Alcohol, smoking, and illegal substance/drug abuse during pregnancy

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Alcohol use during pregnancy
Smoking during pregnancy
Illicit substance and drug abuse during pregnancy
Pregnant women in substitution treatment (Medically Assisted Rehabilitation; MAR)
Legislation on substance abuse

Alcohol use during pregnancy

Recommendations

- Women should be informed about the dangers of consuming alcohol during pregnancy **(recommendation)**
- The screening tool TWEAK can be used to screen for high-risk drinking during **pregnancy (proposal)**

Most western countries recommend total abstinence from alcohol during pregnancy. The following guidelines apply in Norway (Sosial- og helsedirektoratet [Health and Social Affairs], 2005):

1. A pregnant woman should not drink alcohol.
2. A pregnant woman who has already consumed alcohol during pregnancy should stop immediately to minimize further risk.
3. A woman planning to become pregnant should not drink alcohol.

Physicians should document the woman's drinking habits during the first antenatal consultation.
For women who abuse alcohol during pregnancy and who decline appropriate guidance, Lov om sosiale tjenester [Law on social services] permits detention of pregnant substance abusers.

Literature search

McMaster PLUS (Premium LiteratUre Service), Up to date, PubMed, National Institute for Health and Clinical Excellence (NICE), Cochrane Database, Royal College of Obstetricians & Gynecologists, Danish and Swedish guidelines.

Prevalence

Data from the Norwegian Mother and Child Cohort Study indicate that 84% of pregnant women abstain from drinking alcohol during pregnancy. Approximately 15% consume less than one unit per week, while 0.5% of the study participants consume one unit or more per week during pregnancy (1).

In Norway, estimates indicate that 60 children with Fetal Alcohol Syndrome (FAS) (0.1%) and 200-300 children with Fetal Alcohol Effects (FAE) are born every year (2, 3).

Etiology / pathogenesis

One unit of alcohol equals 12.8 grams of pure alcohol (in practice = 1 glass of wine (15cl) / 1 bottle of beer (33 cl). Alcohol transfers easily across the placenta, giving the fetus the same level of alcohol in the blood as the mother. Brain structures and function can be seriously

damaged by prenatal alcohol exposure (3-8).

There is no knowledge about the lower safe limit of alcohol consumption during pregnancy. Some studies find no increased risk of birth defects after maternal consumption of one to two units of alcohol per week during pregnancy (9), while other studies find that one unit of alcohol a week during pregnancy is sufficient to increase the risk for behavioral problems in the child (10).

Several observational studies find that high alcohol consumption (more than 2 units per day) and binge drinking is associated with FAS. FAE and FAS are well-documented effects of alcohol use in pregnancy as well as an increased risk of miscarriage. Growth retardation affects length and weight as well as head circumference. FAS is the leading cause of preventable developmental disabilities (3-9).

Risk Factors

Mental illness, substance abuse. Alcohol abuse occurs in all socioeconomic groups.

Diagnostics / Recording of alcohol habits

Helsedirektoratet [The Directorate of Health] recommends using the screening tool TWEAK to screen for risky alcohol use in pregnancy. It can be found on www.helsebiblioteket.no under Psykisk helse/Rus og avhengighet/Skåringsverktøy TWEAK (3).

Interventions / follow-up

Health care providers should ask about and record the drinking habits of at the first maternity check-up. Many pregnant women reduce their alcohol consumption during pregnancy without help from health services. Because alcohol can have a detrimental effect on the fetus throughout pregnancy, it is important to quit drinking alcohol at all stages of pregnancy (3).

Patient information

Consumption of alcohol during pregnancy can seriously injure the baby. There is no known lower safe limit for alcohol intake in pregnancy. It is best therefore to abstain completely from alcohol during pregnancy and preferably also during the period when the woman is trying to conceive.

ICD-10

O35.4 Maternal care for (suspected) damage to fetus from alcohol
O99.3 Mental disorders and diseases of the nervous system complicating pregnancy, childbirth and the puerperium
F10.2 Alcohol dependence

Keywords
• Alcohol
• Pregnancy

Literature

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Smoking during pregnancy

Recommendations
• Smoking habits should be recorded at the first maternity check-up **(recommendation)**
• Pregnant women should be informed about the benefits of smoking cessation during pregnancy **(recommendation)**
• If the use of nicotine replacement therapy is a prerequisite for achieving smoking cessation, this is considered less harmful to the mother and child than that the woman continues to smoke **(recommendation)**

Literature search
McMaster PLUS (Premium LiteratUre Service), Up to date, Pub-med, National Institute for Health and Clinical Excellence (NICE), Cochrane Database, Royal College of Obstetricians & Gynecologists, Danish and Swedish guidelines.

Definitions
Tobacco use during pregnancy (all forms).

Prevalence
Data from the Medical Birth Registry from 2002 show that 18% of Norwegian women smoked daily in early pregnancy and 13% were daily smokers by the end of the pregnancy (1). Most of the women who stopped smoking during pregnancy were low consumers prior to becoming pregnant.

Etiology / pathogenesis
Cigarette smoke contains more than 3,000 toxic components. Both smoking and passive smoking increases the risk of infertility, growth retardation, placental abruption, premature rupture of membranes (PROM) and placenta previa. Smoking, and particularly smoking in third trimester, inhibits the fetal growth. Some studies indicate a possible neonatal nicotine withdrawal syndrome with symptoms of neonatal eating problems, irritability and tremors. Norwegian studies have also found an association between fetal exposure to tobacco smoke and diseases in adulthood such as asthma, obesity, high blood pressure and gestational diabetes (2-5). The risk of adverse events is dose-related and children of mothers smoking more than 10 cigarettes per day are at greatest risk (2-5).

Indication / method / diagnostics
Recording smoking habits is necessary for interventions (2).

Interventions / treatment / progress / follow-up
Various interventions have been scientifically evaluated (2). Distributions of brochures alone have shown little effect on smoking cessation in pregnancy (6). Repeated focus on tobacco consumption at each prenatal consultation and information about smoking during pregnancy (oral and written), together with offers of help and possibly cessation courses, has proven to be cost-effective (2).
Smoking cessation is the goal, but if this is not possible, it is important to strive for reduction targets.
Nicotine replacement therapy ((NRT), i.e. chewing gum, patch, inhaler, sublingual tablets or lozenges) has traditionally not been recommended during pregnancy; however, use of NRT is potentially less harmful to the fetus than cigarette smoking. Women ingest less nicotine with NRT than when smoking, and fetal exposure to other harmful substances in the tobacco will

be avoided (7). Medications prescribed for smoking cessation (bupropion (Zyban®), vareniklin (Champix®)) are not recommended during pregnancy and lactation.

Patient information

Smoking during pregnancy is harmful for both mother and child. Smoking cessation at any time during pregnancy is beneficial. If cessation is not achieved, it is better to use nicotine replacement products (nicotine gum, smoking patches, etc.) than smoking cigarettes during pregnancy to avoid all the other substances in the tobacco.
- Information about "Røyketelefonen" [Smoking helpline]: Tel: 800 400 85.
- Helsedirektoratets [the Directorate of Health] smoking cessation program for pregnant women: http://www.helsedirektoratet.no/publikasjoner/roykesluttprogram-for-gravide/Publikasjoner/roykesluttprogram-for-gravide.pdf

Keywords
• Tobacco
• Pregnancy

ICD-10
Z 72.0 Tobacco use
F 172 Mental and behavioral disorders due to tobacco dependence

Literature

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Illegal substance and drug abuse during pregnancy

Substance abuse during pregnancy increases the risk of pregnancy complications, severe withdrawal symptoms in the newborn (lasting up to six months), malformations and neurodevelopmental disorders in the child. It can be difficult to distinguish transient perinatal complications in the infant from symptoms that indicate more serious damage to the central nervous system.

Recommendations
• Illegal substance/drug abuse should be recorded at the first antenatal consultation **(recommendation)**
• Women should be informed about the dangers of illegal substance /drug abuse both during and after pregnancy **(recommendation)**

For women who decline appropriate guidance, and where the abuse is of such a nature that it is highly likely that the child will be born with adverse effects, Lov om sosiale tjenester [Law on social services] permits detention of pregnant substance abusers.

Literature search
McMaster PLUS (Premium LiteratUre Service), Up to date, PubMed, National Institute for Health and Clinical Excellence (NICE), Cochrane Database, Royal College of Obstetricians & Gynecologists, Danish and Swedish guidelines.

Definition
Sosial- og helsedirektoratet [Health and Social Affairs] defines, through its policies, *all ingestion of substances that can cause harm to the unborn child* as abuse (1). Substances in pregnancy include alcohol, drugs and narcotics, licit and illicit substances.

Prevalence
Data from the Norwegian Prescription linked to The Medical Birth Registry] (2004-2009) showed that approximately 3% of all pregnant women bought opioids during pregnancy (2). In 99% of the cases, the prescribed drug was codeine / paracetamol combinations (Paralgin Forte ®, Pinex Forte ®). Most of the women were only registered as one-time dispensers, with an amount corresponding to short-term treatment (one week).

The number of pregnant women in Norway institutionalized by law due to substance abuse is approximately 30 per year (3). Most were forcibly treated because of illegal substance and drug abuse. A few had problems with alcohol abuse. Women should be encouraged to undergo voluntary treatment; however, the number of pregnant women who undergo voluntary substance abuse treatment is unknown.

Etiology / symptoms
Pregnant substance abusers belong to a risk group that needs closer follow-up than usually recommended, both during pregnancy and after birth (1). Most pregnant substance abusers have significantly higher frequency of somatic and psychological morbidity.

Stimulants (amphetamines, cocaine, LSD)
Amphetamine use causes vasoconstriction and poorer blood flow to the fetus via the placenta. Amphetamine abuse increases the risk of miscarriage, premature birth, fetal death and growth

restriction (smaller head circumference). When used near time of birth, withdrawal-like symptoms, with increased agitation or abnormal drowsiness, may occur in newborns. Long-term studies have documented reduced IQ and behavioral problems (4, 5).

A wide range of morphological changes in the fetus has been attributed to cocaine's vasoconstriction effects. Vasoconstriction causes poor blood flow to the placenta, increased risk of placenta abruptio and premature rupture of membranes. Toxic reactions have been reported in neonates, as have withdrawal symptoms, although the latter are less common. Negative effects on psychomotor development have also been reported (5).

Documentation regarding the teratogenic effects of LSD is limited. A mix of abuse with other illegal substances/drugs makes it difficult to separate the effects of different substances. Available data do not indicate that LSD is highly teratogenic.

Benzodiazepines and benzodiazepine derivates (BDZ)
Generally the risk of birth defects is considered low when administered in therapeutic doses (5,6). However, the risk is dose-dependent, and dosages of diazepam (Sobril ®, Valium®) above 30-40 mg daily or use over extended periods can cause an increased risk of birth defects. Abrupt discontinuation can cause withdrawal symptoms in both mother and fetus (6,7). Recommended dosage reduction is discussed in Helsetilsynets [the Norwegian Board of Health Supervision] guidance-report on addictive drugs (8). Abuse of BZD in pregnancy may increase the risk of cleft lip-palate. Abuse of benzodiazepines in the third trimester increases the risk of withdrawal symptoms in newborns (tremors, irritability, hypertonisitet and diarrhea / vomiting). In such cases, gradual dose reduction may be necessary to avoid withdrawal symptoms. Used continuously up to delivery, BDZ has been associated with "floppy infant syndrome" with symptoms such as hypotension, hypothermia, breathing problems, lethargy and breastfeeding problems (6.7).

Cannabis (hashish, marijuana)
The active ingredient tetrahydrocannabinol (THC) may cross the placenta. Studies show a slightly increased risk of premature birth and low birth weight associated with frequent use of cannabis (5).

Opioids
Women who abuse opioids during pregnancy have an increased incidence of placental abruption, intrauterine fetal death and preterm birth. Low birth weight (LBW) and smaller head circumference has also been observed (5, 7, 8). The children often have low Apgar scores and may have pronounced withdrawal symptoms: tremors, trembling, respiratory problems, breastfeeding problems, yawning, sneezing, and possibly convulsions. Symptoms may appear soon after delivery, but can also occur one to two weeks after birth. Children of mothers who use methadone have the most prolonged withdrawal symptoms. These children can have problems with hypersensitivity to sensory input, sound, light or touch for several months after birth. Studies have shown that children of opiate using mothers are at increased risk for attention problems and hyperactivity disorder (8).

Indication / method / diagnostics
Urine is the most appropriate test medium for illegal substance and drug analyses. Many of the most commonly abused substances have short half-life in the blood but can be detected in urine for an extended period after ingestion. Sosial- og helsedirektoratet [the Health and

Social Affairs] have issued guidelines for substance abuse testing (9). In suspected or confirmed abuse situations, sosialetaten [the social agency] will take responsibility for facilitating follow-up / treatment after they are notified.

Interventions / treatment / progress / follow-up
A pregnant woman who is suspected of abusing illegal substances or drugs are defined as a *high-risk pregnancy*. High-risk pregnancies should be offered *more frequent and more extensive* prenatal care than usual (1).

There are seven regional resource centers for substance abuse in Norway. Borgestadklinikken in Skien has been assigned as national resource center for pregnant women and new mothers women who are substance abusers (Phone: 35 50 91 00, email: info@borgestadklinikken.no, or Internet: www.borgestadklinikken.no).

Patient information
Use of illegal substances or drugs in pregnancy may result in the child being born with serious health problems. Legislation requires health care professionals to report any suspected abuse that could harm the unborn child. Voluntary interventions are preferred, but enforced actions (i.e. institutionalisation) are permitted by law in *Lov om kommunale helse- og omsorgstjenester med mere (helse- og omsorgstjenesteloven) § 10-3. Tilbakeholdelse av gravide rusmiddelavhengige.* [the law on municipal health- and care services and more (the health- and care service law) § 10-3. Detention of pregnant substance abusers.]

Keywords
• Substance abuse
• Drug addiction
• Pregnancy

ICD-10
O35.5 Caring for and treating mother when (suspected) damage to fetus is caused by drugs
O99.3 Mental disorders and diseases of the nervous system that complicates pregnancy, childbirth and maternity
F11.2 Mental and behavioral disorders due to dependence on opiates
F12.2 Mental and behavioral disorders due to dependence on cannabinoids
F13.2 Mental and behavioral disorders due to dependence on sedatives and hypnotics
F14.2 Mental and behavioral disorders due to addiction to cocaine
F16.2 Mental and behavioral disorders due to dependence on hallucinogens
F18.2 Mental and behavioral disorders due to dependence on volatile solvents
F19.2 Mental and behavioral disorders due to dependence on multiple substances

Literature
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Pregnant women in opioid replacement therapy (Medically Assisted Rehabilitation; MAR)

Recommendations
• Opioid-dependent pregnant women in MAR can continue opioid replacement therapy during pregnancy **(recommendation)**
• In the event of stopping opioid replacement therapy, pregnant MAR users with co-abuse of other substances/drugs should reduce/quit these first **(recommendation)**

Literature search
McMaster PLUS (Premium LiteratUre Service), Up to date, PubMed, National Institute for Health and Clinical Excellence (NICE), Cochrane Database, Royal College of Obstetricians & Gynecologists, Danish and Swedish guidelines.

Definition
MAR is a treatment in which patients with long-term opiate abuse are offered long-acting opioid (methadone (Metadon®), buprenorphine (Subutex®) or buprenorphine + naloxone (Subuxone®)) as part of a treatment and rehabilitation intervention.

Prevalence
Annually, between 30 and 60 children in Norway are born to mothers in MAR treatment where the fetus has been exposed to methadone or buprenorphine in utero (1,2).

Treatment
In 2011, Helsedirektoratet [the Directorate of Health] published national guidelines for follow-up of pregnant women during MAR treatment (2). The Directorate of Health recommends that pregnant women not reduce the use of methadone or buprenorphine during pregnancy, unless they want to (2,3).

Consequences
Children who are born to mothers in MAR treatment are somewhat smaller at birth (birth weight, length, head circumference) than children born to non-substance abusing mothers (2). Methadone use in pregnancy is related to neonatal abstinence syndrome (NAS) in 60-90% of births and about half of these newborns will need medical treatment (2-5).

Patient information
It is better for mother and child to continue MAR and use methadone or buprenorphine in a controlled environment than using illegal substances or abusing opiates during pregnancy.

ICD-10
O35.5 Caring for and treating mother when (suspected) damage to fetus is caused by drugs
O99.3 Mental disorders and diseases of the nervous system that complicates pregnancies, childbirth and maternity
F11.2 Mental and behavioral disorders due to dependence on opiates

Literature
1. Nasjonal retningslinje for legemiddelassistert rehabilitering ved opioidavhengighet [National guideline for medically assisted rehabilitation for opioid dependence] http://www.helsebiblioteket.no/Retningslinjer/LAR/Forord
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Legislation on substance abuse

Lov om helsepersonell § 32 [Health Personnel Act § 32]
Providing information to social services: *"Notwithstanding the confidentiality legislation of § 21, health care personnel shall provide information to social services if there is reason to believe that a pregnant woman is abusing substances in such a manner that it is highly likely that the child will be born with damage. Also upon order from the agencies responsible for the implementation of social services, health care personnel shall provide such information. In health institutions there shall be appointed one person to be responsible for the disclosure of such information ".*

The legislation distinguishes between providing such information before and after birth. Lov om barneverntjenester [The Child Welfare Act] will not be applicable before the child is born. Practice varies from one municipality to another in terms of the extent to which child welfare services is involved in matters concerning unborn children. Concern for the unborn child shall be channelled to health care services. The woman must give consent for contact with the child welfare service during pregnancy.
Health care professional are obliged inform health care services when there is reason to believe that a pregnant woman is abusing substances in such a manner that it is highly likely that the child will be born with damage.

When abuse problems are suspected, the social services shall be notified. This according to Lov om helsepersonell § 34 [the Health Personnel Act, § 34] (2): *"Notwithstanding the confidentiality of § 21, the health care personnel shall provide information to social services if there is reason to believe that a pregnant woman is abusing substances in such a manner that it is highly likely that the child will be born with damage. Also upon order from the agencies responsible for the implementation of social services, health care personnel shall provide such information. In health institutions there shall be appointed one person to be responsible for the disclosure of such information".*

Lov om kommunale helse- og omsorgstjenester m.m. (helse- og omsorgstjenesteloven) § 10-3. [Law on municipal health- and care services and more. (Health- and care service law)]
Detention of pregnant substance abusers
It may be decided that a pregnant substance abuser, without her consent, should be taken to an institution designated by the regional health authority, jf. spesialisthelsetjenesteloven § 2-1a fjerde ledd [Specialist Health Care Service Act § 2-1a fourth paragraph], and kept there throughout the pregnancy if the abuse is of such a nature that it is highly likely that baby will be born with damage and if other interventions are not sufficient. Fylkesnemnda [The County Council] will also decide whether it should be permitted to take urine samples from the pregnant women while in residential care (2).

Interventions concerning pregnant substance abusers are described in Rundskriv I-46/95 from Sosial- og helsedepartementet and Barne- og familiedepartementet [Circular I-46/95 from the Health and Social Affairs and Children and Family Affairs] (3).

Urine samples
Substance abuse control by analysing for illicit substances in urine samples requires initially the woman's consent if the results may lead to serious sanctions if a positive test result is obtained4, 5). Urine sample control without the woman's consent can only be implemented after the decision by Lov om kommunale helse- og omsorgstjenester m.m. (helse- og

omsorgstjenesteloven) § 10-3. [Law on municipal health- and care services and more. (Health- and care service law)] *Detention of pregnant substance abusers* (2).

Medical tests (often called screening tests)
These tests most often only contain screening analyses. Screening analyses detect substance groups. These tests are performed by many laboratories. Test results are not legally binding and cannot be used when a positive test result may lead to serious sanctions, but can provide immediate indication of whether there has been consumption of substances for abuse (4).

Literature
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http://www.helsetilsynet.no/no/Regelverk/Rundskriv/Rundskriv-helsetjenesten/Rundskriv-og-lignende-Helsedirektoratet/Kvalitetsrutiner-rusmiddeltesting-medisinsk-sammenheng/
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