

## Engagement Report for Clinical Commissioning Policies

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| <b>Unique Reference Number</b>                                                                                                                                  | B10X01                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Policy Title</b>                                                                                                                                             | Surgical correction for pectus deformity (all ages)                                                                                                                                                                                                                                                                                                                                                         |
| <b>Accountable Commissioner</b>                                                                                                                                 | Nigel Andrews                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Clinical Reference Group</b>                                                                                                                                 | Thoracic Surgery (TSY)                                                                                                                                                                                                                                                                                                                                                                                      |
| Which stakeholders were contacted to be involved in policy development?                                                                                         | All CRG registered stakeholders                                                                                                                                                                                                                                                                                                                                                                             |
| Identify the relevant Royal College or Professional Society to the policy and indicate how they have been involved                                              | The Royal College of Surgeons and Royal College of Paediatrics will be invited to feedback as part of the consultation process.                                                                                                                                                                                                                                                                             |
| Which stakeholders have actually been involved?                                                                                                                 | All stakeholders listed above were invited to comment.                                                                                                                                                                                                                                                                                                                                                      |
| Explain reason if there is any difference from previous question                                                                                                | N/A                                                                                                                                                                                                                                                                                                                                                                                                         |
| Identify any particular stakeholder organisations that may be key to the policy development that you have approached that have yet to be engaged. Indicate why? | Stakeholder testing has identified additional organisations/groups which may have an interest and which will be invited to respond to the public consultation. These are <a href="http://www.pectus.org">www.pectus.org</a> and the Society of Cardiothoracic Surgeons, Chest Wall Interest Group, Chest Wall International Group, Society of Thoracic Surgeons, American Association for Thoracic Surgery. |
| How have the stakeholders been involved? What engagement methods have been used?                                                                                | The draft policy was circulated to the full membership of the CRG and registered stakeholders for one week for their views, both to establish whether any amendments to the policy are required, and to understand from their perspective what the key questions to ask at consultation might be.                                                                                                           |

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What has happened or changed as a result of their input?

A number of additional stakeholders will be asked to respond to the formal consultation including:

Society of Cardiothoracic Surgeons  
Chest Wall Interest Group  
Chest Wall International Group  
Society of Thoracic Surgeons  
American Association for Thoracic Surgery

A number of changes were made to the Evidence Review:

- Frantz et al., 2011 and Nuss et al., 2010 were removed from the table as they were expert opinion pieces
- Additional text was added for the Nasr et al., 2010 study and it was downgraded to level 2- based on another review of its limitations
- The summary comments for the Maagaard et al., 2013 study were updated to reflect the fact that the clinical significance of the comparative reduction in FEV1 and cardiac index preoperatively and the improvement post-operatively was not established
- Steinmann et al., 2011 was graded and further comments were added
- Minor errors in the text were updated

20 further studies were suggested through stakeholder testing. All were reviewed, and a summary is provided below (one study, Maagaard et al 2013, had been included in the evidence review).

Studies identified by stakeholders which fall outside of the agreed search strategy:

1. Pectus excavatum: historical background, clinical picture, preoperative evaluation and criteria for operation. Kelly et al., 2008
2. Surgical repair of pectus excavatum markedly improves body image and perceived ability for physical activity: multicenter study. Kelly et al., 2008
3. Effect of pectus excavatum deformity on cardiorespiratory fitness in adolescent boys. Rowland et al., 2005
4. Surgical repair of pectus excavatum markedly improves body image and perceived ability for physical activity: multicenter study. Kelly et al., 2008
5. Self and parental assessment after minimally invasive repair of pectus excavatum: lasting satisfaction after bar removal. Metzelder et al., 2007
6. Nuss procedure improves the quality of life in young male adults with pectus excavatum deformity. Krasopoulos et al., 2006
7. A pilot study of the impact of surgical repair on disease-specific quality of life among patients with pectus excavatum. Lawson et al., 2003
8. Quality of life of patients who have undergone the Nuss procedure for pectus excavatum: Preliminary findings. Roberts et al., 2003
9. Bracing in pediatric patients with pectus carinatum is effective and improves quality of life. Colozza et al., 2013

Studies identified through stakeholder engagement and considered for inclusion:

10. Compromised cardiac function in exercising teenagers with pectus excavatum. Lesbo et al., 2011 not included in original literature search as no reference to the procedure is contained in the abstract or title. It is excluded from further inclusion due to a number of limitations including (i) lack of impact information i.e. before and after pectus surgery (ii) patients are not stratified by severity (iii) the clinical significance of the cardiac index difference between pectus and the control group is not provided. Hence it doesn't add to the current review findings.
11. Cardiopulmonary response following surgical repair of pectus excavatum in adult patients. Neviere et al., 2011 fell outside the original

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|                                                                                                                                              | <p>search terms. The study confirms that at one year follow-up the pectus excavatum repair was associated with minor changes in lung function tests. The clinically relevant impact of significant improvement in <math>VO_2</math> to <math>87 \pm 2\%</math> from pre-operative <math>77 \pm 2\%</math> and postoperative <math>O_2</math> pulse increase at maximal exercise, is not known. Given the limitations identified it will not alter the commissioning position.</p> <p>12. Regional chest wall motion dysfunction in patients with pectus excavatum demonstrated via optoelectronic plethysmography. Redlinger et al., 2011 fell outside the original search terms. This study demonstrates anatomical and kinematic effectiveness of pectus surgery. The actual baseline exertional symptoms of easy fatigability or shortness of breath in the patient population do not appear to be defined from the abstract. Correlation between chest movement and symptoms improvement need to be established and validated for this study to definitively impact current evidence. Hence it doesn't add to the current review findings.</p> <p>13. Optoelectronic plethysmography demonstrates abrogation of regional chest wall motion dysfunction in patients with pectus excavatum after Nuss repair. Redlinger et al., 2012 included in original literature search as part of a longer list of potential studies for inclusion. Excluded as would not impact on the commissioning position.</p> <p>14. Nuss technique in pectus excavatum: a mono-institutional experience. Pilegaard, 2015 included in original literature search as part of a longer list of potential studies for inclusion. This study reports single surgeon, single institution outcome which may not be representative of the variations in surgical expertise and patient populations in different settings. In addition, the possible risk for selection, performance, detection bias has not been addressed. Also, note that the reported complications include some moderately severe complications but numbers are low. Given the limitations of the study and evidence from other studies it is unlikely to alter the current commissioning position.</p> <p>15. Thoracoscopic Nuss procedure for young adults with pectus excavatum: excellent midterm results and patient satisfaction. Hanna et al., 2013 included in original literature search as part of a longer list of potential studies for inclusion. Excluded as its inclusion would be unlikely to alter the current commissioning position.</p> <p>16. Quality of life of patients who have undergone the minimally invasive repair of pectus carinatum. Bostanci et al., 2013 fell outside the original search terms. Unclear which procedure the study is referring to. Also uncertainty regarding the questionnaire and how it was validated. Excluded as unlikely to alter the current commissioning position.</p> <p>17. Symptomatic pectus excavatum in seniors (SPES): a cardiovascular problem? : A prospective cardiological study of 42 senior patients with a symptomatic pectus excavatum. Kragten et al., 2011 fell outside the original search terms. Small study that's excluded as unlikely to alter the current commissioning position.</p> <p>18. The quality of life after bar removal in patients after the nuss procedure for pectus excavatum. Kim et al., 2011 included in original literature search as part of a longer list of potential studies for inclusion. Small and selective patient population. Only 63% response rate and non-validated instrument used. Excluded as unlikely to alter the current commissioning position.</p> <p>19. Long-term Surveillance Comparing Satisfaction between the Early Experience of Nuss Procedure vs. Ravitch Procedure. Kang et al., 2012 included in original literature search as part of a longer list of potential studies for inclusion. Reports on comparative outcomes of Nuss and Ravitch procedure. Does not address the question of patient satisfaction compared to a no-intervention patient population. Excluded as unlikely to alter the current commissioning position.</p> |
| <p>How are stakeholders been informed of progress with policy development as a result of their input?</p>                                    | <p>This engagement report, along with the updated policy proposition will be involved as part of the public consultation. Stakeholders will be notified and invited to comment further.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <p>What level of wider public consultation is recommended by the CRG for the NPOC Board to agree as a result of stakeholder involvement?</p> | <p>Public consultation for a period of 30 days as supported by stakeholders</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |