Bone & Joint Open

Supplementary Material

Note: This questionnaire was administered via Online Surveys and therefore reformatted for electronic completion

The INFORM GUIDELINE Consensus Questionnaire

Guidance for completing the questionnaire

In this questionnaire we are interested in your views on the appropriateness of the proposed guideline components for the treatment and management of prosthetic hip infection, across the patient pathway from diagnosis to post-operative care. We will ask you to rank each recommended action from 1-9 (not appropriate to very appropriate).

On the next pages, please complete the consent form so that we have a record of your agreement to take part in the study and your contact details so that we can invite you to a stakeholder meeting to discuss the proposed guidelines.

Thank you for helping us with our study

Consent form

We need to ask for your consent to show that you are willing to take part in this study and that you understand why you have been invited to participate. If you agree with the following statements, please tick the box to the right of each statement and then write your name and the date at the bottom.

Please **tick**

1. I confirm that I have read and understood the information booklet dated 16/11/21 (Version 1) for the above study. I have had the opportunity to consider the information, and been informed that I can contact the research team if I have any questions about the study. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time. Anonymised data collected up to the date of withdrawal will be retained. ☐
3. I agree that relevant data and my contact details will be held confidentially and securely by the study office at the University of Bristol and I give my consent on the condition that the University complies with its duties and obligations under the General Data Protection Regulation. ☐
4. I understand that my data collected during the study may be looked at by individuals from the University of Bristol or regulatory authorities, where it is relevant to my taking part in this research. I give permission for these individuals to have access to the study data. ☐
5. I agree to the University of Bristol recording and processing information about me which will only be used for research purposes. ☐
6. I agree to take part in the above study. ☐

OPTIONAL

7. I understand that the information I give will be used to support other research in the future and that anonymised data may be shared with other researchers. ☐

_____ _ _ /_ _ /_ _ _ _

Name of participant Date

Your contact details

So that we know a little bit about you and can contact you to send you the summary report and an invitation to the expert stakeholder meeting to discuss the refined guideline, please complete the following details:

Title: _____

First name: _____

Surname: _____

E-mail address: _____

About you

Gender identity:_____

Profession/job title: _____

Number of years' in your current clinical role: ____

Current place of work: _____

Please briefly describe your experience of working with patients that have prosthetic hip infection, and any other expert roles you may hold that are relevant to orthopaedic infection.

Guideline Components

Please rank how appropriate it is to include each of the following recommended actions in the guideline, from 1-9 (not appropriate to very appropriate)

There are no right or wrong answers, we just want to know what is important to you.

Increased vigilance and monitoring

Evidence shows those at increased risk are males, people with previous revision surgery, previous hip infection, hip replacement for rheumatoid arthritis, or femoral bone graft during primary hip replacement, smokers, people with a history of steroid administration or body mass index ≥30 kg/m², and those with significant co-morbidity (including liver disease, diabetes, chronic pulmonary disease, heart failure and depression).

Action 1: Patients with post-op complications such as slow wound healing, or unexplained pain should prompt high suspicion of infection.

Please rank the appropriateness of this action.

1 2 3 4 5 6 7 8 9

Please explain your ranking and make any suggestions for alterations or additions.

Action 2: Modifiable risk factors should be optimised (e.g. Diabetes control)

Please rank the appropriateness of this action.

1 2 3 4 5 6 7 8 9

Please explain your ranking and make any suggestions for alterations or additions.

Diagnosis

Evidence shows that patients feel their concerns are often unacknowledged and an earlier diagnosis of infection is needed.

Action 3: All patients with unexplained symptoms should be investigated for infection without delay.

Please rank the appropriateness of this action.

1 2 3 4 5 6 7 8 9

Please explain your ranking and make any suggestions for alterations or additions.

Action 4: Improve education and patient and clinician information to enable earlier recognition of signs and symptoms of infection.

Please rank the appropriateness of this action.

1 2 3 4 5 6 7 8 9

Please explain your ranking and make any suggestions for alterations or additions.

Action 5: Increase vigilance amongst primary and secondary care for patients at high risk of PJI. This includes optimising an open door policy to allow patients to be referred back to the treating orthopaedic team promptly.

Please rank the appropriateness of this action.

1 2 3 4 5 6 7 8 9

Please explain your ranking and make any suggestions for alterations or additions.

TREATMENT: Debridement, antibiotics & implant retention (DAIR)

Evidence shows that (DAIR) works well if done early with thorough debridement by an appropriate surgeon.

Action 6: When infection is diagnosed with well-fixed implants and DAIR is considered it should be performed promptly. This consists of a radical debridement with exchange of modular components where possible, and NOT a wound wash-out.

Please rank the appropriateness of this action.

1 2 3 4 5 6 7 8 9

Please explain your ranking and make any suggestions for alterations or additions.

TREATMENT: Revision

Evidence shows that patients have a preference for single-stage surgery which is equally efficacious to 2-stage surgery and patients have earlier recovery.

Action 7: Single-stage should be performed whenever surgeons believe it is feasible, and within the bounds of a well-established dialogue with the patient.

Please rank the appropriateness of this action.

1 2 3 4 5 6 7 8 9

Please explain your ranking and make any suggestions for alterations or additions.

Evidence shows that when 2-stage surgery is undertaken, patients struggle with pain and/or function without articulating spacers.

Action 8: Surgeons should consider the use of standard components fixed with antibiotic loaded bone cement as an articulating spacer.

Please rank the appropriateness of this action.

1 2 3 4 5 6 7 8 9

Please explain your ranking and make any suggestions for alterations or additions.

Perioperative management

Evidence shows that when surgery is undertaken, patients struggle with function and report a need for tailored physiotherapy input.

Action 9: Patients need appropriate levels of specialist physiotherapy and rehabilitation as determined through assessment from early on in their journey.

Please rank the appropriateness of this action.

1 2 3 4 5 6 7 8 9

Please explain your ranking and make any suggestions for alterations or additions.

Evidence shows that patients struggle with the physical, social and psychological impact of treatment and report that they are not offered social and psychological support.

Action 10: Psychological and social support should be offered to all patients with infection from the point of diagnosis onwards to long-term recovery.

Please rank the appropriateness of this action.

1 2 3 4 5 6 7 8 9

Please explain your ranking and make any suggestions for alterations or additions.

Action 11: Physical aids such as wheelchairs should be provided.

Please rank the appropriateness of this action.

1 2 3 4 5 6 7 8 9

Please explain your ranking and make any suggestions for alterations or additions.

Patients report that they often have problems tolerating antibiotics.

Action 12: Patients need to have antibiotics reviewed often by microbiologists until patients have a regime that is effective with tolerable side-effects.

Please rank the appropriateness of this action.

1 2 3 4 5 6 7 8 9

Please explain your ranking and make any suggestions for alterations or additions.

Please feel free to add any comments you have about the questionnaire or the study:

Would you like to receive a summary report of the results of this questionnaire?

Yes ☐ **No** ☐

Thank you for completing this questionnaire, please now click the submit button.

We will be in touch soon with an invitation to the stakeholder meeting.

Supplementary material ii: Description of the voting process.

Rather than revoting on statements that had reached consensus for appropriateness and in which no changes had been made following the survey, participants were only asked to vote on statements to which changes had been made. Two statements from the draft guideline (3 & 12) had not reached consensus and major modifications were suggested, and three statements (9, 10 & 11) had reached consensus, but minor modifications were suggested. At the start of the meeting panel members were presented with the modified statements and asked to vote on these (rather than voting on statements where consensus had been reached in the survey and which required no further modifications). Following discussion with the 11 panel attendees, and further revisions in the meeting, consensus was reached on all modified statements.

During the discussion of how to revise statement 3 ("All patients with persistent fluid discharge, worsening erythema or worsening pain arising from the joint should be investigated for infection") it became evident that rather than further revising the statement an additional statement was required to ensure that any patient within the first 4 weeks of primary joint replacement, with increasing discharge or reduction in function or worsening erythema should prompt discussion with a specialist orthopaedic colleague within 48 hours. Thus, statement 13 [statement 4 in the final version] was developed: "Any patient within the first 4 weeks of primary joint replacement, with increasing discharge or reduction in function or worsening erythema should prompt discussion with a specialist orthopaedic colleague within 48 hours."

Additionally, representatives from primary care and orthopaedic surgery, felt that a further statement was needed to address the timelines required for a response to suspected haematogenous prosthetic infection. Three members of the panel and two members of the research team (in total 3 orthopaedic surgeons, 1 GP and 1 academic researcher) were invited to develop a further statement following the meeting, via email discussion:

New statement 14 [statement 5 in the final version]: "A patient with a previously well performing hip replacement, who develops symptoms consistent with infection (such as fluid discharge, new or worsening erythema and new or worsening pain) which persist for more than 48 hours, should prompt discussion with an arthroplasty specialist within 72 hours from presentation."

These revised statements were then voted on by those who could not attend the meeting and the two new statements were voted on by all participants at which point consensus was reached on all statements (see Table 1).

INFORM Guidelines for the Management of Hip Periprosthetic Joint Infection

These guidelines are based on best evidence from the six-year National Institute for Health & Care Research funded INFORM programme (RP-PG-1210-12005) and have been developed by a consensus panel of 20 clinical experts in orthopaedic infection, primary care and rehabilitation, and healthcare commissioning, including members of the British Hip Society.

INCREASED VIGILANCE AND MONITORING

1: Hip replacement patients with post-operative complications such as slow wound healing or unexplained pain should prompt high suspicion of infection.

2: Modifiable risk factors should be optimised (e.g., diabetes control).

DIAGNOSIS

3: All patients with persistent fluid discharge, worsening erythema or worsening pain arising from the joint should be investigated for infection.

4: Any patient within the first four weeks of primary joint replacement, with increasing discharge or reduction in function or worsening erythema should prompt discussion with a specialist orthopaedic colleague within 48 hours.

5: A patient with a previously well performing hip replacement, who develops symptoms consistent with infection (such as fluid discharge, new or worsening erythema and new or worsening pain) which persist for more than 48 hours, should prompt discussion with an arthroplasty specialist within 72 hours from presentation.

6: Improve education and patient and clinician information to enable earlier recognition of signs and symptoms of infection.

7: Increase vigilance amongst primary and secondary care for patients at high risk of periprosthetic joint infection. This includes optimising an open-door policy to allow patients to be referred back to the treating orthopaedic team promptly.

TREATMENT

Debridement, antibiotics and implant retention (DAIR)

8: When infection is diagnosed with well-fixed implants, and DAIR is considered, it should be performed promptly. This consists of a radical debridement with exchange of modular components where possible, and NOT a wound wash-out.

Revision

9: Single stage revision should be performed whenever surgeons believe it is feasible, and within the bounds of a well-established dialogue with the patient, characterised by a plain language explanation of treatment options, with adequate time for the patient's questions to be answered.

10: Surgeons should consider the use of standard components fixed with antibiotic loaded bone cement as an articulating spacer.

Postoperative management

11: Patients need appropriate levels of patient-centred rehabilitation as determined through assessment from early on in their journey.

12: Patients with infection should be asked about their need for psychological and social support and this offered from the point of diagnosis onwards to long-term recovery.

13: Patients should be assessed and provided with appropriate aids and equipment to support their recovery and rehabilitation.

14: Patients should remain under the care of an infection multidisciplinary team whilst on antibiotics and monitored for side-effects and tolerance.

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REFERENCES:

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