Appendix B: PMMRC recommendations for government departments and agencies 2007–2019

The table below is a subset of recommendations yet to be implemented and made by the PMMRC since its first report in 2007. The recommendations are aimed at government departments and agencies. The reports referenced in the third column are all available on the Health Quality & Safety Commission's website at: www.hqsc.govt.nz/our-programmes/mrc/pmmrc/publications-and-resources.

It is vital that government ensures adequate funding and infrastructure to enable DHBs and clinicians to implement PMMRC recommendations. While there has been significant work towards implementing recommendations, further priority must be given to them because a number of preventable deaths continue to occur.

This table is one of five (see also Appendices C–F), each directed towards different areas of maternity services and governing bodies. Government departments and agencies need to view the recommendations below alongside the other tables.

Importantly, we must all continue to support the work of our colleagues and organisations in owning these responsibilities. Together, we can make the greatest and most valuable impact towards changing the outcomes of women and their babies, families and whānau.

		PMMRC recommendations yet to be fully implemented
Perinatal mortality	Antenatal care/screening	**URGENT RECOMMENDATION**: All women should commence maternity care before 10 weeks, for the following reasons: • opportunity to offer screening for congenital abnormalities, sexualy transmitted infections, family violence, and maternal mental health: and to refer as appropriate • education around nutrition (including appropriate weight gain), smoking, alcohol and drug use, and other at risk behaviours • recognition of underlying medical conditions with referral for secondary care as appropriate • identification of vunerable women at increase risk of perinatal related mortality. *(Fifth Annual Report, 2011)*
		As smoking is a significant modifiable risk factor for both stillbirth and neonatal death, every effort must be made to encourage women to engage in effecttive smoking cessation programmes prior to, during and after pregnancy *(Eighth Annual Report, 2014)*

		URGENT RECOMMENDATION: We strongly recommend to the Government/Ministry for Primary Industries that folic acid fortification of bread be mandatory to reduce both mortality and serious morbidity from neural tube defects *(Thirteenth Annual Report, 2013)*
		Strategies to improve awareness of antenatal care services and increase access among women who are isolated for social, economic, cultural or language reasons should be developed *(Third Annual Report, 2009)*
	Guidelines	The PMMRC recommends a review of epilepsy in the Guidelines for Consultation with Obstetric and Related Medical Services (Referral Guidelines). *(Ninth Annual Report, 2015)*
	Data collection	The Ministry of Health should continue to support and fund DHBs and lead maternity carers (LMCs) in their collection of complete perinatal mortality statistics. *(Third Annual Report, 2009)*
		As a matter of urgency, the Ministry of Health update the National Maternity Collection (MAT), including the ethnicity data as identified by the parents in the birth registration process *(Eleventh Annual Report, 2017 and Ninth Annual Report, 2015)*
		The national Maternity Collection (MAT), linked to birth registration ethnicity data, be available for use by the mortality review committees. Access to these data would allow PMMRC to report the independent associations between ethnicity, maternal age, socioeconomic status and perinatal related death, adjusting for smoking and maternal body mass index *(Seventh Annual Report, 2013)*
		The PMMRC recommend the Ministry of Health: • urgently require DHBs to provide complete and accurate registration data to the MAT dataset (as required of LMCs providing services to pregnant women in order to receive funding for those services). Specifically, this should include women who present for birthing at DHB facilities without previous antenatal LMC registration and women who are provided primary maternity care by DHB maternity services • require that the MAT dataset include complete registration and antenatal data on live and stillborn babies from 20 weeks gestation (including terminations for pregnancy). *(Eleventh Annual Report, 2011)*
	Mothers less than 20 years	Maternity and primary care providers need to be aware of the increasing risk of perinatal mortality for mothers under 20 years of age in New Zealand. Inequity in perinatal mortality for babies born to mothers under 20 years of age needs to be actively addressed. The PMMRC recommends the Ministry of Health and DHBs: • develop, in consultation with young mothers, acceptable and safe methods for mothers under 20 years of age to access and engage with care in order to achieve equitable health outcomes

		• identify and adequately resource evidence-based solutions to address risks for mothers under 20 years of age, paying attention to smoking cessation, screening and treatment for infections, screening for fetal growth restriction, and providing adequate information about the causes and symptoms of preterm labour • consider how they can support LMCs caring for mothers aged under 20 years. *(Twelfth Annual Report, 2018)*
	Preterm birth	The PMMRC recommends the Ministry of Health establish a multidisciplinary working group to review current evidence for implementation of a preterm birth prevention program such as that implemented in Western Australia, taking care to: • identify and adequately resource evidence-based solutions • ensure equitable access to screening and/or treatment for priority populations • ensure that priority populations have a voice in the development of health policy, process and practice in order to achieve equitable health outcomes • ensure that the outcomes of any implemented program, including equity of access, are evaluated. *(Twelfth Annual Report, 2018)*

		Birth in a tertiary centre is associated with improved outcomes for preterm babies at the lower limits of viability (prior to 25 weeks gestation). The PMMRC recommends the Ministry of Health leads the development of a national consensus pathway for the care of women in preterm labour or requiring delivery prior to 25 weeks gestation. The PMMRC recommends this pathway includes:
		• ensuring that all groups of women (irrespective of ethnicity, age, socioeconomic status or place of residence) are offered and provided the same level of care
		• strategies for secondary units for management of women in threatened or early preterm labour, or who require delivery, prior to 25 weeks gestation. Including:
		  ○ administration of corticosteroids and magnesium sulphate
		  ○ timely transfer from primary and secondary units to tertiary units
		  ○ management of babies inadvertently born in their units at the lower limits of viability
		• ensuring that priority populations have a voice in the development of health policy, process and practice in order to achieve equitable health outcomes
		• guidance on monitoring that care provision is equitable by ethnicity, age, socioeconomic status and place of residence. *(Twelfth Annual Report, 2018)*

		URGENT RECOMMENDATION: There is a need to recognise the independent impact of socioeconomic deprivation on perinatal death, specifically on preterm birth, which after congenital abnormality is the leading cause of perinatal death. Addressing the impact of poverty requires wider societal commitment as has been highlighted in the recent

		health select committee report on improving child health outcomes. The PMMRC supports the implementation of the recommendations. The report can be found at https://www.parliament.nz/en/pb/sc/reports/document/50DBSCH_SCR6007_1/inquiry-into-improving-child-health-outcomes-and-preventing *(Eight Annual Report, 2014)*
	SUDI prevention	The PMMRC recommends that the Ministry of Health and DHBs have a responsibility to ensure that midwifery staffing ratios and staffing acuity tools: • enable active observation of mothers and babies who are undertaking skin-to-skin contact in the postnatal inpatient period • allow for the identification of, and additional needs of, mothers who have increased risk factors for sudden unexpected death in infancy (SUDI). *(Twelfth Annual Report, 2018)*
Neonatal encephalopathy		The Neonatal Encephalopathy Working Group (NEWG) and PMMRC support the development of a guideline for the investigation and management of neonatal encephalopathy *(Eighth Annual Report, 2014)*
Maternal mortality	Maternal mental health	**URGENT RECOMMENDATION:** The PMMRC recommends that a Maternal and Infant Mental Health Network is funded by the Ministry of Health and that the network then determine an achievable work stream by the end of 2018 detailing work to be completed by the end of 2020, to include as potential areas of priority: a. a stocktake of current mental health services available across New Zealand for pregnant and recently pregnant women to identify both the strengths of services and gaps or inequity in current services and skills in the workforce b. a national pathway for accessing maternal mental health services, including: • cultural appropriateness to ensure of service access and provision • appropriate screening • care for women with a history of mental illness • communication and coordination. *(Twelfth Annual Report, 2018)*
		That a Perinatal and Infant Mental Health Network be established to provide an interdisciplinary and national forum to discuss perinatal mental health issues *(Tenth Annual Report, 2016)*
		A comprehensive perinatal and infant mental health service should include: • screening and assessment • timely interventions including case management, transition planning and referrals • access to respite care and specialist inpatient care for mothers and babies

		• consultaiton and liaison services within the health system and with other agencies for example, primary care and termination of pregnancy services. *(Sixth Annual Report, 2012)*
	Mortality review committees Māori caucus relating to maternal mental health	Improve awareness and responsiveness to the increased risk for Māori women. *(Eleventh Annual Report, 2017)*
Support for parents, families and whānau		**URGENT RECOMMENDATION:** The Ministry of Health should resource, support and facilitate the development of a national perinatal bereavement pathway with key stakeholders, including governmental and non-governmental organisations, to ensure high-quality, appropriate and equitable care for all. *(Thirteenth Annual Report, 2019)*
		Develop and improve the provision of perinatal pathology services with regards to accessibility, training and appropriateness and ensure quality and equitable services are available across the country. *(First Annual Report, 2007 and Second Annual Report, 2008)*

Appendix C: PMMRC recommendations for district health boards 2007–2019

The table below is a subset of recommendations yet to be implemented made by the PMMRC since its first report in 2007. These recommendations are aimed towards district health boards (DHBs). The reports referenced in the third column are all available on the Health Quality & Safety Commission's website at: www.hqsc.govt.nz/our-programmes/mrc/pmmrc/publications-and-resources.

While there has been significant work towards implementing recommendations, further priority must be given to them because a number of preventable deaths continue to occur.

This table is one of five (see also Appendices A and D–F), each directed towards different areas of maternity services and governing bodies. It is important that DHBs view the below recommendations alongside Appendix E recommendations for health practitioners. This is to ensure that DHBs, through good systems and processes, can effectively support clinicians to implement PMMRC recommendations.

Importantly, we must all continue to support the work of our colleagues and organisations in owning these responsibilities. Together, we can make the greatest and most valuable impact towards changing the outcomes of women and their babies, families and whānau.

		PMMRC recommendations yet to be fully implemented
		DHBs should demonstate that they have co-developed and implemented models of care that meet the needs of mothers of Indian ethnicity. *(Thirteenth Annual Report, 2019)*
		That all maternity care providers identify women with modifiable risk factors for perinatal related death and work individually and collectivley to address these strategies to address modifiable risk factors include: • Improving update of periconceptual folate • Pre-pregnancy care for known medical disease such as diabetes • Access to antenatal care • Accurate height and weight measurement in pregnancy with advice on ideal weight gain • Prevention and appropriate management of multiple pregnancy • Smoking cessation • Antenatal recognition and management of threatened preterm labour • Following evidence based recommendations for indications for induction of labour • Advice to women and appropriate management of decreased fetal movements.

		All DHBs should report the availablitiy and uptake of relevant services in their annual clinical report to ensure that these strategies are embedded and to identify areas for improvements. *(Ninth Annual Report, 2015)*
		URGENT RECOMMENDATION: There is a need to recognise the independent impact of socioeconomic deprivation on perinatal death, specifically on preterm birth, which after congenital abnormality is the leading cause of perinatal death. Addressing the impact of poverty requires wider societal commitment as has been highlighted in the recent health select committee report on improving child health outcomes. The PMMRC supports the implementation of the recommendations. The report can be found at https://www.parliament.nz/en/pb/sc/reports/document/50DBSCH_SCR6007_1/inquiry-into-improving-child-health-outcomes-and-preventing *(Eighth Annual Report, 2014)*
		For the management of suspected ectopic pregnancies, the PMMRC recommends DHB gynaecology services have: • Clear pathways/processess for primary care regarding early pregnancy management. Clear hospital guidelines for assessment of the collapsed woman of reproductive age that include the differential diagnosis of ectopic pregnancy. Collapse due to ectopic pregnancy requires rapid assessment and surgical management. *(Thirteenth Annual Report, 2019)*
		Strategies to improve awareness of antenatal care services and increase access among women who are isolated for social, economic, cultural or language reasons should be developed. *(Third Annual Report, 2009)*
	Communication and coordination	Pregnant women who are admitted to hospital for medical conditions not related to pregnancy need to have specific referral pathways for perinatal care *(Fifth Annual Report, 2011)*
	Education	**URGENT RECOMMENDATION:** The PMMRC recommends that regulatory bodies require cultural competency training of all individuals working across all areas of the maternity and neonatal workforce. Training should address awareness of, and strategies to reduce and minimise the impact of, implicit bias and racism. *(Twelfth Annual Report, 2018)*
		The PMMRC recommends that DHBs provide free interdisciplinary fetal surveillance education for all clinicians involved in intrapartum care on a triennial basis. This is to be provided free for staff and at no cost to LMCs. The PMMRC encourages the Midwifery Council, the New Zealand College of Midwives (NZCOM) and Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) to work with DHBs in the implementation of this recommendation:

		• this education includes risk assessment for babies throughout pregnancy as well as intrapartum observations. The aims include strengthening of supervision and support to promote professional judgement, interdisciplinary conversations and reflective practice. *(Thirteenth Annual Report, 2019 and Ninth Annual Report, 2015)*
		Offer education to all clinicians so they are proficient at screening women, and are aware of local services and pathways to care for the following: • family violence • smoking • alcohol and other substance use. *(Ninth Annual Report, 2015)*
		All clinicians involved in the care of pregnant women should undertake regular multidisciplinary training in management of obstetric emergencies. *(Tenth Annual Report, 2016 and Fifth Annual Report, 2011)*
		Maternity and primary care providers need to be aware of the increasing risk of perinatal mortality for mothers under 20 years of age in New Zealand. Inequity in perinatal mortality for babies born to mothers under 20 years of age needs to be actively addressed. The PMMRC recommends the Ministry of Health and DHBs: • develop, in consultation with young mothers, acceptable and safe methods for mothers under 20 years of age to access and engage with care in order to achieve equitable health outcomes • identify and adequately resource evidence-based solutions to address risks for mothers under 20 years of age, paying attention to smoking cessation, screening and treatment for infections, screening for fetal growth restriction, and providing adequate information about the causes and symptoms of preterm labour consider how they can support LMCs caring for mothers aged under 20 years. *(Twelfth Annual Report, 2018)*
	Mothers less than 20 years	Maternity services for teenage mothers need to address this increased risk by the provision of services that specifically meet their needs, paying attention to: • Commencing maternity care before 10 weeks • Smoking cessation prevention of preterm birth (including smoking cessation, sexually transmitted infection screening and treatment, urinary tract infection screening and treatment) and screening for fetal growth restricition using regular fundal height measurement on customised growth charts

		• Providing appropriate antenatal education *(Fifth Annual Report, 2011)*
		DHBs make available appropriate information, including appropriate counselling for parents, families and whānau about birth outcomes prior to 25 weeks gestation to enable shared decision making and planning of active care or palliative care options. *(Twelfth Annual Report, 2018)*
	Preterm birth	DHB maternity services audit the rates of antenatal corticosteroid administration, including repeat doses when indicated, to mothers of neonates live born at less than 34 weeks gestation, including autditing whether administation is equitable by ethnicity, DHB of residence, and maternal age. *(Twelfth Annual Report, 2018)*
		The PMMRC recommends that LMCs and DHBs ensure that every baby will have access to a safe sleep place on discharge from the hospital or birth unit, or at home, that is their own place of sleep, on their back and with no pillow. If they do not have access to a safe sleep place, then a wahakura or Pēpi-Pod must be made available for the baby's use prior to discharge from hospital. *(Twelfth Annual Report, 2018)*
	SUDI prevention	The PMMRC recommends that DHBs have a responsibility to ensure that midwifery staffing ratios and staffing acuity tools: • Enable active observation of mothers and babies who are undertaking skin-to-skin contact in the postnatal inpatient period. Allow for the identification of, and additional needs of, mothers who have increased risk factors for sudden unexpected death in infancy (SUDI). *(Twelfth Annual Report, 2018)*
		Clinicans and LMCs should be encouraged to collect accurate ethnicity details at the time of booking. *(Fourth Annual Report, 2010)*
	Data collection	It is recommended that mothers who experience Intrapartum stillbirth, Intrapartum deaths of babies at term without obvious congenital abnormality are encouraged to have full investigation, including a post-mortem examination *(Third Annual Report, 2009)*
	Post-mortem	All neonatal encephalopathy (NE) cases need to be considered for a Severity Assessment Code (SAC) rating. Neonatal hypoxic brain injury resulting in permanent brain damage (or permanent and severe loss of function) should be rated as SAC 1. Those who received cooling with as yet undetermined outcome should be rated as SAC 3. *(Thirteenth Annual Report, 2019)*
		All babies with NE, regardless of severity, should have a multidisciplinary discussion about whether to refer to the Accident Compensation Corporation (ACC) for consideration for cover as a treatment injury, using

Neonatal encephalopathy		ACC's Treatment Injury Claim Lodgement Guide. Parents should be advised that not all treatment claims are accepted. All clinicians involved in the care of pregnant women should undertake regular multidisciplinary training in management of obstetric emergencies. *(Tenth Annual Report, 2016 and Fifth Annual Report, 2011)*
		DHBs with rates of neonatal encephalopathy significantly higher than the national rate review or continue to review, the higher rate of neonatal encephalopathy in their area and identify areas for improvement. *(Twelfth Annual Report, 2018 and Eleventh Annual Report, 2017 and Tenth Annual Report, 2016)*
		URGENT RECOMMENDATION: Widespread multidiscipinary education is required on the recognition of neonatal encephalopathy with a particular emphasis on babies with evidence of neonatal asphyxia (eg, babies who required resuscitation) for all providers of care for babies in the immediate postpartum period. This should include: • Recognition of babies at increased risk by their history • Signs suggestive of encephalopathy Knowledge of clinical pathways to induce cooling if required *(Ninth Annual Report, 2015)*
		All DHBs should undertake local review of cases of neonatal encephalopathy to identify area for improvement in care including adequacy of resuscitation and cooling. *(Eighth Annual Report, 2014)*
		Women with pre-existing medical conditions (such as epilepsy, hypertension or mental health) should have individualised pre-conceptual counselling about their condition and the medication they are taking. Health professionals providing care to these women need to communicate the importance of continuing their medication in pregnancy, if appropriate, and to advise women to seek early medical review. *(Seventh Annual Report, 2013)*
Maternal mortality	Antenatal care/screening	Women with complex medical conditions require a multidisciplinary approach to care, often across more than one DHB. Each woman requiring such care should be assigned a key clinician to facilitate her care. *(Third Annual Report, 2009)*
		Women who are unstable or clinically unwell should be cared for in the most appropriate place within each unit in order for close observation to occur. When observations are abnormal, clear documentation, early review by a senior clinican and development of a detailed management plan are required. *(Eighth Annual Report, 2014)*

	Communication and coordination	Pregnant women who are admitted to hospital for medical conditions that are not related to pregnancy need to have specific referral pathways for perinatal care. *(Fifth Annual Report, 2011)*
		Women with serious pre-existing medical conditions require a multidisciplinary management plan for the pregnancy, birth and postpartum period. This plan must be communicated to all relevant caregivers. *(Eighth Annual Report, 2014)*
		A comprehensive perinatal and infant mental health service includes: • Screening and assessment • Timely interventions including case management, transition planning and referrals • Access to respite care and specialist inpatient care for mothers and babies. Consultation and liaison services within the health system and with other agencies for example, primary care and termination of pregnancy services. *(Sixth Annual Report, 2012)*
	Maternal mental health	Termination of pregnancy services should undertake holistic screening for maternal mental health and family violence and provide appropriate support and referral. *(Sixth Annual Report, 2012)*
		At first contact with services women should be asked: • Are you currently receiving, or have you ever received treatment for a serious mental illness such as severe depression, bipolar disorder, schizophrenia or psychosis? • Have you ever had treatment from a psychiatrist or specialist mental health team in the past? • Do you have a family history of mental illness including perinatal mental illness? Women with a previous history of serious affective disorder or other psychoses should be referred in pregnancy for psychiatric assessment and management even if they are well. Regular monitoring and support is recommended for at least three months following delivery. *(Fifth Annual Report, 2011)*
		Improve awareness and responsiveness to the increased risk for Māori women. *(Eleventh Annual Report, 2017)*
	Mortality review committees Māori caucus relating to maternal mental health	All providers of maternity, obstetric, mental health and maternal mental health services should improve their systems, guidelines and professional development to ensure that they are responsive to the identified increased risk for Māori women. *(Eleventh Annual Report, 2017)*
		Māori women who have a history of serious mental illness and are currently well should be referred to specialist mental health services for a mental health birth plan, and monitored closely by their maternity care provider +/- mental health services. Where such a woman has a miscarriage, the GP should be notified

		immediately and an explicity process for early follow up that includes a review of mental health status agreed with GP. *(Eleventh Annual Report, 2017)*
		Where Māori women exhibit symptoms suggesting serious mental illness or distress, an urgent mental health assessment, including consultant psychiatrist review and consultation with perinatal mental health services, on the same day these symptoms are first noted should be undertaken. *(Eleventh Annual Report, 2017)*
		Primary care (GPs, FPA), LMCs, TOP services, alcohol and drug services, and secondary and tertiary providers of maternity, obstetric, mental health, and maternal mental health services should improve their systems, guidelines and professional development to ensure that they are responsive to the identified increased risk for Māori women. *(Eleventh Annual Report, 2017)*
		Communication and coordination between primary care (GPs, FPA), LMCs, TOP services, alcohol and drug services, and secondary providers of maternity, obstetric, mental health, and maternal mental health services should be improved and enhanced using a variety of means including but not limited to case management, integrated notes systems, and electronic transfer of information. *(Eleventh Annual Report, 2017)*
		The PMMRC recommends that DHBs with rates of perinatal related mortality and neonatal encephalopathy significantly higher than the national rate review, or continue to review, the higher rater of mortality in their area and idenitfy areas for improvement. *(Twelfth Annual Report, 2018 and Eleventh Annual Report, 2017 and Tenth Annual Report, 2016)*
Auditing		**URGENT RECOMMENDATION:** DHBs should monitor key maternity indicators by ethnic group to identify variations in outcomes. They should then improve areas where there are differences in outcome. *(Thirteenth Annual Report, 2019)*
		Further research is warranted to understand the higher rate of perinatal related mortality in the Counties Manukau region. *(Third Annual Report, 2009)*

Appendix D: PMMRC recommendations for health organisations, colleges and regulatory bodies 2007–2019

The table below is a subset of recommendations yet to be implemented made by the PMMRC since its first report in 2007. These recommendations are aimed towards health organisations, colleges and regulatory bodies. The reports referenced in the third column are all available on the Health Quality & Safety Commission's website at: www.hqsc.govt.nz/our-programmes/mrc/pmmrc/publications-and-resources.

While there has been significant work towards implementing recommendations, further priority must be given to them because a number of preventable deaths continue to occur.

This table is one of five (see also Appendices A–C and E–F), each directed towards different areas of maternity services and governing bodies. It is important that health organisations view the below recommendations alongside Appendix E recommendations for health practitioners. This is to ensure that health organisations, through good systems and education, can effectively support clinicians to implement PMMRC recommendations.

Importantly, we must all continue to support the work of our colleagues and organisations in owning these responsibilities. Together, we can make the greatest and most valuable impact towards changing the outcomes of women and their babies, families and whānau.

		PMMRC recommendations yet to be fully implemented
Perinatal mortality	*Antenatal care/screening*	The PMMRC recommends that DHBs provide free interdisciplinary fetal surveillance education for all clinicians involved in intrapartum care on a triennial basis. This is to be provided free for staff and at no cost to LMCs. The PMMRC encourages the Midwifery Council, the New Zealand College of Midwives (NZCOM) and Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) to work with DHBs in the implementation of this recommendation: • This education includes risk assessment for babies throughout pregnancy as well as intrapartum observations. • The aims include strengthening of supervision and support to promote professional judgement, interdisciplinary conversations and reflective practice. *(Thirteenth Annual Report, 2019 and Ninth Annual Report, 2015)*
		The PMMRC endorses all recommendations of the audit of congenital abnormalities. Key recomendations from the audit include: • all primary care providers (if first contact of a pregnant woman with the health service) should offer first trimester screening and facilitate expeditious registration • achieving optimal use of preconceptual folate by young women in New Zealand requires a policy for foritification of bread • the National Screening Unit review the cost benefit of the current algorithms in the first and second trimester screening programme, so they are calibrated for maximal sensitivitiy for all chromosomal abnormalities • the National Screening Unit review false negative screening tests • the New Zealand National Maternal Fetal Medicine Network regularly audit time from referral to review to ensure that the majority of women are seen within seven days as recommended. *(Seventh Annual Report, 2013)*
	Education	**URGENT RECOMMENDATION:** The PMMRC recommends that regulatory bodies require cultural competency training of all individuals working across all areas of the maternity and neonatal workforce. Training should address awareness of, and strategies to reduce and minimise the impact of, implicit bias and racism. *(Twelfth Annual Report, 2018)*
Neonatal encephalopathy		**URGENT RECOMMENDATION:** Widespread multidiscipinary education is required on the recognition of neonatal encephalopathy with a particular emphasis on babies with evidence of neonatal asphyxia (eg. babies who required resuscitation) for all providers of care for babies in the immediate postpartum period. This should include: • Recognition of babies at increased risk by their history • Signs suggestive of encephalopathy

		• Knowledge of clinical pathways to induce cooling if required. *(Ninth Annual Report, 2015)*
		The Neonatal Encephalopathy Working Group (NEWG) and PMMRC support the development of a guideline for the investigation and management of neonatal encephalopathy *(Eighth Annual Report, 2014)*
Maternal mortality	*Mortality review committees Māori caucus relating to maternal mental health*	**URGENT RECOMMENDATION:** Improved awareness and responsiveness to the increased risk for Māori women *(Eleventh Annual Report, 2017)*
		URGENT RECOMMENDATION: Primary care (GPs, FPA), LMCs, TOP services, alcohol and drug services, and secondary and tertiary providers of maternity, obstetric, mental health, and maternal mental health services should improve their systems, guidelines and professional development to ensure that they are responsive to the identified increased risk for Māori women. *(Eleventh Annual Report, 2017)*

Appendix E: PMMRC recommendations for health practitioners involved in care of pregnant women 2007–2019

The table below is a subset of recommendations yet to be implemented made by the PMMRC since its first report in 2007. These recommendations are aimed towards health practitioners involved in the care of pregnant women. The reports referenced in the third column are all available on the Health Quality & Safety Commission's website at: www.hqsc.govt.nz/our-programmes/mrc/pmmrc/publications-and-resources.

While there has been significant work towards implementing recommendations, further priority must be given to them because a number of preventable deaths continue to occur.

This table is one of five (see also Appendices A–D and F), each directed towards different areas of maternity services and governing bodies. It is important that government departments, agencies and DHBs fund, develop and maintain effective systems and processes to enable health practitioners to implement these recommendations.

Importantly, we must all continue to support the work of our colleagues and organisations in owning these responsibilities. Together, we can make the greatest and most valuable impact towards changing the outcomes of women and their babies, families and whānau.

		PMMRC recommendations yet to be fully implemented
Perinatal mortality	Antenatal care/ screening	That all maternity care providers identify women with modifiable risk factors for perinatal related death and work individually and collectively to address these. Strategies to address modifiable risk factors include: • Improving update of periconceptual folate • Pre-pregnancy care for known medical disease such as diabetes • Access to antenatal care • Accurate height and weight measurement in pregnancy with advice on ideal weight gain • Prevention and appropriate management of multiple pregnancy • Smoking cessation • Antenatal recognition and management of threatened preterm labour • Following evidence based recommendations for indications for induction of labour

		• Advice to women and appropriate management of decreased fetal movements. All DHBs should report the availability and uptake of relevant services in their annual clinical report to ensure that these strategies are embedded and to identify areas for improvements. *(Ninth Annual Report, 2015)*
		URGENT RECOMMENDATION: All women should commence maternity care before 10 weeks, for the following reasons: • Opportunity to offer screening for congenital abnormalities, sexualy transmitted infections, family violence, and maternal mental health: and to refer as appropriate • Education around nutrition (including appropriate weight gain), smoking, alcohol and drug use, and other at risk behaviours • Recognition of underlying medical conditions with referral for secondary care as appropriate • Identification of vunerable women at increase risk of perinatal related mortality. *(Fifth Annual Report, 2011)*
		If small for gestational age (SGA) is confirmed by ultrasound at term, timely delivery is recommended. *(Sixth Annual Report, 2012)*
		Pregnant women should consult their midwife, general practitioner or specialist services as soon as symptoms of influenza like illness develop or if other family members are unwell to allow: • Referral to hospital for assessment if there are symptoms of respiratory compromise due to influenza that is, worsening shortness of breath, espeically at rest, productive cough, pleuritic chest pain, haemoptysis • Prescription of antiviral medication. *(Fifth Annual Report, 2011*)
	Communication and coordination	Pregnant women who are admitted to hospital for medical conditions not related to pregnancy need to have specific referral pathways for perinatal care. *(Fifth Annual Report, 2011)*
	Data collection	Clinicans and LMCs should be encourage to collect accurate ethnicity details at the time of booking. *(Fourth Annual Report, 2010)*
	Education	All clinicians involved in the care of pregnant women should undertake regular multidisciplinary training in management of obstetric emergencies and resuscitation. *(Tenth Annual Report, 2016 and Fifth Annual Report, 2011)*
		Maternity services for teenage mothers need to address this increased risk by the provision of services that specifically meet their needs, paying attention to: • Commencing maternity care before 10 weeks

		• Smoking cessation prevention of preterm birth (including smoking cessation, sexually transmitted infection screening and treatment, urinary tract infection screening and treatment) and screening for fetal growth restricition using regular fundal height measurement on customised growth charts • Providing appropriate antenatal education. *(Fifth Annual Report, 2011)*
	SUDI prevention	The PMMRC recommends that LMCs and DHBs ensure that every baby will have access to a safe sleep place on discharge from the hospital or birth unit, or at home, that is their own place of sleep, on their back and with no pillow. If they do not have access to a safe sleep place, then a wahakura or Pēpi-Pod must be made available for the baby's use prior to discharge from hospital. *(Twelfth Annual Report, 2018)*
Neonatal encephalopathy		All neonatal encephalopathy (NE) cases need to be considered for a Severity Assessment Code (SAC) rating. Neonatal hypoxic brain injury resulting in permanent brain damage (or permanent and severe loss of function should be rated as SAC 1. Those who received cooling with as yet undermined outcome should be rated as SAC 3. *(Thirteenth Annual Report, 2019)*
		For all babies diagnosed with NE a multidisciplinary discussion about whether to refer to the Accident Compensation Corporation (ACC) for consideration for cover as a treatment injury, using ACC's Treatment Injury Claim Lodgement Guide, should be arranged. Parents should be advised that not all treatment claims are accepted. *(Thirteenth Annual Report, 2019)*
		If neonatal encephalopathy is clinically suspected in the immediate hours after birth, early consultation with a neonatal paediatrician is recommended in order to avoid a delay in commencing cooling. *(Sixth Annual Report, 2012)*
		Cord gases should be performed on all babies born with an Apgar 7 at one minute. *(Sixth Annual Report, 2012)*
Maternal mortality	Antenatal care/screening	Women with serious pre-existing medical conditions require a multidisciplinary management plan for the pregnancy, birth and postpartum period. This plan must be communicated to all relevant caregivers. *(Eighth Annual Report, 2014)*
		Women who are unstable or clinically unwell should be cared for in the most appropriate place within each unit in order for close observation to occur. When observations are abnormal, clear documentation, early review by a senior clinican and development of a detailed management plan are required. *(Eighth Annual Report, 2014)*
		Women with pre-existing medical conditions (such as epilepsy, hypertension or mental health) should have individualised pre-conceptual counselling about their condition and the medication they are taking. Health

		professionals providing care to these women need to communicate the importance of continuing their medication in pregnancy, if appropriate, and to advise women to seek early medical review. *(Seventh Annual Report, 2013)*
		Pregnant women who are admitted to hospital for medical conditions not related to pregnancy need to have specific referral pathways for perinatal care *(Fifth Annual Report, 2011)*
	Communication and coordination	Women with complex medical conditions require a multidisciplinary approach to care, often across more than one DHB. Each woman requiring such care should be assigned a key clinician to facilitate her care. *(Third Annual Report, 2009)*
	Maternal mental health	A comprehensive perinatal and infant mental health service should include: • Screening and assessment • Timely interventions including case management, transition planning and referrals • Access to respite care and specialist inpatient care for mothers and babies. Consultation and liaison services within the health system and with other agencies for example, primary care and termination of pregnancy services. *(Sixth Annual Report, 2012)*
		Termination of pregnancy services should undertake holistic screening for maternal mental health and family violence and provide appropriate support and referral. *(Sixth Annual Report, 2012)*
		At first contact with services women should be asked: • Are you currently receiving, or have you ever received treatment for a serious mental illness such as severe depression, bipolar disorder, schizophrenia or psychosis • Have you ever had treatment from a psychiatrist or specialist mental health team in the the past? • Do you have a family history of mental illness including perinatal mental illness? Women with a previous history of serious affective disorder or other psychoses should be referred in pregnancy for psychiatric assessment and management even if they are well. Regular monitoring and support is recommended for at least three months following delivery. *(Fifth Annual Report, 2011)*
	Mortality review committees Māori caucus relating to	Improved awareness and responsiveness to the increased risk for Māori women. *(Eleventh Annual Report, 2017)*
		Communication and coordination between primary care (GPs, FPA), LMC's TOP services, alcohol and drug services, and secondary providers of maternity, obstetric, mental health and maternal mental health services should be improved and enhanced using a variety of means including but not limited to case management, integrated notes systems, and electronic transfer to information. *(Eleventh Annual Report, 2017)*

	maternal mental health	Primary care (GPs, PA) LMCs, TOP services, alcohol and drug services and secondary and tertiary providers of maternity, obstetric, mental health and maternal mental health services should improve their systems, guidelines and professional development to ensure that they are responsive to the identified increased risk for Māori women. *(Eleventh Annual Report, 2017)*
		Where Māori women exhibit symptoms suggesting serious mental illness or distress, an urgent mental health assessment, including consultant psychiatrist review and consultation with perinatal mental health services, on the same day these symptoms are first noted should be undertaken. *(Eleventh Annual Report, 2017)*
		Comprehensive assessment of risk factors for all Māori women, including those seeking a TOP, should be undertaken at diagnosis of pregnancy and/or on first presentation for antenatal care. *(Eleventh Annual Report, 2017)*
		Māori women who have a history of serious mental illness and are currently well should be referred to specialist mental health services for a mental health birth plan, and monitored closely by their maternity care provider +/- mental health services. Where such a woman has a miscarriage, the GP should be notified immediately and an explicit process for early follow up that includes a review of mental health status agreed with GP. *(Eleventh Annual Report, 2017)*
		The referring doctor of women who undergo a TOP is expected to provide a free post-TOP follow up consultation 10–14 days after the procedure. The referring doctor should actively follow up Māori women referred for TOP to ensure this consultation is completed and review mental health status during this consultation *(Eleventh Annual Report, 2017)*
		Clinicans are reminded that mental illness can deteriorate very rapidly in pregnancy and the postnatal period, and that suicide is the most common cause of maternal death in New Zealand at this time *(Fifth Annual Report, 2011)*

Appendix F: PMMRC recommendations for researchers 2007–2019

The table below is a subset of recommendations yet to be implemented made by the PMMRC since its first report in 2007. These recommendations are aimed towards researchers. The reports referenced in the third column are all available on the Health Quality & Safety Commission's website at: www.hqsc.govt.nz/our-programmes/mrc/pmmrc/publications-and-resources.

While there has been significant work towards implementing recommendations, further priority must be given to them because a number of preventable deaths continue to occur.

This table is one of five (see also Appendices A–E), each directed towards different areas of maternity services and governing bodies. While the below recommendations have been made directly to researchers, there are many recommendations included in Appendices B–E, where barriers to implementation could generate valuable research. It is worthwhile viewing the below recommendations alongside the other appendices.

Importantly, we must all continue to support the work of our colleagues and organisations in owning these responsibilities. Together, we can make the greatest and most valuable impact towards changing the outcomes of women and their babies, families and whānau.

PMMRC recommendations relating to research
Collectively, we need to increase our understanding of the reasons for adverse outcomes in certain groups. For example, within Aotearoa/New Zealand and internationally, we have an incomplete understanding of what puts women and babies of Indian ethnicity at increased risk. *(Thirteenth Annual Report, 2019)*
Research on the best model of care for teenage pregnant mothers in New Zealand should be undertaken with a view to reducing stillbirth and neonatal death. *(Fifth Annual Report, 2011)*
Key stakeholders in provision of health and social services to women at risk should work together to identify existing research on: • Reasons for barriers to engagement with maternity care • Interventions to address barriers to engagement with maternity care. *(Fifth Annual Report, 2011)*

Possible causes for the increase in perinatal-related death of babies born to Pacific women, Māori women, women under the age of 20 and over the age of 40, and women who live in areas of high socioeconomic deprivation should be researched. This information is necessary in order to develop appropriate strategies to reduce these possibly preventable deaths. *(Fourth Annual Report, 2010)*
Strategies to improve awareness of antenatal care services and increase access among women who are isolated for social, economic, cultural or language reasons should be developed. *(Third Annual Report, 2009)*