

Supplementary Material

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Prioritisation of Those Awaiting hip and knee Arthroplasty (PATHWAY) – Consensus Meeting

01/12/22 19:30 – Virtual via Microsoft teams

Meeting notes

➤ Welcome

Presentation about the project with thanks to the attendees for their contribution. Individual introductions were made among the group of attendees.

➤ Overview of Delphi methodology

Overview of the Delphi methodology presented as described in the study protocol - <https://doi.org/10.1302/2633-1462.310.BJO-2022-0071>

➤ What is a Discrete Choice Experiment (DCE)?

Scene set for later development of the DCE as part of the second project work package (including explanation of how the DCE works in practice), and how the outcomes of the consensus meeting were integral to feed into delivery of the DCE.

➤ Round 3 results including selected attributes

Presentation of Round 3 results which are summarised at the bottom of the page. Overall, out of the 13 included factors there were 11 achieving consensus in and two achieving no consensus. No included factor achieved a consensus out decision following the Delphi process.

➤ Decision over which attributes to be taken forwards to DCE

- This section started by an initial discussion about the ideal number of attributes to be taken forward to the DCE. Given the presence of 11 identified factors already from the Delphi study we first achieved consensus that both age and social support (attributes with no consensus) did not merit inclusion over any of the other factors where consensus in had been achieved). Each of the factors was then considered in turn as to their potential inclusion.

Five factors (Severity of pain, mobility/function, length of time waited, radiological severity, and mental wellbeing) were deemed to be suitable to carry forward to the DCE in their current form.

Activities of daily living and frailty were discussed and agreed as broadly very similar attributes. It was therefore decided that only one of these should be included. Following discussion consensus was achieved that this should be Activities of daily living (ADLs) due to the perceived links of frailty to increasing age, where overall general opinion among the Delphi feedback was that if any age group were to be prioritized, it would be younger individuals, and that frailty alone might cause difficulty in identifying younger individuals with significant deficiencies in their ability to carry out ADLs.

It was also agreed that both caring responsibilities and work were both similar attributes in their potential impact on a patient in the wider context, and the attendees considered caring (either formal or informal) to be a line of work. A consensus decision was therefore made to combine the attributes of caring and work into a single composite factor.

A decision was made to remove Quality of life from the attribute list given that it was felt to be a composite measure of a number of other included factors (particularly when considering domains of the EQ-5D quality of life measure), and therefore offered little other additional information to that which was already measured.

Lifestyle factors (for example, smoking or BMI) were also removed as following discussion it was agreed by the group that these primarily formed part of the decision-making process regarding suitability for surgery, rather than something to be included as part of the prioritization process, particularly given the ethical issues related to genetic and social determinants of these factors.

This therefore left a consensus of seven attributes to be included in the DCE:

- Severity of Pain; Mobility / Function; Activities of Daily Living; Inability to work / care; Length of time waited; Radiological severity; Mental wellbeing.

Measurement options & levels for each attribute included in DCE

- **Severity of pain:** Following discussion it was determined that a five-level Likert scale would be suitable for use within the DCE. It was felt that the pain component of the Oxford Hip and Knee Scores +/- EQ-5D-5L pain domains would be a suitable measurement tool already utilized in clinical practice that the Likert scale could be mapped to.
- **Mobility / function:** Following discussion it was determined that a five-level Likert scale would be suitable for use within the DCE. It was felt that the functional component of the Oxford Hip and Knee Scores +/- EQ-5D-5L mobility function domains would be a suitable measurement tool already utilized in clinical practice that the Likert scale could be mapped to.
- **Activities of Daily Living:** Following discussion it was determined that a five-level Likert scale would be suitable for use within the DCE. It was felt that the ADL component of the Oxford Hip and Knee Scores +/- EQ-5D-5L self-care domain would be a suitable measurement tool already utilized in clinical practice that the Likert scale could be mapped to.
- **Inability to work / care:** Following discussion it was felt that this best be included as an attribute with three levels – no restriction, some/partial restriction (for example amended duties or reduced hours), and full restriction. No consensus was achieved at this stage as to exactly how this would be measured (for example patient reported vs more formal measure e.g. Employment and Support Allowance). Discussed need to involve carer/disability charities as part of ongoing process when considering implementation.
- **Length of time waited:** Agreement that to be included as a continuous variable measured in months to allow for calculation of Time trade off values.
- **Radiological severity:** It was discussed regarding the difficulty of providing a formalized assessment of radiological severity (beyond that required for joint replacement) given the current lack of a definitive agreement within clinical practice. However, the group did agree that it was important to include. A consensus decision was therefore taken to include this variable as a three-point Likert scale (expected radiological OA, joint at risk with potential for increased operative complexity, joint at risk with significant potential for increased operative complexity). It was agreed that both radiological and written interpretations should be included in the DCE if possible, to allow for a more realistic assessment of clinical practice decision-making. No consensus was included at this stage as to exactly what constituted both Likert categories for the “joint at risk”.
- **Mental wellbeing:** Following discussion it was determined that a five-level Likert scale would be suitable for use within the DCE. It was felt that the EQ-5D-5L Anxiety/depression domain would be a suitable measurement tool already utilized in clinical practice that the Likert scale could be mapped to, so long as it was made clear that this related specifically to the joint in question rather than a generic assessment.

Closing Remarks including timeline for DCE and recruitment

Participants thanked for their time and involvement in the study process. A timeline for likely DCE delivery in Q1/Q2 of next year was envisioned. Now levels and attributes set formal sample size calculation for the DCE will be performed along with initial piloting. It is anticipated that greater numbers of individuals will be required for the DCE so plan to recruit through dissemination of work at BHS/BASK and other related events.

Table i. Summary of Round 3 results.

Consensus in	Median scores (IQR)	Levels	No consensus	Median scores (IQR)
Severity of pain	8 (8 to 9)	5	Age	5 (3 to 6)
Mobility/function	8 (7 to 8)	5	Social support	5 (3 to 6)
Activities of daily living	8 (7 to 8)	5		
Frailty/falls risk	8 (7 to 9)			
Inability to work	7 (5 to 7)	3		
Length of time waited	8 (7 to 9)	Continuous		
Radiological severity	7 (5 to 8)	3		
Mental wellbeing	7 (6 to 9)	5		
Caring responsibilities	7 (5 to 9)	3		
Quality of life	7 (5 to 8)			
Lifestyle factors	6.5 (5 to 8)			

Green, consensus in; yellow, consensus in but amalgamated with another attribute; red, consensus out.

Table ii. Original multinomial regression analysis (full model). Due to the use of dummy coding the lowest (reference) level is not contained within the multinomial regression output for dichotomous variables.

Attribute	Coefficient (SE)	p-value
Moderate pain	25.29 (4,691.73)	0.996
Severe pain	10.95 (956.69)	0.991
Extreme pain	15.64 (3,234.01)	0.996
Moderate mobility impairment	13.65 (48.82)	0.780
Severe mobility impairment	10.12 (91.77)	0.912
Extreme mobility impairment	9.27 (2,004.18)	0.996
Moderate impairment in ADLs	9.22 (1,593.99)	0.995
Severe impairment in ADLs	3.87 (1,776.23)	0.998
Extreme impairment in ADLs	-1.36 (227.75)	0.995
Moderate impact on mental wellbeing	-2.00 (2,322.78)	0.999
Severe impact on mental wellbeing	-5.47 (1,229.66)	0.996
Extreme impact on mental wellbeing	0.54 (774.26)	0.999
Partial work/carer status impairment	14.35 (1,685.05)	0.993
Full work/carer status impairment	11.28 (865.73)	0.990
Potential risk of harm with operative delay based on radiological severity	-1.80 (501.08)	0.997
Likelihood of harm with operative delay based on radiology severity	5.66 (956.42)	0.995
Length of time waited	0.41 (220.14)	0.999
Alternative specific constant	7.85 (956.65)	0.993

ADLs, activities of daily living; SE, standard error.