AUSTRALIAN MEDICAL ASSOCIATION REPORT CARD SERIES 2005
ABORIGINAL AND TORRES STRAIT ISLANDER HEALTH

LIFTING THE WEIGHT
LOW BIRTH WEIGHT BABIES: AN INDIGENOUS HEALTH BURDEN THAT MUST BE LIFTED

Improving the health of Indigenous Australians has always been a priority for the AMA.

In recent years we have endeavoured, quite successfully, to increase Government and public awareness of the plight facing Aboriginal and Torres Strait Islander communities - not just in health, but with linked factors such as education, housing, sanitation and access to medical services.

We launched our Indigenous Health Report Card Series in 2002, with *No More Excuses*, an overarching study that illustrated in simple and stark terms how big the problem is, and how poorly Australia was addressing it compared to Canada, the USA and New Zealand, with their Indigenous populations.

We followed this up in 2003 with *Time For Action*, another comprehensive analysis that revealed the miserly level of Government funding for Indigenous Health, and the sad truth that nothing had improved over the previous year.

In 2004, with *Healing Hands*, we showed that the shortage of funding was matched by a serious shortage of Indigenous doctors and nurses and other health workers, and we set out a plan to turn this workforce crisis around.

This year we go back to the source of lifelong problems in Indigenous Health - low birth weight and premature babies.

The 2005 Report Card is called *Lifting The Weight*, and our objective is to create awareness of the problem and, quite literally, lift the weight - lift the weight of Indigenous babies to a healthier level and lift the weight of this health burden from Indigenous mothers, families and communities.

We have collected and collated important data on low birth weight and premature babies to give our political leaders and the public an easy-to-understand snapshot of this huge public health problem - a problem that can be fixed with proper funding and resources, education and political will.

Low birth weight and premature babies suffer from poor health for the rest of their lives, especially compared to their full birth weight, full term brothers and sisters.

Indigenous children are more than twice as likely to be born with low birth weight as non-Indigenous babies, putting 1,140 children a year at a physical and developmental disadvantage.

We all know and understand that no single intervention will solve the health crisis faced by Aboriginal and Torres Strait Islander people. But the solutions to premature and low birth weight babies are relatively straightforward. Better still, these solutions would reduce the incidence of chronic illnesses such as diabetes and renal failure suffered by Indigenous people throughout lives, in Australia.

Smoking during pregnancy is the greatest cause of low birth weight in Indigenous babies, with alcohol and substance abuse and sexually transmitted diseases significant contributing factors. Maternal malnutrition is another. We know these behaviours and symptoms can be addressed.

We need culturally sensitive maternal and child health teams to provide antenatal and postnatal care.

We must continue to develop the Aboriginal and Torres Strait Islander Health Workforce to help deliver these services.

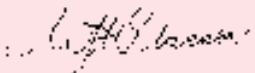
Every year, around 8800 Aboriginal and Torres Strait Islander babies are born. More than 1100 of them will be low birth weight or premature babies, or both - and destined to a life of poor health. How many more must be born to suffer through our inaction?

Some pioneering work in this field is already out there to build upon. In the following pages we look at some good news stories of reduced numbers of low birth weight and premature babies in five communities. With political leadership and proper funding we can turn these few isolated success stories into a major national achievement. And for a prosperous and caring nation like Australia it won't cost much.

We estimate that around $20 million a year of new money is needed every year to provide the health workers and support staff, outreach services, pharmaceuticals, food and transport required to make a difference. More would be needed for buildings and equipment.

In this report we define the problem and describe the solution.

We can't afford to wait. We must lift the weight.



Dr. William Glasson
Australian Medical
Association Federal President

AMA

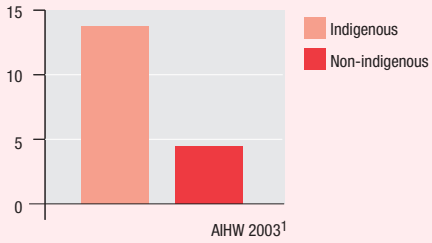
Aboriginal Health painting **Jillie Nakamarra**

EACH YEAR 83 INDIGENOUS CHILDREN DIE BECAUSE THEY ARE INDIGENOUS

Aboriginal and Torres Strait Islander babies do not get a good start in life compared to non-Indigenous babies. All the odds are stacked against them. Aboriginal and Torres Strait Islander mothers comparatively do even worse.

Infant mortality is the number of babies born alive that die before they are one year old per 1,000 live births.

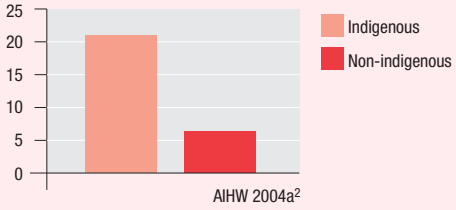
The graph below shows Indigenous and non-indigenous infant mortality for the years 1999-2001



If the Indigenous infant mortality rate were the same as the rest of the population there would be 83 more Indigenous children in each year which would add up to 500 more primary school kids.

Maternal mortality rate is the number of women who die per 100,000 confinements.

The graph below shows Indigenous and non-indigenous maternal mortality for the years 1997-1999.

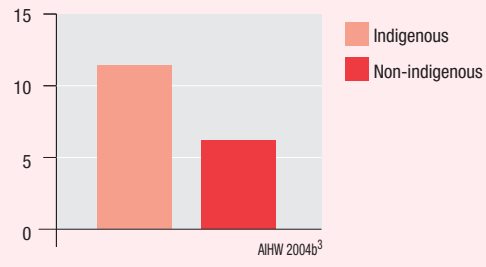


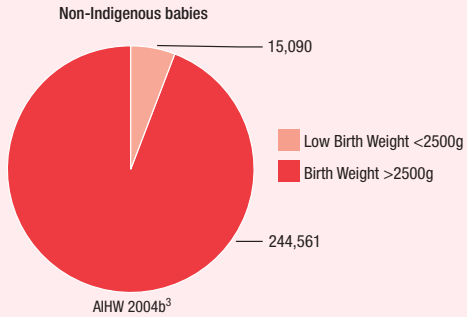
The differences are not just in death rates. Aboriginal and Torres Strait Islander babies are also more likely to be born with a low birth weight (LBW) and prematurely, and these higher rates are found across the whole country not just in rural and remote areas.

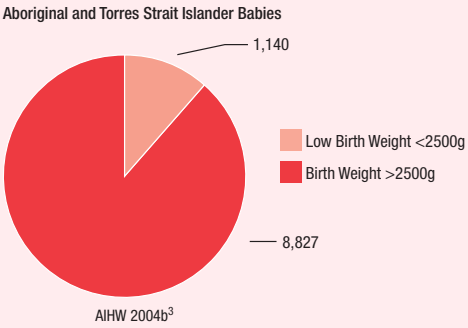
LOW BIRTH WEIGHT

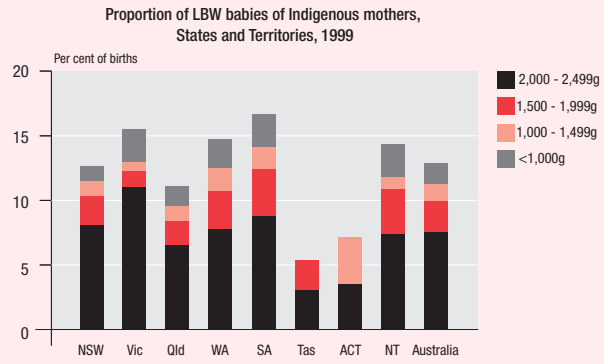
Low Birth Weight babies are those born weighing less than 2500g.

The graphs and pie charts below and opposite show Indigenous and non-indigenous LBW as a percentage of all babies born alive, and the distribution of the percentage of Indigenous babies that are LBW by State and Territory.







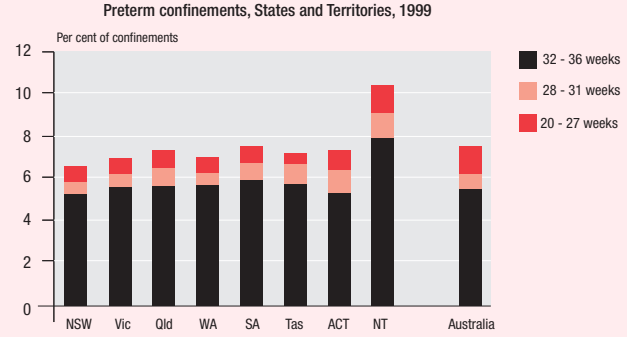


Note: Data for Tasmania unavailable. 1998 data used as an estimate.
AIHW 2001[4]

PRETERM BIRTH

Preterm or premature birth is birth at less than 37 weeks of gestation.

These births make up 7.0% of all births or 6.9% of all confinements in Australia. The highest incidence is in the Northern Territory (NT) where 10.5% of births were premature in 1999. In NT 36.5% of the births were to Indigenous women and it is therefore assumed that this high rate of preterm births reflects the high rate of prematurity of Indigenous babies. There is no country-wide comparable data available on this.



Note: Data for Tasmania unavailable. 1998 data used as an estimate.
AIHW 2001[4]

WHY DOES PREMATURITY AND LOW BIRTH WEIGHT MATTER?

In the short run LBW is an extremely important factor in infant mortality. Using USA data, only 0.5% of babies born with normal weight die in the first year of life compared to 10.2% of babies born <2500g and 45.3% of babies born <1500g. Put another way, while LBW babies account for only 11% of births in the USA they account for 90% of all deaths in the first year of life.[5] It is not unreasonable therefore to assume that if the number of Indigenous LBW babies could be reduced there would be a reduction in infant mortality.

Besides its impact on infant mortality, LBW is associated with increased childhood ill health including that from respiratory illnesses, impaired growth after birth and brain development problems. Although these complications increase in frequency with decreasing birth weight even children at the upper end of the LBW range, who require no intensive care, have poorer outcomes than children with normal birth weight[6].

In the medium to long term there is increasing evidence that LBW is a significant contributing factor in a wide range of chronic diseases. These may include:

- obesity (in particular central obesity)
- high blood pressure
- heart attack
- stroke
- heart failure
- renal (kidney) failure
- non-insulin dependent diabetes (adult onset diabetes)
- thyroid disease
- depression

The possible programming of a baby's system to react differently to the outside world while in its mother's womb, or very soon after, is called the Barker Hypothesis.[7] The main components of the hypothesis, including the research results that are beginning to explain how malnutrition of a baby while in its mother's womb impacts on all its systems, is briefly described in the diagram on the following page.

The effects of LBW on the risk of disease in adulthood may be considerable; indeed a recent meta-analysis of a large number of studies estimated that up to 35% of the cases of type 2 diabetes mellitus are attributable to reduced birth weight.[8]

THE AMA IS CALLING ON THE FEDERAL GOVERNMENT TO:

1. Resource all Aboriginal Medical Services, across urban and remote Australia, for maternal and child health teams to provide antenatal and post natal care as well as care to young children. This should include home visiting as a key component of the service, with a focus on health education and promotion. Services should build on, and adapt as needed, the successful programs already in existence, like the Mums and Babies program in Townsville. Key areas of focus for the teams should be:
   - Reduction of smoking by pregnant women and childhood exposure to passive smoking;
   - Reduction of alcohol and substance use in pregnancy;
   - Reduction of sexually transmitted diseases in all women of reproductive age and prompt diagnosis and treatment during pregnancy;

   In addition the service could provide:
   - nutrition supplementation;
   - mental health interventions for pregnant women and during the post natal period;
   - enhanced immunisation coverage of Aboriginal children.
   - sudden infant death syndrome prevention advice;
   - childhood injury prevention programs; and
   - child abuse prevention strategies.
2. Investigate and fund a program targeted to improve the nutritional status of those Aboriginal or Torres Strait Islander women who are assessed to be at risk. All women in the following categories should be assessed: those under the age of 20; pregnant; breastfeeding or postpartum; and those with children under 5 years of age.[9]
3. Adopt as a National Goal the improvement of Aboriginal and Torres Strait Islander child health. The number of LBW babies and the number of premature deliveries should be set as indicators to monitor the achievement of this goal. It is quite simple; if a program does not reduce these two indicators we know it is not working.[9]
4. Ensure that there is sufficient investment in workforce development to support the above program.
5. Fully fund the provision of this culturally appropriate service across the whole country. Based on the costs of the successful Mums and Babies Program in Townsville this would cost approximately $20 million a year in running costs ($2,400/pregnant woman). Initial set-up costs will depend on what is already available and will vary significantly, but would be between $6 and $10 million.

BARKER HYPOTHESIS

A baby's nourishment before birth and during infancy, best monitored by observing foetal and infant weight, “programs" the development of risk factors for an ever increasing number of diseases in adulthood: adult onset diabetes, high blood pressure, high unhealthy fats in the blood, coronary artery disease, heart attacks, strokes, mental health problems, autoimmune thyroid disease. The list is ever growing.[7 10]

POOR NOURISHMENT IN UTERO

(PROBABLY) PREMATURE BIRTH[11]

ABNORMAL PROGRAMMING OF [7 12 13]

- BLOOD PRESSURE CONTROL (VASCULAR RESPONSIVENESS)
- CHOLESTEROL (FAT) METABOLISM
- INSULIN RESPONSE TO GLUCOSE (HYPOTHALAMIC PITUITARY AXIS, INSULIN SECRETION & SENSING) BLOOD CLOTTING
- HORMONAL SETTINGS
- CENTRAL NERVOUS SYSTEM APPETITE CONTROL

ORGAN DEVELOPMENT [12 13 14]

- NOT FULLY DEVELOPED KIDNEYS LEADING TO LOWER NUMBER OF FILTRATION UNITS (NEPHRONS)
- POSSIBLE ABNORMAL MICRO-ARCHITECTURE OF LIVER
- PROPORTIONS OF FAT AND LEAN BODY MASS
- PANCREATIC STRUCTURE AND FUNCTION

LBW

A person with relatively few life and lifestyle stressors will have a much lower chance of progression to syndrome X and therefore will have a higher chance of a normal life expectancy

NORMAL LIFE EXPECTANCY

Stressors that increase chance of progression to Syndrome X

- Slow infant growth + rapid weight gain 3-11years
- Infections - skin, ear, chest etc.
- Poor nutrition
- Alcohol
- Some illegal substances
- Smoking
- Obesity

SYNDROME X OR METABOLIC SYNDROME

The Australian Aboriginal and Torres Strait Islander population is being decimated not by a single disease but by a collection of diseases, which have been named collectively as 'Syndrome X' or the 'Metabolic Syndrome'. This syndrome is the combination of several unhealthy factors including a fat tummy, low levels of good cholesterol (high-density lipoprotein or HDL), high levels of triglycerides (a bad blood fat), high blood pressure, and a high blood sugar with high insulin levels - meaning that the body is resistant to the effects of insulin. Syndrome X isn't a disease in itself. It is the name for a collection of simultaneously occurring conditions that cause an increased risk of disorders such as diabetes and heart disease.[15]

HEART DISEASE - HEART FAILURE/HEART ATTACKS

STROKES

HIGH BLOOD PRESSURE

ADULT ONSET DIABETES

RENAL FAILURE LEADING TO DIALYSIS OR TRANSPLANTATION

PREMATURE DEATH

Syndrome X gives an increase of 6x the average rate of premature death[16]

CAUSES AND SOLUTIONS

Multiple births have been excluded from most studies included below, as LBW is almost universal for these babies.

	WHAT ARE THE CAUSES OF LBW AND PREMATURITY - THE INTERNATIONAL DATA	WHAT ARE THE CAUSES AMONG ABORIGINAL AND TORRES STRAIT ISLANDER MOTHERS	WHAT INTERVENTIONS WORK TO REDUCE LBW AND PREMATURITY - AUSTRALIAN AND INTERNATIONAL EXPERIENCE
SMOKING	A study from the UK found smoking as the single most important factor causing, on average, a **5% reduction in birth weight.** Passive smoking was not significant. Only four socio-economic and stress factors significantly reduced birth weight, but these factors became non-significant when smoking was controlled for.[17] Another study from the UK of 178,801 births showed that although adjusted birth weight was lower for those in areas of high deprivation, **this effect was small compared with the effect of smoking.**[18] Smoking has long been known to be a risk factor in pregnancy, and is associated with LBW, preterm birth, congenital anomalies and perinatal death.[19] Smoking also increases the mother's risk of spontaneous abortion, ectopic pregnancy and other obstetric complications.	Data on smoking during pregnancy is available for five states and territories: overall 18.4% of women reported smoking in pregnancy.[3] Around 60% of the Aboriginal and Torres Strait Islander population smoke.[20] Data from King George V Hospital Sydney published in 1996 showed **65.5% of the Indigenous mothers smoked during the pregnancy** compared to 15.9% of the non-Indigenous women.[21] A study of 503 live born children born to Indigenous mothers and routinely delivered at the Royal Darwin Hospital between January 1987 and March 1990 found that **18% of the LBW babies could be attributed to their mothers smoking** more than half a packet of cigarettes a day during pregnancy.[22]	A literature review of smoking and smoking interventions in Australia was published in 2001. The review found a major lack of research and evaluation of tobacco interventions in Aboriginal and Torres Strait Islander communities. The review noted that some women do quit in pregnancy but many take it up again soon after birth. Health promotion materials have been developed but not evaluated.[23] A 2004 Cochrane Review of all relevant evidence-based research on "Interventions for promoting smoking cessation during pregnancy" showed that such programs during pregnancy appear to reduce both LBW and preterm births, and on average achieved a 33g increase in average birth weight. One intervention strategy, rewards plus social support (two trials), resulted in a significantly greater smoking reduction than other strategies.[24] The health risks of maternal smoking during pregnancy are dose related so an attempt to cut down as well as quit smoking can convey benefits to the mother and child.[25]
MALNUTRITION AND SOCIO-ECONOMIC STATUS	Research from developing countries found the following to be significant predictive factors for LBW: socio-economic status; maternal age less than 20 years and over 30 or 40 years; first pregnancy; pregnancy interval less than 6 months; non-pregnant weight less than 40kg; height below 145cm; and anaemia.[26] From India 41.4% of LBW is predicted by socio-economic status; 22.9% by non-pregnant weight, 29.5% by maternal height and 34.5% by severe anaemia. Studies from other developing countries indicate maternal pre-pregnancy weight to be one of the strongest determinants of birth weight.[27] There are also many studies showing a direct correlation between family income and birth weight.[28]	A study of 503 live born children born to Indigenous mothers and routinely delivered at the Royal Darwin Hospital between January 1987 and March 1990 showed **28% of LBW could be attributed to maternal malnutrition.** Infants born to mothers with a BMI less than 18.5 kg/m^2 had five times the risk of having a LBW baby.[22]	A review of food and nutrition programs for Aboriginal and Torres Strait Islander peoples was conducted in 1997. The review found limited evidence of success, and insufficient evidence to indicate which strategies are effective in addressing the problems of failure to thrive and LBW.[29] A 2003 Cochrane review of energy and protein supplementation in pregnancy found that balanced energy/protein supplementation was associated with modest increases in maternal weight gain and in mean birth weight, and a substantial reduction in the risk LBW birth. These effects did not appear greater in undernourished women. No significant effects were detected on preterm birth, but significantly reduced risks were observed for stillbirth and neonatal death.[30] The provision of food supplements to disadvantaged populations such as through the US Women, Infants and Children Program (WIC) has reduced the incidence of low birth weight infants[31] and infant deaths,[32] and led to higher mean birth weights[33] and a greater likelihood of receiving pre-natal care.
AGE OF MOTHER	This is a complex area but the data is quite clear that those under 20 years of age at delivery have a higher risk of premature and LBW babies. This has been shown in studies in both developing and developed countries and is independent of all other predictive variables such as smoking, maternal weight and first babies.	A retrospective study using the perinatal data collection for South Australian births in 1995-1999: 449 Aboriginal and 4,625 non-Aboriginal teenagers were identified. Aboriginal teenagers have a pregnancy rate more than twice as high as non-Aboriginal. Their babies are more likely to be LBW and preterm, to have a congenital abnormality, to require special and intensive nursery care and stay longer in hospital.[34] On average Indigenous mothers are younger than non-Indigenous mothers and Aboriginal teenagers have twice as many pregnancies as non-Indigenous teenagers.	Any intervention must recognise the specific needs of teenage mothers. In the USA specific support programs for teenage mothers have reduced the rates of preterm births and LBW infants.[35] Programs that are successful in reducing teen birth rates are usually multifactorial and combine comprehensive sexuality education with youth development activities; reduction in repeat pregnancies is associated with home visits by nurses combined with long-acting contraceptive use.[36] Programs with intense prenatal home visiting by public health nurses have been shown in the USA to improve both prenatal and perinatal outcomes.[37]

	WHAT ARE THE CAUSES OF LBW AND PREMATURITY - THE INTERNATIONAL DATA	WHAT ARE THE CAUSES AMONG ABORIGINAL AND TORRES STRAIT ISLANDER MOTHERS	WHAT INTERVENTIONS WORK TO REDUCE LBW AND PREMATURITY - AUSTRALIAN AND INTERNATIONAL EXPERIENCE
ALCOHOL & OTHER SUBSTANCE USE	Maternal alcohol consumption during pregnancy is significantly related to the incidence of foetal death, infant death and to the birth of LBW babies.[38] The proportion of babies born with a LBW increases sharply with increasing alcohol intake.[39] However these effects appear in most studies to be limited particularly when compared to the effects of smoking. Data from the USA suggests that marijuana and heroin during pregnancy is related to infant birth weight but alcohol and cocaine were not. However smoking was by far the strongest influence on birth weight.[40]	Whilst most Indigenous Australians do not drink, many of those who do drink do so at levels considered a health hazard. Different communities have widely differing consumption levels ranging from 12% - 45% of women declaring themselves as current drinkers in surveys of remote communities. No data is available on the rates of Aboriginal or Torres Strait Islanders drinking during pregnancy. A study conducted at one of the two major obstetric hospitals in Brisbane compared Indigenous and non-Indigenous women who attended antenatal care. Of the Indigenous women 18.8% consumed alcohol early in their pregnancy and 9.6% binge drank in early pregnancy.[41]	There are no studies with outcome data identified of interventions aimed at changing alcohol consumption or other substance use in pregnant or breastfeeding Aboriginal or Torres Strait Islander women. A review of the evidence on the prevention of substance use, risk and harm in Australia has recently been published. This review notes that antenatal and postnatal family home visits demonstrates some benefits (in selected populations) in reducing alcohol and drug use and related harm. The review also notes there is very limited evidence supporting other interventions in the antenatal and postnatal period, and very few alcohol and substance use reduction interventions more broadly targeted at Aboriginal and Torres Strait Islander people have been evaluated.[42]
GENITO-URINARY TRACT INFECTIONS INCLUDING SEXUALY TRANSMITTED INFECTIONS	In the international literature, a review of premature birth and subclinical infections suggests that up to 80% of early preterm births are associated with an infection inside the uterus.[43] More widely, infections of the genital tract are estimated to contribute to up to 40% of all preterm births.[44] Prompt treatment of all sexually transmitted diseases is important.[45]	Screening for trichomonas infection (a sexually transmitted disease) has recently been advocated because of the high prevalence in remote Aboriginal communities.[46] A West Australian study of Aboriginal and Torres Strait Islander women showed **51% of women who gave birth to LBW babies had had a genito-urinary tract infection** compared to 13% of other women.[47]	A recent Cochrane Review found that the evidence to date suggests there is no benefit in screening and treating all pregnant women for bacterial infections of the vagina, which are causing no symptoms, to prevent preterm birth. In considering the implications for clinical practice it should be remembered, however, that women with symptomatic bacterial infections of the vagina were generally absent from these trials due to treatment of their symptoms with antibiotics.[48] It may be appropriate in certain regions of Australia to screen for sexually transmitted infections.
IN SUMMARY	The internationally identified determinants of LBW include genetic, social, environmental, and behavioural factors, as well as underlying medical and biological conditions that affect how long the pregnancy lasts or reduces the mother's ability to support optimal growth of the baby in utero. Infections of the genital tract are estimated to contribute to up to 40% of all preterm births. When looking at the international literature it is clear that the determinants of LBW and preterm birth are affected by the socio-economic situation of the country and the local practices: if few women smoke then it will not be a large contributing factor. It is probably safe to conclude that the factors causing LBW babies and preterm births will vary across Aboriginal and Torres Strait Islander communities.	The **NUMBER 1 CAUSE of LBW and preterm births amongst Aboriginal and Torres Strait Islander babies**, in all parts of Australia, is probably cigarette smoking during pregnancy, with genito-urinary infections second. Malnutrition appears to be a significant issue in many partrs of Australia (although most data is available from the Northern Territory). Alcohol may be significant and the young age of many Indigenous mothers is also a contributory factor. Any intervention to reduce the number of LBW and preterm babies will need to have a set of core components tackling smoking, alcohol, nutrition and infection issues with a focus on reaching the sexually active young Aboriginal and Torres Strait Islander women before they are pregnant. The program must however, be flexible, to respond to the particular causes of LBW and prematurity in each area.	The funding of all Aboriginal Medical Services, across urban and remote Australia, for maternal and child health teams to provide antenatal and post natal care as well as care to young children. This should include home visiting as a key component of the service with a focus on health education and promotion. The key areas of focus for the teams should be: 1) *Reduction of smoking by pregnant women;* 2) *Reduction of alcohol and substance use in pregnancy;* 3) *Reduction of sexually transmitted diseases in all women of reproductive age and prompt diagnosis and treatment during pregnancy.* In addition it is essential to investigate and fund a program targeted to improve the nutritional status of those Aboriginal or Torres Strait Islander women who are assessed to be at risk. All women in each of the following categories should be assessed: under the age of 20; pregnant; breastfeeding or postpartum; and those with children under 5 years of age.

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