

**National Screening Advisory Committee (NSAC)**

**National Screening Unit (NSU)**

**Minutes Thursday 19 November 2020**

Venue	Ministry of Health, 133 Molesworth St, Wellington	
Start time	10:00hrs	
NSAC members present	Dr Jane O'Hallahan (Deputy Chair) Dr Carol Atmore Dr Karen Bartholomew Professor Barry Borman Pania Coote Professor Jackie Cummings Professor Mark Elwood John Forman Dr Gary Jackson Professor John McMillan Dr Pat Tuohy	
Other attendees	<b>NSU</b> Anne McNicholas Principal Advisor  Stephanie Chapman NSU Acting Manager	<b>Item 4. Lung Cancer Screening</b>  <i>University of Otago</i> Dr Mel McLeod Dr Giorgi Kvizhinadze Associate Professor Sue Crengle  <i>Waitemata District Health Board (DHB)</i> Dr Peter Sandiford  <i>Waikato DHB / Lakes DHB</i> Professor Ross Lawrenson Dr Denise Aitken  <i>Te Aho o Te Kahu, Cancer Control Agency</i> Dr Nisha Nair Professor Diana Sarfati  <i>NSU</i> Dr Kerry Sexton  <b>Item 5. Critical congenital heart disease: pulse oximetry screening</b>  <i>Liggins Institute</i> Professor Frank Bloomfield Dr Elza Cloete  <i>NSU</i> Jasmine Plimmer Michelle Hooper
Apologies	Dr Caroline McElroy	

Item	Subject and summary
1.	<p><b>Welcome, apologies and introductions</b></p> <p>Dr Jane O’Hallahan (NSAC Deputy Chair) advised that Dr Jo Dixon (NSAC’s Chair) has resigned from NSAC following her recent retirement. NSAC acknowledged Dr Dixon’s dedication and contribution to NSAC over the last five years, her expertise as a clinical geneticist with a strong understanding of screening, and her strong advocacy for national screening programmes for adult as well as antenatal and newborn populations.</p> <p>The Deputy Chair welcomed Dr Gary Jackson to NSAC.</p>
2.	<p><b>Declaration of conflicts of interest</b></p> <p>Conflict of interest register tabled.</p> <p>Noted Dr Karen Bartholomew’s involvement with lung cancer screening research (Item 5).</p>
3.	<p><b>Meeting agenda and discussion arising</b></p> <ul style="list-style-type: none"> <li>• Implementation of NSAC’s previous recommendations <ul style="list-style-type: none"> <li>• NSAC noted their frustration at the failure of the Ministry to implement a number of screening initiatives that are supported by expert advice and which NSAC has formally endorsed. These include: <ul style="list-style-type: none"> <li>○ the National Cervical Screening Programme’s introduction of primary HPV screening</li> <li>○ the National Bowel Screening Programme’s introduction of age extension for Māori</li> <li>○ the inclusion of non-invasive prenatal screening as part of antenatal screening for Down syndrome (trisomy 21), Edwards syndrome (trisomy 18) and Patau syndrome (trisomy 13).</li> </ul> </li> <li>• NSAC acknowledged that their role is to make screening recommendations with subsequent decisions regarding the timing of their implementation resting with the priorities determined by the Ministry and Government. However, they believe that failure to implement a number of quality improvements leaves New Zealand behind international best practice and places the programmes at increasing risk of failure.</li> <li>• Members noted that their recommendations are in the public domain through publication of the meeting minutes on the NSU website.</li> </ul> </li> </ul>
4.	<p><b>Lung cancer screening</b></p> <p><b>Background</b></p> <p>At its July 2018 meeting, NSAC undertook a high-level review of lung cancer screening using low-dose computed tomography (LDCT). NSAC also considered the University of Otago’s Burden of Disease Epidemiology, Equity &amp; Cost-Effectiveness Programme (BODE<sup>3</sup>) analysis which indicated lung cancer screening was unlikely to be cost-effective for any sociodemographic group in New Zealand.</p> <p>At its July 2019 meeting, NSAC was advised that an equity review of the BODE<sup>3</sup> modelling had identified errors which impacted on the original assessment and shifted the analysis towards LDCT being cost-effective in New Zealand.</p> <p>In February 2020 the Belgium and Netherlands NELSON study’s results were published (<i>De Koning HJ at al., Reduced lung-cancer mortality with volume CT screening in a randomized trial, N Eng J Med 2020;382:503-513</i>).</p> <ul style="list-style-type: none"> <li>• This large randomised controlled trial confirmed the efficacy of LDCT screening for lung cancer with a 24% reduction mortality for men at 10 years follow up and 33% reduction in women; with a substantial shift to lower stage lung cancers at the time of diagnosis in the screened group.</li> </ul>

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	<ul style="list-style-type: none"> <li>Compared to previous trials, there were fewer false positives and less over-diagnosis, largely related to the adoption of an improved and strict lung-nodule protocol.</li> </ul> <p>During 2020, the BODE<sup>3</sup> team published a corrected analysis of lung cancer screening cost-effectiveness and the University of Otago, Auckland DHB and Waitemata DHB lung cancer screening research team published their ethnic health inequities focused analysis.</p> <p>With the publication of the NELSON findings and re-modelling of the cost-effectiveness of lung cancer screening in New Zealand, NSAC considered the potential for a national lung cancer screening programme at this November 2020 meeting.</p> <p><b>University of Otago, Auckland DHB and Waitemata DHB collaboration: lung cancer screening cost effectiveness re-analysis and research programme</b></p> <p>Led by Associate Professor Dr Sue Crengle, Drs Mel McLeod, Giorgi Kvizhinadze, Karen Bartholomew and Peter Sandiford presented their research-led work on lung cancer screening.</p> <p><i>Cost-effectiveness analyses</i></p> <p>The research team explained their recently published cost-effectiveness analyses, including correction of the original analysis undertaken by the Burden of Disease Epidemiology, Equity and Cost-Effectiveness Programme (BODE<sup>3</sup>). The relevant publications are listed below:</p> <ul style="list-style-type: none"> <li><i>Sue Crengle. Comment on: Jaine R, et al. Cost-effectiveness of a low-dose computed tomography screening programme for lung cancer in New Zealand. Lung Cancer 2018, 124, 233–240. Lung Cancer 145 (2020) 219–220</i></li> <li><i>Melissa McLeod, Peter Sandiford, Giorgi Kvizhinadze, Karen Bartholomew, Sue Crengle. Impact of low-dose CT screening for lung cancer on ethnic health inequities in New Zealand: a cost-effectiveness analysis. BMJ Open 2020;10:e037145.</i></li> <li><i>Richard Jaine, Giorgi Kvizhinadze, Nisha Nair, Tony Blakely. Cost-effectiveness of a low-dose computed tomography screening programme for lung cancer in New Zealand. Lung Cancer 144 (2020) 99–106</i></li> </ul> <p>In summary:</p> <ul style="list-style-type: none"> <li>The Otago/Auckland collaboration noted the complexity and sophistication of the BODE<sup>3</sup> screening model and the willingness of the BODE<sup>3</sup> team to share the model and their expertise.</li> <li>The Otago/Auckland collaboration modelling benefited from being able to include more recent information, for example, incorporating improved diagnosis staging from Midland DHB data, as well as updated parameters and assumptions drawn from the NELSON LDCT screening trial.</li> <li>They took specific consideration of the impact of lung cancer screening on equity in health outcomes, for example, this equity driven approach incorporated equal screening coverage for Māori.</li> <li>They modelled potential lifetime health gains, equity impacts and cost-effectiveness of a national LDCT biennial screening programme in smokers aged 55-74 years with a 30 pack-year history, and for former smokers who have quit within the past 15 years.</li> <li>They concluded that screening is likely to be cost effective for all groups, especially for Māori and females, using an incremental cost effectiveness ratio (ICER) threshold of NZ\$45,000 per health adjusted life years (HALY). <ul style="list-style-type: none"> <li>The total population ICER was NZ\$34,400 per HALY gained.</li> <li>Māori are likely to see greater health gains for LDCT lung screening than non-Māori with an ICER of NZ\$27,400 versus \$36,300 for non-Māori.</li> <li>While absolute inequities in lung cancer reduce there is little impact on relative inequities.</li> <li>Large inequities in local stage lung cancer survival need to be addressed, for example, through access to and quality of health care for those with lung cancer alongside appropriate management of comorbid conditions.</li> </ul> </li> </ul>

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	<p><i>Wider research programme</i></p> <p>The research programme is a Māori-led collaboration with the University of Otago, Auckland and Wāitemata DHB, Māori health, screening, clinical and academic partners. The research group provided a high-level description of the research programme's foundational work. As summarised below.</p> <ul style="list-style-type: none"> <li>• At the centre of their approach are eligible Māori participants and their whānau, with a series of focus groups (hui process) and a survey to help identify themes to support the design of trials, participant materials, communication approaches and shared decision-making resources.</li> <li>• Priority is to “design-in” equity into the programme as the primary approach rather than retrofitting equity after implementation. The work must be Māori-led. The screening programme must be designed by Māori with an initial focus on getting screening right for Māori.</li> <li>• Next steps include a randomised controlled trial to test invitation strategies, assess the suitability of lung cancer risk prediction tools for Māori and provide early data (to assess effectiveness and cost-effectiveness); as well as identification of improvements to diagnosis and treatment pathways.</li> <li>• Careful consideration is required of potential co-benefit (eg spirometry for early diagnosis of COPD; smoking cessation support) and how high-quality services and care would work to ensure benefit for Māori.</li> <li>• There are financial and logistic barriers to potential establishment of mobile LDCT scanners with none currently in New Zealand.</li> <li>• There is significant potential to reduce Māori mortality (and the life expectancy gap) from lung cancer through screening, and the New Zealand Cancer Action Plan identifies it as a priority to consider.</li> </ul> <p><b>Waikato DHB / Lakes DHB proposed lung health screening.</b></p> <p>Prof Ross Lawrenson and Dr Denise Aitken presented on community driven research based interventions to promote early diagnosis of cancer and proposed lung health screening as summarised below.</p> <p><i>Health Research Council (HRC) funded research already undertaken: improving early access to lung cancer diagnosis for Māori and Rural Communities (HRC #17/438)</i></p> <ul style="list-style-type: none"> <li>• Phase 1: qualitative interviews with Māori lung cancer patients and whānau; Hui/focus groups with community members and also with GP practices in rural localities.</li> <li>• Phase 2: co-design local intervention with stakeholders in 4 localities, with each community implementing a different intervention, for example, videos to promote help-seeking behaviour if whānau have a persistent cough; and the Pou Pupuru Ōranga/Cancer Navigator to help whānau navigate the healthcare space.</li> <li>• Conclusions from the community-driven engagement included: the priority of a broader lung health approach; the importance of kaupapa Māori interventions that include whānau; and the need to tailor interventions that are relevant rather than a standardized ‘one-size-fits-all’ approach.</li> </ul> <p><i>Proposed lung health screening programme</i></p> <ul style="list-style-type: none"> <li>• The programme aims to: <ul style="list-style-type: none"> <li>• improve early diagnosis of lung cancer by screening high risk populations and offer early investigation to symptomatic patients (especially those with barriers to accessing health services)</li> <li>• support prevention activities, that is, address tobacco smoking at individual and community level and early identification and management of COPD.</li> </ul> </li> <li>• The model proposed is similar to the UK Manchester lung screening community-based pilot with targeted invitations for a lung health check. This approach reduces stigma from just</li> </ul>

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	<p>focusing on lung cancer. Those identified as at higher risk of lung cancer are then eligible for immediate LDCT screening (mobile unit).</p> <ul style="list-style-type: none"> <li>• The Manchester pilot reports that: <ul style="list-style-type: none"> <li>• 50% of those checked reached the risk threshold for LDCT scanning</li> <li>• lung cancer early diagnosis rates quadrupled</li> <li>• over two screening rounds, 4.4% of those screened were diagnosed with lung cancer</li> <li>• 79% were stage I, and 89% of patients could be offered treatment with curative intent.</li> </ul> </li> <li>• The trial-to-practise model is community driven with a focus on how screening would work for Māori and to then feed into a national framework.</li> <li>• Issues to be addressed include agreeing: <ul style="list-style-type: none"> <li>• Eligibility - Māori have greatest inequity with access and outcomes, and focus is on screening Māori; while the proposed programme is about health promotion, prevention and screening and may include all adults who are concerned about their lung health the focus will be on Māori</li> <li>• what screening involves - eg, nurse interview to assess smoking status, lung health and lung cancer risk; spirometry; oximetry</li> <li>• screening management/responsibilities - eg, recruitment (GPs), provision of LDCT (DHB), patient follow-up including for COPD (GPs), smoking cessation and education (primary care)</li> <li>• actions required post screen - eg, high-risk offered LDCT; lower risk but with evidence of COPD offered further investigation/treatment</li> <li>• evaluation of the lung health screening programme - eg, database/register/linking to Midland Lung Cancer Register</li> </ul> </li> <li>• Next steps include business case development, establishment of governance models to ensure project is Māori driven, pilot recruitment (rural/high needs areas), funding for a mobile LDCT bus, and agreement around an evaluation framework.</li> </ul> <p><b>Discussion</b></p> <p><i>Conflict of interest:</i> Dr Bartholomew left the room during the discussion due to her involvement in the University of Otago, Auckland DHB and Waitemata DHB research collaboration on lung cancer screening.</p> <p><i>Lung cancer is an important area: it meets the screening criteria including New Zealand evidence of cost-effectiveness</i></p> <ul style="list-style-type: none"> <li>• NSAC's role includes making evidence-based recommendations about the case for implementing new population screening programmes.</li> <li>• Accepted that lung cancer is an important condition and there is a strong case for the condition meeting the criteria for a national screening programme including that: <ul style="list-style-type: none"> <li>• it is a serious condition and screening has the potential to save a large number of lives</li> <li>• there is strong international randomised controlled trial evidence of effectiveness</li> <li>• there is important New Zealand evidence that it is cost-effective</li> </ul> </li> <li>• A lung cancer screening programme justifies full consideration and would potentially be the next national screening programme to be implemented.</li> </ul> <p><i>New Zealand evidence of cost-effectiveness.</i></p> <ul style="list-style-type: none"> <li>• Impressed by latest cost-effectiveness modelling results, which are very different to previous work, with strong evidence of benefit for Māori and non-Māori.</li> <li>• Cost-effectiveness is favourable in the New Zealand context compared with the bowel and breast screening programmes.</li> </ul>

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	<p data-bbox="240 159 943 192"><i>Addressing inequities drives New Zealand's approach</i></p> <ul data-bbox="240 215 1517 551" style="list-style-type: none"> <li>• It is encouraging to see equity at the forefront of consideration of lung cancer screening cost-effectiveness analyses, which alongside enhanced smoking cessation could make a true difference.</li> <li>• Lung cancer underpins the inequity in New Zealand cancer rates and is the greatest contributor to inequity in cancer mortality. Therefore, there is potential for a national screening programme to drive improvements in current inequities in lung cancer treatment.</li> <li>• Considered whether the benefit of improvements in treatment access would give better gains than screening; alternatively, it need not be an either/or approach with both important. A well-designed screening programme will inevitably leverage improvements in stage data and treatment pathways.</li> </ul> <p data-bbox="240 573 879 607"><i>A need to balance expectations and prioritisation</i></p> <ul data-bbox="240 629 1517 1447" style="list-style-type: none"> <li>• Noted NSAC's role is to identify and provide advice on potential new programmes, and that lung cancer appears to meet all the committee's criteria for a new screening programme. The Ministry/Government's role is to determine if and how it could be done, and to set funding priorities.</li> <li>• While the cost-effective results are impressive, these just get considerations to the starting gate given that many interventions are cost-effective. It must then join a lengthy prioritisation list, with other wider health sector initiatives potentially more important.</li> <li>• New Zealand under-invests massively in prevention, an area where screening programmes can play an important part. If maximising improvements in health is a high priority, screening programmes are a good place for investment of resources. However, pragmatic decisions will likely drive what is funded, acknowledging also the impact of COVID-19 on budgets for many years out.</li> <li>• There is a need to be realistic and balance expectations about what is achievable for the NSU to deliver given current resources, noting the current priorities related to the National Bowel Screening Programme (rollout completion and age extension for Māori), the National Cervical Screening Programme (primary HPV screening implementation) and antenatal screening (non-invasive prenatal screening). The delivery of these initiatives first is a requirement.</li> <li>• A view presented was that priority should be given to smoking cessation rather than lung cancer screening, with the overall rate of decline in smoking slowing and very high smoking levels in Māori, noting smoking's impact on health reaches beyond lung cancer.</li> <li>• Even if there are major improvements in the decline in smoking rates, screening will have an impact for many years as those who have stopped smoking remain at high risk for at least another 10 to 15 years. Even if it takes ten years to establish a screening programme, its longevity would likely be another 30 years or more.</li> </ul> <p data-bbox="240 1469 863 1503"><i>Complex work over many years will be required</i></p> <ul data-bbox="240 1525 1517 1760" style="list-style-type: none"> <li>• An enormous amount of work over many years is required to move this area forward, noting the need for a screening register and extensive monitoring.</li> <li>• Capacity issues will also come into play with radiology and LDCT service requirements requiring consideration by a dedicated workstream.</li> <li>• Noted complexities of identifying individuals eligible for LDCT screening, with an initial "invite" for risk assessment (using smoking history and other health information) to then assess eligibility for the LDCT screen itself.</li> </ul> <p data-bbox="240 1783 1134 1816"><i>New Zealand implementation trials will provide important information</i></p> <ul data-bbox="240 1839 1517 2009" style="list-style-type: none"> <li>• The two proposed New Zealand trials will provide important and complementary information that will support the implementation of a national programme. Both approaches are valid: one designed to test invitation strategies and also the accuracy of lung cancer risk assessment tools for Māori; the other similar to the broader lung health check approach piloted in Manchester.</li> </ul>

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	<ul style="list-style-type: none"> <li>Noted that both teams are adopting a Māori-led approach from design through to delivery; and that if they get the design right using a by-Māori for-Māori approach, then the programme will work for all groups.</li> <li>Some concern was raised that a more expedient / pragmatic approach (trial-to-practise) proposed in the Midland region may see harms outweigh benefits if a comprehensive register to support the screening pathway is not in place.</li> <li>Both trials are encouraged to undertake thorough evaluations and further cost-effective assessments, and to present these to NSAC in the future.</li> </ul> <p><i>NSAC's overall position is supportive of the development of lung cancer screening but the NSU must prioritise the delivery of outstanding programme initiatives.</i></p> <ul style="list-style-type: none"> <li>Evidence supports lung cancer screening effectiveness and that it is strongly pro-equity.</li> <li>Smoking cessation remains vitally important with some believing it should be achieved first.</li> <li>Development of lung cancer screening is important but would occur over at least a ten-year period. Adequate resourcing is an absolute requirement, or it will disappoint in terms of achievement, repeating a constant issue with current screening programmes.</li> <li>Supportive of the proposed screening trials and their completion of thorough evaluations.</li> <li>In the interim, the NSU's priorities must be to complete delivery of the bowel screening programme (including age extension for Māori), implement primary HPV screening for cervical screening, and include non-invasive prenatal screening within antenatal screening, noting NSAC's previous strong endorsements for all these initiatives.</li> </ul> <p><b>Next steps</b></p> <ul style="list-style-type: none"> <li>A joint HRC, Cancer Agency and Ministry request for proposal (RFP) is anticipated to support research that will inform potential lung cancer screening programmes.</li> <li>The University of Otago/Auckland DHB/Waitemata DHB collaboration and the Midland DHB/Lakes DHB team will report back to NSAC in the future regarding their proposed lung cancer screening trials.</li> <li>NSAC will maintain a watching brief of international and New Zealand lung cancer screening developments.</li> </ul>
5.	<p><b>Pulse oximetry screening (POS) for critical congenital heart disease (CCHD)</b></p> <p><b>Background</b></p> <p>NSAC has considered POS at several meetings since 2015. At its November 2018 meeting NSAC considered findings from the Liggins Institute pilot undertaken from May 2016 to April 2018 at Auckland, Lakes and Counties Manukau DHB.</p> <p>At that time NSAC concluded:</p> <ul style="list-style-type: none"> <li>There was sufficient evidence to support POS, either through a sector or nationally led quality improvement programme. It noted that a sector led programme would likely not result in equitable provision of screening or equitable improvement in outcomes.</li> <li>The NSU needed a sense of budgetary requirements as well as cost effectiveness (with this analysis not completed) to further consider implementation options; and that comprehensive adoption of POS would require adequate resourcing, standard guidelines and protocols, and national monitoring.</li> <li>That to help decide whether to support a nationally or sector led quality improvement programme the next steps required included: <ul style="list-style-type: none"> <li>provision of fuller documentation from the pilot (a report or manuscript)</li> <li>completion of the cost-effectiveness modelling.</li> </ul> </li> <li>In the interim, the NSU should encourage and support development of a national POS guideline.</li> </ul>

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	<p><b>POS guideline progress</b></p> <p>The NSU has completed the development of the POS guideline with the public consultation process anticipated shortly. The substantial contribution of Dr Cloete was acknowledged. Key issues remain around how to achieve consistent implementation of the guideline, including in rural areas, as well as the extent of monitoring and evaluation required.</p> <p><b>POS study findings</b></p> <p>Dr Elze Cloete and Professor Frank Bloomfield presented the findings from the POS feasibility study as detailed in a number of journal publications and their POS study report (<i>Liggins Institute, University of Auckland. Newborn pulse oximetry screening in New Zealand. Feasibility study steering committee report and recommendations, 2019</i>)</p> <p><i>Summary of the pilot results</i></p> <ul style="list-style-type: none"> <li>• New Zealand has a well-developed antenatal screening programme (antenatal ultrasound and physical examination). The success of significant efforts to improve antenatal detection improvements are evident with a CCHD mortality reducing to four deaths over the 3-year period 2013-2015 versus four deaths per year over the 2006-2010 period.</li> <li>• However, some CCHD presents diagnostic challenges and remain undiagnosed prior to birth. POS is able to reduce the number of these late diagnoses.</li> <li>• The POS feasibility study tested 16,644 of 27,172 (61%) eligible infants. <ul style="list-style-type: none"> <li>• 48 infants (0.3%) failed to reach the saturation target.</li> <li>• 3 had CCHD.</li> <li>• 45 did not have CCHD (false positive rate of 0.27%).</li> <li>• 34 of the 45 had significant respiratory or infectious disease.</li> <li>• 11 of the 45 had no pathology detected.</li> </ul> </li> <li>• While earlier screening was associated with a higher false positive rate, it yielded more pathology per number of screens: one pathology was detected per 245 tests if performed within four hours after birth; one pathology per 309 tests if 4-12 hours after birth; and one among 6,197 tests after 12 hours.</li> <li>• If unsettled or asleep, infants were less likely to pass compared with awake and settled infants. Breast feeding during recording did not result in lower oxygen levels.</li> <li>• Māori and Pacific babies and those born to families living in a more deprived areas were less likely to be screened.</li> <li>• Parents were satisfied with pulse oximetry screening and found the quality of the available information was good, However, not all received sufficient information, with the timing of its receipt influencing how well it was retained.</li> <li>• Focus groups with health professionals found POS to be pragmatic and worthwhile. However, there were concerns about workload burden and under-resourcing, as well as the timeframe for screening with frequent early discharge likely to impact on midwives' ability to screen.</li> <li>• Overall, the POS pilot demonstrated its feasibility in the New Zealand setting and its acceptability among health professional and consumers.</li> </ul> <p><i>POS was not shown to be cost-effective</i></p> <ul style="list-style-type: none"> <li>• The cost-effectiveness analysis compared a national pulse oximetry screening programme for CCHD against historic standard of care, that is, the newborn physical examination.</li> <li>• Diagnosis before discharge from place of birth was associated with a 3.7% reduction in neonatal mortality for single ventricle anomalies and 5% reduction for biventricular critical anomalies.</li> <li>• The lower mortality rate amongst earlier detected cases corresponds to an expected gain of approximately 3.74 quality adjusted life years (QALYs) per year.</li> <li>• POS was not cost-effective, improving health at a cost exceeding \$195,000 per QALY.</li> <li>• A limitation of the analysis was that the data captured healthcare costs only over the first two years. It did not consider the life-long implications of CCHD especially the potential benefit of</li> </ul>



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	<p>timely diagnosis on neurodevelopmental outcomes. Also, it did not factor in the health benefits from earlier diagnosis of other hypoxaemic conditions such as neonatal sepsis.</p> <ul style="list-style-type: none"> <li>• Issues for further consideration included: <ul style="list-style-type: none"> <li>• the overlap of a POS programme with the newborn early warning score (NEWS) which is currently being implemented across New Zealand. This initiative will see around 40% of newborns undergo a health assessment that includes a pulse oximetry test.</li> <li>• the shared cost of pulse oximeters with the NEWS initiative would alter a POS programme's cost-effectiveness.</li> <li>• exploration of low-cost options to secure the POS sensor with the current non-reusable wraps expensive at around five dollars each.</li> </ul> </li> <li>• The researchers' recommendations included that: <ul style="list-style-type: none"> <li>• there is a nationwide screening programme</li> <li>• there are uniform guidelines</li> <li>• the programme should be monitored to ensure equitable delivery and outcomes</li> <li>• the availability of adequate human and material resources is ensured</li> <li>• there are ongoing efforts to improve antenatal screening.</li> </ul> </li> </ul> <p><b>Discussion</b></p> <ul style="list-style-type: none"> <li>• While POS does provide a higher detection of CCHD there is relatively low benefit in terms of QALYs. Substantial concerns were expressed regarding the cost-effectiveness results, and whether a national programme should be introduced when the cost per QALY gained is so high.</li> <li>• Cost-effectiveness results might improve if the analysis included the impact of lifelong morbidity from late presentation (eg, brain damage) and if costs were reduced (eg, cheaper sensors). It was suggested the further work be done to fill the gaps in evidence with even a best guess worthwhile.</li> <li>• It was noted that once the CCHD diagnosis is made there are inequities around treatment provision with Māori and Pacific babies less likely to get surgery and more likely to be offered palliative care.</li> <li>• There will be an impact from the introduction of NEWS across New Zealand. NEWS is an example of good clinical care. It will be used to assess 40% of babies (eg, mother has diabetes or prolonged ruptured membranes), so fewer babies would be screened within a POS programme. NEWS will also reduce costs as DHBs will have more POS equipment in place.</li> <li>• Detecting hypoxia from other causes could be regarded as is a secondary benefit rather than a false positive, however this approach would alter the current application of the screening criteria. While framing the cost-effectiveness to include hypoxia other than CCHD was suggested, this approach is difficult to model as the natural history of hypoxia is not known.</li> <li>• The bar to introduce a new national screening programme is very high and at present POS does not meet all the required criteria.</li> <li>• The assessment of screening of rare diseases is difficult where often some, but not all the evidence is in place; with development of a comprehensive framework for rare diseases suggested including unmet needs, prevention, screening, diagnosis and treatment.</li> <li>• It was acknowledged that a sector-led approach to a quality improvement programme is problematic, including ensuring equitable provision of POS. Challenges at the DHB level include midwifery resourcing/training and agreeing/establishing monitoring.</li> <li>• Concerns were raised about the safety of implementing POS as a quality improvement programme without adequate national monitoring. However, there is insufficient Ministry resource for in-depth development of monitoring options, exacerbated by the impact of COVID-19. <ul style="list-style-type: none"> <li>• The researchers suggested that NSAC could support a recommendation to the National Maternity Monitoring Group that they stipulate that newborn POS rates are included in the annual maternity reports that each DHB has to submit under the New Zealand Maternity Quality and Safety Programme (MQSP) programme; or alternatively POS becomes a</li> </ul> </li> </ul>

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	<p>maternity indicator reported on annually by the Ministry as one of the set of maternity indicators. These also are signed off by National Maternity Monitoring Group (with recommendations coming from an expert working group).</p> <ul style="list-style-type: none"> <li>• It was noted that there is lack of investment and substantial inequities in other areas (eg, retinal screening), so could also argue reporting should be implemented to reveal these.</li> <li>• A pragmatic approach was generally accepted, that is, supporting a quality improvement programme, ideally with national data collection and noting the priority of monitoring equity of outcomes. The risk of creating a reporting burden on providers was recognised.</li> <li>• However, there did remain questions re the priority of a POS screening programme given its marginal extra gain, with the current system working well and paediatric services good at diagnosis/management and treatment. The 18-20 week ultrasound is performed well in New Zealand, although there a difference between the expertise in the largest centres versus rural areas.</li> <li>• At some point the criteria for a quality improvement programme should be clarified as don't meet traditional screening criteria, noting cost would still be a consideration.</li> <li>• The NSU has endeavoured to implement NSAC's recommendations made to date. With the support of the Liggins Institute, the NSU has developed a POS clinical guideline.</li> </ul> <p><b>Conclusions</b></p> <ul style="list-style-type: none"> <li>• POS does not meet the criteria for a national screening programme.</li> <li>• There is sufficient evidence to support POS through a sector-led quality improvement programme.</li> <li>• NSAC asked the NSU to complete the public consultation and finalise the POS clinical guideline.</li> <li>• NSAC noted that NSU's work on POS screening would stop on release of the guideline to the sector.</li> <li>• NSAC noted the economic evaluation did not find that POS was cost-effective and suggested the Liggins researchers could: <ul style="list-style-type: none"> <li>• remodel the cost-effectiveness analysis to include the impact of 40% of babies being screened under the NEWS programme</li> <li>• consider a fuller assessment in their analyses of other potential benefits of POS over a more extended period, for example, the impact of neurodevelopmental delay.</li> </ul> </li> </ul>
6.	<p><b>Terms of Reference Annual Review</b></p> <p>It was agreed to amend that Terms of Reference to confirm the transparency of NSAC decisions through publication of the meeting minutes on the NSU website. The minutes will continue to be published following the committee's ratification, which will occur as soon as possible after each meeting.</p>
7.	<p><b>Correspondence</b></p> <p><i>Antenatal screening for haemoglobinopathies (eg, thalassaemia)</i></p> <p>Sickle cell disease and thalassaemia antenatal screening operates in a number of countries. The UK completed establishment of screening programme in 2008, however they offer screening dependent on population risk. While all pregnant women are offered a test for thalassaemia, not all are automatically offered a test for sickle cell.</p> <p>Professor Ross Lawrenson has advised that Waikato DHB / Pathlab are considering making an application for NSAC to consider a pilot programme to screen for thalassaemia in their region. The laboratory's test platform for HbA1c now also identifies haemoglobinopathies. Arguably universal antenatal screening for haemoglobinopathies is operating in this region as all pregnant women are offered HbA1c testing. However, there are concerns around the lack of fail-safes along the</p>

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	<p>current pathway, with a national screening programme suggested as a solution to ensuring a more streamlined process.</p> <p><b>Discussion</b></p> <ul style="list-style-type: none"> <li>Concern was raised regarding the importance of appropriate informed consent for pregnant women currently being screened for haemoglobinopathies.</li> <li>NSAC noted that Māori have high rates of Thalassaemia A and are currently likely to be under-diagnosed/treated.</li> <li>Thalassaemia screening has previously been considered by an antenatal screening advisory group (in the 1990s) but it was judged that New Zealand's population profile did not justify screening.</li> <li>Given New Zealand's increasingly diverse population, NSAC would consider an application for it to assess an antenatal screening programme for thalassaemia. However, any application would need to be comprehensive. For example, it should detail the size of the New Zealand population groups judged at increased risk, the extent haemoglobinopathy testing is performed alongside HbA1c testing across New Zealand, and give adequate consideration to the National Health Committee criteria for a screening programme.</li> <li>The NSU advise that given its current commitments, any substantive review of this area would require additional resources. These could potentially be available through a routine public health medicine registrar rotation.</li> </ul>
8	<p><b>Minutes of 28 November 2019:</b> amended and confirmed as a true and accurate record.</p> <p><b>NSAC Chair 2019 Annual Report:</b> report tabled</p> <p><b>NSAC workplan</b></p> <p>Members will consider the workplan at the next meeting, noting the potential addition of renal disease and Hepatitis C screening. Atrial fibrillation screening will be considered at the next meeting.</p>
9.	<p><b>Programme Updates</b></p> <p><b>Impact of COVID-19 on the cancer screening programmes</b></p> <p>A high-level summary was provided of the impact of moving to Alert Level 4 on 25 March 2020. The breast and cervical screening programmes were paused during Alert Level 4 (25 March to 27 April) and gradually resumed during Alert Level 3.</p> <p><i>BreastScreen Aotearoa</i></p> <ul style="list-style-type: none"> <li>From January to the end of September 2020, cumulative screening volumes for eligible women aged 45 to 69 years were 19% lower than the comparable period for 2019 (around 17,500 fewer mammograms) with the largest percentage fall in Pacific women at 24%</li> </ul> <p><i>National Cervical Screening Programme</i></p> <ul style="list-style-type: none"> <li>From January to the end of October 2020, cumulative screening volumes for eligible women aged 25 to 69 years were 10% lower than the comparable period for 2019 (around 30,000 fewer cytology samples) with the largest percentage fall in Pacific women at 13%.</li> </ul> <p><i>National Bowel Screening Programme</i></p> <ul style="list-style-type: none"> <li>Bowel screening invitations were paused for three months (23 March to 25 June). This lengthier pause was related to concerns about the infection risk posed by colonoscopy procedures and the maintenance of acceptable postal transit times for test kit returns.</li> <li>Screening is now back to usual participation and timeframes. However, there is an extension to the length of the screening and rescreen rounds from 24 to 27 months as volumes cannot increase due to colonoscopy service constraints.</li> </ul>

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10.	<b>Meeting Dates for 2021:</b> Wednesdays of 12 May, 4 August and 24 November
	Meeting closed at 16:00hrs.