fetal alcohol spectrum disorders

a guide for midwives

Government of South Australia
Southern Adelaide Health Service

DRUG & ALCOHOL SERVICES SOUTH AUSTRALIA

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Introduction

Fetal Alcohol Spectrum Disorders (FASD) are the largest group of preventable disorders related to prenatal alcohol exposure, found in many cultural groups and all socio-economic groups. The disorders include birth defects, mental retardation and neuro-developmental disorders *(CDC, 2004)*.

Alcohol is a teratogen, and meets the following criteria:

- the agent must cause death, malformations, growth retardation and/or functional disorders
- the effect is dose related
- there are critical periods of susceptibility during development
- the susceptibility to the agent must be affected by an interaction of genetic and environmental factors

It is estimated that 3.7% of women of childbearing age in Australia have an alcohol related disorder which may be dependence or excessive consumption through binge drinking. The patterns and level of alcohol consumed by these women is of great concern due to the teratogenic nature of alcohol and risk of significant problems/effects on the developing fetus. Difficulties in accurately diagnosing less affected babies means that accurate numbers are impossible to estimate at this time.

Fetal Alcohol Syndrome (FAS) was first described in 1973 by two paediatric dysmorphologists in the USA – Kenneth Jones and David Smith. That study, and further research of FAS, has identified three additional less severe syndromes known as Fetal Alcohol Spectrum Disorders (FASD).

These are:

- Fetal Alcohol Effects (FAE)
- Fetal Alcohol Related Birth Disorders (FARBD)
- Alcohol Related Neurodevelopment Disorder (ARND)

(National Alcohol Strategy, 2001–2004)

Historical Perspective

Literature from over the centuries has alluded to the harmful effects of alcohol on infants who had been exposed prenatally:

- "Foolish drunken or hare-brained women bring forth children like unto themselves, morose and languid" *Aristotle in 2700BC.*
- "Behold, thou shalt conceive, and bear a son: and now drink no wine or strong drink" *The Christian Bible, Judges 13:7.*

In England it was noted during the Gin Epidemic in the 1700s that birth weight and development of infants exposed to gin prenatally were compromised. Parliament described the result of prenatal alcohol exposure as "too often the cause of weak, feeble and distempered children, who must be instead of an advantage and strength, (become) a charge to their country" *(Abel 1990, p5)*.

In the middle of the 19th Century a French physician, Dr Lanceraux, described some of the significant characteristics of FAS. "As an infant dies of convulsions or other nervous stated disorders; if he lives, he becomes idiotic or imbecile, and in adult life bears the special characteristics: the head is small...physiognomy vacant [peculiar facial features] a nervous susceptibility more or less accentuated, a state of nervousness bordering on hysteria, convulsions, epilepsy...are a sorrowful inheritance...a great number of individuals given to drink bequeath their children" *(Lanceraux, 1865; quoted by Gustafson, 1885 p39 in Abel, 1999)*.

Research into prenatal alcohol exposure began in the late 19th Century and continued into the 20th century. However, during the Prohibition years (1920s) it was virtually ignored by England and the United States. The resumption of research in 1940 saw scientists conclude that "prenatal exposure to alcohol might contribute to behavioural abnormalities, but they were most likely the result of postnatal home and social conditions" *(Cooper, 1991 p2)*.

In 1973, Drs Jones and Smith diagnosed infants in a Seattle hospital who had been exposed to alcohol prenatally as having various levels of mental anomalies. These findings were published in The Lancet *(1973)* formally using the term Fetal Alcohol Syndrome for the first time *(Cooper, 1991)*.

Alcohol Use During Pregnancy

Alcohol is a colourless, volatile and flammable liquid. It may be pure (cleaning materials, explosives or solvents) or it may be denatured (alcoholic beverages). The main psychoactive ingredient in alcoholic beverages is ethyl alcohol, produced through the fermentation of sugar by yeast. Alcoholic drinks vary in strength, e.g. beer and alcoholic sodas (1–7% alcohol), wines (10–15%) and spirits (35–55%).

More than 2 standard drinks *(Appendix 1)* in a session can impair the mother's cognitive abilities, judgment and practical functioning. Regular excessive alcohol intake can be associated with fatigue and depression. The nutritional status and diet of a mother who consumes alcohol regularly may be deficient in basic food groups and essential vitamins and minerals, particularly thiamine. Abrupt cessation of alcohol in a woman who drinks heavily is very dangerous *(de Crespigny & Cusack, 2003)*.

The effect of alcohol on fetal development depends on the timing of exposure. Conception may be compromised if the quality of the egg and sperm are altered by the ingestion of alcohol *(Abel, 1998a)*.

The small molecular size of alcohol allows it to cross the placenta easily, allowing the blood alcohol concentration of a mother and her fetus to be comparable.

Fetal and cell growth is also malnourished by alcohol as it prevents the uptake of nutrients from the gastro-intestinal tract *(Overholser, 1990)*. This means that not only is the mother's health and safety at risk, so is the baby's.

In the first 8 weeks of pregnancy the embryo develops very quickly with all major organ systems and limbs occurring from day 20 to 55. The premature subdivisions of the brain are complete by 12 weeks, followed by a second growth spurt in the final 2 months of pregnancy and continued maturation for the first 2 years of life *(Abel, 1998a)*.

Alcohol's toxic effects may damage early development and neural tube elaboration in the first 3 weeks after conception. Large amounts in a short period of time, such as binge drinking, may result in spontaneous abortion occurring.
A critical period for the fetus seems to be between weeks 4 and 9 where alcohol exposure can result in malformations of the brain and other cranial structures. Alcohol ingestion may also cause cranio-facial deformities, organ malformations, microcephaly or a normal-sized brain with decreased cells.

Exposure to alcohol by the fetus later in pregnancy may adversely affect pre- and post-natal physical growth and/or behavioural and cognitive disorders.

Hypoxia, caused by possible constriction on the placenta and umbilical cord, may also cause developmental delays and malformations. The exact mechanism of how this occurs has not been determined *(Abel, 1998a)*.

Early detection and intervention is the most effective way of improving the outcome for both mother and baby. An empathic, non-judgmental approach builds rapport and encourages a positive relationship between the mother and midwife/clinician.

Normal brain of baby 6 wks old *Brain of baby same age with FAS*

Photo courtesy of Sterling Clarren MD

Recommended drinking levels during pregnancy

It is important to note that there is a range of recommendations on what is considered to be a safe level of alcohol consumption for pregnant women, which can be confusing.

A **consistent message** must be given to all women of childbearing years and their partners that:

- The safest choice for women who are pregnant or who are considering pregnancy is **no alcohol** *(Women's & Children's Hospital, 2005)*.
- Women should be informed that if they have consumed small amounts of alcohol occasionally during their pregnancy the risk to the baby in **most** situations is minimal.
- Reducing or stopping alcohol use at any time during the pregnancy will reduce the potential harmful effects of alcohol on the baby.
- Specialist care is recommended for women who drink heavily to assist them through alcohol withdrawal and minimise harm to their unborn baby and themselves.
- Midwives/clinicans need to develop and use effective strategies to **reduce the risk of FASD** during a women's pregnancy.
- **Risk of recurrence is high** among women with a previous FAS or FASD baby. They will need counselling to enable them to recognise that they can change their patterns of alcohol use by gaining extra support during this time. Intervention may encourage them to access specialist care/assistance to help them provide a safe and caring environment for a child affected by FASD. The strategies should also aim to assist the mother to reduce impairments and disabilities in future children by encouraging abstinence in future pregnancies.

Prevention

FASD is considered to be 100% preventable if women do not drink alcohol at all if they are pregnant or planning to get pregnant. However, there is a range of reasons why women may drink during this period, such as:

- lack of knowledge on the dangers of alcohol on their baby through poor levels of education and information
- co-existing mental health conditions (e.g. agoraphobia, depression, anxiety)
- post traumatic stress disorder
- unsupportive/absence of family/partner
- isolation
- childhood or adult history of sexual abuse or other abuse

The complexity of these factors may allow midwives/clinicians to have a greater understanding of why women might continue to drink alcohol during pregnancy and potentially compromise their babies *(Miers & Russell, 2003)*.

The goal for midwives/clinicians is to try to reduce the incidence of FASD and the disabilities it causes. To achieve this goal it is necessary to have:

- knowledge about screening for alcohol consumption in pregnancy
- awareness about common attitudes regarding alcohol use and FASD
- open, non-judgmental dialogue and action between women/partner/family and their health care professionals

Strategies

Primary Prevention

- engage in education relating to FASD with all women and their partners
- ask all female patients of childbearing age about their alcohol use
- obtain current promotional materials on FASD and provide to patients
- be familiar with and use any community resources
- discuss and enhance access to contraceptive strategies for women and their partners

Secondary Prevention

- identify women who are using alcohol during pregnancy and assess level of risk using the AUDIT *(Appendix 2)*
- counsel women who are using alcohol about the effects on their baby and themselves
- counsel women about the positive benefits of cutting out or cutting down their alcohol use at any time during their pregnancy
- refer women who are using alcohol for appropriate specialist treatment
- provide contraceptive counselling

Tertiary Prevention

- identify the women who are at high risk in future pregnancies
- ask the woman why she drinks
- refer women at risk, especially pregnant women, for appropriate specialist treatment
- counsel women about the positive benefits of cutting out or cutting down their alcohol use at any time during their pregnancy
- provide contraceptive counselling

(Alberta Clinical Practise Guidelines, 1999)

Undertaking an Alcohol Assessment

It is essential that an accurate assessment is made about both current and previous patterns of alcohol consumption to enable appropriate intervention and care plans to be negotiated and implemented.

The Alcohol Use Disorders Identification Test (AUDIT)

The AUDIT is a well-validated tool developed by the World Health Organization (WHO) to assess patterns of alcohol use. The tool comprises a self-report version, an interview version for midwives to administer and a scoring sheet for interpretation *(Appendix 2)*. It contains three questions on the amount and frequency of drinking; three questions relating to alcohol dependence; and four questions that ask about problems caused by alcohol, including adverse psychological reactions.

Focusing on the person's recent alcohol use (previous 12 months), it can be very easily incorporated into a general/midwifery health evaluation providing a very fast and simple way to identify those at risk of health problems from their drinking and those who are already experiencing problems.

The completion of the 10-item questionnaire allows a brief, accurate and comprehensive assessment of a person who is drinking alcohol, and if their level of drinking is potentially harmful or at a hazardous level *(NH&MRC, 2001)*. Harmful or hazardous drinking is defined as drinking when there are medical consequences, psychological harm, social problems, work problems or experienced trauma *(Dawe et al, 2002)*.

The AUDIT assessment needs to be carried out in a timely manner that is safe, respectful, confidential, and in an environment that is sensitive to the woman and if appropriate, family. It needs to be undertaken in a way that respects cultural identity and other associated needs such as interpretation.

The screening tool provides an opportunity for alcohol and pregnancy education, health promotion and strategies to prevent or reduce risks associated with alcohol use. Many people who drink alcohol are unaware of their risks of harm from their level of drinking, and need encouragement to help them consider ceasing or reducing their drinking *(Prochaska & di Climente, 1986)*.

The effectiveness of the AUDIT is dependent on how accurately the person responds to the questions. The midwife/clinician needs to explain the benefits and encourage the most accurate information. If answers do not seem congruent with the presenting medical condition, further information may be required (e.g. a physical assessment by a trained health professional who can interpret the presence of physical stigmata associated with chronic alcohol use).

Brief Intervention

A suitable support technique for a pregnant woman who drinks at this time is a Brief Intervention.

Brief Intervention has been demonstrated to be a low-cost, effective alternative to treat alcohol problems. It uses short, self-help and preventive strategies to assist in reducing/ceasing alcohol consumption. Brief Interventions are most helpful for non-alcohol dependent people. If the person is alcohol dependent a Brief Intervention can be of some assistance through education and support, and may facilitate their willingness to be referred to a specialist treatment program.

Brief Interventions:

- Involve a **minimum of professional time** in an attempt to change drug use.
- Are **short**, practical strategies that aim to convey, and have understood, advice and information about an aspect of harm minimisation. They are usually based around conversation, listening, giving advice, provoking further thought and are certainly much shorter than traditional treatment.
- Often include the provision of **self-help materials** and may extend to a brief assessment, providing advice (in a one-off session), assessment of the client's readiness to change (motivational interview), problem solving, goal setting, relapse prevention, **harm reduction** and follow-up *(Dale & Marsh, 2000)*.

There are pregnant women and new mothers who drink alcohol at risky or harmful levels who may have little or minimal insight into potential problems associated with their drinking.

This is an opportunity for the midwife to support and help such women to become aware of the risks or problems associated with their drinking, and to contemplate lifestyle changes (cutting out or cutting down) to reduce social and health harms from alcohol use.

The purpose of Brief Intervention is to:

- Provide accurate information about the effects of alcohol on themselves and their unborn or newborn baby.
- Reinforce the woman's understanding of key concepts covered in the alcohol education material provided.
- Enable them to talk about their alcohol use without being judged.
- Support the woman in identifying issues that impact on her own health, well-being, lifestyle and relationships due to her drinking.
- Empower the woman to identify and set reasonable and achievable goals for change based on her informed choices relating to her alcohol use and situation.
- Assist the woman to seek support and access to specialist treatment services, if appropriate.

The most important factor is the midwife's ability to be non-judgmental, approachable, accessible, empathic and helpful.

An effective strategy

Brief Interventions are well researched *(Rollnick, Mason & Butler, 1999)* and have been found to be very effective in assisting people in the change process. They are an appropriate response to people presenting at a general health or community setting and those who are unlikely to need, seek or attend specialist treatment services.

Brief Intervention is most successful when working with women who:

- are experiencing few or uncomplicated problems with their alcohol use
- have low levels of alcohol dependence
- have a short history of harmful alcohol use
- have stable social and family backgrounds/ supports
- are unsure/ambivalent about changing their drinking and therefore open to advice and assistance

Outcomes

Positive outcomes will develop for many women when the midwife/clinician can:

- build a trusting and supportive relationship and be non-judgmental
- establish personalised goals and develop the woman's skills to use suitable strategies that will lead to her successful behaviour change
- develop the woman's self awareness to see her choices and that she can use her personal power
- work with the woman's particular needs, thoughts, feelings, and behaviour in a practical, problem-solving manner

(Divert Resource Manual, 2004)

Hospital Setting

Alcohol withdrawal in pregnant women

The onset of alcohol withdrawal can occur 6–24 hours after the last drink where the woman has regularly consumed 6 or more standard drinks on average per day. Alcohol withdrawal can be medically serious and life-threatening for a pregnant woman and her developing fetus.

It is important for the midwife/clinician to assess for, and accurately monitor and interpret the onset of, alcohol withdrawal so appropriate treatment is commenced as soon as symptoms become evident. These symptoms may occur during labour or later in the postnatal period.

Mild Withdrawal

Symptoms may occur from 6–24 hours after cutting down or ceasing alcohol intake:

- nausea
- anxiety
- trembling
- vomiting
- diaphoresis
- minor brain hyperactivity

Severe Withdrawal

Symptoms can occur from as early as 12 hours after the last drink and up to 5 days after the last drink due to a reduction, or abrupt cessation, of alcohol intake:

- seizures
- tremors
- confusion
- disorientation
- fearfulness
- hallucinations
- tachycardia
- fever
- dehydration
- agitation

(de Crespigny & Cusack, 2003)
(Frayne & Macrory, 2002)

Asking the question

If symptoms of alcohol withdrawal are noticed and there is no record of alcohol use in the casenotes it will be necessary to undertake a drinking history – in particular note the time and date of the last drink consumed *(de Crespigny & Cusack, 2003 ATOD Guidelines, Version 2, Section 3 – see Section 4 Appendixes for taking an alcohol history)*.

Asking the question in a caring and non-judgmental way may facilitate some initial conversation around the issue of their alcohol use:

"I can see that you're feeling a little uncomfortable. Is it possible you might have had some alcohol before you came into hospital? If you had some alcohol a few hours ago, the drop in the level of alcohol in your blood may now be causing discomfort. We are able to offer some medication that will help you and your baby to feel more comfortable."

It may be appropriate to continue at a later time, particularly if the woman is in any discomfort. Most women will accept some help if they are not made to feel guilty and are sure it is safe for themselves and their baby.

If they haven't used alcohol, a re-assessment of their symptoms is necessary to see if there is another reason for their discomfort.

Alcohol withdrawal in newborns

Babies born to women who are alcohol dependent are also at risk of undergoing alcohol withdrawal during or after birth. If the mother has consumed alcohol (whether or not she is acutely intoxicated during delivery), the baby is at risk of alcohol withdrawal up to 48 hours after delivery, depending on the time of the mother's last drink. Withdrawal in newborns can occur later than in adults due to the alcohol being more slowly metabolised by the liver.

Symptoms of alcohol withdrawal in newborns may include:

- Hyperexcitability of the central nervous system (e.g. tremors, excessive muscle tension, irritability, increased respiratory rate, poor sleeping patterns and increased sense of hearing). Seizures may also occur accompanied by breathing cessation and arching of the back.
- Gastro-intestinal symptoms (e.g. abdominal distension, vomiting).

These babies require special care nursing and may need medication to safely manage their symptoms through this period. Sedatives or tranquillisers may be used to prevent or manage serious withdrawal symptoms such as seizures and vomiting. It is important to let the parents know what medications have been prescribed, and the expected outcome.

These babies can also be very unsettled which may cause a lot of anxiety for the parents and their family/friends. A calm, quiet environment with decreased sensory stimulation is advised. Cuddling and gentle handling in a quiet, non-stimulating environment has been shown to be quite effective for some mildly affected babies and may be used instead of medication *(Western, 2004)*. It is essential that the parents know why their baby is unsettled and what special care arrangements have been put in place.

A Neonatal Abstinence Syndrome Scoring Chart *(Appendix 3)* should be filled out regularly to assess the level of withdrawal.

Alcohol and breastfeeding

Alcohol readily crosses into breast milk by diffusion. This means the level of alcohol to which the baby is exposed is approximately the same level as the mother's current blood alcohol level. Alcohol in very small amounts can have a serious effect on the developing brain of a baby. Research has demonstrated that the milk intake of a baby is lowered when alcohol is present in breast milk and that feeding patterns show disturbance. Evidence also showed disruptions in the sleep/wake patterns of this group of babies *(Menella, 2001)*.

One standard drink per day (10 grams of pure alcohol) has been associated with decreased psychomotor development. Binge drinking (e.g. 5 or more standard drinks in one session – hours not days), has the same effect on the baby as the mother. One standard drink per day results in the baby sucking more but receiving less milk and becoming slightly sedated *(Menella, 2001)*.

Alcohol also flavours the breast milk and alters its smell. Well-meaning relatives, friends and clinicians for many years advised new mothers that a glass of alcohol at night would relax them. In fact oxytocin release, necessary for milk ejection reflex, is inhibited after 2 standard drinks of alcohol, and milk volume is reduced by 23% after only 1 standard drink. Calorie value of the milk is not altered after alcohol is consumed.

A baby is able to detoxify alcohol at only half the rate of the mother until it reaches 3 months of age, meaning that alcohol exposure is more dangerous for younger babies.

In the longer term, *James (2005)* describes the level of alcohol increasing as the baby has limited ability to metabolise alcohol following repeated exposure. This then makes the dose of alcohol more potent for the baby. This can have a devastating effect on the developing brain of a baby.

It is widely accepted that drinking alcohol when breastfeeding places the baby at risk. If a mother continues to drink alcohol when breastfeeding, harm minimisation strategies need to be recommended. These include:

- Do not drink alcohol shortly before or when breastfeeding, particularly in the first 3 months.
- Consume alcohol when it will have the least effect on the breast milk (e.g. consume only after the baby has been fed and settled). This allows several hours for the level to decrease before the next feed is due.
- Try to avoid breastfeeding for at least 3 hours after consuming alcohol.
- Consume as little alcohol as possible, no more than 1 standard drink *(NHMRC, 2001)*.
- Consume low-alcohol drinks.
- Eat before and during consumption.
- Express and store alcohol-free milk for use after moderate or heavy drinking.

(Fisher, 2005)

Safety in the hospital setting

If a mother appears to be, or is at risk of being, intoxicated and wants to nurse her baby, follow normal safety procedures (e.g. encourage her to sit on a chair and tactfully supervise her when handling her baby). If she is very intoxicated make sure she is not unwell and suggest that she might like to go and rest in her room and come back at a later time.

"Sue, you look so tired, it's really exhausting being a new Mum. Would you like to go to your room for a rest? I'll ring you when the next feed is due."

An empathic comment can make a difference when dealing with an intoxicated client. This can be a win/win situation for everyone; early intervention is far safer than waiting until the situation compromises everyone involved.

If she seems to be more intoxicated than one would expect from her recent drinking history it may mean her AUDIT needs to be repeated.

Identifying FASD

There is no laboratory test for FASD. Diagnosis relies on a pattern of abnormalities that make up the syndrome along with alcohol use/misuse during the pregnancy and around conception *(Aase, 1994)*.

Key features are:

- growth retardation
- characteristic facial features
- central nervous system anomalies that include mental retardation

Abnormalities in these 3 categories will exclude most other birth defect syndromes. Confirmation of the diagnosis is made by the confirmation of maternal alcohol use during the pregnancy *(Aase, 1994)*.

Diagnosis is generally made on infants and young children as the features are often more obvious with age *(Rossett, 1980)*. Central nervous system dysfunction and facial morphology are difficult to assess before 2 years of age. A longer study in Germany *(Spohr et al, 1994)* has found that as adolescence approaches, changes in weight means the facial features become less obvious. The facial features that remain through life are microcephaly, short palpebral fissures (small eye openings), indistinct philtrum (flattened area between nose and mouth), thin upper lip and mild micrognathia.

Intellectual problems, poor age-appropriate life skills and behaviour problems are seen to continue through adulthood *(Streissguth, 1994)*.

The 4-Digit Diagnostic Code

A new diagnostic code was developed recently to provide a more accurate and reliable diagnostic system. The 4-Digit Diagnostic Code uses quantitative, objective measurement scales and specific case definitions.

Diagnosis is made using 4 key diagnostic features:

1. Growth deficiency.
2. FAS facial phenotype.
3. Central nervous system damage/dysfunction.
4. Gestational alcohol exposure.

The magnitude of expression of each feature is ranked independently with 1 reflecting complete absence of the FAS feature and 4 reflecting a strong 'classic' presence of the FAS feature.

This system has also demonstrated a far more accurate diagnosis of each of the Spectrum Disorders *(Astley & Clarren, 2000)*.

Institute of Medicine – Diagnostic criteria for FAS

This tool, developed by the Institute of Medicine, may still be used by some clinicians and may still be found in case notes. It has been included to give midwives/clinicians an understanding of the categories that may have been used in casenotes prior to the 4-Digit Diagnostic Code being introduced.

Category 1
FAS with confirmed maternal alcohol exposure

A. Confirmed maternal alcohol consumption:
- excessive drinking characterised by considerable, regular, or heavy episodic consumption

B. Characteristic facial features:
- short palpebral fissures (epicanthal folds)

Characteristic premaxillary features:
- flat upper lip
- flattened philtrum (an absent or elongated groove between upper lip and nose)
- flat midface

C. Growth retardation:
- decreased birth weight for gestational age
- failure to thrive post-natally, not related to nutrition
- disproportionate ratio of weight to height

D. CNS abnormalities, including at least one of the following:
- small head size (microcephaly)
- structural brain abnormalities (small brain, partial or complete absence of corpus callosum, decreased size of cerebellum)
- neurological hard or soft signs (age-appropriate), such as impairment of fine motor skills (neurosensory hearing loss, incoordination, impaired eye–hand coordination)

Category 2
FAS without maternal alcohol exposure
(Category 1 B, C & D)

In Category 2 it is recognised that information on maternal drinking may not be available if the children have been adopted or are in foster care *(Abel, 1998a)*.

Category 3
Partial FAS with confirmed maternal alcohol exposure

A. Confirmed maternal alcohol consumption *(same as Category 1)*.

B. Same facial features as for previous categories, either C, D or E.

C. Same growth retardation as for previous categories.

D. Same CNS abnormalities as for previous categories.

E. Evidence of complex behavioural or cognitive dysfunction, unrelated to developmental maturity or to family or home environment, including:
- difficulties in learning
- poor performance in school
- poor impulse control
- problems in relating to others
- deficits in language (understanding and speaking)
- poor ability for abstract thinking
- poor arithmetic skills
- problems in memory, attention or judgment

Category 4
Alcohol-related birth defects with confirmed maternal alcohol exposure and presence of consistent physical anomalies

Category 5
Alcohol-related neuro-developmental disorder with confirmed alcohol exposure and neuro-developmental abnormalities and/or behavioural or cognitive deficits

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Glossary of Terms

Binge drinking

Generally considered as consumption of at least 5 or more drinks per occasion for women.

Cerebellum

Part of the brain concerned with the coordination of movements.

Corpus Callosum

An arched mass of white matter which connects the cerebral hemispheres.

Epicanthal folds

A vertical fold of skin on either side of the nose, sometimes covering the inner canthus (of the eye). It is present as a normal characteristic in persons of certain races and sometimes occurs as a congenital anomaly in others.

Microcephaly

Abnormal smallness of the head, usually associated with mental retardation.

Micrognathia

Failure of development of the lower jaw resulting in a receding chin.

Palpebral

Pertaining to an eyelid. Short palpebral fissures are small eye openings.

Philtrum

The vertical groove in the median portion of the upper lip.

Referral and Further Information

Alcohol & Drug Information Service
Ph: 1300 13 1340

Drug & Alcohol Resource Unit
Royal Adelaide Hospital
Ph: 8222 5473

Women's & Children's Hospital, North Adelaide
Ph: 8161 7000

Flinders Medical Centre, Bedford Park
Ph: 8204 5511

Websites

http://www.dassa.sa.gov.au

http://www.nhmrc.gov.au

http://www.nofasard.org

http://www.cdc.gov

http://www.cyh.com

http://www.adf.org.au

http://www.nationaldrugstrategy.gov.au

http://www.health.gov.au

http://www.danaonline.org

Appendix 1

Standard Drinks

SPARKLING WINE	WINE	LIGHT BEER	REGULAR BEER	FORTIFIED WINE	SPIRITS
100 mL	100 mL	425 mL	285 mL	60 mL	30 mL

EACH OF THESE IS ONE STANDARD DRINK

A standard drink contains approximately 10 grams of pure alcohol

Appendix 2

The Alcohol Use Disorders Identification Test (AUDIT)

AUDIT Self-Report Version

PATIENT: Because alcohol use can affect your health and can interfere with certain medications and treatments, it is important that we ask some questions about your use of alcohol. Your answers will remain confidential so please be honest.
Place an X in one box that best describes your answer to each question.

Questions	0	1	2	3	4	
1. How often do you have a drink containing alcohol?	Never	Monthly or less	2–4 times a month	2–3 times a week	4 or more times a week	
2. How many standard drinks containing alcohol do you have on a typical day when you are drinking?	1–2	3–4	5–6	7–9	10 or more	
3. How often do you have six or more standard drinks on one occasion?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
4. How often during the last year have you found that you were not able to stop drinking once you had started?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
5. How often during the last year have you failed to do what was normally expected of you because of drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
7. How often during the last year have you had a feeling of guilt or remorse after drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
8. How often during the last year have you been unable to remember what happened the night before because of your drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
9. Have you or someone else been injured because of your drinking?	No		Yes, but not in the last year		Yes, during the last year	
10. Has a relative, friend, doctor, or other health care worker been concerned about your drinking or suggested you cut down?	No		Yes, but not in the last year		Yes, during the last year	
					Total	

Developed and validated by World Health Organization (WHO) 989

AUDIT Interview Version

Begin the AUDIT by saying,

"Now I am going to ask you some questions about your use of alcoholic beverages during the past year."

Explain what is meant by alcoholic beverages by using local examples of beer, wine, vodka, etc.

Code answers in terms of standard drinks.

Place the correct answer number in the box at the right.

1. How often do you have a drink containing alcohol?
(0) Never [Skip to Qs 9–10]
(1) Monthly or less
(2) 2 to 4 times a month
(3) 2 to 3 times a week
(4) 4 or more times a week

2. How many standard drinks containing alcohol do you have on a typical day when you are drinking?
(0) 1 or 2
(1) 3 or 4
(2) 5 or 6
(3) 7, 8, or 9
(4) 10 or more

3. How often do you have six or more standard drinks on one occasion?
(0) Never
(1) Less than monthly
(2) Monthly
(3) Weekly
(4) Daily or almost daily
Skip to questions 9 and 10 if Total Score for Question 2 and 3 = 0

4. How often during the last year have you found that you were not able to stop drinking once you had started?
(0) Never
(1) Less than monthly
(2) Monthly
(3) Weekly
(4) Daily or almost daily

5. How often during the last year have you failed to do what was normally expected of you because of drinking?
(0) Never
(1) Less than monthly
(2) Monthly
(3) Weekly
(4) Daily or almost daily

6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?
(0) Never
(1) Less than monthly
(2) Monthly
(3) Weekly
(4) Daily or almost daily

7. How often during the last year have you had a feeling of guilt or remorse after drinking?
(0) Never
(1) Less than monthly
(2) Monthly
(3) Weekly
(4) Daily or almost daily

8. How often during the last year have you been unable to remember what happened the night before because of your drinking?
(0) Never
(1) Less than monthly
(2) Monthly
(3) Weekly
(4) Daily or almost daily

9. Have you or someone else been injured as a result of your drinking?
(0) No
(2) Yes, but not in the last year
(4) Yes, during the last year

10. Has a relative, friend, doctor, or other health care worker been concerned about your drinking or suggested you cut down?
(0) No
(2) Yes, but not in the last year
(4) Yes, during the last year

Record total of specific items here.....

Developed and validated by World Health Organization (WHO) 1989

Scoring for AUDIT

Questions 1 through 8 are scored 0, 1, 2, 3 or 4.
Questions 9 and 10 are scored 0, 2 or 4 only.

The AUDIT elicits a score of between 0 and 40. Although a score of 8 or more (some studies suggest a score of 7 for women) indicates hazardous or harmful alcohol consumption, 13 suggests further investigation (clinical examination) is required to assess for possibility of dependence. It is not a diagnostic, but rather an interpretive and indicative tool. Although the global score itself is useful, also consider the three main areas of questioning to elicit specific information about patterns of use and potential for dependence.

The three main areas assessed are:

Questions 1–3: Quantity and frequency of use
Questions 4–6: Possible dependence on alcohol
Questions 7–10: Alcohol-related problems

The AUDIT is a quick, reliable and valuable screening tool for screening for hazardous or harmful patterns of use and alcohol-related problems and complements the assessment process.

Source: Health and Substance Dependence, World Health Organization (WHO), Geneva. www.stir.ac.uk/departments/humansciences/appsocsci?audit/DRUGS p17

Reference: deCrespigny, C., Talmet, J., Modystack, K., Cusack, L. and Watkinson, J. 2003. Alcohol, Tobacco and Other Drugs Guidelines for Nurses and Midwives: Clinical Guidelines. Flinders University and Drug & Alcohol Services Council, Adelaide, p164.

A Guide to interpretation and intervention:

Abstainer	Low risk alcohol use	Risky or harmful alcohol use	Alcohol dependence likely
0 No further intervention necessary	<8 Reinforce safe drinking behaviour	8+ Provide evidence on the consequences of continued risky or harmful alcohol consumption	13+ Provide advice and prescribe pharmacotherapy

Developed and validated by World Health Organization (WHO) 1989

Appendix 3

Neonatal Abstinence Syndrome Scoring Chart

Modified Finnegan Withdrawal Scale	WARD	
	MRN	
	SURNAME	
	OTHER NAMES	
	DOB/SEX	

NEONATAL WITHDRAWAL SCORING CHART (TERM INFANTS)

SYSTEM	SIGNS & SYMTOMS	SCORE	DATE AND TIME IN HOURS									
CENTRAL NERVOUS SYSTEM DISTURBANCES	*High-Pitched Cry* *Continuous High-Pitched Cry*	2 3										
	Sleeps <1 hour after feeding *Sleeps <2 hours after feeding* *Sleeps >3 hours after feeding*	3 2 1										
	Mild Tremors Disturbed *Mod–Severe Tremors Disturbed*	1 2										
	Mild Tremors Undisturbed *Mod–Severe Tremors Undisturbed*	3 4										
	Increased Muscle Tone	2										
	Excoriation (Specify area)	1										
	Myoclonic Jerks	3										
	Generalised Convulsions	5										
METABOLIC/VASOMOTOR/ RESPIRATORY DISTURBANCES	*Fever (37.3°C – 38.3°C)* *Fever (38.4°C and higher)*	1 2										
	Frequent Yawning (>3–4 times)	1										
	Nasal Stuffiness	1										
	Sneezing (>3–4 times)	1										
	Nasal Flaring	2										
	Respiratory Rate >60/min *Respiratory Rate >60/min with retractions*	1 2										
GASTROINTESTINAL DISTURBANCES	*Excessive Sucking*	1										
	Poor Feeding	2										
	Regurgitation *Projectile Vomiting*	2 3										
	Loose Stools *Watery Stools*	2 3										
	Max Score: 41 TOTAL SCORE											
	SCORER'S INITIALS											

From NSW Methadone Maintenance Treatment Clinical Practice Guidelines. Used with permission.
For additional scoring information see page 27.

Guidelines for Neonatal Abstinence Syndrome (NAS) Scoring

Score 1 for each of the following (except 1).

1. *High-pitched cry:* Score 2 if a cry is high-pitched at its peak, score 3 if a cry is high-pitched throughout.
2. *Sleep:* Consider total amount of time baby was asleep between feeds.
3. *Tremors:* This is a scale of increasing severity, and only one score should be made from the four categories. Undisturbed sleep means when the baby is asleep or at rest in a cot.
4. *Increased muscle tone:* Score if the baby has a generalised muscle tone greater than the upper limit of normal.
5. *Excoriation:* Score if excoriation occurs more than three to four times in 30 minutes.
6. *Nasal flaring:* Score if nasal flaring is present without other evidence of airways disease.
7. *Respiratory rate:* Score if respiratory rate of greater than 60 per minute is present without other evidence of airways disease.
8. *Excessive sucking:* Score if the baby sucks more than average.
9. *Poor feeding:* Score if the baby is very slow to feed or takes inadequate amounts.
10. *Regurgitation:* Score only if the baby regurgitates more frequently than usual in newborn infants.

Modifications for prematurity are mainly necessary in the sections on sleeping, e.g. a baby who needs three-hourly feeds can only sleep at most 2.5 hours between them. Scoring should be 1 if baby sleeps less than two hours, 2 if sleeps less than one hour, and 3 if the baby does not sleep between feeds. Many premature babies require tube feeding. Babies should not be scored for poor feeding if tube feeding is customary for their period of gestation.

If the baby has three consecutive scores averaging more than eight, the child should be treated for Neonatal Abstinence Syndrome (NAS).