

Fetal Alcohol Spectrum Disorder in New Zealand

A Report for the Public Health Unit of Taranaki District Health Board

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*“Preventing FASD and supporting those affected by it is everyone’s business. [...] We want every child to have the best possible start – not to start their lives on the back foot”.*<sup>1</sup>

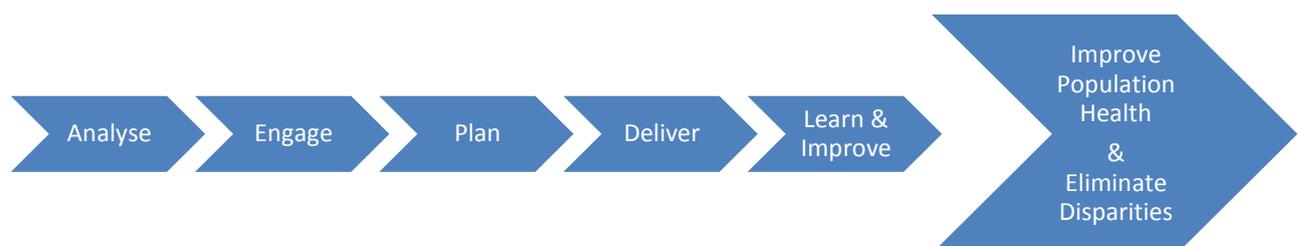
- Peter Dunne

## Introduction

Fetal alcohol spectrum disorder (FASD) is an umbrella term for four disorders linked to alcohol use during pregnancy: fetal alcohol syndrome (FAS), partial fetal alcohol syndrome, alcohol-related neurodevelopmental disorder, and alcohol-related birth defects.<sup>2</sup> Rates of FASD vary throughout the world and can be influenced by ethnic, cultural, geographical, and socio-economic factors as well as the methods by which FASD is surveilled.<sup>2</sup> In New Zealand, the rate of FASD has been purported to be approximately 1% or 1 per 100 live births, though this has not been confirmed.<sup>3</sup> It has been described as an ‘invisible disability’, in part due to the significant range of the manifestations of FASD. These include growth restriction, developmental delay, difficulties with speech and language acquisition, issues with hearing and vision, social and behavioural difficulties, poor academic achievement, mental health concerns, problematic alcohol and substance use, and increased rates of contact with the justice system and incarceration.<sup>2</sup>

Concerns are being heightened around FASD as new research conveys evidence around the significant personal and societal harms of alcohol use during pregnancy. One of the features of concern is that FASD is a life-long diagnosis; one that can have an increased burden of disease and societal consequences if proper supports are not introduced early in the disorder’s trajectory.<sup>3</sup> A research article published earlier this year estimates the loss of productivity in 2013 in New Zealand related to FASD-attributable morbidity and premature mortality to be \$49 million NZD to \$200 million NZD.<sup>3</sup>

FASD is a multifactorial disorder with deeply engrained social and cultural aspects. It has been described as a ‘wicked problem’; a problem for which the solution is very difficult or seemingly impossible to achieve. Problems such as this are often evolving and thus difficult to define, include interconnected issues (eg. the problem is linked with other problems), are socially complex and do not fall under the jurisdiction of a single organization, have a pronounced economic burden, and require sustained changes in human behaviour.<sup>4</sup> Taranaki District Health Board (TDHB) has created a ‘Wicked Problem Toolkit’ (see below and appendix A) which lays out a method for addressing wicked problems.<sup>5</sup>



The first step in the toolkit is to analyze the problem; this includes defining the problem in the local area, mapping out to causal pathway to try and grasp the big picture, and then

identifying stakeholders, the current strategy in place, high risk populations, and up-to-date evidence about effective interventions.<sup>5</sup>

The New Zealand Ministry of Health published an action plan earlier this year in which they outline a plan to address FASD over the next three years.<sup>6</sup> The aim of this report is to lay out an analysis of the problem using the TDHB toolkit with research to support the implementation of a local plan in Taranaki aligned with the Ministry of Health (MOH) plan. There are two key areas of focus: preventing FASD and reducing the health inequities associated with FASD.

## Information Gathering

### **Literature**

A review of current literature was conducted to gain an up-to-date understanding of the background of FASD and new directions that research was taking. Articles were selected for review to identify trends and evolving evidence around prevention of FASD, supportive interventions, and reduction of associated inequities.

### **Māori Community Members**

A presentation was created based on some of the above research and delivered at a monthly hui held at maraes in Parihaka, Taranaki on October 18<sup>th</sup> and 19<sup>th</sup>, 2016. The aim of the presentation was to present information and, more importantly, to gain an appreciation for the perceptions held by community members and to draw on the wisdom that they may have to offer.

The gathered members for the hui offered several questions and comments which are paraphrased below. There was limited time for discussion though this still allowed for a variety of responses:

- What is the evidence for continued maternal alcohol use in the child's first 1000 days of life, specifically regarding attachment, emotional regulation, and brain development?
- Do we know if there is a difference in the rates of FASD in adopted versus non-adopted children? Is this an impetus to place a child for adoption?
- How do we qualify harmful drinking? How does the government measure such things as alcohol use during pregnancy?
- How does the impact of colonisation fit in? Are we taking this enough into account?
- The impetus needs to be placed within the education system – we need to put this into the curriculum so young girls are aware, so everyone is aware.
- [rebuttal] Using the education system would be ineffective, don't trust it.
- What can we do in Parihaka specifically as a community? What supports are available to us around alcohol and substance use?
- I'm so glad to hear you talking about this, this is an issue that has affected many of my descendants and continues today. Alcohol historically was so socially accepted, it

was considered normal to have alcohol when pregnant. I wish they would do research on the prison populations to find out how prevalent FASD is within the justice system.

- I don't think this is a personal problem – this is a societal problem. Partners, friends, and family members all need to support a pregnant woman by also modifying their habits and providing social gatherings that she can safely participate in. There's not a lot to do if alcohol is always part of social situations. This was true for me when I was pregnant; I felt outside, there was so much I couldn't do.
- How can we improve getting the information out there to our girls and young women? There are still so many that don't know not to have alcohol in pregnancy.

### **Treating Physician**

A key informant interview was held with paediatrician Dr. Raimond Jacquemard about his experience, insight, and opinions on the MOH's action plan. He was a contributing member of the committee that drafted the action plan.

- Tends to see patients in 3 stages: infancy, childhood (ages 7-8), and late adolescence
  - Infancy
    - Babies referred by midwives, NICU nurses, and RMO's due to awareness of mother imbibing alcohol during pregnancy
    - A single appointment is usually made, in his experience, the parents may or may not know why they are being referred
    - The three aims of the meeting are to gain an understanding of the social situation, educate and create awareness of the harms of alcohol in pregnancy, and, importantly, to try and prevent recurrent alcohol use in the subsequent pregnancies
    - Most women he sees are aware that alcohol can be harmful to their baby but often do not realise how significant this harm is
    - A letter is generated about the consultation and sent to the patient's GP, follow-up appointments are not usually made (in large part, due to limits in the capacity of the paediatric department), the onus is on the GP to re-refer if ongoing concerns
  - Late preschool/primary school
    - Usually referred due to social and/or behavioural issues, also if concerns about learning
  - Teenagers/older adolescents
    - Usually referred due to involvement with youth justice programs and/or mental health concerns
- Diagnosis is made using the Canadian guidelines for FASD which is a fairly complex process and requires a multidisciplinary team<sup>7</sup>
- Taranaki DHB is one of the few DHB's that have the capabilities to offer this diagnostic process

- Diagnosis is done in collaboration with the Ministry of Education
- Currently, there is only capacity for approximately six diagnostic assessments per year in Taranaki and only for those children who the Ministry of Education has knowledge of due to severe behavioural issues
- The process can only proceed with the consent of the family
  - There have been occasions where family members deny the possibility or do not wish to undergo the lengthy diagnostic process
- Once the diagnosis has been arrived at, two formal feedback sessions are arranged with the family and with the child's school
- The response from the family tends to be unique to each situation and a range of reactions have been encountered including: shock, relief, apathetic, or sees this as a way to a solution
- Following (or prior to) diagnosis, pharmacological therapies may be initiated, such as stimulant medications
- From his experience, some families express that they do not see the diagnosis as stigmatizing
- A very important piece of information is that FASD does not meet disability criteria unless there is documented evidence of intellectual disability (ID). Though many manifestations of FASD are incredibly disabling, not all affected children will have ID. This has significant implications for the amount of accessible funding and support services.
- Ideas for future:
  - Repeat study published in 2009 that looked at alcohol use in mothers who gave birth at Taranaki Base Hospital to see whether there has been improvement <sup>8</sup>
  - Examine the current documentation process for midwives – how specific are the sections around alcohol and substance use? Is there consistency in how this is assessed and documented?
    - May be useful to have midwives administer a standardized questionnaire to their clients (eg. AUDIT)
  - We need New Zealand prevalence data, ways to obtaining this include:
    - Screening the cohort of 'Growing up in New Zealand' (GUINZ)
    - Screening all children in CYF's care and/or that come through the Gateway program
    - Screen all adopted children (New Zealand born and internationally born)
  - Increase the diagnostic capacity
    - Equip more DHB's to be able to offer diagnostic services
    - Increase the amount of places (through increased funding) for diagnostic evaluation in Taranaki
  - Increase education of police force
  - Increase education of faculty and administrative staff in schools

- With the typical behaviours that many FASD children manifest, they are often repeatedly suspended which is of no benefit to their long term educational or well-being needs
- Look at our screening and assessment methods, consider the evidence for biomarker testing for alcohol use in pregnancy

### **Māori Policy Analyst/Public Health Advisor**

A second key informant interview was held with Keriata Stuart, who has worked as a senior policy analyst at the Māori policy unit of the Ministry of Women's Affairs, a Māori public health advisor for the Ministry of Health, a senior policy analyst to the New Zealand Drug Foundation, and now works for the Public Health Association of New Zealand as a Māori strategic advisor.

- There are a number of small projects being rolled out in primary care services, maraes, and local health agencies
  - There is a lack of connection and data sharing between these projects
- No current best practice resources or centralized information database available to New Zealand health care practitioners who have questions about FASD, prevention, and evidence-based interventions
  - Currently using overseas models or informal structures
- It would be helpful to have support in the New Zealand legislation; such has been done in countries like Canada
- There are secondary prevention programs being rolled out in Canada that target mothers who have a child with FASD and provide intensive support to try and prevent a second pregnancy being affected by alcohol
- We have some amazing strengths to draw from in Taranaki
  - Māori health workers and health providers, may be useful to hold a roundtable discussion
  - Aunties who work in the smoking cessation program, great value in their non-judgmental and knowledgeable approach
  - Good intersecting relationships between the DHB and other agencies, has a reputation for being a cohesive region
- Have heard from midwives that adding a screening tool is unrealistic as the antenatal screening requirements are already overwhelming
  - Other midwives have said they make significant efforts to provide counseling around alcohol beyond simple screening to the women they support
- There are some midwives who deliver teaching in small groups of 3-4 women and this may be a good avenue to hold a deeper discussion and address alcohol use in pregnancy
- It is a limitation to only screen for alcohol at the beginning of a pregnancy or at the first antenatal visit
  - Very little relationship/trust has been built
  - There may be concerns that if truthful, the child will be taken from the mother

- Pregnancy, to some women, is seen as an opportunity to change their lives and unhealthy behaviours. This is difficult or impossible to maintain without support and having someone ‘check in’ later in the pregnancy and institute supports where needed is of tremendous value in maintaining behaviour shifts like stopping drinking alcohol
- Smoking cessation studies have good evidence for long-term, ongoing support
- Local communities and women need to be approached to help gather information for designing an intervention
  - Frame it as “what do you want for your baby?”, “how can we support you?”, “where do you perceive the barriers to be?”
- A Canadian project on Vancouver Island created an intervention using the traditional Medicine Wheel from Aboriginal culture (an already validated tool) and found this very helpful in appealing to a person’s culture and addressing limitations posed by poor health literacy
- Young mothers are a vulnerable population, an idea has been suggested that peer support groups would be a helpful initiative
- May also be useful to include information about alcohol and substance use in pregnancy in the sexual education curriculum, the limitation being that for women who don’t get pregnant until their adult years, this is a long time in which the information can be forgotten
- ‘Quit counselors’ for alcohol may be very helpful in being able to provide continuous support to women and whānau
  - Perhaps coupled with a kit with relevant, understandable information
  - Could possibly deliver pilot programs from local maraes

## **Midwives**

On the booking form used at TDHB (see appendix B) for antenatal care, there is a small section in which to record alcohol use. An area of friction, and possible limitation, was identified when speaking to one of the community midwives about the possibility of introducing a formal screening tool for alcohol use. There was concern voiced about the already-overloaded screening requirements that midwives must complete with each woman. It was felt that adding another form created a new job that may or may not be done correctly and added pressure to an overwhelmed service. The informal screening already being undertaken is taken seriously as there is awareness that alcohol in pregnancy is a significant issue. In addition, the recommendation is followed that all women are advised not to drink alcohol while pregnant.

## Analysis – Define the Problem in your Local Area: FASD in New Zealand and Taranaki

The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) published a statement in 2008 states that there is no recognized safe threshold for alcohol use in pregnancy and complete abstinence is recommended.<sup>9</sup> According to

2012/2013 data in the New Zealand Health Survey, approximately one in five women report drinking alcohol during pregnancy and this increases to one in three for Māori women.<sup>10</sup>

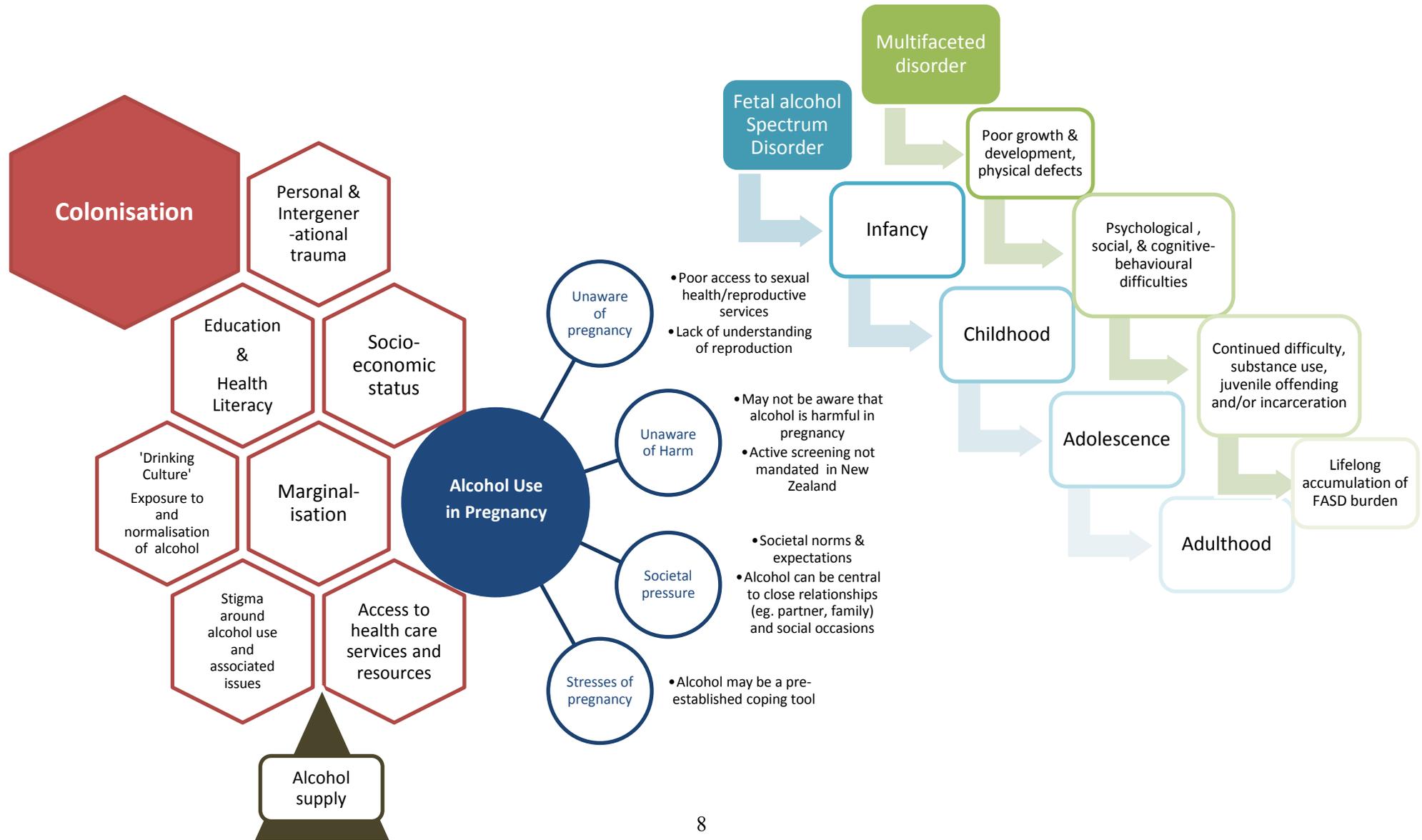
Levels of hazardous drinking have been reported to be higher in Taranaki than in other parts of New Zealand.<sup>11</sup> An article published in the New Zealand Medical Journal in 2009 published the results of a survey of maternal alcohol use in Taranaki over a period of one month in 2006. One hundred women completed the questionnaire for the study. Of the hundred women, 80% of women reported drinking alcohol prior to pregnancy, 66% of which described their pattern of alcohol use as ‘binge drinking’, and 28% continued to consume alcohol during pregnancy in varying quantities.<sup>8</sup> If the estimated incidence of one in a 100 is applied to the Taranaki region, there are potentially over 1000 individuals affected.<sup>12</sup>

There is a perception of alcohol consumption being a normal part of life in New Zealand, indeed for some Māori, alcohol use has reportedly been linked with identity.<sup>6,13</sup> It’s been shown that women in New Zealand who drink alcohol more frequently before becoming pregnant are more likely to continue using alcohol during pregnancy.<sup>6</sup> Regarding some of the reasoning behind women using alcohol during pregnancy, a qualitative piece of research published in New Zealand identified three main reasons why a woman used alcohol during her pregnancy: she didn’t know she was pregnant, she didn’t know alcohol was harmful to her baby, or she had alcoholic partners/husbands with whom the child was conceived with.<sup>14</sup> In the New Zealand Health Survey, only 68% of New Zealand women (or 66% of Māori women) reported receiving advice not to consume alcohol during pregnancy.<sup>10</sup>

#### Analysis – Map out the Causal Pathway: Drivers and Downstream Effects

As seen in the diagram on the following page, the causal pathway is multifaceted and complex. The downstream effects are significant, accumulative, and often irreversible.

Analysis – Map out the Causal Pathway: Drivers and Downstream Effects



## Analysis – Identify Stakeholders

- Mothers and women of childbearing age in Taranaki
- Whānau who have individuals affected by FASD
- Taranaki DHB
  - Taranaki Base Hospital
    - Particularly obstetrics, paediatrics, psychiatry, and substance abuse departments
  - TDHB public health unit
- Taranaki Midwives
  - Particularly regional Māori midwives
- Taranaki General practitioners
- Taranaki Māori care providers
- Regional Iwis
  - Ngāti Tama
  - Ngāti Mutunga
  - Te Atiawa
  - Ngāti Maru
  - Taranaki Iwi
  - Ngāruahine
  - Ngāti Ruanui
  - Ngaa Rauru Kiiitahi
- Taranaki Regional Council
- Taranaki Maraes
- CYF's
- Gateway Assessment contributors (eg. paediatrician)
- New Zealand Ministry of Education – Taranaki branch
- National and local FASD support network representative(s)

The above is not an exhaustive list of stakeholders and represents a starting point in thinking about who it may be important to involve in information gathering, roundtable discussions, and intervention planning.

## Analysis – Current Strategy

The RANZCOG statement on alcohol use currently recommends that maternity care providers screen for alcohol use (actively surveil) to enhance detection of undisclosed use and advise that there is no safe level of alcohol intake during pregnancy.<sup>9,15</sup> When there is suspicion of use or a woman discloses use, a supportive multidisciplinary team should be involved in her antenatal care.<sup>9</sup>

As stated above, on the TDHB Birth Booking Form, there is a small space to record self-reported alcohol use. The section to record information for smoking and tobacco use is much larger and more detailed. According to local midwives, there are currently no formal screening tools (eg. AUDIT, CAGE questionnaire) used in routine antenatal care to assess for

the presence and amount of substance use. There are concerns about adding yet another screening assessment.

Infants, children, and youth believed to be at risk for FASD are referred to the paediatric service at Base Hospital due to concerns from a range of sources including midwives, nurses, doctors, general practitioners, teachers, and/or parents. At present, there is only capacity for six diagnostic assessments to be conducted in Taranaki per year. To the writer's knowledge, there is no formal assessment process yet instituted for screening neonates at risk for FASD during the mother's post-partum recovery in hospital (for hospital births).

#### Analysis – Identify High Risk Population(s)

As identified above, women who drink prior to pregnancy, women who are not aware that they're pregnant, women who don't receive advice about alcohol during pregnancy, and women with close relationships in which alcohol is featured are at high risk for alcohol use during pregnancy.<sup>6,10,14</sup> Māori women are more likely than non-Māori women to use alcohol during pregnancy.<sup>10</sup> In a wider context outside of pregnancy, Māori individuals are more likely to engage in a binge-type drinking pattern, experience harm from their own (or other people's) drinking, have twice the rate of severe alcohol-related problems, are four times more likely to die of an alcohol-related condition and are twice more likely to have wanted help around their alcohol use but not receive it.<sup>13</sup> This increased pattern of risk has a complicated causation stemming, in large part, due to colonisation and has also been seen in the Indigenous peoples of Australia, the First Nations/Inuit/ Métis peoples of Canada, and the Native Americans in the United States.<sup>16-18</sup>

Other high risk populations for FASD include children born to mothers with low socioeconomic status, children under Children Youth and Family (CYF) care (up to 50%) and adopted children.<sup>2,6,19</sup> There is also evidence that suggests that many individuals who have repeated contact with the justice system or are incarcerated may have been impacted by maternal alcohol use.<sup>20,21</sup> Prevalence studies are being proposed, such as a study of youths in detention facilities in Western Australia, to try and capture how significant this proportion is.<sup>22</sup>

#### Analysis – Evidence for Effective Interventions

There is evidence for decreasing overall alcohol related harm in the pursuit of reducing alcohol use in pregnancy, though the actual effect on incidence of FASD has not yet been evaluated.<sup>23</sup> Supply reduction (eg. decreasing number of outlets selling alcohol, increasing the price of alcohol), demand reduction (eg. early intervention, reducing relapse), and harm reduction strategies (eg. sobering up shelters) have all been shown to reduce harm in Aboriginal communities in Australia.<sup>16</sup> In New Zealand, Māori and Pacific women who give birth are more likely to reside in socially deprived areas.<sup>24</sup> The density of off-licence alcohol outlets is also greater in areas of social deprivation.<sup>10</sup> Hazardous drinkers living in the most deprived (urban) areas are more likely to live within a two-minute driving distance to multiple off-licence alcohol outlets than those living in less deprived areas.<sup>10</sup> Though the supply reduction strategies may not be as feasible outside of closed or isolated communities,

this is an important arena to think about given the contribution to inequities inherent in the distribution of alcohol outlets in New Zealand.

The World Health Organization (WHO) presented a set of governing principles when introducing their recommendations for identification and management of substance use in pregnancy. These include: prioritise prevention, ensure access to preventative and treatment services, respect patient autonomy, provide comprehensive care, and safeguard against discrimination and stigmatization.<sup>25</sup> When the WHO guidelines were released, the quality of evidence for advocated interventions was deemed to be low to very low. The guidelines did, however, make some strong recommendations for asking all women about alcohol use at their first prenatal visit and subsequent antenatal visits, instituting a brief intervention for those who identify using alcohol or other substances, and referring for detoxification/addiction support services where appropriate.<sup>25</sup> In a report prepared for the Aboriginal Healing Foundation in Canada, it was concluded that there was good evidence for cognitive-behavioural modeled brief interventions in prenatal assessment settings to reduce or stop alcohol use during pregnancy.<sup>26</sup> In a review published earlier this year, it was found that prenatal health screening with brief interventions and motivational interviewing focused around empathy were effective for reduction and cessation of alcohol use in pregnancy.<sup>19</sup>

It is important to ensure that women don't perceive being 'targeted' due to their high risk of alcohol use, thus normalizing the use of screening questions and questionnaires is important.<sup>19</sup> In terms of screening instruments shown to be helpful, there is evidence to support the use of the CAGE and AUDIT screening tools within the context of a supportive environment.<sup>26</sup> Two other instruments have been developed to screen for alcohol in use in pregnancy specifically and there is moderate evidence for their use: T-ACE, a four question tool, and TWEAK, a seven question tool.<sup>26</sup> A systematic review conducted in New Zealand in 2008 also found that these two tools were of value.<sup>27</sup> All of these screening tools fit into a wider approach for early identification and prevention of substance use associated harm: SBIRT (screening, brief intervention, and referral to treatment).<sup>19</sup> Essential to this process is the therapeutic relationship between a woman and her health care providers in fostering the trust can lead to honest self-reporting and acceptance of support and treatment.<sup>19</sup> Additionally, screening for depression has also been shown to be important due to the relationship between depression, alcohol use, and poor obstetric/fetal outcomes.<sup>19</sup>

In order for screening to occur, antenatal care needs to be in place. This is, unfortunately, another area of disparity with Māori and Pacific women disproportionately represented in the group that has received no, inadequate, or late antenatal care.<sup>28</sup> Unintended pregnancy, inadequate financial resources, a belief that antenatal care is not required, and substance use have all been demonstrated to be barriers.<sup>28</sup> Interventions to support improving knowledge, sexual health, and reproductive planning are helpful in preventing unplanned or unrecognized pregnancies. As a secondary effect, these interventions can decrease alcohol use during pregnancy as many women cease or decrease their alcohol use when learning that they are pregnant.<sup>10,19</sup>

In combination with an approach such as SBIRT, there is research being done into the development and refinement of biomarkers to help identify alcohol exposed pregnancies.<sup>19,29</sup> Screening samples include those from the mother and developing baby as well as neonatal samples for retroactive identification.<sup>29</sup> They can be stratified by feasibility in obtaining, cost, sensitivity and specificity, reliability, and whether they can identify short-term, intermittent, or low amounts of alcohol use.<sup>19,29</sup> Current research is also exploring other aspects of alcohol and pregnancy such as genetic and environmental factors, paternal factors, and nutritional implications/use of nutritional supplements as a ‘rescue’ intervention.<sup>19</sup> Interestingly, not only is the woman’s relationship with a male who consumes alcohol a risk factor for alcohol use in pregnancy, but paternal alcohol consumption has been linked with adverse outcomes in birth weight, chance of a live birth, and cognitive abilities of the child.<sup>19</sup>

Reducing inequities is not only of relevance in primary prevention but also in secondary prevention aiming to alleviate some of the burden associated with FASD. This includes early diagnosis, referral and access to appropriate support services, instituting timely and tailored treatment, education delivery, mental health and substance use services, and increased awareness in the justice system.

### Current Research in New Zealand

Research is currently being conducted with the cohort of children involved in the GUINZ study. The Ministry of Health is using a representative group to gather information that can be used to generate prevalence estimates of FASD in New Zealand.<sup>6</sup> A study being carried out by Superu/Families Commission is hoping to capture the patterns of maternal alcohol consumption in New Zealand including identifying characteristics of mothers who consume alcohol and factors associated with alcohol consumption.<sup>30</sup> Another team of researchers, in a joint project between the National Institute for Health Innovation (NIHI) and the University of Auckland, is completing a feasibility assessment for the introduction of a FASD prevalence study protocol created by the WHO.<sup>30</sup>

### Conclusion

In New Zealand, people with FASD describe encountering challenges in their education, employment, mental health, memory, cognitive abilities, social lives, and in their experience with the justice system.<sup>31</sup> FASD encompasses conditions that can affect every aspect of a person’s life and represents a number of social and health inequities that have not been fully explored or characterized. Available research is often limited by small sample sizes or applicability to the unique population of New Zealand. While research is now being conducted nationally, we need more information about the prevalence of FASD in Taranaki to assist in identifying existing inequities and high risk groups. Regional data would then allow for the creation and implementation of specific, efficient, supported interventions as well as serve as a platform for advocacy, funding requests, and further research.

## References

1. Dunne P. Launch of taking action on fetal alcohol spectrum disorder: 2016-2019 [Internet]. Wellington: New Zealand Government; 2016 Aug 17 [cited 2016 Oct 17]. Available from: <https://www.beehive.govt.nz/speech/launch-taking-action-fetal-alcohol-spectrum-disorder-2016-2019-parliament-buildings-wellington>
2. British Medical Journal Best Practice. Fetal alcohol spectrum disorders [Internet]. London: British Medical Journal; 2016 Jan 14 [cited 2016 Oct 12]. Available from: <http://us.bestpractice.bmj.com/best-practice/monograph/1141.html>
3. Easton B, Burd L, Rehm J, Popova S. Productivity losses associated with alcohol spectrum disorder in New Zealand. *N Z Med J*. 2016 Aug 19;129(1440):72-83.
4. Australian Public Services Commission. Tackling wicked problems: a public policy perspective [Internet]. Barton: Commonwealth of Australia; 2007 [cited 2016 Oct 14]. Available from: [http://www.apsc.gov.au/\\_\\_data/assets/pdf\\_file/0005/6386/wicked-problems.pdf](http://www.apsc.gov.au/__data/assets/pdf_file/0005/6386/wicked-problems.pdf)
5. Taranaki District Health Board. TDHB wicked problem toolkit. New Plymouth: Taranaki District Health Board; 2016.
6. FASD Working Group. Taking action on fetal alcohol spectrum disorder: 2016-2019: an action plan. Wellington: Ministry of Health; 2016 Aug [cited 2016 Oct 12]. Available from: <http://www.health.govt.nz/publication/taking-action-fetal-alcohol-spectrum-disorder-2016-2019-action-plan>
7. Cook JL, Green CR, Lilley CM, Anderson SM, Baldwin ME, Chudley AE, et al. Fetal alcohol spectrum disorder: a guideline for diagnosis across the lifespan. *Can Med Assoc J*. 2016;188(3):191-7.
8. Ho R, Jacquemard R. Maternal alcohol use before and during pregnancy among women in Taranaki, New Zealand. *N Z Med J*. 2009 Nov 20;122(1306):20-32.
9. The Royal Australian and New Zealand College of Obstetricians and Gynaecologists. Alcohol in pregnancy [Internet]. Melbourne: The Royal Australian and New Zealand College of Obstetricians and Gynaecologists; 2008 March [cited 2016 Oct 14]. Available from: [https://www.ranzcog.edu.au/RANZCOG\\_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Alcohol-in-pregnancy-\(C-Obs-54\)-Review-Jul-2014.pdf?ext=.pdf](https://www.ranzcog.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Alcohol-in-pregnancy-(C-Obs-54)-Review-Jul-2014.pdf?ext=.pdf)
10. Ministry of Health. Alcohol use 2012/13: New Zealand health survey [Internet]. Wellington: Ministry of Health; 2015 [cited 2016 Oct 13]. Available from:

<http://www.health.govt.nz/system/files/documents/publications/alcohol-use-2012-13-new-zealand-health-survey-feb15-v2.pdf>

11. Taranaki District Health Board. High levels of hazardous drinking in Taranaki [Internet]. New Plymouth: Taranaki District Health Board; 2014 Aug 8 [cited 2016 Oct 17]. Available from: [http://www.tdhb.org.nz/news/documents/media\\_release\\_2014\\_08\\_07.shtml](http://www.tdhb.org.nz/news/documents/media_release_2014_08_07.shtml)
12. Statistics New Zealand. StatsMaps: 2013 census data: Taranaki region [Internet]. Wellington: Statistics New Zealand; 2013 [cited 2016 Oct 14]. Available from: <http://www.stats.govt.nz/StatsMaps/Home/People%20and%20households/2013-census-quickstats-about-a-place-map.aspx>
13. Best Practice Advocacy Centre New Zealand. Kua warea te Māori e te tarukino, e te whakapōauau: substance misuse and addiction in Māori. *Best Practice Journal*. 2010;28:18-35.
14. Salmon J. Fetal alcohol syndrome: New Zealand birth mothers' experiences. In: Adamson SJ, Schroder R, editors. *New Zealand Addiction Treatment Research Monograph* [Internet]. New Zealand Addiction Treatment Research Monograph ; 2006 [cited 2016 Oct 14]. Available from: <http://www.otago.ac.nz/nationaladdictioncentre/pdfs/monograph2006.pdf>
15. The Royal Australian and New Zealand College of Obstetricians and Gynaecologists. Pre-pregnancy counselling [Internet]. Melbourne: The Royal Australian and New Zealand College of Obstetricians and Gynaecologists; 2015 April [cited 2016 Oct 14]. Available from: [https://www.ranzcog.edu.au/RANZCOG\\_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Pre-pregnancy-Counselling-\(C-Obs-3a\)-Amended-April-2015.pdf?ext=.pdf](https://www.ranzcog.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Pre-pregnancy-Counselling-(C-Obs-3a)-Amended-April-2015.pdf?ext=.pdf)
16. Gray D, Wilkes E. Reducing alcohol and other drug related harm [Internet]. Canberra: Australian Government; 2010 Dec [cited 2016 Oct 17]. Available from: <http://www.aihw.gov.au/uploadedFiles/ClosingTheGap/Content/Publications/2010/ctgc-rs03.pdf>
17. Canadian Centre on Substance Abuse. First Nations, Inuits, and Métis [Internet]. Ottawa: Canadian Centre on Substance Abuse; no date [cited 2016 Oct 22]. Available from: <http://www.ccsa.ca/Eng/topics/First-Nations-Inuit-and-Metis/Pages/default.aspx>
18. U.S. Department of Health and Human Services. Fetal alcohol health spectrum disorders among Native Americans [Internet]. Washington: U.S. Department of Health and Human Services; 2007 [cited 2016 Oct 22]. Available from:

<https://www.ihs.gov/headstart/documents/FetalAlcoholSpectrumDisordersAmongNativeAmericans.pdf>

19. Montag AC. Fetal alcohol-spectrum disorders: identifying at-risk mothers. *Int J Womens Health*. 2016;8:311-23.
20. O'Driscoll SJ. Fetal alcohol spectrum disorder. *N Z Law J*. 2011;4.
21. Mutch R, Watkins R, Jones H, Bower C. Fetal alcohol spectrum disorder: knowledge, attitudes and practice within the Western Australian justice system. Perth: Telethon Institute for Child Health Research; 2013.
22. Passmore HM, Giglia R, Watkins RE, Mutch RC, Marriott R, Pestell C. Study protocol for screening and diagnosis of fetal alcohol spectrum disorder (FASD) among young people sentenced to detention in Western Australia. *BMJ Open*. 2016;6:1-12.
23. Australian Government. Fetal alcohol spectrum disorders: a review of interventions for prevention and management in Indigenous communities [Internet]. Canberra: Australian Government; 2015 Feb [cited 2016 Oct 22]. Available from: <http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=60129550296>
24. Ministry of Health. Report on Maternity 2014. Wellington: Ministry of Health; 2015.
25. World Health Organization. Guidelines for the identification and management of substance use and substance use disorders in pregnancy [Internet]. Switzerland: World Health Organization; 2014 [cited 2016 Oct 25]. Available from: [http://www.who.int/substance\\_abuse/publications/pregnancy\\_guidelines/en/](http://www.who.int/substance_abuse/publications/pregnancy_guidelines/en/)
26. Tait CL. Fetal alcohol syndrome among Aboriginal people in Canada: review and analysis of the intergenerational links to residential schools. Ottawa: Aboriginal Healing Foundation; 2003.
27. Elliot L, Coleman K, Suebwongpat A, Norris S. Fetal alcohol spectrum disorders (FASD): systematic reviews of prevention, diagnosis, and management. *HSAC Report*. 2008;1(9).
28. New Zealand College of Public Health Medicine. First 1000 days of life: New Zealand College of Public Health Medicine policy statement [Internet]. Wellington: New Zealand College of Public Health Medicine; 2013 [cited 2016 Oct 27]. Available from: [http://www.nzcpmh.org.nz/media/64578/2013\\_08\\_first\\_1000\\_days\\_policy\\_statement.pdf](http://www.nzcpmh.org.nz/media/64578/2013_08_first_1000_days_policy_statement.pdf)

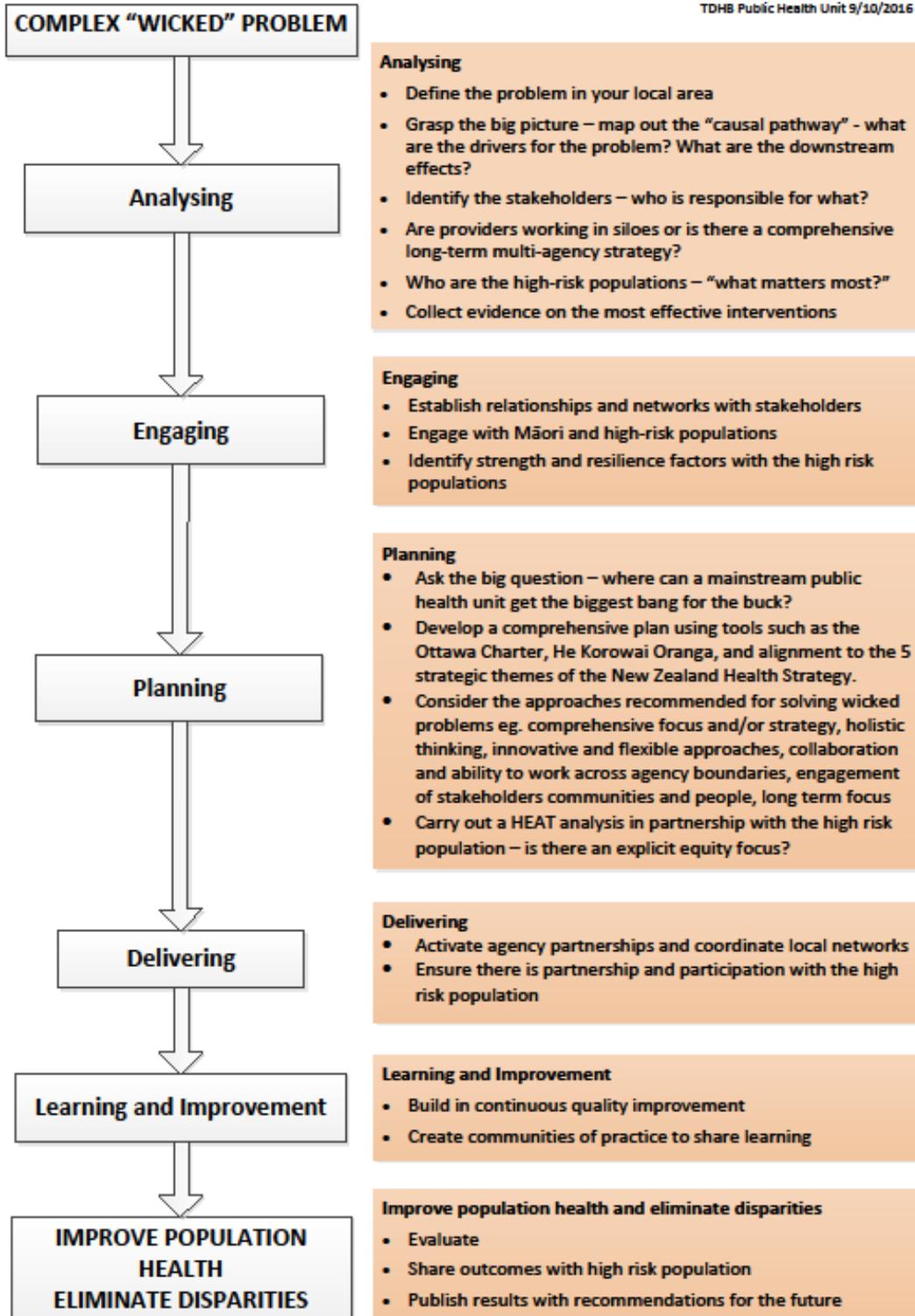
29. Bearer CF, Stoler JM, Cook JD, Carpenter SJ. Biomarkers of alcohol use in pregnancy [Internet]. Bethesda: National Institute on Alcohol Abuse and Alcoholism; no date [cited 2016 Sept 27]. Available from: <http://pubs.niaaa.nih.gov/publications/arh28-1/38-43.htm>
30. Growing Up in New Zealand. Current research with GUiNZ data [Internet]. Auckland: University of Auckland; [cited 2016 Oct 26]. Available from: <http://www.growingup.co.nz/en/research-findings-impact/current-research.html>
31. Salmon JV, Buetow SA. An exploration of the experiences and perspectives of New Zealanders with fetal alcohol spectrum disorder. *J Popul Ther Clin Pharmacol*. 2012;19(1):41-50.

# TDHB WICKED PROBLEM TOOLKIT

"Tackling wicked problems is an evolving art. They require thinking that is capable of grasping the big picture, including the interrelationships among the full range of causal factors underlying them. They often require broader, more collaborative and innovative approaches. This may result in the occasional failure or need for policy change or adjustment." [Australian Public Health Commission 2007]



All New Zealanders live well, stay well, get well, in a system that is people-powered, provides services closer to home, is designed for value and high performance, and works as one team in a smart system.





# BIRTH BOOKING FORM

GP: \_\_\_\_\_ NHL: \_\_\_\_\_ LMC: \_\_\_\_\_

Mother's Full Name: _____		DOB: __/__/__	Age: _____
Previous names mother known by: _____		Ethnicity(s): _____	
Address: _____	Phone (H): _____	Iwi(s): _____	
_____	(W): _____	NZ Resident: <input type="checkbox"/> Yes <input type="checkbox"/> No	
Postcode: _____	NoK: _____	Country of birth: _____	
NoK Contact Details: _____	Relationship: _____	Sec 88 eligibility type: _____	
Father of Baby: _____	Ethnicity(s): _____	Iwi(s): _____	Marital Status: _____

MENSTRUAL HISTORY	SOCIAL	SURGICAL
LMP: __/__/__ EDD: __/__/__ Sure/Unsure	FV: RQ Y +VE -VE N	
Cycle: Regular/Irregular Adjusted date: _____	Booking Height: _____	
Oral Contraceptives: <input type="checkbox"/> Yes <input type="checkbox"/> No	Booking Weight: _____	
	BMI: _____	

BLOOD RESULTS	FAMILY HISTORY	MEDICAL
Date: __/__/__	Congenital Dislocation of Hips: <input type="checkbox"/> Yes <input type="checkbox"/> No	Booking Blood Pressure: _____
Blood group: _____ Rhesus: _____	Other family history: _____	
Antibodies: _____	_____	
Rubella: _____ VDRL: _____ Hep B: _____	_____	
Hb: _____ Other: _____		

MEDICATIONS	ALLERGIES	SMOKING: <input type="checkbox"/> Yes <input type="checkbox"/> No	Last Cervical Smear:
Alcohol	Medications/Latex/ Foods	Less than 10 per day _____ 10-20 per day _____ More than 20 per day _____	____/____/____
		Anyone in house smokes <input type="checkbox"/> Yes <input type="checkbox"/> No	On national register: <input type="checkbox"/> Yes <input type="checkbox"/> No
		Referred Smoking Cessation <input type="checkbox"/> Yes <input type="checkbox"/> No	

**OBSTETRIC HISTORY:** Gravida (including miscarriage/TOP): \_\_\_\_\_ Parity: \_\_\_\_\_

Place of Delivery	Date	PREGNANCY		LABOUR MISCARRIAGE		PUERPERIUM	INFANT			
		Duration weeks	Complications	Duration	Complications	Complications	Sex	Alive NND SB	Birth Weight (grams)	Feeding in months

Obstetric Risk Factors: _____	Breastfeeding History/Plan _____
Special Instructions: _____	Diet: _____
	BCG required: <input type="checkbox"/> Yes <input type="checkbox"/> No (if yes send TB form)
	History taken by: _____
LMC to forward original to Ward Clerk, Maternity Unit	Designation: _____ Date: _____