Service Model for National Perinatal Pathology Services

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Executive Summary

Background

Perinatal pathology provides post mortem examinations of perinatal related death. Perinatal related mortality is defined by the Perinatal and Maternal Mortality Review Committee (PMMRC) as:

- Fetal death is the death of a fetus at 20 weeks gestation or beyond (≥20 weeks) or weighing at least 400g if gestation is unknown. Fetal death includes stillbirth and termination of pregnancy. Note that the term ‘stillbirth’ does not include terminations. Where a termination of pregnancy died after birth, the pregnancy is included as a termination of pregnancy and therefore as a fetal death rather than as a neonatal death.

- Neonatal death is the death of any baby showing signs of life at 20 weeks gestation or beyond or weighing at least 400g if gestation is unknown. Early neonatal death is a death that occurs up until midnight of the sixth day of life. Late neonatal death is a death that occurs between the seventh day and midnight of the 27th day of life.

A post mortem is one of a range of strategies for optimal investigation of the causes of perinatal related death. A post mortem is important, as information gained from autopsy can assist in the understanding of events surrounding the death, and in future pregnancy planning by enabling consideration of the risk of recurrence, alongside different management strategies (Paediatric Society of Australia and New Zealand 2009). In 2008 a report on Perinatal and Paediatric Pathology Service Provision in New Zealand was released by PMMRC. The Review highlighted a range of issues with the service model in place at that time, particularly in relation to a shortage of pathologists. The review recommendations included recruitment and retention plans, development of national guidelines for referral, and provision of administrative support for the service.

In September 2010 the, then National Health Board (NHB) received advice concerning paediatric and perinatal pathology services. The NHB board paper outlined workforce vulnerability, particularly succession planning and a lack of critical mass to maintain staffing levels during leave periods as key drivers for establishing a single national service model. This model was subsequently endorsed by the Minister of Health.

An implementation process was initiated in late 2010, working with a range of key stakeholders. While some progress was made to establish the national Paediatric and Perinatal Service there were a number of unresolved challenges which prevented agreement being reached on configuration of the national service.

Key barriers were related to differing requirements for paediatric and perinatal services, the role of Southern District Health Board (DHB) as a provider, and the impact of a Ministry of Justice review of their procurement of coronial and forensic pathology services.

In 2016 providers of perinatal pathology services approached the Ministry with a request to revisit the service model. A workshop was convened, and agreement reached that a Service Model for a National Perinatal Pathology Service be developed.
Lifting rates of post mortems for perinatal related death

Rates of parental consent to post mortems are one of the principal drivers of the number of non-coronal post mortems undertaken. Improving rates of consent is a key strategy to increase post mortem rates, so that accurate cause of death can be identified, along with determining whether there were disorders with implications for counselling and monitoring of future pregnancies.

Knowledge is important in assisting with reducing inequalities, with Maori and Pacific people over represented in perinatal mortality statistics, and with the grieving process as parental understanding of events surrounding the death is enhanced. Maori and Pacific perinatal related deaths are less likely to be optimally investigated than deaths in all other ethnic groups. Practice changes to support culturally appropriate conversations will be an important aspect of lifting post mortem rates.

In an article in NZ Doctor, (Thomas, 2016) reinforced the need for health professionals being prepared to have conversations about investigating causes of stillbirth in a culturally sensitive way, and that staff should be supported in this area.

In their Tenth Annual Report, published in June 2016, PMMRC reported against two recommendations related to rates of post mortems.

The first is that the low rate of update of post mortems amongst families and whānau who experience perinatal loss should be investigated, and noted the information contained in the 2015 Survey of Bereaved Women, which looks at information provided to women and their decisions about post mortem examination.

The second recommendation is that the reasons for the difference in rates of optimally investigated perinatal deaths between DHBs should be investigated, and noted that DHBs with post mortem rates of less than 50 percent were asked to provide a progress update on their implementation of this recommendation. Reported results were that geographical distance, length of time families and whānau are separated from their babies and family or whānau cultural beliefs can all be barriers to consenting to post mortems.

The incidence of perinatal related mortality in New Zealand in 2014 (the most recent data available) was 656 deaths, or a rate of 11.2 deaths per 1000 births. Numbers and rates of perinatal deaths have been relatively stable in New Zealand and are lower than rates in Australia which have been falling in recent years.

A post mortem is one of three potential strategies identified as optimal investigation of death. The others include karyotype to confirm chromosomal abnormality and clinical examination/ investigations (including Magnetic Resonance Imaging).

Optimal investigation rates in New Zealand are reported by the PMMRC in their Annual Reports. PMMRC have identified that in the five years between 2010 and 2014 optimal investigation occurred in 45 – 53 per cent of perinatal related deaths (n = 295 – 324 per annum).

Of the optimal investigations, a post mortem was performed in 34 – 42 per cent of perinatal related deaths each year, or around 250 perinatal related post mortems per annum. A post mortem is offered to families and whānau who have experienced a perinatal related death in most cases (89 – 94 per cent between 2012 and 2014), however around 55 per cent of bereaved families and whānau declined the offered post mortem.
Taking into account the increase in non-post mortem investigations, it is recommended that the initial goal is to lift perinatal related post mortem rates to at least 50 per cent by 2025 (or around 273 post mortems per annum, if mortality reduced, or 329 post mortems per annum if mortality remained stable). This rate would be consistent with the level at which PMMRC has sought DHB progress reports when considering reasons for difference in rates of optimally investigated perinatal deaths.

The Service’s capacity to achieve projected increases in perinatal related post mortems should be reviewed over time, based on actual post mortem rates, and regional distribution. Where pathologist capacity is constrained, options to remove low value added or non-clinical tasks should be developed to ensure pathologist resource is not a barrier to increasing rates of post mortems.

**Priorities for a National Perinatal Pathology Service**

The Working Group identified that the provision of high-quality services presents challenges for New Zealand given the wide geographic distribution of our small population. They identified that the purpose of the Service Model is one that:

1. Supports delivery and sustainability of the Service
   a. Includes a streamlined and effective operational and administrative infrastructure
   b. Provides an effective service and clinical governance structure
   c. Has effective coordination of the service for family, whānau and pathologists
   d. Ensures sufficient activity for each centre to be safe and sustainable.

2. Provides access for family and whānau
   a. Culturally sensitive and appropriate interactions with family and whānau
   b. Offered and available to all families and whānau that experience a fetal or neonatal death
   c. Is provided with the informed consent of the family and whānau, free of coercion
   d. Is provided as close to home as possible within the bounds of quality, safety and timeliness
   e. Is provided equitably

3. Meets quality and safety expectations
   a. Is provided in line with agreed guidelines, referral pathways and consent process
   b. Meets agreed standards for performance and reporting of post mortem and placenta examinations
   c. Meets agreed quality improvement indicators
   d. Has a common data collection and reporting system
   e. Has a common clinical record or shared care portal
   f. Monitored against a consistent reporting framework, and evaluated regularly

4. Supports development of the workforce
   a. Is provided by a sustainable, qualified, workforce
   b. Provides access to post graduate training for pathologists
   c. Has a clinical leadership, peer review and support framework
   d. Has a workforce recruitment and development plan
5. Makes best use of available funds
   a. Is fiscally responsible
   b. Receives funding that meets costs of providing the Service, and which is not a disincentive to referral for service

Service configuration

Perinatal Pathology Services are provided from DHB mortuaries in Auckland, Wellington, Christchurch and Dunedin Hospitals, and are part of wider Anatomical Pathology Services. The service employs (or utilises through contracting arrangements) 3.1 Full Time Equivalents (FTE) of perinatal pathologists nationally across the four sites, or five individuals (two in Auckland, and one each in Wellington, Christchurch and Dunedin).

Auckland DHB’s LabPlus provides perinatal pathology services for the Northern and Midland Region DHBs, either in the Auckland or Wellington mortuary.

Southern Community Laboratories (SCL) Wellington provides perinatal pathology services for the Central Region, and Nelson Marlborough DHBs, through the Wellington mortuary. SCL Dunedin contracts with a local Dunedin based pathologist to provide services for Southern DHB.

Canterbury Health Laboratories provides services for Canterbury, West Coast and South Canterbury DHBs.

There was consensus from the working group that the service should be retained in the existing four centres to support access for family and whānau closer to home, without reducing existing access levels. However, the group felt that efficiencies could be gained through reducing the number of “hosts” employing perinatal pathologists. A reduced number of hosts, or employers, provides greater opportunity to:

- streamline operational and administrative support
- reduce variation in information technology in use
- support greater consistency in reporting and monitoring of the service
- support clinical teams
- support succession planning for the service.

The Service is primarily provided Monday to Friday, normal business hours, but staff are available afterhours if required. There is no formal on call arrangement within the service, although leave is covered by other pathologists as required.

It is recommended that an implementation plan to reconfigure the services be actioned. The revised configuration should ensure that quality and safety requirements are met, including participation in a service wide peer review and clinical audit for all pathologists.

The recommended configuration, which minimises change, is:
• Auckland, who currently has pathologists in Auckland and Wellington, takes on responsibility for providing Services to the Central Region and Nelson Marlborough DHB\(^1\), in addition to their current Services for Northern and Midland Regions.

• Canterbury takes on responsibility for the whole South Island, expanding to include Southern, noting the volume of post mortems provided by this hub are expected to be relatively small.

Figure 1: The National Perinatal Pathology Service Model

The working group confirmed that the appropriate scope of a national Perinatal Pathology Service should be non-coronal post mortem services, external examinations and placenta examinations and testing, in the following situations:

• Stillbirths and terminations of pregnancy from 14 weeks gestation for high risk pregnancy, terminations and intrauterine deaths

• Neonatal and infant deaths (up to one year).

Placenta examination is also performed by other pathologists, but the Perinatal Pathology Service will continue to perform these examinations for their local populations, and upon request for other DHBs. Referrals from other regions may be a request for full examination or review of slides, either as the primary placenta examination or as a second opinion.

The Service is provided primarily during normal business hours, but with afterhours cover by local arrangement when circumstances warrant more urgent access.

\(^1\) Nelson Marlborough DHB receives Maternal Fetal Medicine and Neonatal Services through Capital & Coast DHB. These Services have important relationships with the Perinatal Pathology provider and current alignment should be maintained.
The existing Tier Two Service Specification for Paediatric and Perinatal Pathology services should be updated to reflect the change in scope.

**Streamlining the referral process**

Referral is from the hospital or DHB where the stillbirth or death occurred to the regional Perinatal Pathology Service provider. The referral is made either directly to the pathologist, or via the on call mortuary staff. Only one provider has a documented referral process and out of hours contact number.

Decisions on whether to proceed with a post mortem out of hours are made on a case by case basis where exceptional circumstances exist. The circumstances may be clinical or based on the expectation that consent would be withdrawn if delay occurred.

Placenta examination is an important investigation in improving pregnancy outcomes, both maternal and fetal. Optimum handling of the placenta following delivery is to send the fresh placenta and cord, along with a detailed request form, to the laboratory. If the referral is from another DHB, it is recommended that the Service be contacted to ensure appropriate handling, packaging and transportation.

Greater consistency in referral pathways for post mortem and placenta examinations should be achieved. It is recommended that current pathways are reviewed, documented and made available to referrers. This needs to include clarity about when and how after-hours access is provided.

**Consistency of funding model**

Perinatal Pathology Services are funded inconsistently from other hospital services. They are not included in normal Inter District Flow (IDF) payments for inpatient hospital services, and are not included in national reporting for non-admitted services.

Perinatal Pathology Services are either invoiced under a fee for service arrangement by the host Laboratory, or provided as part of the Laboratory and Pathology service agreements within the host DHB.

A single funding model for the Service should be implemented and applied by all providers. The recommended approach is a mixed model which includes:

- **Activity based funding**, using a fee for service model. Requirements for this include:
  - A memorandum of understanding with DHBs so that the DHB of maternal residence agrees to be invoiced for the post mortem
  - An endorsed fee schedule for the post mortem and placenta examination. It is proposed that post mortem and placenta examination fees are set for one year, using the existing fee as the basis (see Appendix 2). The National Pricing group will then be asked to use the most recent costing data to confirm a national price for the Service for use in 2018/19.

- **A Programme Fee** which covers the cost of administering the National Service configuration and coordination. This funding would be used to support the Governance model, a National clinical leader (0.1 FTE), and a full time Service Coordinator. The ongoing cost of the programme coordination is projected at $185,000. A one off additional amount of $100,000 would be used to develop training resources, referral pathways, and the quality improvement framework (see Appendix 3 for the Programme Fee breakdown).
Improving support for families and whānau in decision making

A post mortem is a valuable mechanism to identify accurate cause of death, identify disorders with implications for counselling and monitoring of future pregnancies, and assist in the grieving process by enhancing parental understanding of events surrounding the death. Improving rates of post mortems will assist in reducing future perinatal mortality.

Identifying areas where either the rate of offer of a post mortem, or the rate of consent to proceed, is low will allow more targeted training to improve post mortem rates, and more accurately diagnose cause of death or factors contributing to death.

If the National Perinatal Pathology Service aims to ensure families and whānau are supported to make an informed decision on whether to proceed with a post mortem, then supporting maternity and paediatric providers in their engagement with families and whānau to seek consent is important.

A survey of bereaved women asked about post mortems. Trust was identified as an important factor in deciding whether or not to proceed with a post mortem. Respondents identified that the key attributes of the ‘most trusted’ maternity providers were that they:

- were understanding and supportive
- made the women, family and whānau feel they could be trusted
- used words that could be understood
- appeared to know what they were talking about.

It was agreed that a service coordinator working in partnership with pathologists, referrers and families or whānau could facilitate the post mortem process for all concerned. The coordinator would focus particularly in DHBs where opportunities to improve outcomes can be achieved through increasing the rate of offer of a post mortem, or the rate of consent to a post mortem.

Because of the relatively low rates of consent for a post mortem, particularly for Maori or Pacific deaths, it was identified that a training package for maternity and paediatric providers dealing with bereaved families and whānau would be useful. The goal would be to support staff to have culturally appropriate conversations with bereaved families and whānau so that an informed choice can be made.

A family and whānau co-design approach would ensure that there is a factors important to consumers are incorporated, so that the training package can be more effective. This work should also include input from maternity and neonatal providers to ensure all factors taken into account.

Leadership and governance

The Service operates under the operational and clinical leadership in place in the DHB/provider’ laboratory. There is an informal clinical leadership model within the Perinatal Pathology Service, provided through peer review and mentoring of less experienced staff. The decentralised model of management, leadership and governance limits the ability to take a whole of service overview, with local priorities taking precedence over a national planning and performance approach.

While the existing operational oversight of the Service by each provider should continue, as a National Service with more than one provider it is important that there is a framework for broader oversight to ensure equity of access and consistency of service provision.
A clinical leadership and governance framework is recommended with a governance group established that includes representation from key stakeholders within the Service, and representation from interested external parties, including DHB funders, and Service referrers.

A national clinical leader should be appointed with responsibilities for ensuring clinical and quality standards are in place and being achieved through leadership, mentoring and support.

**Reporting and quality improvement**

Perinatal post mortem and placenta examination information is entered at the site of examination, and reported in the local database. In most cases the report is included in the local clinical repository. The information is only accessible locally, with regional shared health records not fully implemented. Where a pathologist works across two sites, access is via the local database only. The multiple systems mean that tracking, updating and sharing reports is difficult, and that tissue, slides and blocks may be moved and stored away from the site of the actual post mortem.

Data on post mortems is only available 2-3 years in arrears through the PMMRC reports. The delay in available information limits the ability to leverage quality improvement. Other than consent, post mortem and optimal investigation rates there are no national indicators of quality for Perinatal Pathology Services.

Standardised capture and reporting of post mortem referrals and activity is required to allow assessment of the effectiveness of the Service, with particular reference to reducing inequalities and improving post mortem rates where perinatal mortality remains high. This is particularly important because of the scope of the Service which is broader than the key improvement area of perinatal related pathology

Quality improvement indicators based on the defined referral pathway should be developed, and a reporting framework established to monitor quality. Referral and data management processes will need to be reviewed to ensure data capture of information to support monitoring and reporting of Service activity and performance.

The long term solution to allow the Service access to information regardless of location is through the National Electronic Health Record, expected to have initial roll out in mid-2018. In the interim, options to develop or access a shared electronic clinical record should be explored, which leverage on existing Regional IT solutions. Options to maximise access without requiring new IT investment should be considered that will support:

- Best possible access for pathologists to reports and relevant clinical information, regardless of where the post mortem was conducted or the pathologist based
- Best possible access for referrers to the completed report, regardless of the location of the post mortem.

Approaches to be progressed include ensuring reports are distributed and accessible through DHB and regional electronic platforms and considering whether the required access could be achieved through the new National Maternity Collection.

**Workforce**

Perinatal pathologists are trained in anatomical pathology. There is no specific formal perinatal pathology examination or qualification. Training is achieved through identification
of interested candidates, and funding them to undertake international fellowships. It is expected these candidates will complete the International Paediatric Pathology Association course in Europe, but this requirement is not part of the Service Specification.

Attracting registrars with an interest in perinatal pathology has been identified as challenging, with a need to increase the visibility and profile to attract quality candidates to the Service.

Mortuary technicians support pathologists in providing post mortems. Mortuary technicians are generally employed by the DHB. There is no perinatal pathology standard training programme available, and training occurs on site. It is estimated there are 8-10 mortuary technicians nationally that are able to assist with perinatal post mortems and reconstruction.

A workforce plan should be documented, describing minimum requirements for a pathologist or mortuary technicians to support high quality perinatal pathology service delivery. Draft accreditation requirements are identified in Appendix 1. These should be agreed and finalised.

A summary of the recommendations to achieve the Perinatal Pathology Service priorities is detailed in the next section.
Recommendations

Recommendations are summarised below, and arranged in relation to key service model criteria. These are that the service model meets the following requirements:

1. Supports delivery of the Service
2. Provides access for family and whānau
3. Meets quality and safety expectations
4. Supports development of the workforce

Criterion 1: Supports delivery of the Service

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<tr>
<td>Streamlined and effective operational and administrative infrastructure</td>
<td><strong>Recommendation 1:</strong> The Service’s capacity to achieve projected increases in perinatal related post mortems is reviewed over time, based on actual post mortem rates, and regional distribution. Where an increase in post mortems is putting pressure on existing pathologist capacity a review should be initiated to explore options to remove low value added or non-clinical tasks.</td>
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<td>Effective service and clinical governance structure</td>
<td><strong>Recommendation 2:</strong> The current Service configuration, including where provided, and who hosts the service, is reviewed. The goal would be to retain perinatal pathologists in four centres.</td>
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<td>Effective service coordination</td>
<td>It is recommended that Auckland LabPlus continue to provide services based in Auckland and Wellington for the North Island, and that Canterbury Health Laboratories provide services in Christchurch and Dunedin for the South Island.</td>
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<td>Sufficient activity for each centre to be safe and sustainable</td>
<td>The revised configuration should ensure that quality and safety requirements are met, including participation in a service wide peer review and clinical audit for all pathologists.</td>
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**Recommendation 3:** The scope of the Service should be confirmed as:

- non-coronial post mortem services, external examinations, placenta examinations, and testing in the following situations:
  - Stillbirths and terminations of pregnancy from 14 weeks gestation for high risk pregnancy, terminations and intrauterine deaths
  - Neonatal and infant deaths (up to one year)

The Tier Two Service Specification for Paediatric and Perinatal Pathology Services should be updated to reflect the change in scope.
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<td><strong>Recommendation 8:</strong> A clinical leadership and governance framework is established.</td>
<td><strong>Recommendation 9:</strong> Administrative functions within the service should be reviewed and, if necessary, realigned to ensure pathologists are adequately supported, and that service activity is correctly captured and reported.</td>
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<td>- A national governance group should be convened, with terms of reference describing the group's responsibilities in relation to service provision, improving equity, and ensuring performance indicators are met. Membership of the governance group should include representatives from:</td>
<td><strong>Criterion 2: Provides access for family and whānau</strong></td>
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<td>- the host DHBs (funder and provider arms, as well as a laboratory lead)</td>
<td><strong>Demonstrated by</strong></td>
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<td>- SCL (as provider of facilities and staff in some sites)</td>
<td>- Culturally sensitive and appropriate interactions with family and whānau</td>
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<td>- the national clinical director for perinatal pathology (when established)</td>
<td>- Offered and available to all families and whānau that experience a fetal or neonatal death</td>
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<td>- a referring DHB General Manager, Planning &amp; Funding</td>
<td>- Is provided with the informed consent of the family and whānau, free of coercion</td>
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<td>- a referring clinician (LMC, obstetrician or neonatologist)</td>
<td><strong>Recommendation 12:</strong> A training package for referrers should be considered. The training package would need to adopt a family and whānau co-design to incorporate learnings from their experiences. Referrers should also be involved in the design to ensure all clinician perspectives are also considered.</td>
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<td>- a family, whānau or consumer representative</td>
<td>Once developed, training could be delivered to maternity and neonatal providers, supported with appropriate resources, so that bereaved family and whānau receive information on post mortems that is:</td>
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<td>- a member of the PMMRC.</td>
<td>- Easily understood</td>
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<td>- A national clinical leader position description should be developed describing the expected responsibilities for the national clinical leader, who should be part of the service governance.</td>
<td>- Provided in a supportive and culturally appropriate way that does not presuppose the outcome</td>
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<td>- Gives confidence that the person offering the post mortem is trustworthy and well informed</td>
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- Is provided as close to home as possible within the bounds of quality, safety and timeliness
- Is provided equitably

Recommendations
- Enables family and whānau to make an informed decision on a post mortem.

**Recommendation 13:** A service coordination function should be implemented. The coordinator would:
  - Work in partnership with pathologists to develop relationships with referrers
  - Provide an interface between the Perinatal Pathology Service and local DHBs or referrers to ensure that interaction with the Service is well managed and that pathologist and, family and whānau needs are identified and met.
  - Work with family or whānau where appropriate to facilitate the post mortem process for them
  - Capture and provide information on family reasons for not proceeding with post mortem to inform improvement work
  - Deliver training to support referrers in seeking consent to the post mortem with grieving families and whānau.

The coordinator would focus particularly in DHBs where opportunities to improve outcomes can be achieved through increasing the rate of offer of a post mortem, or the rate of consent to a post mortem.

**Criterion 3: Meets quality and safety expectations**

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<td>• Is provided in line with agreed guidelines, referral pathways and consent process</td>
<td><strong>Recommendation 4:</strong> Referral pathways for a post mortem and placenta examination need to be reviewed and documented to ensure that:</td>
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<td>• Meets agreed standards for performance and reporting of post mortems and placenta examinations</td>
<td>• the scope of the service is clearly documented</td>
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<td>• Meets agreed quality improvement indicators</td>
<td>• the information required by the pathologist for the post mortem is available, relevant and appropriate</td>
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<td>• clinicians using perinatal pathology services are competent in issues of consent for a post mortem and in providing feedback regarding the post mortem results to families and whānau</td>
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<td>• situations where out of hours referral is appropriate and arrangements to access the Service out of hours</td>
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<td>• referrals for post mortem services are streamlined and directed to the appropriate provider, particularly if occurring afterhours</td>
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<td>• families and whānau have access to appropriate support and advice, including bereavement services.</td>
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<td>• Has a common data collection and reporting system</td>
<td><strong>Recommendation 5</strong>: Quality improvement indicators based on the defined referral pathway should be developed, and a reporting framework established to monitor quality. These should be incorporated into the updated Tier Two Service Specification.</td>
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<td>• Has a common clinical record or shared care portal</td>
<td><strong>Recommendation 10</strong>: Referral and data management processes are reviewed to ensure data capture of information to support monitoring and reporting of Service activity and performance. The Tier Two Service Specification should be updated with any purchase units or reporting requirements for capturing of perinatal pathology activity within national collections.</td>
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<td>• Monitored against a consistent reporting framework and evaluated regularly</td>
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**Criterion 4: Supports development of the workforce**

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<td>• Is provided by a sustainable, qualified, workforce</td>
<td><strong>Recommendation 7</strong>: A workforce plan is documented, describing accreditation requirements, including:</td>
</tr>
<tr>
<td>• Provides access to post graduate training for pathologists</td>
<td>• the number, location and hours of availability of perinatal pathologists to ensure capacity to deliver equitable access to post mortems across DHB regions, and minimum volumes to maintain competency</td>
</tr>
<tr>
<td>• Has a clinical leadership, peer review and support framework</td>
<td>• training pre-requisites for completing perinatal post mortems (including coronial which are outside the service)</td>
</tr>
<tr>
<td>• Has a workforce recruitment and development plan</td>
<td>• a training programme for mortuary technicians to support pathologists.</td>
</tr>
<tr>
<td>Demonstrated by</td>
<td>Recommendations</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>• Is fiscally responsible</td>
<td><strong>Recommendation 6</strong>: Funding arrangements for the Service should be reviewed, to ensure they are consistent, meet the averaged costs of providing service, and which is not a disincentive for referrers to seek a post mortem or placenta examination.</td>
</tr>
<tr>
<td>• Receives funding that meets costs of providing the Service, and which is not a disincentive to referral for service</td>
<td>The preferred funding model is to retain the current fee for service arrangement. This would require:</td>
</tr>
<tr>
<td></td>
<td>• A signed memorandum of understanding with DHBs for the provision of perinatal pathology services and agreed fee schedule</td>
</tr>
<tr>
<td></td>
<td>• The fee for service funding model should be supplemented with a modest Programme Fee to allow administration of identified national functions, e.g. service coordination, training and development, governance, clinical leadership. This approach would require Agreement from GMs P&amp;F on the level of programme funded. The Programme Fee would include one off funding in the first year to support the development of referral pathways, quality indicators and training resources.</td>
</tr>
</tbody>
</table>
1 Strategic Context

1.1 Background

Perinatal pathology is post mortem examination of fetal or neonatal death. A post mortem is one of a range of strategies for optimal investigation of the causes of perinatal death. A post mortem remains the gold standard, as information gained from autopsy can assist in the understanding of events surrounding the death and in future pregnancy planning by enabling consideration of the risk of recurrence, alongside different management strategies (Paediatric Society of Australia and New Zealand 2009).

In 2009 the Ministry and DHBs undertook a joint work programme which identified vulnerable services that would be likely to benefit from national level action. The Ministry subsequently undertook a high-level review of the current state of paediatric sub-specialty services and a stocktake of progress against the recommendations made in the report ‘Through the Eyes of a Child’. The report, entitled ‘Specialised Health and Disability Services for Children: A High Level Review’, was considered by the (then) National Health Board (NHB) at its meeting on 29 April 2010.

The review identified paediatric pathology services is experiencing a degree of vulnerability. Further work was recommended to assess whether the service would benefit from a national approach to their planning and/or funding.

Prior to the Ministry’s review, in 2008 a report on Perinatal and Paediatric Pathology Service Provision in New Zealand was released by the Perinatal and Maternal Mortality Review Committee. The Review highlighted a range of issues with the service model in place at that time, particularly in relation to a shortage of pathologists. The review recommendations included recruitment and retention plans, development of national guidelines for referral, and provision of administrative support for the service.

In September 2010 the NHB received further advice concerning paediatric and perinatal pathology services. The September 2010 NHB board paper outlined workforce vulnerability, particularly succession planning and a lack of critical mass to maintain staffing levels during leave periods as key drivers for establishing a single national service model. The paper also proposed the establishment of a national paediatric pathology clinical network. This approach was subsequently endorsed by the Minister of Health.

An implementation process was initiated in late 2010, working with a range of key stakeholders. While some progress was made in the establishment of a national Paediatric and Perinatal Service there were a number of unresolved challenges which prevented agreement on a service and funding model.

Key barriers were related to differing requirements for paediatric and perinatal services, the role of Southern DHB as a provider, and the impact of a Ministry of Justice review of their procurement of coronial and forensic pathology services.

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2 The National Health Board was dissolved in 2016, with the functions performed by the Board absorbed into the Ministry of Health
In 2016 providers of perinatal pathology services approached the Ministry with a request to revisit the service model. A workshop was convened, and agreement reached that a Service Model for Perinatal Pathology be developed.

1.2 Priorities for a Perinatal Pathology Services Model

The provision of high-quality services presents challenges for New Zealand given the wide geographic distribution of our small population. The purpose is to achieve national agreement on the service delivery model for Perinatal Pathology Services in New Zealand that:

1. Supports delivery and sustainability of the Service
   a. Includes a streamlined and effective operational and administrative infrastructure
   b. Provides an effective service and clinical governance structure
   c. Has effective coordination of the service for family and whānau, and pathologists
   d. Ensures sufficient activity for each centre to be safe and sustainable.

2. Provides access for family and whānau
   a. Culturally sensitive and appropriate interactions with family and whānau
   b. Offered and available to all families and whānau that experience a fetal or neonatal death
   c. Is provided with the informed consent of the family and whānau, free of coercion
   d. Is provided as close to home as possible within the bounds of quality, safety and timeliness
   e. Is provided equitably.

3. Meets quality and safety expectations
   a. Is provided in line with agreed guidelines, referral pathways and consent process
   b. Meets agreed standards for performance and reporting of post mortem and placenta examinations
   c. Meets agreed quality improvement indicators
   d. Has a common data collection and reporting system
   e. Has a common clinical record or shared care portal
   f. Monitored against a consistent reporting framework, and evaluated regularly.

4. Supports development of the workforce
   a. Is provided by a sustainable, qualified, workforce
   b. Provides access to post graduate training for pathologists
   c. Has a clinical leadership, peer review and support framework
   d. Has a workforce recruitment and development plan.

5. Makes best use of available funds
   a. Is fiscally responsible
   b. Receives funding that meets costs of providing the Service, and which is not a disincentive to referral for service.
1.3 Guiding principles

The Paediatric and Perinatal Pathology Review, 2008, made the statement that “Families and whānau in all areas of the country and of all ethnicities should have an equal opportunity to receive a considered and complete investigation after a perinatal death, including appropriate support and follow up” (p4).

Health Services in New Zealand are underpinned by the New Zealand Triple Aim, a national commitment to simultaneously achieve three outcomes:

- improving the quality, safety and experience of patient care through improving the timeliness of access to specialist advice
- improving health and equity for all populations through reducing current disparities in access
- getting the best value from the resources made available to the public health system through implementing evidence based improvements referral pathways.

<table>
<thead>
<tr>
<th>Service principles specific to Perinatal Pathology Services will be:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• culturally sensitive and appropriate for family and whānau</td>
</tr>
<tr>
<td>• offered to all families or whānau that experience a fetal or neonatal death</td>
</tr>
<tr>
<td>• provided with the informed consent of the family or whānau, free of coercion</td>
</tr>
<tr>
<td>• as close to home as possible within the bounds of quality, safety and timeliness</td>
</tr>
<tr>
<td>• provided to achieve equity of access</td>
</tr>
<tr>
<td>• meet agreed standards for performance and reporting of post mortem and placenta examinations</td>
</tr>
<tr>
<td>• monitored against a consistent reporting framework, and evaluated regularly</td>
</tr>
<tr>
<td>• provided by a sustainable, well qualified, workforce</td>
</tr>
<tr>
<td>• fiscally responsible.</td>
</tr>
</tbody>
</table>

1.4 National Services planning

In 2010 the Minister of Health endorsed an approach to establish national services. The development approach adopted was aimed at:

- maintaining and strengthening DHB accountability for planning and funding, and designating as National Services only those services whose clinical and financial viability will clearly benefit from NHB management
- ensuring strong clinical leadership and engagement, reflecting the priority given by the NHB to the role of clinicians in planning and delivering performance improvement, particularly through national clinical networks
- making the National Service designation process simple and transparent.

The Ministry adopted a dual model approach:

- **National Services (NS)** - services that should be nationally planned and/or funded ['purchased'] centrally by the NHB; and
• **National Service Improvement Programmes (NSIP)** - services that require action from the centre to lift DHB performance, but are not currently seen as requiring the additional step of the NHB purchasing the service. The focus would be on centrally coordinated performance improvement activities.

The National Services proposed for development during 2010/11 focused on a small number of services with a view to addressing immediate vulnerability issues, whilst laying the foundations for the longer term development of each service. Paediatric pathology was identified as one of these services.

As part of the establishment of a programme of national services, Paediatric (and perinatal) Pathology underwent a review and planning process that commenced in 2011, and involved technical advisory group workshops, and the development of a national Paediatric and Perinatal Pathology Service Specification.

The Service Specification stated that a single, lead DHB would be selected to provide the new national service, and a designated national service funding stream would be established.

The National Paediatric and Perinatal Pathology Service was to be made up of two distinctive service components, often provided by the same specialist pathologists:

1. Paediatric pathology services incorporating surgical pathology (including oncology) and pathology resulting from autopsy. Surgical pathology involves the examination of surgically removed biopsies, tissues and organs and supports a broad range of sub specialities, by providing accurate diagnosis and predicting disease progression.

2. Perinatal pathology services providing non-coronal autopsy services that include developmental and genetic cases (involving confirmation, diagnosis specialised testing for National Genetic Services), high risk pregnancies, terminations of pregnancy, unexpected intrauterine deaths from approximately 14 weeks gestation to term, stillbirth, neonatal deaths and placenta pathology.

The original papers envisaged a single national provider model with pathologists located in three specialist centres. Referral pathways, operational and governance arrangements, and clinical standards were discussed at a May 2011 workshop. At this time there was an underlying assumption that some form of ‘national funding’ model, potentially a national top slice would be implemented.

At a subsequent, September 2011, workshop, recommendations for the shape of the national service were reached, which differed from those originally established. These recommendations were that paediatric surgery pathology and perinatal pathology should be treated as two separate services.

**Paediatric surgery pathology:**

1. Paediatric surgery pathology was considered to be working well, with no need to implement changes to the service model. It was agreed that the operation of two DHBs (Auckland and Canterbury) in collaboration was preferred.

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2 This definition, which includes 14 weeks gestation terminations and stillbirths is different to definitions of perinatal related mortality that are in use in New Zealand in Fetal and Infant Mortality reporting, and in the Paediatric and Maternal Mortality Review Committee reports.
2. Clinicians should be proactive in arranging a regular half day meeting for the purposes of peer review, education, to maintain relationships and to allow clinicians in smaller centres to participate.

3. Further work was recommended to cost the national service. This needed to take into account costs associated with attendance at multidisciplinary meetings and provision of second opinions overseas.

4. Clarification was required on Health Workforce NZ providing ongoing funding for overseas training.

**Perinatal pathology:**

1. Consensus was not reached on the contracting or service model, and further consideration and discussion was recommended.

2. Funding options were to be considered, including Health Workforce NZ funding for ongoing training.

3. A detailed perinatal pathology service specification was to be developed, along with associated costs for a national service.

Subsequent to the September 2011 workshop, the three DHBs providing perinatal pathology services expressed a desire to continue to provide national level services. The approach agreed was to work with the three provider DHBs to further develop a collaborative national service model. Discussions evolved around utilising a Memorandum of Understanding (MoU) as a mechanism for the three DHBs and the Ministry of Health to document the details of coordinated and/or shared service level arrangements such as a national roster to cover pathologists leave and an agreed national pricing regime for paediatric and perinatal autopsies.

The national approach was stalled when a fourth provider was identified, who had not been party to the initial discussions and agreements. Potential changes in the Ministry of Justice coronial pathology services also delayed progress. A decision was made in 2013 to pause the development of a paediatric and perinatal pathology national service, with services continuing to be provided based on historical arrangements.

### 2 Overview of Perinatal Pathology Services in New Zealand

Perinatal Pathology Services are provided in four New Zealand centres. The Service’s current Service Specification includes provision of the following services:

- Paediatric surgical pathology
- Perinatal pathology including examination of placentas
- Post-neonatal autopsies (non-coronial)

The Specification is not consistent with the services offered under the umbrella of the Perinatal Pathology Service, which includes non-coronial post mortem (from around 14 weeks gestation to one year post birth) and placenta examinations, but excludes paediatric surgical pathology.

The Service Specification identified purchase units for submission of data to the National Non-Admitted Patients Collection (NNPAC) that are not used, and which do not align with service activity. Without reliable reporting to national collections and the national pricing
programme, the Service has operated outside of Inter District Flows (IDFs), under a fee for service funding model.

### 2.1 Current Service providers

Perinatal Pathology Services are provided in DHB mortuaries in Auckland, Wellington, Christchurch and Dunedin Hospitals, and are part of wider Anatomical Pathology Services.

Auckland and Canterbury DHBs provide Perinatal Pathology from within their DHB operated pathology services (LabPlus at Auckland, and Canterbury Health Laboratories in Christchurch). Wellington services are provided under contract by Southern Community Laboratories (SCL) Wellington. Southern perinatal pathology is provided by a local pathologist, upon referral from local clinical services, with an invoice submitted to SCL for the activity.

Some improvements in pathologist numbers have been achieved since reviews of the Service were undertaken in 2008 and 2010, with an increase in FTE in Auckland. This does not include clinical leadership time. Staffing levels have evolved independent of the location of current or potential future demand to support equitable access to post mortems based on individual DHB/region rates of perinatal mortality.

### Table 1: Perinatal pathology workforce

<table>
<thead>
<tr>
<th>Provider centre</th>
<th>2010</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auckland</td>
<td>0.6</td>
<td>2.0¹</td>
</tr>
<tr>
<td>Wellington</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Canterbury</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Dunedin</td>
<td>0.2²</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1.7</td>
<td>3.1</td>
</tr>
</tbody>
</table>

¹Includes 0.6 FTE based in Wellington
²FTE is based on resource contracted by SCL on a fee for service basis to perform perinatal post mortems and placenta examinations

The Service is primarily provided during normal business hours, Monday to Friday. Canterbury services are available only on the days the pathologist (employed 0.6 FTE) works. The pathologists located in Dunedin and Wellington will make themselves available to complete a post mortem seven days per week, if clinically required or timing influences the parents’ decision on whether to proceed, although this arrangement is not considered sustainable.

The Service has reported that on occasion a pathologist will travel to the referring DHB to complete a post mortem, but this information is not included in reporting.

In addition to post mortem services, the Perinatal Pathology Service also provides placenta examination (primarily for their local population or as a second opinion), contributes to multidisciplinary meetings and mortality reviews, and provides training and support to delivery room and maternity staff.

A Tier Two Service Specification for a National Paediatric and Perinatal Pathology Service was developed and endorsed in 2011. The specification stipulates the appointment of a national provider, which has not been progressed, and included paediatric pathology services.
Perinatal pathologists providing the service are expected to meet agreed standards of quality and safety, as defined in the Tier One Specialist Medical and Surgical Services Specification, specifically:

- Written evidence of quality assurance processes in place, peer review and a clinical audit system which measures mortality, major morbidity and complications such as infection and readmissions
- Clinical staff regularly participate in organisational and professional colleges’ maintenance of competency programmes.

### 2.2 Incidence of perinatal mortality

Data on perinatal and perinatal related mortality and rates of post mortems in New Zealand are available from three main sources.

National Collections, which reports through the Fetal and Infant Deathsviii report on deaths and stillbirths registered in New Zealand each year with the Births, Deaths and Marriages Registry (BDM). This data includes some cases not reported to the BDM database at the time of publication, but where the Ministry of Health had received a death certificate or post mortem report. The most recent data is for 2012.

National Collections can also identify through activity reported to the National Minimum Dataset (NMDS). The advantage is more timely data and ability to assess outcomes, but the reporting may be incomplete, as it would be limited to births and/or deaths that occur in hospital, or where the mother received hospital treatment post miscarriage. There is also some risk that data will include stillbirth or termination that is pre 20 weeks (i.e. inability to apply a consistent definition). Information on whether a post mortem is completed, not completed, or not stated is also available.

The Perinatal and Maternal Mortality Review Committee (PMMRC) who publish an annual reportviii. The PMMRC report provides information on mortality, whether an offer of post mortem is made and whether this offer is accepted or declined. This data is sourced from lead maternity carers (LMCs) and DHB coordinators, and is collated by a national coordinator. The most recent data is 2014.

LabPlus in Auckland DHB also collects some data on post mortem numbers in Auckland, Wellington and Christchurch. This data shows numbers that are higher than reported by PMMRC, which reports on perinatal related post mortem activity. LabPlus data includes the total activity of the Service, including fetal examinations between 14 and 20 weeks gestation, and infant (up to one year) post mortems. LabPlus data can be produced in a more timely manner, but additional data points would need to be included in the report to allow alignment of reporting with other sources. The data does not include birth or mortality rates, required for metric development.

Data presented in this document has been sourced primarily from the PMMRC Annual Reports. PMMRC data is generally slightly higher than data from the Fetal and Infant Mortality collection.

In determining incidence of perinatal mortality a consistent definition of ‘perinatal’ needs to be applied. PMMRC applies following classifications and subsets:

- Fetal death is the death of a fetus at 20 weeks gestation or beyond (≥20 weeks) or weighing at least 400g if gestation is unknown. Fetal death includes stillbirth and
termination of pregnancy. Note that the term ‘stillbirth’ does not include terminations. Where a termination of pregnancy died after birth, the pregnancy is included as a termination of pregnancy and therefore as a fetal death rather than as a neonatal death.

- Neonatal death is the death of any baby showing signs of life at 20 weeks gestation or beyond or weighing at least 400g if gestation is unknown. Early neonatal death is a death that occurs up until midnight of the sixth day of life. Late neonatal death is a death that occurs between the seventh day and midnight of the 27th day of life.

Table 2: Summary of New Zealand perinatal related mortality rates 2010 - 2014

<table>
<thead>
<tr>
<th>Perinatal related mortality</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>Rate#</td>
<td>n</td>
<td>Rate</td>
<td>n</td>
<td>Rate</td>
</tr>
<tr>
<td>Total births</td>
<td>65,124</td>
<td>62,604</td>
<td>62,425</td>
<td>60,039</td>
<td>58,647</td>
</tr>
<tr>
<td>Terminations of pregnancy*</td>
<td>151</td>
<td>2.3</td>
<td>171</td>
<td>2.7</td>
<td>172</td>
</tr>
<tr>
<td>Stillbirths</td>
<td>347</td>
<td>5.3</td>
<td>332</td>
<td>5.3</td>
<td>320</td>
</tr>
<tr>
<td>Sub Total Fetal deaths</td>
<td>498</td>
<td>7.6</td>
<td>503</td>
<td>8</td>
<td>492</td>
</tr>
<tr>
<td>Early neonatal deaths (&lt; 7 days)</td>
<td>165</td>
<td>138</td>
<td>142</td>
<td>122</td>
<td>150</td>
</tr>
<tr>
<td>Late neonatal deaths (7-28 days)</td>
<td>45</td>
<td>25</td>
<td>36</td>
<td>31</td>
<td>32</td>
</tr>
<tr>
<td>Sub Total Neonatal deaths</td>
<td>210</td>
<td>3.2</td>
<td>163</td>
<td>2.6</td>
<td>178</td>
</tr>
<tr>
<td>Perinatal mortalities^</td>
<td>663</td>
<td>10.2</td>
<td>641</td>
<td>10.2</td>
<td>634</td>
</tr>
<tr>
<td>Perinatal related mortality~</td>
<td>708</td>
<td>10.9</td>
<td>666</td>
<td>10.6</td>
<td>670</td>
</tr>
</tbody>
</table>

* Rates are per 1000 births  
^ Perinatal mortalities – fetal deaths and early neonatal deaths  
~ Perinatal related mortalities – fetal deaths, and early and late neonatal deaths  
Source: Tenth Annual Report of the Perinatal and Maternal Mortality Review Committee, 2016, p28, Table 1.2

As Table 4 shows, the incidence of perinatal related mortality in New Zealand in 2014 (the most recent data available) was 656 deaths, or a rate of 11.2 deaths per 1000 births. The rate has been relatively stable in recent years, although the 2014 is significantly higher than the 2013 rate of 10.0.

International comparisons of both mortality and post mortems require consistent definitions and reporting. It is only possible to compare New Zealand’s neonatal mortality rate with other similar countries, through activity reported to the World Bank. These comparisons show that New Zealand consistently has higher neonatal mortality rates than Australia and the United Kingdom.

Comparisons on rates of perinatal related mortality can be made with Australia who report using definitions consistent to New Zealand’s. These comparisons are somewhat out of date (the most recent comparative data is 2011), but show that numbers and rates of perinatal deaths in New Zealand are higher than Australia’s. Rates in New Zealand have been relatively stable in New Zealand, while rates in Australia which are reducing.

The most recent perinatal mortality data from New Zealand, sourced from the PMMRC annual reports, show that New Zealand’s rate of perinatal mortality has remained relatively static since 2002, although with some annual volatility. In the absence of other information, the assumption is that perinatal deaths in New Zealand will continue to remain relatively stable at 10 – 11 per 1000 births.
2.3 Incidence of perinatal post mortems and future demand

Incidence of post mortems offered and declined is reported by the PMMRC. The rate of offer of a post mortem is high, at 94 per cent of all perinatal related deaths in 2014, up from 89 per cent in 2012 and 93 per cent in 2013. The rate of consent to a post mortem was 42 per cent in 2013, but reduced to 39 per cent in 2014. In its Tenth Annual Report, PMMRC reported against two recommendations related to investigation of perinatal deaths:

1. The low rate of update of post mortems amongst families and whānau who experience perinatal loss should be investigated

2. That the reasons for the difference in rates of optimally investigated perinatal deaths between DHBs should be investigated

The Perinatal Society of Australia and New Zealand reported that a working party of the Royal College of Pathologists recommended an optimal rate of 75 per cent. Based on this, the current rate of offer and consent in New Zealand would be considered low. The 2014 rate does represent an improvement over 2012 when the consent rate was 34 per cent.

Table 3: Post mortem examination offered 2014

<table>
<thead>
<tr>
<th>Post mortem examination offered</th>
<th>Fetal deaths</th>
<th>Perinatal related deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Termination of pregnancy</td>
<td>Stillbirths</td>
</tr>
<tr>
<td>n=149</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Post mortem offered and parental consent given</td>
<td>58</td>
<td>38.9</td>
</tr>
<tr>
<td>Post mortem offered and parents declined</td>
<td>75</td>
<td>50.3</td>
</tr>
<tr>
<td>Post mortem not offered</td>
<td>14</td>
<td>9.4</td>
</tr>
<tr>
<td>Unknown</td>
<td>2</td>
<td>1.3</td>
</tr>
</tbody>
</table>

Source: Tenth Annual Report of the Perinatal and Maternal Mortality Review Committee, 2016, p85, Table 1.52
Improving rates of consent is desirable as a post mortem is a valuable mechanism to identify accurate cause of death, identify disorders with implications for counselling and monitoring of future pregnancies, and assist in the grieving process by enhancing parental understanding of events surrounding the death.

PMMRC reported that in 2014, of the 255 post mortems completed, there was data on the usefulness of the post mortem available for 212 (83%) of cases. The data showed that in:

- 123 cases (58%) the post mortem confirmed the clinical diagnosis
- 32 cases (15%) the post mortem changed the diagnosis and resulted in altered counselling to parents for future pregnancies
- 35 cases (17%) additional information was gained but did not change the diagnosis
- 22 cases (10%) the post mortem was inconclusive.

Estimating the number of post mortems required to achieve a goal ‘rate’ depends on the number of birth rates and the number and rate of perinatal deaths (expected to remain relatively stable in the short term). Achieving the rate will depend upon improving rates of family or whānau consent.

**Birth rates**

Statistics New Zealand reports on live births in New Zealand, and reported an increase in live births in 2015 to 61,038. This followed declining rates in the preceding four years.

Statistics New Zealand has modelled birth rates between 2016 and 2033, factoring in projected fertility rates and migration. Based on their conclusions, birth rates are projected to increase between 2016 and 2026, then flatten before gradually reducing to 2033. The expectation is that in the five years between 2016 and 2021, the number of live births will increase by an average of 600 per annum.

*Figure 3: Live birth rates*

![Projected Birth Rates](image)

Source: Statistics New Zealand, October 2015 for financial years ending June 2016 - 2033

**Post mortem rates**

A post mortem is one of three potential strategies identified as optimal investigation of death, and remains the gold standard investigation. The other types of investigation include
karyotype to confirm chromosomal abnormality or clinical examination/investigations (including Magnetic Resonance Imaging).

Data on rates of post mortems and optimal investigation in New Zealand is available from the PMMRC Annual Reports. The data is available for 2008 to 2014. For 2008 and 2009 there is only an aggregated “optimal investigation” rate provided, while for 2010 onwards, data is for post mortem rates, and for optimal investigation rates. The more recent data shows a post mortem comprises around 80 per cent of the total optimal investigation volume.

Table 4: Rates of post mortem and optimal investigation

<table>
<thead>
<tr>
<th>Perinatal related deaths</th>
<th>Post mortem</th>
<th>Optimal investigation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total n</td>
<td>%</td>
</tr>
<tr>
<td>2008</td>
<td>700</td>
<td>345</td>
</tr>
<tr>
<td>2009</td>
<td>720</td>
<td>294</td>
</tr>
<tr>
<td>2010</td>
<td>704</td>
<td>254</td>
</tr>
<tr>
<td>2011</td>
<td>665</td>
<td>247</td>
</tr>
<tr>
<td>2012</td>
<td>669</td>
<td>227</td>
</tr>
<tr>
<td>2013</td>
<td>598</td>
<td>252</td>
</tr>
<tr>
<td>2014</td>
<td>656</td>
<td>256</td>
</tr>
</tbody>
</table>

Source: 2009 – PMMRC Fourth Annual Report, p48, Table 29 (note includes post mortem and karyotype); 2009 – PMMRC Fifth Annual Report, p58, Table 31 (note includes post mortem and karyotype); 2010 – PMMRC Sixth Annual Report, p65, Table 31; 2011 – PMMRC Seventh Annual Report, p78, Table 37; 2012 – PMMRC Eighth Annual Report, p88, Table 1.39; 2013 – PMMRC Ninth Annual Report, p83, Table 1.30; 2014 – PMMRC Tenth Annual Report, p85, Table 1.51

The number of perinatal related post mortems conducted each year has been relatively stable at around 250 per annum, with the exception of 2012, when numbers dropped to 227. While there was a slight increase in post mortems in 2014, the increase in perinatal deaths meant that the post mortem and optimal investigation percentages reduced.

Based on the information that is available, it is reasonable to expect the number of post mortems will remain relatively stable unless there is either a reduction in pathologist resource, or a change in rates of consent.

Future post mortem requirements
While the Perinatal Society of Australia and New Zealand has indicated a rate of optimal investigation of 75 per cent is desired, the PMMRC has not formalised this as a national standard. However, PMMRC is asking DHBs with rates of post mortems below 50 per cent to report on their progress to improve rates of optimal investigation of perinatal deaths. DHBs reported that that geographical distance, length of time families and whānau are separated from their babies and family or whānau cultural beliefs can all be barriers to consenting to a post mortem.

Perinatal pathologists in New Zealand have signalled that a post mortem rate of 50 per cent would be an appropriate goal to aim for, recognising the increasing availability and appropriateness of other investigations.

Growth in post mortems has been modelled, assuming an incremental increase to 50 per cent of fetal or neonatal deaths. The assumptions used in the modelling are:

- The birth rate will increase as projected by Statistics New Zealand (at a rate of approximately 600 per annum)
- Perinatal related deaths will remain relatively stable.

This modelling only factors in post mortems that fit within the definition of ‘perinatal related’, and does not include post mortems for infant deaths or when the fetus is less than 20 weeks gestation. There is no external data on the total level of non-coronial post mortems undertaken by the Service, but information collected by LabPlus indicates that in 2014 there were 367 post mortems provided. PMMRC reported 256 (70%) of these were provided for perinatal related deaths.

Any variation from assumed rates of perinatal death would impact on the number of post mortems required to achieve and maintain a rate of 50 per cent.

Two options to estimate the number of perinatal related post mortems required to achieve a rate of 50 per cent are modelled below. Both options assume an increasing birth rate, and the percentage of perinatal deaths investigated with post mortems increasing by 1 per cent per annum to 2025. Option 1 assumes a reduction in perinatal deaths averaging 10 per annum, while Option 2 assumes perinatal related mortality remains stable. The variation in number of perinatal deaths has considerable impact on the number of post mortems required to achieve the 1 per cent per annum increase.

1. **Option 1**, assuming a reduction in perinatal deaths of 10 per annum would see the increase in post mortems required averaging 2-3 per annum, up to 273 by 2025. Assuming eight hours per post mortem⁴, this increase would equate to an additional 1-2 hours of clinical time per week until 2018, then an additional 2 - 3.5 hours of clinical time until 2025. Depending upon associated attendance at mortality meetings the increase might require an additional 0.1 FTE for the Service by 2025.

2. **Option 2** would require a more marked increase of 6-7 post mortems per annum, up to 329 by 2025. Assuming eight hours per post mortem, and that pathologists are operating at capacity, this would equate to an additional 0.1 FTE by 2018, increasing to 0.2 FTE by 2022, and 0.3 FTE by 2025.

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⁴ Includes 4-6 hours for post mortem and reporting, and attendance at mortality review committees
These assumptions do not take into account the placenta examination component of the Service, which is not consistently reported. Improved referral pathways may also see an increase in placenta examinations, or a shift from local pathologists to the National Service.

While the above options make assumptions about potential need for additional pathologists, these assumptions would need to be tested through a usual recruitment business case if an increase in pathologists was sought. This would need to be considered within the context of the location of pathologists, the area they provide service for, and whether there is flexible capacity in another centre that could be used. The expectation would always be to consider options to reduce low value or non-clinical activities before proceeding to recruiting additional pathologists.

Table 5: Predicted post mortem numbers by 2021

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual &amp; projected live births</th>
<th>Actual and projected perinatal related deaths</th>
<th>Projected increase per centage of perinatal related mortality post mortem</th>
<th>Projected increase in perinatal related post mortem</th>
<th>Actual and projected perinatal related deaths</th>
<th>Projected increase per centage of perinatal related mortality post mortem</th>
<th>Projected increase in perinatal related post mortem</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>58,717</td>
<td>601</td>
<td>42%</td>
<td>252</td>
<td>598</td>
<td>42%</td>
<td>252</td>
</tr>
<tr>
<td>2014</td>
<td>57,242</td>
<td>656</td>
<td>39%</td>
<td>256</td>
<td>656</td>
<td>39%</td>
<td>256</td>
</tr>
<tr>
<td>2015</td>
<td>61,038</td>
<td>646</td>
<td>40%</td>
<td>258</td>
<td>658</td>
<td>40%</td>
<td>263</td>
</tr>
<tr>
<td>2016</td>
<td>60,400</td>
<td>636</td>
<td>41%</td>
<td>261</td>
<td>658</td>
<td>41%</td>
<td>270</td>
</tr>
<tr>
<td>2017</td>
<td>61,100</td>
<td>626</td>
<td>42%</td>
<td>263</td>
<td>658</td>
<td>42%</td>
<td>277</td>
</tr>
<tr>
<td>2018</td>
<td>61,500</td>
<td>616</td>
<td>43%</td>
<td>265</td>
<td>658</td>
<td>43%</td>
<td>283</td>
</tr>
<tr>
<td>2019</td>
<td>62,200</td>
<td>606</td>
<td>44%</td>
<td>267</td>
<td>658</td>
<td>44%</td>
<td>290</td>
</tr>
<tr>
<td>2020</td>
<td>62,900</td>
<td>596</td>
<td>45%</td>
<td>268</td>
<td>658</td>
<td>45%</td>
<td>296</td>
</tr>
<tr>
<td>2021</td>
<td>63,400</td>
<td>586</td>
<td>46%</td>
<td>270</td>
<td>658</td>
<td>46%</td>
<td>303</td>
</tr>
<tr>
<td>2022</td>
<td>63,700</td>
<td>576</td>
<td>47%</td>
<td>271</td>
<td>658</td>
<td>47%</td>
<td>309</td>
</tr>
<tr>
<td>2023</td>
<td>63,800</td>
<td>566</td>
<td>48%</td>
<td>272</td>
<td>658</td>
<td>48%</td>
<td>316</td>
</tr>
<tr>
<td>2024</td>
<td>64,100</td>
<td>556</td>
<td>49%</td>
<td>272</td>
<td>658</td>
<td>49%</td>
<td>323</td>
</tr>
<tr>
<td>2025</td>
<td>64,400</td>
<td>546</td>
<td>50%</td>
<td>273</td>
<td>658</td>
<td>50%</td>
<td>329</td>
</tr>
</tbody>
</table>

Notes: Live births 2013-2015 are actuals, and 2016-2025 are projections as reported by Statistics NZ. 2013 and 2014 perinatal related mortality and post mortem are as reported by PMMRC.

Recommendation 1:

The Service’s capacity to achieve projected increases in perinatal related post mortems is reviewed over time, based on actual post mortem rates, and regional distribution. Where an increase in post mortems is putting pressure on existing pathologist capacity, a review should be initiated to explore options to remove low value added or non-clinical tasks.

2.4 Perinatal Pathology Service requirements

To deliver high quality, efficient and effective Perinatal Pathology Services that will achieve an increase in post mortem rates, the following key requirements need to be considered and/or put in place:
1. Monday to Friday, normal business hours service, with clarity about when and how afterhours access will be available
2. Access to accredited mortuary facilities for paediatric post mortems and reconstruction, with technical staff competent to support perinatal post mortems
3. Access to all materials, equipment, testing and substances required for delivering the Service (post mortems, external examinations and placenta examination)
4. Transportation of specimens to other laboratories for tests not performed in house
5. Tissue management where required for any fetus less than 20 weeks gestation
6. Participation in multi-disciplinary mortality meetings in DHBs
7. Provision of clinical advice or interpretation of results and other clinical issues for pathologists, including pre and post-test advice
8. Communication with the family and whānau of the deceased, and with general practitioners and referrers to the Service
9. Provision of registrar, technical and scientific, and specialist training, including where appropriate, overseas fellowships and attachments
10. Training of maternity and neonatal staff in seeking informed consent
11. Familiarity with the referring DHBs’ care pathways after fetal (termination or stillbirth) or neonatal death.

To achieve these Service Requirements the Service Model may be configured in a number of ways. Options included varying the number of hosts/employers from the current three (ADHB, CDHB and SCL), or varying the number of centres where pathologists are located from the current four (Auckland, Wellington, Christchurch and Dunedin). Consideration was also be given to an ‘outreach’ model whereby the pathologist travels to the referring centre to provide post mortem services.

The strong consensus is that the Service must at least retain pathologists in Auckland, Wellington and Christchurch, and should ideally continue to be provided in four centres (i.e. continue in Dunedin as well). This supports access for family and whānau closer to home, without reducing existing access levels.

The group felt that efficiencies could be gained through reducing the number of ‘hosts’ employing perinatal pathologists. A reduced number of hosts, or employers, provides greater opportunity to:

- streamline operational and administrative support
- reduce variation in information technology in use
- support greater consistency in reporting and monitoring of the service
- support clinical teams
- support succession planning for the service.

The Wellington pathology post is expected to be vacant early in 2018 and Auckland LabPlus has signalled a willingness to increase the FTE they employ, based in Wellington. Auckland LabPlus would therefore be providing perinatal pathology services for the North Island.

Southern DHB perinatal pathology is provided under a contract arrangement, which would need to be reviewed so that the arrangement could be transferred to CDHB who would then provide services for the South Island.
An assessment of impact for staff and organisations involved will be required. Mortuary and pathology staff based in Wellington and Dunedin are employed by Capital & Coast and Southern DHBs, and they would need to be consulted if any change in employment arrangement was to proceed.

Specific consideration would need to be given as to whether changes would apply to pathologists only, or also to mortuary technicians and/or administrative staff. As mortuary and administrative staff support wider pathology services, rather than just perinatal pathology, it is likely that the recommendation would be that change would only impact pathologists. Agreement would then be required to ensure appropriate access to mortuary support in remote centres for the perinatal pathologists.

Out of hours service is currently provided through local arrangements. A safe out of hours service requires a minimum 1 in 4 roster, which can be provided with four individuals but ensuring weekend and leave cover would ideally require between five and six pathologists.

Pathologists agreed that afterhours referrals were uncommon, and that while the Service should remain a Monday to Friday, normal business hours service, it was appropriate that local arrangements for out of hours referrals be retained.

**Recommendation 2:**

The current Service configuration, including where provided, and who hosts the service, is reviewed. The goal would be to retain perinatal pathologists in four centres.

It is recommended that Auckland LabPlus continue to provide services based in Auckland and Wellington for the North Island, and that Canterbury Health Laboratories provide services in Christchurch and Dunedin for the South Island.

The revised configuration should ensure that quality and safety requirements are met, including participation in service wide peer review and clinical audit for all pathologists.

**Recommendation 3:**

The scope of the Service should be confirmed as:

- non-coronial post mortem services, external examinations, placenta examinations, and testing in the following situations:
  - Stillbirths and terminations of pregnancy from 14 weeks gestation for high risk pregnancy, terminations and intrauterine deaths
  - Neonatal and infant deaths (up to one year).

The Tier Two Service Specification for Paediatric and Perinatal Pathology Services should be updated to reflect the change in scope.

**2.5 The referral pathway – post mortem examination**

Perinatal post mortems (non-coronial): The Service provides post mortem services that include developmental and genetic cases, high risk pregnancies, terminations of pregnancy,
unexpected intrauterine deaths (from approximately 14 weeks gestation to term), stillbirths, neonatal and infant deaths.

Referral is from the hospital or DHB where the stillbirth or death occurred to the regional Perinatal Pathology Service provider. Northern and Midland Region DHBs refer to the Auckland service. Wellington receives referrals from the Central Region and Nelson Marlborough. Canterbury receives referrals from West Coast and South Canterbury, while Southern DHB provides for its own population.

Figure 5: Geographical boundaries

LabPlus has provided activity data that shows that 98 per cent of post mortems for DHBs in the Northern and Midland Regions are provided in Auckland. It is estimated that 91 per cent Central Region post mortems are completed in Wellington, with the remainder in Auckland. Canterbury provides 51 per cent of the reported South Island post mortems, with 33 per cent in Southern, and the remaining 16 per cent (mostly Nelson Marlborough DHB) provided in Wellington. Post mortems provided in Dunedin are not included in LabPlus reporting, but have been estimated by SCL Dunedin at around 30 per annum.

Table 6: Location of provision of services – 2014 and 2015

<table>
<thead>
<tr>
<th>Provider Pathology Service</th>
<th>Auckland</th>
<th>Wellington</th>
<th>Canterbury</th>
<th>Southern</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Referral Region</td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Northern</td>
<td>307</td>
<td>98%</td>
<td>7</td>
<td>2%</td>
<td>0</td>
</tr>
<tr>
<td>Midland</td>
<td>107</td>
<td>97%</td>
<td>3</td>
<td>3%</td>
<td>0</td>
</tr>
<tr>
<td>Central</td>
<td>11</td>
<td>9%</td>
<td>111</td>
<td>91%</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>South Island</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>--------------</td>
<td>----</td>
<td>-----</td>
<td>------</td>
<td>----</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0%</td>
<td>28</td>
<td>16%</td>
<td>92</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>16%</td>
<td>149</td>
<td>21%</td>
<td>92</td>
</tr>
<tr>
<td></td>
<td>92</td>
<td>51%</td>
<td>92</td>
<td>13%</td>
<td>60</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>425</strong></td>
<td><strong>59%</strong></td>
<td><strong>149</strong></td>
<td><strong>21%</strong></td>
<td><strong>92</strong></td>
</tr>
</tbody>
</table>

Source: LabPlus – includes non-coronial post mortems on fetal (14 weeks gestation) and infant (less than one year) deaths during 2014 and 2015, and Southern DHB estimate of post mortems for 2 years

Referrals for a post mortem are made either directly to the pathologist, or via the on call mortuary staff. Auckland DHB has a documented referral process and out of hours contact number.

Decisions on whether to proceed with a post mortem out of hours are made on a case by case basis where exceptional circumstances exist. The circumstances may be clinical or based on the expectation that consent would be withdrawn if delay occurred.

Clearly documented referral pathways would ensure referrers are able to make contact without delay, that referrals are directed to the available pathologist, and that the information required by the pathologist is available.

Figure 6: Perinatal post mortem pathway

2.6 The referral pathway – placenta examination

Placenta examination is an important investigation in improving pregnancy outcomes, both maternal and fetal. Placenta examination is performed by both non specialist and perinatal pathologists. Referral to the Perinatal Pathology Service for placenta examination is most likely to originate from within the Pathology provider DHB. Perinatal pathologists may also be asked to examine a placenta or review slides by pathologists in another DHB.
If a referral is made for a placenta examination it is recommended that the Service be contacted to ensure appropriate packaging and transportation. Optimum handling is to send the fresh placenta and cord, along with a detailed request form.

The number of placenta examinations completed by each provider, and those potentially completed outside the service, is not known. Estimates have been provided suggesting in the area of 1400-1600 placentas are examined within the Service each year, but the data is not sufficiently reliable to draw any conclusions about volume or location.

Improving data capture on placenta examination, and understanding where this is provided (particularly when not referred to perinatal pathologists) is required.

**Figure 7: Placenta examination pathway**

**Recommendation 4:**

Referral pathways for post mortem and placenta examinations need to be reviewed and documented to ensure that:

- the scope of the service is clearly documented
- the information required by the pathologist for the post mortem is available, relevant and appropriate
- clinicians using perinatal pathology services are competent in issues of consent for post mortem and in providing feedback regarding post mortem results to families and whānau
- there is an agreed process for managing out of hours referrals and decisions related to provision of out of hours post mortem, and pathologist travel
- referrals for post mortem services are streamlined and directed to the appropriate provider, particularly afterhours
- families and whānau have access to appropriate support and advice, including bereavement services.
Recommendation 5:
Quality improvement indicators based on the defined referral pathway should be developed, and a reporting framework established to monitor quality. These should be incorporated into the updated Tier Two Service Specification.

2.7 The current funding model

Perinatal Pathology Services operate under a different funding model to other hospital services, and are not included in IDF forecasts for inpatient or non-admitted activity.

ADHB perinatal pathology services are funded strictly under a fee for service arrangement. The referrer is invoiced for either the post mortem or placenta examination according to an agreed schedule. Where the referral is received from within ADHB this is managed through an internal service transfer.

The fee for a post mortem examination is $2,500, exclusive of GST. The fee includes all perinatal pathology services, mortuary technician services, histology and laboratory services, and administration costs. The fee does not cover transportation of the baby to and from the referring DHB, or any third party costs not associated with the delivery of the post mortem. Non-routine investigations are also excluded from the fee. These range from $50 for blood or microbiology, to $600 for some more specialised tests. While the fee is set at $2,500, Auckland DHB has estimated ‘real’ costs to be between $2,600 and $3,000 per post mortem.

Increased use of genetic testing in post mortem and placenta examinations will influence costs, particularly where tests are only able to be performed in a limited number of overseas laboratories.

Canterbury Health Laboratories is funded directly by Canterbury DHB to provide all laboratory and pathology services for the populations of Canterbury and West Coast DHBs. Relatively few services are provided for other South Island DHBs, but these would be invoiced, as per the cost schedule identified above.

SCL also receives its funding directly from the DHBs contracting with them to provide Laboratory and Pathology services, namely SCL Dunedin is funded by Southern DHB, and SCL Wellington is funded by Capital & Coast, Hutt Valley and Wairarapa DHBs to provide services for their populations. SCL invoices for work performed for other DHBs, also using the same fee schedule.

One potential unintended consequence of invoicing for a post mortem is the risk that referral pathways or decisions may be influenced by cost. This risk can be managed through appropriate referral pathways that describe the most effective and appropriate investigation for the circumstance.

Placenta examinations are invoiced based on a sliding scale, with a referral fee of $300, then additional activities according to a price list, with the fee for a single, uncomplicated placenta examination set at $550.

Invoicing for a placenta examination is more variable than for post mortems. As the majority of primary examinations are from within the local DHB, it is unlikely that these are invoiced. For secondary examinations, an invoice is only raised where a formal report has been
requested. This is to prevent cost from being a barrier to referral for placenta examination. Assessment of the funding versus cost of providing a placenta examination may be required.

The key advantages of the current funding model are:

- Fees can be set to cover the cost of providing the service
- Flexible and responsive to changes in demand and cost, which are anticipated for perinatal post mortems
- Invoice can be to either referring DHB or DHB of domicile
- Is not impacted by the lack of reporting on perinatal post mortem and placenta examinations.

These advantages are offset by:

- the need to have robust counting, administration and invoicing systems in place
- likelihood that placenta examinations are not being funded, or the costs cross-subsidied by other services
- different cost structures in place in the different providers, and the need for a change in funding arrangements if a nationally consistent approach is to be implemented
- lack of visibility over forecast costs for referring DHBs, who may consider cost a deterrent to referral for a post mortem, especially if referrals increase
- risk that agreement will not be reached between the providers on the level of fees, and could lead to calculation of different fees.

2.8 Future funding model options

A range of options for funding the Perinatal Pathology Service have been identified. These are summarised below, including an assessment of the advantages and considerations associated with each option. The options are applicable and used across a range of services within the New Zealand health environment.

Table 7: Funding model Options Assessment

<table>
<thead>
<tr>
<th>Model 1: Top Slice</th>
<th>A fixed amount, based on ‘assumed’ right amount to provide the service. Top Slice is from DHBs, either as reprioritisation or realignment from existing fee for service arrangements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Advantages</strong></td>
<td>Consistent with a ‘national service’ funding approach&lt;br&gt;Surety of funding, regardless of activity&lt;br&gt;Not based on reported activity&lt;br&gt;DHB contribution based on PBFF share rather than utilisation&lt;br&gt;Shares risk associated with volatility in activity across DHBs&lt;br&gt;Removes any potential disincentive to referring for service</td>
</tr>
<tr>
<td><strong>Considerations</strong></td>
<td>Most effective when there is a single national host or provider&lt;br&gt;Less responsive to growth in activity, costs or changes in technology, all of which are anticipated for perinatal post mortem&lt;br&gt;Would require GM agreement to establishment and any adjustment to funding&lt;br&gt;Funding to Host DHB, distribution may not flow to Service&lt;br&gt;Limited visibility of the cost of providing the service</td>
</tr>
</tbody>
</table>
### Model 2: Inter District Flows (IDFs)
National costing data for identified purchase units are used to determine a national unit price for activity

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Funded based on calculated costs, and therefore responsive to increases</td>
<td>• Requires accurate costing and activity data, which is not available</td>
</tr>
<tr>
<td>• DHB of domicile pays for service based on activity for their population</td>
<td>• Slow to respond to price/cost changes as pricing impacted by cost data 2 years in arrears, which may be material for post mortems</td>
</tr>
<tr>
<td>• Adjusted annually and responds to increases or decreases in activity for a DHB’s population</td>
<td>• Cost based on ‘averages’ – may not cover full cost of more expensive activity (e.g. genetic testing)</td>
</tr>
<tr>
<td>• Easy to administer</td>
<td>• Requires correct and timely reporting of activity to national collections</td>
</tr>
<tr>
<td>• No disincentive to referring for Service</td>
<td>• May require ‘pathway’ agreement to manage referrals</td>
</tr>
<tr>
<td>• Is the usual funding mechanism for non-admitted services</td>
<td>• May be dependent upon local DHB prioritisation decisions</td>
</tr>
</tbody>
</table>

### Model 3: Fee for Service
The Service calculates a fee for activity, and enters into a memorandum of understanding, or contract, with external funders for the delivery of the Service on the basis of an invoice for services provided

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Status quo</td>
<td>• Administration costs sit with Service</td>
</tr>
<tr>
<td>• Fees can be set to cover cost of service</td>
<td>• Requires memorandum of understanding to be agreed by hosts, and all referrers</td>
</tr>
<tr>
<td>• Flexible and responsive to changes in demand and cost</td>
<td>• Cost may be considered a deterrent to referral</td>
</tr>
<tr>
<td>• Invoice can be to either referring DHB or DHB of domicile</td>
<td>• May be different cost and fee structures across the Service providers</td>
</tr>
</tbody>
</table>

### Model 4: Mixed model
A lead DHB receives a programme fee to support delivery of national service components, with activity funded through IDFs or fee for service

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Recognises ‘national’ components of the Service, while retaining responsiveness to demand driven activity</td>
<td>• As with top slice, would require GM agreement to establishment and any future increases</td>
</tr>
<tr>
<td></td>
<td>• Administration costs associated with fee for service arrangements sit with Service</td>
</tr>
<tr>
<td></td>
<td>• Requires memorandum of understanding to be agreed by hosts, and all referrers</td>
</tr>
<tr>
<td></td>
<td>• Cost may be considered a deterrent to referral</td>
</tr>
<tr>
<td></td>
<td>• Referring DHBs have limited visibility over forecast costs</td>
</tr>
<tr>
<td></td>
<td>• Funding to Host DHB</td>
</tr>
</tbody>
</table>
The Top Slice funding model was discarded because of the risk associated with expected increases in post mortem and placenta numbers. Setting the Top Slice would result in either the provider carrying the risk of increasing volume, or funders through the inclusion of a risk reserve which may not be utilised for some time.

The IDF funding model was discarded because of the variable nature of the cost of tests associated with post mortem and placenta examinations, the lack of historical costing data, and the time delay.

The preferred funding model is the Mixed Model (Option 4). This combines the existing fee for service model with a programme fee for national leadership and coordination.

The fee for service model is considered flexible enough to respond to changes in cost and volume pressure, and is therefore the preferred approach. A fee schedule will need to be agreed by all stakeholders.

While a fee for service model will be effective for funding activity, this model does not reflect a ‘national’ service model, and requirements for some components of the service to be centrally managed and coordinated.

The mixed model, with a programme or coordination fee paid to a lead DHB, has been used in other Services (e.g. National Intestinal Failure Service and Paediatric Rheumatology Service), and is considered suitable to support a national Perinatal Pathology Service provided through more than one DHB.

The mixed funding model would be applied as follows:

- **Activity based funding**, using a fee for service model. Requirements for this include:
  - A memorandum of understanding with DHBs so that the DHB of maternal residence agrees to be invoiced for the post mortem
  - An agreed fee schedule

- A Programme Fee which covers the cost of administering the National Service of $185,000, per annum. This funding would be used to support:
  - the Governance model
  - a National clinical leader (0.1 FTE)
  - a Service Coordinator (1.0 FTE)
  - administrative support (0.5 FTE).

A one off additional amount in 2017/18 of $100,000 would be used to develop training resources, referral pathways, and the quality improvement framework (see Appendix 3 for the Programme Fee breakdown). This work would be lead by the Service Coordinator and supported by the clinical leader and administrator.

**Recommendation 6:**

Funding arrangements for the Service should be reviewed, to ensure they are consistent, meet the costs of providing service, and are not a disincentive for referrers to seek a post mortem or placenta examination.

The preferred funding model is to retain the current fee for service arrangement. This would require:

- A signed memorandum of understanding with DHBs for the provision of perinatal pathology services and agreed fee schedule.
• The fee for service funding model should be supplemented with a modest Programme Fee to allow administration of identified national functions, e.g. service coordination, training and development, governance, clinical leadership. This approach would require Agreement from GMs P&F on the level of programme funded. The Programme Fee would include one off funding in the first year to support the development of referral pathways, quality indicators and training resources.

2.9 Perinatal Pathology Workforce

Pathologists

The 2008 report on Perinatal and Paediatric Pathology Service Provision produced by the PMMRC identified that perinatal pathology services had developed in an opportunistic and piecemeal fashion, with no formalised specialist training in New Zealand. They concluded the Service was dependent upon the interests and availability of suitably trained pathologists. Perinatal pathology shortages were also reported in Australia and the United Kingdom.

While the number of pathologists has improved since the 2008 report, the Perinatal Pathology Service continues to operate with a small, primarily part time workforce that is spread across four centres.

Increasing post mortem rates, while desirable, will place an additional burden upon the existing workforce. The ability to fund additional FTE and then recruit to the new positions may be difficult.

Canterbury DHB has signalled an intent to increase the hours of coverage for their Perinatal Pathology Service, which is currently three days per week. They have identify a suitably qualified pathologist to provide the additional cover, and are currently assessing whether additional FTE is required for the Service.

Wellington’s pathologist is employed by both SCL (Wellington) and Auckland DHB. She has signalled planned retirement in January 2018 and a recruitment plan is required. This presents an opportunity to “size” the role requirements for the Central Region (currently 0.3 FTE), and whether to retain the current employment arrangements for a new pathologist. Based on the number of post mortems completed in Wellington, the suggestion is that additional FTE will be required.

Auckland DHB will have a 0.6 FTE vacancy with the planned retirement, and believes they will be able to fill this vacancy, with at least one suitable candidate known to the Service.

Dunedin’s pathologist provides perinatal pathology under a fee for service arrangement with SCL. It is estimated that around 30 post mortems are completed each year, equating to approximately 0.2 FTE.

Perinatal pathologists are trained in anatomical pathology. As identified above, there is no specific formal perinatal pathology examination or qualification. Training is achieved through identification of interested candidates, and funding them to undertake international fellowships. It is expected these candidates will complete the International Paediatric Pathology Association course in Europe, but this requirement is not part of the Service Specification. Accreditation requirements for perinatal pathologists are being developed, and are included in draft form in Appendix 1.
Attracting registrars with an interest in perinatal pathology has been identified as an issue, with a need to increase the visibility and profile to attract quality candidates to the Service. Health Workforce NZ has confirmed that training in perinatal pathology would be considered post vocational training which they do not fund.

**Mortuary technicians**

Mortuary technicians are employed by the DHB hosting the mortuary. Ministry of Justice funding for coronial services includes some funding of mortuary staff.

Mortuary technicians working in Auckland, Wellington and Christchurch are trained in perinatal post mortems and reconstruction. It is reported that this is unique to these three mortuaries as there is no standard training programme available, and training occurs on site.

It is estimated there are 8-10 mortuary technicians nationally that are able to assist with perinatal post mortems and reconstruction. A more structured training approach would ensure quality standards are consistently achieved and a succession plan for technicians to provide ongoing support for pathologists.

HWNZ is willing to provide undergraduate training for mortuary technicians as part of their Medical Sciences training, if required.

**Recommendation 7:**

A workforce plan is documented, describing accreditation requirements, including:

- the number, location and hours of availability of perinatal pathologists to ensure capacity to deliver equitable access to post mortems across DHB regions, and minimum volumes to maintain competency
- training pre-requisites for completing perinatal post mortems (including coronial which are outside the service)
- a training programme for mortuary technicians to support pathologists

**2.10 Clinical leadership and governance**

The Service operates under the operational and clinical leadership in place in the DHB/provider Laboratory. While this provides a direct link to support to consider/address concerns or issues as they arise, there is likely to be variation in the levels of support in each centre.

There is an informal clinical leadership model within the Perinatal Pathology Service, provided through peer review and mentoring of less experienced staff. This role needs to be formalised and expanded to include Southern DHB, ensuring a consistent peer support framework. Key responsibilities for the national clinical leader will be to:

- Participate in Service governance
- Support clinical service compliance with national/local monitoring requirements, quality standards and achievement of KPI’s for the service and other specifically identified priorities
- Support the implementation of appropriate systems and processes for the accurate reporting of information required by the service
• Work with providers to ensure all perinatal pathologists engaged or to be engaged within the service are suitably qualified, and meet clinical practice requirements
• Organises or coordinates regular case review meetings per year
• Identifies suitably qualified pathologists for future development
• Monitors international developments in paediatric and perinatal pathology and communicates these as appropriate
• Builds relationships with all relevant stakeholders and health professionals nationally and internationally.

The decentralised model of management, leadership and governance limits the ability to take a whole of service overview, with local priorities taking precedence over a national planning and performance approach.

While the existing operational oversight of the Service by each provider should continue, this should be supplemented by Service wide governance.

A clinical leadership and governance framework is recommended with a governance group established that includes representation from key stakeholders within the Service, and representation from interested external parties, including DHB funders, and Service referrers.

**Recommendation 8:**

A clinical leadership and governance framework is established.

- A national governance group should be convened, with terms of reference describing the group’s responsibilities in relation to service provision, improving equity, and ensuring performance indicators are met. Membership of the governance group should include representatives from:
  - the host DHBs (funder and provider arms, as well as a laboratory lead)
  - SCL (as provider of facilities and staff in some sites)
  - the national clinical director for perinatal pathology (when established)
  - a referring DHB General Manager, Planning & Funding
  - a referring clinician (LMC, obstetrician or neonatologist)
  - a family, whānau or consumer representative
  - a member of the PMMRC.

- A national clinical leader position description should be developed describing the expected responsibilities for ensuring clinical and quality standards are in place and being achieved through leadership, mentoring and support. The national clinical leader should be part of the service governance.

### 2.11 Administrative support

Administrative support is provided as part of the Laboratory infrastructure, and is not dedicated for perinatal pathology services. As with operational oversight, the decentralised model can result in different levels of support, and different referral and reporting systems. Administrative support is provided in two areas. Mortuary staff manage the referral and scheduling of a post mortem, while clinical transcriptionists produce the post mortem
reports. In Dunedin, the report is provided by the Pathologist as part of her fee for service, and issued by the Anatomical Pathology team.

Pathologists have reported that inconsistent and limited administrative support hampers the functioning of the service in the following areas:

- Receipt and registering of referrals for a post mortem
- Capture of activity reporting
- Access to tests, results and reports
- Production of reports.

Administrative staff will be required to support standardised capture and reporting of post mortem referrals and activity, to allow assessment of the effectiveness of the Service. In particular the Service should be assessed against effectiveness in reducing inequalities and improving post mortem rates where perinatal mortality remains high. Administration staff also play an important role in ensuring post mortem reports are accessible to referring clinicians.

Some allowance for additional administrative support is recommended as part of the programme funding to support nationally consistent capture and reporting of all activity within the Service, regardless of the location provided.

**Recommendation 9:**

Administrative functions within the service should be reviewed and realigned to ensure pathologists are adequately supported, and that service activity is correctly captured.

### 2.12 Information management

Perinatal post mortem and placenta examination information is entered at the site of examination, and ‘posted’ in the local database. In most cases the report is included in the local clinical repository, although is not currently practice for SCL.

The information is only accessible locally, with regional shared health records not fully implemented. Where a pathologist works across two sites, access is via the local database only. The multiple systems mean that tracking, updating and sharing reports is difficult, and that tissue, slides and blocks may be moved and stored away from the site of the actual post mortem.

A local information management solution is needed to ensure appropriate access to reports and results, as well as provide accurate activity and costing data. This has two components.

**A consistent system for capturing referral data**

A reporting framework should be developed from existing or available data. Data capture should include the following information, which will support development of quality improvement metrics:

- the source of the referral
- the DHB of maternal residence
- the date and time of the referral
- the outcome (i.e accepted or not, and whether scheduled during normal or afterhours)
- the location of the post mortem
- the pathologist providing the post mortem
- the classification to show, at a minimum:
  - stillbirth or termination and if pre or post 20 weeks
  - early or late neonatal
  - paediatric (up to or greater than 1 year)

Quality improvement metrics should be system or clinical outcome based, and contribute to future reduction in inequity, and improvement of perinatal mortality outcomes. The metrics would need to identify post mortems by:

- type (gestation, termination, early or late neonatal and infant),
- region (referring DHB, DHB of maternal residence and location of post mortem)
- maternal age and ethnicity
- time from referral to completion
- the extent to which the post mortem contributed knowledge to cause of death
- the extent to which clinical standards of care are being achieved.

In addition to reporting on post mortem activity and quality improvement outcomes, it is also considered important to provide regular information on reasons a post mortem does not proceed when offered. This has been considered as part of a Ministry of Health survey, but regular, timely information will support effective conversations and potentially lift rates of post mortems.

A mechanism to capture and report on reasons for declining the offer of consent would be desirable. Potentially this could be part of reporting on the offer of consent, or part of a service coordination function.

Options for capturing perinatal pathology activity information include collecting the data locally, using consistent data points and definitions, or developing purchase units for the activity which would have to be reported to the National Non-Admitted Patients Collection (as outlined in the current Tier Two Service Specification).

**A widely accessible clinical data repository**

To facilitate pathologist and referrer access to post mortem reports, a widely accessible clinical data repository is required. This needs to accommodate reports, photographic and diagnostic images and laboratory results.

The long term solution to allow the Service access to information regardless of location is through the National Electronic Health Record, expected to have initial roll out in mid-2018.

In the interim, options to develop or access a shared electronic clinical record should be explored, which leverage on existing Regional IT solutions. Options to maximise access without requiring new IT investment should be considered that will support:

- Best possible access for pathologists to reports and relevant clinical information, regardless of where the post mortem was conducted or the pathologist based
- Best possible access for referrers to the completed report, regardless of the location of the post mortem.

Approaches to be progressed include ensuring reports are distributed and accessible through DHB and regional electronic platforms.
Following discussion with Ministry of Health Technology and Digital Services Directorate, the view is that using Regional Clinical Data Repositories is likely to be the most effective solution. Further work will be required to ensure this potential solution will meet service and referrer needs.

**Figure 8: Required data collection, file transfer and access**

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**Recommendation 10:**
Referral and data management processes are reviewed to ensure data capture of information to support monitoring and reporting of Service activity and performance.

The Tier Two Service Specification should be updated with any purchase units or reporting requirements for capturing of perinatal pathology activity within national collections.

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**Recommendation 11:**
Options to access a shared electronic clinical record should be explored, which leverage on existing Regional IT solutions to support:

- best possible access for pathologists to reports and relevant clinical information, regardless of where the post mortem was conducted or the pathologist based
- best possible access for referrers to the completed report, regardless of the location of the post mortem

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### 3 Improving Access

#### 3.1 Equity, access and outcomes

Perinatal Pathology Service principles are that services are:

- Provided to achieve equity of access
- Culturally sensitive and appropriate for family and whānau
- Offered to all families and whānau that experience a fetal or neonatal death
- Provided with the consent of the family and whānau, free of coercion
- As close to home as possible within the bounds of quality, safety and timeliness
- Meet agreed standards, particularly in post mortem reconstruction.

Key components of a well-functioning service are considered to be:
1. All families and whānau experiencing perinatal mortality where there is an unknown cause are offered a post mortem

2. Post mortem discussions should be conducted by appropriately skilled clinical staff, preferably those with a relationship with the family or whānau; and training should be provided to support this

3. Rates of post mortems should be lifted to at least 50 per cent of perinatal related deaths

4. Post mortems should be provided without delay (95 per cent of post mortems should be completed within two working days, and 90 per cent of pathology specimens should be processed within 10 working days\(^{(\text{x})}\))

5. The family or whānau and cultural needs should be met, and their experience understood

6. Clinical standards of post mortems should be met, including the quality of reconstruction.

PMMRC collects data on the offer of a post mortem, and consent for a post mortem by DHB of maternal residence. This gives a view of equity for both the offer and the provision of a post mortem.

As previously identified, PMMRC have recommended that work is done to investigate the low uptake of post mortem offers, and to understand the reasons for different levels of optimal investigation in DHBs (initially attributed to shortages of perinatal pathologists).

Identifying areas where either the rate of offer of a post mortem, or the rate of consent to proceed, is low will allow more targeted training to improve post mortem rates, and more accurately diagnose cause of death or factors contributing to death. Figure 9, below, displays the relationship between the offer of a post mortem and the completion of optimal investigations. In some cases a post mortem may not be offered, but optimal investigation considered to be completed, on the basis of karyotype or clinical investigation other than post mortems.

In addition to considering rates of offer and consent to a post mortem, DHBs with higher than expected rates of perinatal related mortality might also be considered for improved post mortem outcomes. The PMMRC Tenth Annual report has assessed crude mortality rates in DHBs, and identified that:

- Counties Manukau has had statistically significantly higher rates of perinatal mortality since 2007, and has the highest rate reported by any DHB. Counties Manukau DHB has improved the rate of offer and consent to post mortems in 2014, with both being at or above the national median.

- Northland has significantly higher rates of both fetal and neonatal mortality, although is not statistically significant from the national average for perinatal related mortality. This finding was reported to be suggestive of a lower rate of late termination of pregnancy in Northland. Northland DHB’s rate of offer and consent are both below the national median.

- Bay of Plenty and Waikato DHBS have significantly higher rates of neonatal mortality. Both DHBS are among those rates of consent below the median. Bay of Plenty also has a rate of offer of post mortems below the median.
If DHBs were asked to achieve the median for both offer and post mortems, priority for intervention, training and development would be DHBs with an offer rate of below 95 per cent, and a rate of consent below 49 per cent.

As Figure 9 shows, in some cases the DHB may have a high rate of offer of post mortem, but low rates of consent. There is some volatility in the rates of offer and consent for post mortems from year to year, so an aggregate rate of 3 years would be a more reliable source of information to inform any change intervention.

PMMRC has identified in their Tenth Annual Report (p59) that over a period of time, there is no difference in the proportion of parents and whānau offered a post mortem, by ethnicity, but that Maori and Pacific parents and whānau are less likely to give consent to a post mortem. They speculated on whether the knowledge that Maori and Pacific people may find post mortems a less acceptable practice influences the way health professionals discuss this with the whānau, and whether this, in turn, impacts on consent rates. PMMRC felt that seeking input from whānau that have experienced a death and listening to their stories of being offered post mortem might help inform practice changes.

Figure 9: Perinatal death offered post mortem and optimal investigation - 2014

PMMRC recommended that the Ministry of Health should require DHBs to ensure all providers of maternity services provide support to parents, families and whānau who have experienced perinatal and maternal loss, including providing access to information, counselling and clinical follow up. This requirement is included within the Ministry’s accountability documents for maternity services. Based on findings from the 2015 Survey of Bereaved Women*, DHBs and primary maternity providers manage this well – 114 women were surveyed, and 74 per cent (n=84) were satisfied or very satisfied with the maternity care they received.

The survey of bereaved women that were asked specifically about post mortems had a higher rate of consent or uptake for a post mortem than the overall population. The survey

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* Optimal investigation is defined as post mortem or karyotype confirming congenital abnormality or clinical examination/investigation confirming diagnosis

Source: Tenth Annual Report of the Perinatal and Maternal Mortality Review Committee, 2016, Supplementary Tables and Appendices, p17, Table A22

3.2 Family and whānau support

PMMRC recommended that the Ministry of Health should require DHBs to ensure all providers of maternity services provide support to parents, families and whānau who have experienced perinatal and maternal loss, including providing access to information, counselling and clinical follow up. This requirement is included within the Ministry’s accountability documents for maternity services. Based on findings from the 2015 Survey of Bereaved Women*, DHBs and primary maternity providers manage this well – 114 women were surveyed, and 74 per cent (n=84) were satisfied or very satisfied with the maternity care they received.

The survey of bereaved women that were asked specifically about post mortems had a higher rate of consent or uptake for a post mortem than the overall population. The survey
reported that 82 per cent of women (n=94) were asked if they wanted a post mortem to be carried out to determine the cause of death, with 67 per cent (n=63) deciding to go ahead. The 31 women who decided they did not want a post mortem conducted were asked to identify their reasons for this. Reasons for declining were:

- Twenty of the women who did not want a post mortem, felt that it was not necessary as they already had all of the information they needed regarding the cause of death
- Eight women said they chose not to have a post mortem conducted because they were uncomfortable with the procedure
- Two of the women explained that a post mortem was against their religious or cultural beliefs
- Two women chose not to have a post mortem as they felt the results may not have been conclusive
- One woman, and her husband, did not want to be parted from their babies, as they wanted to spend time with them

This information is useful for maternity providers in ensuring the offer of a post mortem is made within the context of a culturally appropriate and supportive environment, by a skilled maternity provider. The key attributes of the ‘most trusted’ maternity providers were that they:

- were understanding and supportive
- made the women, and family and whānau feel they could be trusted
- used words that could be understood
- appeared to know what they were talking about.

If the Perinatal Pathology Service aims to ensure families and whānau are supported to make an informed decision on whether to proceed with post mortems, then training of maternity staff in supporting families and whānau through the consent process is an essential component of the Service.

A mechanism to implement a training package is would be helpful, similar to the Australasian Donor Awareness Programme (ADAPT) workshops. These are a training module delivered by Organ Donation New Zealand to support intensive care unit staff to have culturally appropriate conversations with the families of potential organ donors.

A family and whānau co-design approach would ensure that there is a factors important to consumers are incorporated, so that the training package can be more effective. This work should also include input from maternity and neonatal providers to ensure all factors taken into account.

Regardless of where families and whānau live, they should have appropriate access to post mortems, with a view to reducing perinatal mortality, particularly in populations most impacted.

**Recommendation 12:**

A training package for referrers should be considered. The training package would need to adopt a family and whānau co-design to incorporate learnings from their experiences. Referrers should also be involved in the design to ensure all clinician perspectives are also considered.
Once developed, training could be delivered to maternity and neonatal providers so that bereaved family and whānau receive information on post mortems that is:

- Easily understood
- Provided in a supportive and culturally appropriate way that does not presuppose the outcome
- Gives confidence that the person offering a post mortem is trustworthy and well informed
- Enables family and whānau to make an informed decision on post mortems.

**Recommendation 13:**
A service coordination function should be considered. The coordinator would:

- Work in partnership with pathologists to develop relationships with referrers
- Provide an interface between the Perinatal Pathology Service and local DHBs or referrers to ensure that interaction with the Service is well managed and that pathologist, and family and whānau needs are identified and met.
- Work with family and whānau where appropriate to facilitate the post mortem process for them.
- Capture and provide information on family reasons for not proceeding with a post mortem to inform improvement work.

The coordinator would focus particularly in DHBs where opportunities to improve outcomes can be achieved through increasing the rate of offer of post mortems, or the rate of consent to a post mortem.

### 4 Implementing Change

#### 4.1 Service Model Implementation Approach

A three phase implementation approach is recommended, which includes:

- Mandate for change - endorsing recommendations, consultation and approval
- Assessment and development of the change package, and documentation related to the National Service implementation (in line with endorsed recommendations)
- Implementing the change – processes and systems are in place and operational.

Prior to implementing any change in the Service Model for Perinatal Pathology Services, the Draft Service Model should be endorsed by the National Services Governance Group to proceed to stakeholder consultation.

The Service Model would then need to be endorsed by DHB funders, and the Ministry of Health executive. If endorsed for implementation, a project approach will be required to implement agreed recommendations.

The second phase of implementation is to convene a working group and develop the documentation and structures required for the national service, prior to implementing the change for the 2017/18 financial year. A summary of the implementation plan, and provisional timeframes are identified below.
### Table 8: Actions to support the implementation of the proposed service configuration

<table>
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<th>No.</th>
<th>Action required</th>
<th>Provisional timeline</th>
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<tbody>
<tr>
<td><strong>Mandate for change</strong></td>
<td></td>
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<tr>
<td>1</td>
<td>Perinatal Pathology Service Model considered and endorsed to proceed to consultation by National Services Governance Group</td>
<td>Oct 2016</td>
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<td>Funding Request for the Programme Funding submitted to GMs Planning &amp; Funding (if endorsed)</td>
<td>Dec 2016</td>
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<td>Consultation with key stakeholders</td>
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<td>3</td>
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<td>1. National Services Governance Group</td>
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<td></td>
<td>2. General Managers Planning &amp; Funding</td>
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<td>3. Director Service Commissioning</td>
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<td>4. Director General of Health</td>
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<td>Project plan completed</td>
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<td>- Deliverables and milestones</td>
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<td>- Risk and issues log</td>
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<td>- Project plan endorsed</td>
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<td>- Technology</td>
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<td>- Infrastructure and equipment</td>
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<td>- Reporting framework established</td>
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</table>
No. | Action required | Provisional timeline
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9 | Support package for referrers and service users:  
   - Service coordination  
   - Referral guidelines, pathways and protocols documented  
   - Consent form revised | Mar-Jun 2017
10 | Training package for obtaining consent developed  
   - Working group, including consumers, formed  
   - Liaison with similar providers to identify key success criteria  
   - Package developed  
   - Delivery approach confirmed | Jul-Oct 2017

### Implementing the change

| No. | Action required | Provisional timeline
--- | --- | ---
11 | National service implemented  
   - Clinical leader appointed  
   - Governance group operational  
   - Reporting against quality indicators commenced  
   - Support package for referrers implemented | July 2017
12 | Delivery approach for training package in place | 

### 4.2 Communication

A high level communication and consultation document will be developed that will identify key stakeholders, and determine the most appropriate method of engaging with each group. Key stakeholders for consultation on the service model for Perinatal Pathology Services are:

- General Managers, Planning and Funding
- Referrers:  
  - Maternity providers (midwives and obstetricians)  
  - Neonatal and paediatric care providers
- Perinatal and Maternal Mortality Review Committee
- Perinatal Pathology staff, including administrative and mortuary staff
- Anatomical Pathology and Laboratory teams
- Patient and family or whanau advocacy groups, e.g. SANDS
- Funeral directors
- Clinical geneticists
- Ministry of Health stakeholders, including the Metabolic Screening Unit
- Ministry of Justice.

### 4.3 Evaluation

A framework for evaluation will be developed as part of the Service Model implementation. The expectation is that two forms of evaluation are undertaken.

#### Process evaluation

The first is a process evaluation, which will assess the extent to which the model has been implemented. The questions to be considered as part of the process evaluation are:

1. To what extent has the service model been implemented?
2. Have all components been delivered?
3. Is the service model achieving the stated improvement objectives, namely does the service model:
   a. Support delivery of the Service
   b. Provide access for family and whānau
   c. Meet quality and safety expectations
   d. Support development of the workforce
   e. Make best use of available funds.
4. Can the service model be fine-tuned to improve efficiency and effectiveness?
5. Are staff, referrers, and family and whānau satisfied with the Service?

The timing of the process evaluation should be within six months of the change being implemented, with an action plan to adjust or revise any components of the model that are not considered to be operating effectively.

**Summative evaluation**

Following implementation, a summative evaluation should be considered, to see if the stated outcomes, particularly quality improvements, have been achieved. The timing of a summative evaluation would need to be considered, but would most likely be 2-3 years after the change is fully implemented.
Appendix 1 – Draft criteria for accreditation as a perinatal pathologist in New Zealand

1. Qualifications
   a. FRCPA or recognised equivalent in anatomical pathology
   b. Attendance of the 5 year IPPA course

2. Work description
   a. Perinatal autopsies (miscarriage, stillbirth, neonatal deaths)
   b. Sudden unexpected infant deaths (to one month of age, and ex-preterm infants)
   c. Second pathologist for cases of non-accidental injury in infants
   d. Placenta examination
      i. Whole organ examination (macro and micro)
      ii. Referral cases (typically slide review)

3. Meetings
   a. Attendance at Australia and New Zealand paediatric group meetings at least once annually (Update / IAP)
   b. International perinatal / paediatric pathology meetings and courses to an average of at least one annually
   c. Attendance of the IPPA Update courses when initial 5 year IPPA course completed
   d. Attendance of the quarterly NZ perinatal pathology group meetings

4. Practice recommendations
   a. Perinatal / paediatric autopsies (Coronial and/or hospital) – 80/1FTE
   b. Placenta examination and reporting for clinical diagnostic purposes – 200/1FTE

5. Multidisciplinary meetings
   a. Attendance and presentation at multiple regular multidisciplinary meetings (mortality, maternal fetal medicine, cardiac, genetic, and neonatal meetings)

6. Teaching
   a. Midwifery staff study days
   b. Medical staff at grand rounds
   c. Pathology registrars
   d. Medical students

7. Oversight
   a. It is expected that the senior members of a centre will support the younger pathologists in that centre with care and generosity in dealing with perceived problems that arise related to work. Oversight may continue for up to 5 years depending on the experience of the new pathologist at the time of joining the team.

8. Mentoring
   a. A mentor should not only be available to discuss case problems, but also to take a wider view of the working environment and issues that may affect the ability to work effectively. There will be one mentor for the service – who will usually be a perinatal pathologist and senior member
Appendix 2 – Proposed Fee Schedule

### Post Mortem Fixed Fee for 2017/18

<table>
<thead>
<tr>
<th></th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pathologist</td>
<td>$1,000</td>
</tr>
<tr>
<td>Mortuary Technician and consumables¹</td>
<td>$350</td>
</tr>
<tr>
<td>Medical secretary</td>
<td>$50</td>
</tr>
<tr>
<td>Routine histology</td>
<td>$250</td>
</tr>
<tr>
<td>Overheads</td>
<td>$1,000</td>
</tr>
<tr>
<td><strong>Total Fixed</strong></td>
<td><strong>$2,650</strong></td>
</tr>
</tbody>
</table>

Fees exclude all transport costs, including return flights, return pick up and delivery of the case by a funeral director and any other transport costs associated with referring the case to a designated provider.

### Placenta Examination Fees

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singleton Placenta = Complexity L5 (less than 10 blocks normal); or</td>
<td>$250</td>
</tr>
<tr>
<td>Twin Placenta = Complexity L6 (more than 10 blocks-normal); or</td>
<td>$450</td>
</tr>
<tr>
<td>Intra-uterine Death = Complexity L7;</td>
<td>$550</td>
</tr>
<tr>
<td>All referrals, per case, plus re-cuts and special stains as below</td>
<td>$300</td>
</tr>
<tr>
<td>MDM attendance, per hour</td>
<td>$200</td>
</tr>
<tr>
<td>Special stain</td>
<td>$60</td>
</tr>
<tr>
<td>Enzyme histochemical stain</td>
<td>$70</td>
</tr>
<tr>
<td>Immunoperoxidase stain, per antibody</td>
<td>$70</td>
</tr>
<tr>
<td>FISH / Cytogenetics</td>
<td>$450</td>
</tr>
</tbody>
</table>
### Appendix 3 – Programme Funding

#### Programme funding

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governance – four meetings per annum</td>
<td>$10,000</td>
</tr>
<tr>
<td>Clinical Leader – 0.1 FTE</td>
<td>$25,000</td>
</tr>
<tr>
<td>Service Coordinator – 1 FTE</td>
<td>$100,000</td>
</tr>
<tr>
<td>National Service administration and data entry (0.5 FTE)</td>
<td>$25,000</td>
</tr>
<tr>
<td>Training for referrers – twice per annum</td>
<td>$5,000</td>
</tr>
<tr>
<td>Printing resources</td>
<td>$5,000</td>
</tr>
<tr>
<td>Travel &amp; accommodation to support service improvement</td>
<td>$15,000</td>
</tr>
<tr>
<td><strong>Annual Programme Funding</strong></td>
<td><strong>$185,000</strong></td>
</tr>
</tbody>
</table>

#### One off funding

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Leader (0.1 FTE)</td>
<td>$25,000</td>
</tr>
<tr>
<td>Resource development</td>
<td>$70,000</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>$5,000</td>
</tr>
<tr>
<td><strong>Annual Programme Funding</strong></td>
<td><strong>$100,000</strong></td>
</tr>
</tbody>
</table>
References


