

briefing

Date 7 November 2014
Security Level Confidential
To Hon Anne Tolley, Minister for Social Development
Subject **Vulnerable Children Predictive Modelling: Design for Testing and Trialling**

Purpose

1. This paper summarises the advice of the cross-agency Predictive Modelling (PM) Working Group, and the Vulnerable Children's Board's (VCB) recommendations in response to that advice, on testing and trialling use of PM as part of the Children's Action Plan.

Executive Summary

2. The design phase for the operational use of PM has been progressing since March 2014. A cross-agency Predictive Modelling (PM) Working Group (Ministry of Social Development, Ministry of Health, Te Puni Kōkiri, Children's Action Plan Directorate) considered a number of potential applications of PM.
3. The Working Group agreed that applications that could be progressed towards trialling were:
 - Application 1: Use in triage
 - Application 2: Use in early identification, subject to capacity
 - Application 3: Use in determining neighbourhood-level service needs.
4. Extensive discussion on the original intention of the use of PM for early identification and then referral concluded that it is appropriate to defer operational use of PM in early identification until there is capacity to respond appropriately to the children referred, and there is stronger evidence that it could add value in early identification and improve outcomes.
5. This has led to a proposal for testing and trialling in three phases:
 - Phase 1: Completion of technical design by December 2014
 - Phase 2: Parallel streams of testing and piloting by the end of 2016
 - Phase 3: Large scale trial of an operational PM starting by the beginning of 2017
6. CAPPE and VCB have agreed to proceed now with Phase 1 and preparation for Phase 2, with a report back in December 2014.

7. The further testing in Phase 2 consists of a 2 year prospective observational study. VCB is awaiting further feedback and ethical advice on this study in the December 2014 report back, before agreeing Phase 2 should proceed. The VCB has expressed concern about the length of time needed for Phases 2 and 3 and the resources that will be required.
8. The Working Group has advised that the timeframes outlined for the prospective study and follow up trialling are typical for the development and validation of such tools.
9. The Children's Action Plan Expert Advisory Group (EAG) has endorsed and commended the progress and detail of this work to date, although it also noted that if the AISA works well to promote early and comprehensive information sharing about vulnerable children, the PM may not provide sufficient additional benefit in terms of earlier identification of risk to justify the costs.
10. The Advisory Expert Group on Information Sharing's (AEGIS) view is that the trial work on PM should proceed, as long as the ethical issues arising from a prospective study can be managed.
11. The cost of Phase 1 will consist of personnel resourcing (e.g. MSD Insights MSD, Ministry of Health and Te Puni Kōkiri). The cost of the design for Phase 2 will include service design work, IT costs and the development and delivery of training resources. These will be delivered within baselines.
12. VCB will report back to you in December 2014 with recommendations on whether to proceed to Phase 2 and 3 of a PM trial.

Recommendations

13. It is recommended that you:
 - a. **note** that the Vulnerable Children's Board (VCB) has agreed to proceed to the next phase of the Predictive Modelling work (referred to as Phase 1 in the body of the report);

b. **note** that VCB has expressed concerns about both the ethical risks of trialling PM and proposed timing of the next phases:

- ethical risks - information about a very high risk child may sit in the system but never be requested or acted on
- timing - Phase 1 will be completed by the end of 2014, Phase 2 by mid-2017 and Phase 3 by mid-2018 with results at longer follow-up intervals available in successive years.

Sue Mackwell, National Children's Director

Date

Hon Anne Tolley, Minister for Social Development

Date

Background

14. On 24 September 2012, as part of the package of decisions associated with the release of the White Paper for Vulnerable Children (the White Paper), Cabinet agreed to the introduction of predictive modelling to assist professionals to identify and assess children potentially at risk of abuse or neglect, subject to a feasibility study and trialling [CAB Min (12) 34/9 refers].
15. The White Paper noted that predictive modelling (PM) based on administrative data already held by Government shows promise as part of a strategy to prevent maltreatment from occurring. It also acknowledged that the use of PM in the context of child maltreatment is untried, carries ethical risks, and warrants careful and staged development and trialling.
16. On 19 February 2014, CAPPE:
 - a. agreed to advance to a design phase to lay the groundwork for trialling predictive modelling as part of the operation of the new Children's Teams;
 - b. noted that at the completion of the design phase in June 2014, CAP will report back with detailed advice on proceeding to trial, including the final technical form of the trial model, arrangements for the maintenance and updating of the model, and how the model should be trialled and evaluated.
17. On 31 March 2014, Ministers noted that at the completion of the predictive modelling design phase in June 2014, VCB will decide whether it is appropriate to go to trial, and will report to the Joint Ministers (including the Minister of Internal Affairs) to seek approval, if needed, to include births data [CBC Min (14) 1/5 refers].
18. Three high-level potential applications of PM that could be tested and trialled were outlined to CAPPE on 2 July. These were:
 - Application 1: Use in triage
 - Application 2: Use in early identification, subject to capacity
 - Application 3: Use in determining neighbourhood-level service needs
19. More detail on these applications and potential benefits and risks of each are set out in Appendix 1.
20. CAPPE asked that further work be done on options for concurrent testing and trialling, to be reported back to a meeting later in July. That further work was taken to CAPPE on 30 July. CAPPE's advice was provided to the VCB on 6 August.
21. This paper summarises the advice that was provided to CAPPE and the VCB, and the VCB's recommendations in response to that advice.

Considerations informing the proposed approach

Insufficient certainty at this time about whether benefits of Application 2 (use in early identification) outweigh the risks

22. In developing the proposal, the Working Group was concerned to ensure that any significant risks are mitigated by appropriate implementation strategies, or outweighed by the potential benefits, before any use of PM in early identification.
23. The Working Group's view is that, given the context into which the PM would be introduced, there is not currently sufficient certainty on this matter at this time.
24. In particular, a PM used in early identification would:
 - a. refer children and their families and whānau into a system for which the benefits are as yet unknown - it is important for the work of the Children's Team to become better embedded, for early learnings from the pilot teams to be put into practice, and for positive impacts to be established before a PM is used to proactively refer children;
 - b. offer uncertain benefits in identifying children who might not otherwise be identified and prioritised early. The child protection environment is changing rapidly. The Vulnerable Pregnant Woman initiatives working in many DHBs, heightened awareness as a result of the Children's Action Plan, and other new systems being introduced under the CAP may mean that PM adds little value in early identification;
 - c. risk referring children before there is sufficient capacity to serve the needs of children and their families and whānau, or sufficient services that are acceptable to families and whānau.

The need for new work on guidelines for operational use and user testing to support Application 1 (use in triage)

25. Work to date has focussed on the technical feasibility and ethics of PM. To support use in triage, development and testing of guidelines is needed in order to assess whether PM can be successfully integrated into triage decision making. Feedback from front-line practitioners indicates that this will be a key component of testing and trialling.

The need for new work to incorporate births data to allow potential for possible over-identification of Māori and other sub-populations of children to be monitored and addressed

26. The Working Group is concerned to ensure that testing and trialling has a strong focus on monitoring and addressing possible over-identification of Māori and other sub-populations of children. This requires new work to incorporate births data (which is the best source of information on ethnicity, and allows risk to be considered among children not known to CYF or supported by benefits). Proposed timeframes reflect the lead-in time required for this.

Proposed approach

27. The Working Group recommends deferring operational use of PM in early identification (Application 2) until there is capacity to respond appropriately to the

children referred, and there is stronger evidence that it could add value in early identification and improve outcomes.

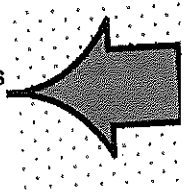
28. The Working Group proposes the following next three phases for testing and trialling use of PM in triage and for consolidating evidence on the degree to which it could add value in early identification.
29. The work would proceed in phases and would be a joint undertaking of the CAP directorate, Te Puni Kōkiri, MSD and the Ministry of Health. Findings at each phase would inform decisions on whether and how to progress to the next.

Phase 1 - Completion of technical design

30. Feasibility study and model development to date have focused on use of PM in early identification to generate new referrals as this was the proposed application of PM outlined in the White Paper for Vulnerable Children.
31. Model development has also been focussed on a model that could be used for early identification of infants who are high priority for services.
32. In the Working Group's advice of 2 July it was noted that a minority of referrals are expected to relate to infants. However, testing and trialling focussed on a model that could be used in prioritisation decision-making for very young children (aged under two) is recommended, because:
 - a. It provides a well-defined group with whom to test whether benefits of using a PM outweigh the risks and whether PM can be successfully integrated into professional decision making;
 - b. Around the time of birth is one of the few points at which administrative information for all children can readily be brought together at present with the inclusion of births data (extending to a wider age range would increase time required for technical design by an estimated six months as it would require feasibility study for new data linkages);
 - c. The risk of serious harm due to abuse or neglect is highest in the first years of life.
33. Completion of technical design work will include the following:
 - a. Strengthening of data linkage systems and testing of sensitivity to the data linkage approach;
 - b. Consideration of possible modifications to tailor models for use in triage. For example, for some children for whom triage decisions are made, information on previous CYF contact for the child themselves could potentially strengthen the predictions;
 - c. New work to assess and consider measures to address possible over-identification of Māori and other sub-populations of children (such as Pacific children, children in families already known to CYF, children supported by benefits). As noted, shares of real harm are uncertain. This assessment can only be made using shares of recorded contact with CYF, recorded maltreatment findings, or other recorded harm as benchmarks;

- d. Assessment of predictive accuracy based on retrospective model validation at different thresholds for defining high, medium and low priority (This will include an assessment of accuracy in predicting poor child health outcomes based on a re-examination of the feasibility study research data).

34. The Working Group proposes that initial testing proceed based on a linkage with births information under research exceptions to the Privacy Act. Any linkage of births information for pilot testing in an operational context should await finalisation of the AISA currently being developed to support the work of the CAP.



35. Phase 1 (incorporating births information under research exceptions to the Privacy Act) is estimated to be completed early in 2015. The Working Group will report back to CAPPE in December 2014 with a progress report on the new modelling work, and by February 2015 will report whether the new modelling work shows sufficient predictive accuracy in retrospective testing to justify proceeding further. The Working Group will also advise on how any over-identification of population sub-groups, relative to shares of recorded harm, will be managed.

Phase 2 – Two parallel streams of testing and piloting

36. If there is agreement to continue to proceed at the end of Phase 1, Phase 2 would involve two parallel streams of testing and piloting over a two year period.

37. Stream 1 - Prospective observational testing: All model testing to date has been carried out with historical research data and with research data linkages. This stream would apply the model developed in Phase 1 in real time.

38. The PM score would be calculated at birth for a known cohort of children and then these children's outcomes and service contacts observed. This observational study would require ethics committee approval, and would be carried out under research exceptions to the Privacy Act and would involve no operational use of the PM. A research proposal is currently in preparation for submission for ethics committee approval in mid-November.

|| Talk to me first!
AT.

39. The aims would be to ensure that predictive accuracy in the 2013 feasibility study could be matched in a contained application of the tool. This testing would also allow resolution of inevitable technical difficulties before any "go live", and assessment of the scale of potential benefits in early identification.

40. The study would take two years to complete. Given the rarity of the outcomes the PM seeks to identify, this is the minimum period recommended for assessing predictive accuracy, i.e. two years allows sufficient follow-up time to assess whether children identified by the PM as at high risk of an adverse outcome/s did in fact suffer that outcome.

|| Not on my watch!
These are children not lab rats.
AT.

41. Observational cohort studies begin with individuals who are exposed or not exposed to a factor (PM score) and then the outcomes for the different groups are evaluated. Observational cohort studies are an appropriate study design when:

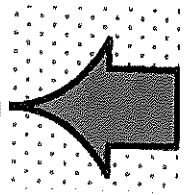
- a. there is good evidence to suggest an association between an exposure and an outcome;

- b. the interval between exposure and development of the outcome is relatively short to minimize loss to follow-up; and
 - c. the outcome is relatively common. Cohort designs such as this can yield incidence rates as well as relative risks, and cohort studies may be able to infer causality due to the temporal nature of the study design.
42. Careful monitoring of the cohorts is required by an oversight group to assure clinical safety. Typically such designs have a well observed group of individuals who are monitored for adverse events, and the study is terminated if one group has (predetermined) significantly poorer outcomes than the other. See reference below¹.
43. This time period would also allow the database of infants who had been risk scored to build so that eventually, with an AISA to support operational use in place, it could be queried for all children aged under two.
44. Stream 2 – user guidelines, user testing and pilot testing for use in triage: This stream of work would involve three sequential stages:
- a. Development of guidelines and training materials for how PM is to be used alongside professional judgment in triage decision making, and how to mitigate the potential for unintended impacts on practice outlined in Appendix 2. The Working Group proposes that an international expert and local practitioners be engaged to assist with this work;
 - b. User testing based on these guidelines and training materials. User testing would be undertaken using real historic cases of triage decisions. The testing would assess whether PM information used in conjunction with professional judgment leads to better decisions, with the benefit of hindsight informing the assessment of what would have constituted the best decision in each case. User testing would inform further modifications to guidelines and training materials;
 - c. Pilot testing application of PM in triage in an operational triage setting. Pilot testing would be on a small scale and aim to assess whether PM can be successfully integrated into front-line decision making and associated risks successfully mitigated, and whether there appear to be benefits to vulnerable children from the approach.
45. Pilot testing could take place in the Hub, or in advance of the Hub by making PM information able to be requested to inform Child Youth and Family's (CYF) triage of children who have been notified to them. It could also be tested at the point of Children's Teams' triage at intake of children referred to them.
46. Further detailed planning for the Phase 2 streams of work is currently under way. The Working Group has sought a post-design ethical assessment of the planning by initial PM ethics reviewers (Tim Dare and authors of the assessment of ethical concerns for Māori). Health and Disability Committee Ethics Review may also be required if potentially identifiable health information is to be used without consent as part of the observational testing or as part of user or pilot testing.

Stop this immediately & talk to me!
AT.

¹ <http://bjp.rcpsych.org/content/191/50/s78.full>

47. The Working Group will also consult with the Children's Action Plan Expert Advisory Group and the Office of the Chief Science Advisor.
48. An ethical risk associated with observational testing and pilot testing PM in triage is the identification of very high risk with no response – information about a very high-risk child may sit in the system but never be requested or acted on. This risk is being addressed, and will need to be considered as part of ethical review.
49. The report back to CAPPE in December 2014 will include an update on this planning, including results of ethical assessments of use in triage (including the risk of identification of very high risk with no response) and proposals to mitigate ethical risks in the observational testing and in pilot testing PM in triage.



Phase 3 – Large scale trial of an operational PM

50. If there is agreement to continue to proceed at the end of Phase 2, Phase 3 would involve a formal impact evaluation.
51. Phase 3 trialling would:
 - a. assess the effectiveness, and cost effectiveness, of PM, in combination with the Children's Team service response, in preventing child maltreatment from occurring;
 - b. assess whether unintended outcomes occur and their scale, and evaluate management of ethical risks.
52. The trial would involve a randomised controlled trial or other robust design. Planning and ethical review for this phase would commence at the beginning of 2017, conditional on indications of promise in Phase 2.
53. Decisions on whether to trial use of PM in early identification, use in triage, or a combination of the two would be taken at that time.
54. Towards the end of Phase 2, work would be done to re-assess the likely balance of benefits and risks of using PM in early identification. This work would be informed by Phase 2 results, the overall evaluation of the Children's Teams, the availability of effective and accessible interventions at that time, and available mechanisms for mitigating risks outlined in Appendix 1.

Children's Action Plan Expert Advisory Group (EAG) views

55. The EAG endorsed the progress and detail of this work to date on proposed trial options, noting the importance of being clear on the design, purpose and limitations of PRM and the predictive accuracy of a PRM score. The EAG supported the decision not to use it as an early identification tool at this time. EAG noted that there would be a need for caution around the reliability of data informing the model (e.g. CYF findings in respect of prior notifications).
56. EAG members considered the need to be cautious on ethical interventions, and queried the possibility of a plan to connect clinical research (e.g. domestic violence and siblings) to the data. The EAG noted that if the AISA works well to promote early and comprehensive information sharing about vulnerable children, the PM may not

provide sufficient additional benefit in terms of earlier identification of risk to justify the costs.

Advisory Expert Group on Information Sharing (AEGIS) view

57. The AEGIS view is that the trial work on the PM should proceed. At their last meeting they discussed the PM and felt that trialling needed to occur. They were mindful of the fact that ethical issues still needed to be resolved including how the PM would be used in practice on a regular basis.

*// I want
to meet
and
talk with
them
again!
AT.*

Vulnerable Children's Board views

58. At its meeting on 6 August 2014, the VCB noted the cross-agency Working Group had identified a three-phased approach to PM trial design, with a report back to CAPPE on the results of Phase 1 and preparation for Phase 2 in December 2014. The three phases are:

- a. Completion of technical design by December 2014;
- b. Parallel streams of testing and piloting by the end of 2016;
- c. Large scale trial of an operational PM starting by the beginning of 2017

59. Specifically, VCB noted and agreed that:

- a. Phase 1 technical design work be undertaken to develop and validate models that could be applied to children aged under two, for completion by the end of 2014;
- b. testing and trialling a model that could be used in triage for children aged under two is recommended because:
 - i. it provides a well-defined group for testing the approach;
 - ii. this is one of the few points at which administrative information for all children can readily be brought together at present through linking with births data (extending to a wider age range would increase the time required for technical design by an estimated six months as it would require feasibility study for new data linkages);
 - iii. the risk of serious harm due to abuse or neglect is highest in the first years of life;
 - iv. there is a general acceptance by health and social sectors that this is an appropriate use of PM data;
- c. technical design for initial testing would proceed based on a linkage with births data under research exceptions to the Privacy Act;
- d. the Working Group report back to CAPPE and VCB in December 2014 on:
 - i. whether the Phase 1 technical design work shows sufficient predictive accuracy to support proceeding further;
 - ii. advice on how any over-identification of Maori and other sub-populations of children relative to their shares of known harm will be managed;
 - iii. detailed planning for Phase 2 if there is agreement to proceed;

60. In addition, VCB noted:

- a. the significant time and resource commitment to get the trial under way;
- b. that Phase 1 involves resources from the Ministry of Social Development and Ministry of Health;
- c. that the Children's Action Plan Expert Advisory Group (EAG) endorsed and commended the progress and detail of this work to date, although it was also noted that if the AISA works well to promote early and comprehensive information sharing about vulnerable children, the PM may not provide sufficient additional benefit in terms of earlier identification of risk to justify the costs;
- d. that the Advisory Expert Group on Information Sharing's (AEGIS) view is that the trial work on PM should proceed;
- e. that there are potential overlaps between the PM work and proposed testing of intake decision making as part of the Modernising Child, Youth and Family project and that MSD will work with the CAP Directorate to ensure appropriate alignment between the governance, funding, design and potential operation of these two projects.

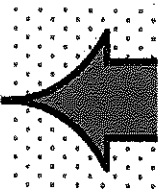
61. VCB queried the long timeframes for Phase 2, in particular to observe the results of the proposed Prospective Study and noted that timeframes will be reviewed as work progresses.

62. VCB was advised that:

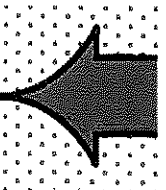
- a. ethics approval would be sought before Phase 2 proceeds;
- b. the modelling work would inform Ministers' requirements in relation to having good data and information available for policy development and decision-making.

Timings and links to other work

63. Phase 1 would be complete by the end of the 2014 calendar year. Phase 2 would be complete by mid-2017. One year follow-up results would be available from Phase 3 by mid-2018 with results at longer follow-up intervals available in successive years. Ministry of Health clinicians advise that these are typical time frames for the development and validation of such tools.



64. Note that one of the initiatives funded in the latest Budget, as part of the Modernising Child, Youth and Family programme, is the trial of advanced analytics tools at intake to inform triage decisions. There are potential overlaps between this work and the possible trial of PM as part of the CAP. MSD will work with the CAP Directorate to ensure appropriate alignment of the governance, funding, design and operation of these projects.



There are also considerable links to the Budget 2015 work - we need to coordinate all this asap to avoid duplication AT.

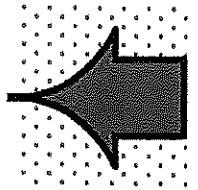
Timeline

	2014	2015	2016	2017	2018 →
Phase 1	Initial Technical Design (R)	Operational Technical Design (O)			
Phase 2	Planning	Preparative observational testing (R)		Pilot Testing (O)	
		User Guidelines (R)	User Testing (R)		
Phase 3				Planning	Large Scale Trial (O)
					One year results

(R) based on research data linkages under Research exceptions to the Privacy Act
(O) based on operational data linkages under an AISA

Application 3: Use in determining neighbourhood-level service needs

65. The Working Group recommends researching models for use in determining neighbourhood-level service needs. With this application PM information could be used to help guide geographical service placement and funding decisions.



66. This application of PM does not need to be trialled, but should be subject to validation of the predictive validity of the models (against, for example, benchmarks for child wellbeing such as B4School Check measures), and compared with the New Zealand Deprivation Index 2013.

Costings

67. The cost of Phase 1 will consist of personnel resourcing (e.g. Insights MSD, Ministry of Health and Te Puni Kōkiri). The cost of the design for Phase 2 will include service design work, IT costs and the development and delivery of training resources. These will be delivered within baselines.

68. Note that these are sunk costs that cannot be recouped if the decision is made at the end of initial phases to not proceed further.

69. Detailed costings for Phase 2 and indicative costs for a Phase 3 trial will be included in the December 2014 report back.

is funding agreed on phase? who has sign-off? AT

So why aren't they talking with Police who use similar modeling to identify the most vulnerable neighbourhoods for Policing AT.

Recommendations

70. It is recommended that you:

note that the Vulnerable Children's Board (VCB) has agreed to proceed to the next phase of the Predictive Modelling work (referred to as Phase 1 in the body of the report);

note that VCB has expressed concerns about both the ethical risks of trialling PM and proposed timing of the next phases.

Appendix 1

High-level potential applications:

<p><i>Application 1: Use in triage</i></p> <p>MSD operates a PM that, on request from an authorised person and for an already referred child, provides an estimate of priority for intensive targeted preventative assistance and information on the factors that informed that priority estimation, to inform the triage decision for that child.</p> <p>PM information is used alongside other information provided by the referrer or sought from other parties, to inform a professional judgement about the appropriate pathway for the child and their family: referral to CYF, a Children's Team, an NGO service provider, universal services (e.g. health, education or social services), or no further action.</p>
<p><i>Application 2: Use in early identification, subject to capacity</i></p> <p>MSD operates a PM that identifies newborn children who are high priority for intensive targeted preventative services. When the Children's Team has the capacity and services to consider new cases, it receives referrals from the PM via the Hub and considers these alongside other referrals.</p>
<p><i>Application 3: Use in determining neighbourhood-level service needs</i></p> <p>MSD periodically produces a research PM that identifies geographical areas with high numbers of new-born children who are high priority for intensive targeted preventative services. There is no disclosure of PM information for an individual child.</p>

Potential benefits:

Application 1 Use in triage	Application 2 Use in early identification, subject to capacity	Application 3 Use in determining neighbourhood service needs
<i>Improved decision making:</i>		
<p>Evidence suggests that a model based on empirical evidence can provide a better assessment of risk of future harm than professional judgement.</p> <p>PM, used in conjunction with professional judgement, has the potential to help better decisions to be made about which children and communities should be prioritised for the offer of Children's Team (CT) services.</p> <p>Better decisions about service prioritisation could enable scarce early intervention and preventive resources to be strategically focussed where they can be most effective, and could help improve outcomes for vulnerable children.</p>		
<i>Other:</i>		
<p>May help improve early identification of already referred children who should potentially be offered CT services. An early offer of preventive services may prevent downstream harm.</p> <p>May provide a "safety net" offer of service in respect of already referred children who might otherwise not be identified and prioritised early.</p> <p>May offer efficiency gains in triage as PM summarises information from a range of systems and about a range of individuals associated with the child.</p> <p>Efficiency gains may allow case-worker resources to be more focussed on working with high-risk cases, rather than spread thinly assessing large volumes of referrals.</p>	<p>May help improve early identification of children in the population who should potentially be offered CT services. An early offer of preventive services may prevent downstream harm.</p> <p>May provide a "safety net" offer of service in respect of children in the population who might otherwise not be identified and prioritised early.</p>	<p>May be more useful than NZDep in assisting with geographical service placement and funding decisions related to child maltreatment prevention because it can be tailored to the outcomes of concern.</p> <p>Could support targeted community-level child maltreatment prevention initiatives which show promise. Services available to all members of a community may be more acceptable to families and whānau and may be experienced as non-stigmatising.</p>

Potential risks:

Application 1 Use in triage	Application 2 Use in early identification, subject to capacity	Application 3 Use in determining neighbourhood service needs
<i>The scale of benefits is uncertain and may be limited:</i>		
<p>Evidence of the effectiveness of CTs in preventing harm is yet to be generated. PM would be being used as part of a wider strategy for which the benefits are unknown.</p> <p>There is an 'opportunity cost' risk of harm from investing in PM rather than investing in frontline intervention services.</p>		
Whether PM will improve decision making in practice is unknown	<p>Whether PM helps identify children who might not otherwise be identified and prioritised early is uncertain.</p> <p>Heightened awareness, the Vulnerable Pregnant Woman initiatives working in many DHBs and other new systems being introduced with the CAP may mean that PM adds little value in early identification.</p>	Whether PM will improve on other possible service allocation guides (eg. NZDep, CYF volumes) is unknown.
<i>There are limits to predictive accuracy:</i>		
<p>Inevitable that some children who go on to be maltreated will not be identified as high risk by PM – no model is perfect.</p> <p>True accuracy in predicting risk of harm is unknowable because maltreatment can be hidden.</p> <p>Research to date on accuracy in identifying children who will become known to CYF is encouraging, but model performance in a practical application is yet to be tested.</p> <p>Potential for errors in the linking of identities to gather information that informs the score.</p> <p>Potential for unwarranted over-prediction for some population groups (Māori children, children in families already known to CYF).</p>		Not all vulnerable children are in areas with high numbers and/or density of vulnerable children – predictive accuracy as a service allocation aid needs to be tested.
<i>Unintended impacts on practice:</i>		
<p>May lead to unwarranted escalation of concerns (where correct low clinical assessment of risk, high PM score).</p> <p>May lead to unwarranted downgrading of concerns (where correct high clinical assessment of risk, low PM score).</p> <p>May lead to over-reliance on PM (clinical assessment may not be as thorough as it would be in the absence of PM).</p> <p>May make decision making more complex if the decision maker struggles to reconcile the risk score with the information they observe for the child, family or whānau.</p>		
<i>Insufficient capacity to serve, or a lack of services that are effective and acceptable to families and whānau:</i>		



<p>Potential to increase the volume of cases being triaged to CTs. There may not be capacity to serve the needs of these families and whānau.</p>	<p>It is unclear whether CTs would ever be in a position to signal capacity to consider new cases.</p> <p>Risk that services offered will be ineffective, and that an unintended consequence of early identification will be increased removal into care as a result.</p>	
<p><i>Unintended impacts on relationships of trust; practitioner resistance:</i></p>		
<p>PM information would be generated without consent, use in triage or early identification is without consent, and other information gathering to decide whether to offer service to the family is without consent.</p> <p>There is a risk that this could undermine relationships of trust between practitioners and families and whānau.</p> <p>There is potential for CT practitioners to avoid or resist considering referrals to them informed by PM information as a result.</p>	<p>N/a – there is no “live” practical application of PM</p>	
<p><i>Privacy risks:</i></p>		
<p>Need to balance the need to limit dissemination of individuals' private and sensitive information with the need to enable decision makers to understand and critically appraise PM information.</p>	<p>N/a – there is no “live” practical application of PM</p>	
<p><i>Stigma, and the risk that vulnerable families and whānau will avoid services or move to avoid identification:</i></p>		
<p>May stigmatise population groups who have a high representation among those identified at the highest risk (Māori, children of benefit recipients, children in families with a CYF history).</p>		
<p>May stigmatise an individual child, family or whānau.</p> <p>However risk of added stigma is lowered because PM information is only used if a concern has already been raised about a child, and in a situation where information gathering about the case occurs in any case.</p>	<p>May stigmatise an individual child, family or whānau.</p>	<p>May stigmatise a community.</p>



<i>Identification of very high risk with no response - information about high risk may sit in the system but never be requested:</i>		
Eg. cases where a concern never gets raised, or PM information is not requested.	Eg. cases where the CT does not have capacity to receive a referral.	N/a – there is no "live" practical application of PM
<i>Potential for public and media concern:</i>		
High – relating to failure to act when have knowledge of very high risk Moderate – relating to use of data without consent Moderate – relating to surveillance	High – relating to failure to act when have knowledge of very high risk High – relating to use of data without consent High – relating to surveillance	Low