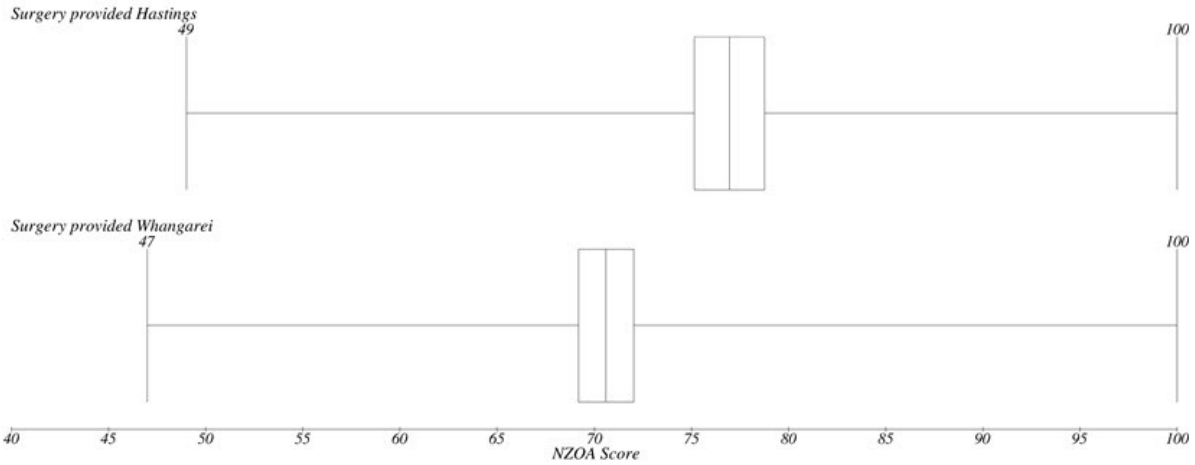

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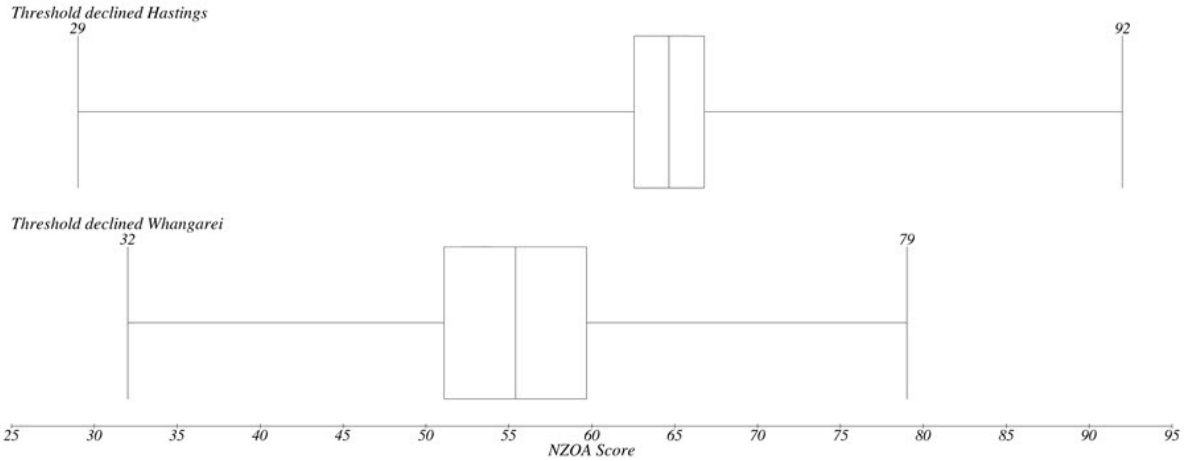
Figure 3. NZOA scores showing patients declined for being below threshold, by hospital



Discussion

36% of patients in this study with either hip or knee OA and who were appropriate for arthroplasty, were declined surgery due to a lack of resources. Recent articles from both Hooper[7] and Gwynne-Jones[8] highlight that despite increasing absolute numbers of arthroplasty being performed in New Zealand, the effect of the ageing population is resulting in a significant unmet need.

New Zealand has a two-tiered healthcare system where patients can also access private healthcare through the provision of private health insurance or out-of-pocket funding.[9,10] No standard threshold for treatment exists in the private healthcare sector; with patients typically limited from this sector for financial reasons only. It has been hypothesised that some of the excess burden of surgery can be picked up by the private healthcare sector, however this has previously been shown to be incorrect.[11]

Hooper's paper (2013) also highlights that the significant improvements in waiting times for patients waiting for TJA has resulted in a large number of patients being excluded from waiting lists altogether.[7] Our paper has shown that close to 40% of patients who are fit for surgery and in whom surgery is clinically indicated are declined surgery for being below the financial threshold.

Patients declined due to a lack of resources still live with significant discomfort and disability, with an average NZOA prioritisation score of 63. When reviewing these scores; if one takes a best case scenario and assigns 15 points for the last two sections of the prioritisation score (assuming complete postoperative resolution of symptoms and considerable risk of deterioration of symptoms), a further 48 points in the pain and functional disability sections of the score remain. Evenly divided, this indicates the patients not obtaining surgery have moderate to severe pain, personal and social limitations due to their hip and knee OA. This includes sleep disturbance 2-3 times per week, use of a walking stick indoors and outdoors, some limitation in work or an inability to walk for more than 15 minutes.

Gwynne-Jones (2013) has also highlighted that significant regional variations in the provision of elective arthroplasty exist in New Zealand.[8] This is not the first time significant variations have been shown to exist, having also been highlighted by Derrett et al. in 2009.[11] Our study has shown regional differences in prioritisation scores for those that make the waiting lists and those who do not.

Whilst the aims of prioritisation scores are to obtain fair access to elective surgery throughout New Zealand there will always be regional differences. Overall, the proportion of those who were declined surgery for threshold reasons was the same for both DHBs in this study. There was however, a significant difference in the NZOA prioritisation scores of the patient's booked for surgery and the

patients declined below threshold between DHBs. This difference may in part be a reflection of differences in scoring, rather than a true difference in pain and disability between population groups. However, it may indicate that patients are more severely debilitated from OA before receiving publically funded surgery in Hawke's Bay.

Changes in thresholds have previously been shown to increase patient frustration and discontent.[12] Our study showed some overlap of prioritisation scores for those who were both booked for surgery and declined below threshold. This overlap may be due to patients booked as a "clinical call". This is a situation where a patient is deemed to require surgery by the assessing surgeon regardless of their prioritisation score – although it is an uncommon practice. The overlap may also be due to variations in the threshold for treatment both within DHBs and between DHBs. DHBs are known to adjust thresholds for treatment to meet certain Ministry of Health requested targets.[10]

Whilst it has been shown that patients who wait longer than 12 months for THA trend towards worse pre and post-operative function,[13] the ongoing drive to drop waiting times to 6 months for elective surgery, with a progression to only 4 months by January 2015, has resulted in 36% of patients with moderate to severe pain and disability being left untreated.

It has been shown that while patients who are significantly disabled pre-operatively improve post-operatively, they are still left with a degree of disability and do not "catch-up" to their peers who were less disabled pre-operatively.[13,14] Additionally, Fielden et al. (2005) showed that a delay longer than 6 months is associated with increased costs both personally and to society.[14] With the trend toward only the most severely disabled patients gaining publically funded surgery, we are likely to see a population of patients with unnecessary residual disability despite operative treatment for OA with arthroplasty.

Previous scoring systems have been used in New Zealand to help define patients most in need of total joint arthroplasty.[10] Known as clinical priority assessment criteria (CPAC) they were introduced in the mid 1990s to ensure patients with the greatest potential benefit from surgery would get priority.[10] Further assessment of these CPAC scoring tools has shown variable correlation to patient derived health status scores.[15-18] The NZOA prioritisation score was introduced to help standardise prioritisation for TKA and THA across New Zealand and followed on from previous national and local versions.[10,15-18]

The association between the severity of OA symptoms and the severity of radiographic changes are not strong. A patient with severe radiographic OA may have relatively few symptoms and vice versa.[1] This has implications for potential CPAC scoring tools which use either primary symptomatic or primary radiographic criteria to prioritise surgery.[11] The NZOA prioritisation score has specific categories for both pain and functional disability and a section for patients with structurally unstable radiographs.

Limitations of this study include the use of two different provincial DHBs with multiple different scoring surgeons and registrars. Different DHBs and surgeons often have a differing approach to scoring in prioritisation situations, and this may be the reason behind the significant differences in NZOA prioritisation scores between the DHBs. Additionally there is an absence of data for some patients in Whangarei who were declined due to capacity issues.

For some patients assessed and deemed to meet threshold, the NZOA score was not completed or retained. All patients declined for being below threshold in Hawke's Bay received an NZOA score, whereas only 39 of the 98 in Whangarei did. Furthermore, the results of this study may reflect anecdotal reports of a large number of patients being declined elective surgery despite significant disability. However, this may not reflect the practice at other DHBs.

In conclusion, our study has shown 25% of all patients presenting with hip or knee osteoarthritis and 36% of patients eligible for arthroplasty in two New Zealand DHBs are declined due to a lack of capacity to treat. These patients continue to live with moderate to severe pain and disability. These

data have been previously unreported. A consideration to make such data publicly available would increase the transparency of the current elective surgery waiting lists nationwide.

This paper also provides a rationale for the consideration of a national threshold for arthroplasty to help reduce variability between District Health Boards.

Competing interests: Nil.

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Appendix 1. Hip and knee prioritisation tool

WHAKAWATEATIA
HAWKE'S BAY
District Health Board

Hip and Knee Prioritisation Tool

Patient Label

Criterion	Category	Category Descriptions Assign patient to highest scoring category that applies and tick the descriptor that best describes your patient. Patient must be on optimal medical therapy at time of rating. ✔		
Pain	1	No Pain		0
	2	Episodic activity-related pain May use occasional analgesics		4
	3	Daily pain with weight-bearing activity 2-3 times/week prn use of simple analgesics/NSAIDs		10
	4	Pain which cannot be ignored with activity and at rest Sleep disturbance 2-3 times/ week due to pain Daily analgesics/NSAIDs		19
	5	Dominates life and interferes with sleep every night Pain poorly controlled by analgesics		27
Personal Functional Limitation DUE to Hip or Knee Orthopaedic Condition	1	No Limitation		0
	2	**Minimal restriction of personal activities e.g** trouble reaching toes Walking stick used for longer walks		3
	3	**Moderate restriction of personal activities, e.g** requires help with socks/shoes Requires help cutting toenails Use of walking stick indoors and outdoors		9
	4	**Severe Restriction of personal activities e.g** Requires help with dressing or showering Consistently uses 2 crutches or wheelchair		18
Social Limitation DUE to Hip or Knee Orthopaedic Condition	1	No Limitation		0
	2	**Mild Restriction e.g:** can walk > 1 hour Some limitation of leisure activity, e.g: golf or tennis		4
	3	**Moderate Restriction e.g:** can walk 15-60mins Significant limitation of leisure activity Can manage garden or bowls		10
	4	**Severe Restriction e.g:** can't walk > 15mins - slow Difficulty with steps and stairs Severe limitation on leisure activity - can't maintain garden Requires help with shopping Some limitation to work		19
	5	**Profound Restriction e.g:** confined to the property Shopping done by others Requires meals on wheels or other domestic help Can't work due to Orthopaedic condition		23
Potential to Benefit from Operation (for patient, dependents or community)	1	Small Improvement Likely - significant residual symptoms +/or functional limitation		0
	2	Moderate Improvement likely - some residual symptoms +/or functional limitation		6
	3	Return to near normal likely- asymptomatic + full return of function		8
Consequence of delay > 6 months (for patient, dependents or community)	1	Little risk will deteriorate over next 6 months		0
	2	Considerable risk will deteriorate and result in increased disability during next 6 months		7
	3	Likely to progress to major complication during next 6 months with increased clinical costs, e. impending fracture or structural failure		24

Name & designation of person completing form: _____