

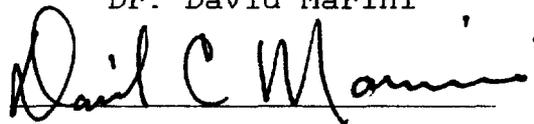
Drug Use in the Expectant Mother

An Honors Thesis (HONRS 499)

by

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American society today makes extensive use of psychotropic substances. These substances induce relaxation which enables people to better cope with extraordinary stressors as well as the stressors of everyday life. Some of these drugs, such as heroin and cocaine, are illegal and are used for their euphoric mood-altering effects. Other legal substances such as alcohol, nicotine, and caffeine are encountered on a day-to-day basis and, for many, become habits of daily life. These drugs, however, have potential to cause great harm to the user. Unfortunately, in some cases more than one life may be at risk, as in the case of maternal drug use. A pregnant woman consuming drugs of any kind will pass these drugs through the placenta to her baby. The baby will be affected in a variety of ways, depending upon the quantity and type of drugs used. Anything from slight behavioral abnormalities to spontaneous abortion can result from maternal drug use.

It was not until the thalidomide tragedy in the early 1960's that drug effects on the fetus were extensively studied. Until that time little attention had been paid to this issue, partly because drug use was not extremely widespread among women before the 1960's. However, in the past twenty years, drug use in women of childbearing age has drastically increased. As a result, the amount of information on this topic grew tremendously.

Teratogens are the group of drugs that have been noted to adversely affect the baby. These teratogens have now been studied extensively, bringing startling and frightening discoveries. Several different drugs will be specifically addressed throughout this paper. Due to the fact that different drugs have diverse effects on the mother and baby, several different types of drugs will be reviewed. The effects of each drug, including the beneficial effects, are important to note. The mother, in addition to the baby, will experience effects, good and bad, from any drug. However, few people are as sympathetic with the mother as they are with the baby. The mother did choose to use drugs; whereas, the baby is an innocent victim of drug abuse and could be forced to start its life with birth defects and intellectual impairment.

Narcotics such as heroin will be addressed due to the seriousness of the damage that can result as a consequence of its usage. Any report would be incomplete that did not include discussion of narcotics, even though they do not comprise the majority of the drug abusing pregnant women. The effects of marijuana and cocaine will also be discussed since these illegal drugs are more often seen in society than narcotics, particularly outside the inner-city ghetto.

Also important, however, are the more prevalent drugs such as alcohol, nicotine, and caffeine. The use of these drugs on a day-to-day basis in American culture are frequently unquestioned. In the pregnant woman, however,

these drugs can have a profound effect on the fetus. Therefore, much of this paper will address these more common drugs and their effects.

One of the most crucial steps in handling drug-dependent mothers is quick and accurate recognition of her addiction. The entire pregnancy of an unaddicted mother is treated differently than that of a mother addicted to a drug. Therefore, early identification of the problem is the first step toward having a healthy baby. Frequently, the pregnant substance-abusing patient is forgotten, and little follow-through is done to refer the mother to rehabilitation and to adequately treat her baby. Many medical professionals have had very little experience with prenatal exposure to drugs. This may account for inadequate follow-through or inaccurate diagnosis (Chasnoff 17).

Physical signs of chemical dependence can be very helpful in diagnosing the drug abuser. Drug tests, such as a routine urine drug screen, can be administered with relatively little effort, but patient cooperation must be considered. Erratic behavior such as mania or depression may be indicative of drug use. Some mothers, fortunately, will admit their use of drugs. It appears that their fear of harm to the baby outweighs any negative consequences of admitting their drug use.

Even after a mother's addiction is discovered, each woman and pregnancy must be considered separately. As will be discussed later, the type(s) of drug(s) being used will

have a profound influence on the decisions of the physician. In addition to the type of drug used, some women are habitual users, whereas others are addicted to a lesser extent. These women would be handled differently during and after the pregnancy. Psychological factors must also be considered. A mother who has an apathetic attitude toward her pregnancy will usually treat herself and her fetus more carelessly than a woman who is thrilled to be pregnant. It is obvious that several factors must be taken into consideration before a doctor can decide how to handle the pregnancy. The sooner, and the more accurately the physician can diagnose the patient, the greater the benefit to patient and baby.

A patient's physical appearance, medical history, obstetrical history, substance abuse history, and psychological status are all factors to be considered before a diagnosis and treatment regimen can be developed. Each of these aspects will be discussed briefly with somewhat more emphasis on the psychological factors.

In a medical and obstetrical history, effects of substance abuse in relation to other health problems and other pregnancies in an individual are researched. An interviewer can look into a woman's past pregnancies to check for past complications. Drug use during past pregnancies could have resulted in spontaneous abortion, premature labor, fetal death, and an assortment of other difficulties. Knowing these facts about a woman's past is very helpful in preparing the physician for any birth complications.

Substance abuse history is obviously an important part of a complete assessment of a mother. Every drug used at any time during a woman's life needs to be included in this history. Many drugs such as heroin and cocaine can affect a future baby permanently. If the interviewer begins with questions about prescribed drugs, over-the-counter medications, and alcohol, the questions will seem less threatening to the mother and are likely to make her less defensive. Such an interview technique may encourage the woman to be honest in her responses to inquiries regarding illegal drug consumption.

The first drugs to be discussed are the drugs most commonly used by society as a whole--nicotine and alcohol. Thousands of babies are born every year with difficulties caused by maternal use of these drugs. The misconception of these being "safe drugs" must be dismissed.

The products of tobacco smoke are absorbed from the mouth and lungs into the bloodstream which then circulate the products to all the parts of the body. These substances pass through the placenta and move from mother's bloodstream to baby's. Nicotine, one of the potent drugs in cigarettes affects the cardiovascular system as well as the nervous system. Obviously if one of these systems is altered, serious complications can result. Another of the dangerous drugs in tobacco smoke is carbon monoxide which interferes with the oxygen-carrying ability of hemoglobin (Fried 27). Although smoking has been proven to be extremely harmful,

millions of Americans still engage in habitual smoking.

The seriousness of the addiction of smoking is indicated by the statistic that two-thirds of smokers wish to quit and even have good reasons for quitting, such as health problems, yet are unable to break the habit. For most smokers, smoking becomes a compulsion. They are dependent on its effects and face the pain of withdrawal if the drug is not used (Fried 28).

Cigarette smoking is believed to be the most common drug addiction among pregnant women in today's society (Niebyl 173). Despite growing information of the risks of smoking, only about twenty percent of pregnant women quit smoking during pregnancy. A book entitled Smoking For Two was written in response to a need its authors saw arising in society--the need for accurate and available information on the dangers of smoking for the pregnant woman. The mere fact that cigarette use is so widespread demands that much attention be focused on its adverse effects. In the last few decades, the smoker has been the focus of smoking's negative effects. The dramatic increase in documented cases of lung cancer has provided an indisputable correlation between smoking and health problems. Illnesses such as emphysema, asthma, throat cancer, labored breathing, and cardiovascular disease can also occur as a result of smoking.

Because many people do not think of nicotine as extremely harmful especially if used in moderation, society has tended to focus on the dangers it presents only to the

smoker. Of more recent concern, however, has been the effects of cigarette smoking on people other than the smoker. Sidestream smoke has now been proven to have a profound negative effect on the non-smoker. For example, those who live in the same household as a smoker have an increased risk of respiratory difficulties as compared with those who live in a smoke-free environment. Simply being in the room a few times with a smoker will have no effect on a person's overall health; however, prolonged and consistent exposure to cigarette smoke will take its toll on many non-smokers. The bystanders encountered by a smoker everyday can be affected by the addiction of one individual to nicotine. But, another victim is created in our smoking society--the unborn child. A smoking mother-to-be is creating a toxic world in which her baby is to develop.

As long ago as 1935 "investigators revealed that there is a definite rise in the fetal heart rate when the mother begins smoking a cigarette and suggested that this effect probably is caused by nicotine passing across the placenta" (Fried 30). Studies done today support this discovery. The fact that the heart rate increases may not seem extremely harmful; however, this is only one of many complications caused by a smoking mother.

Retarded fetal growth is the most common side effect of smoking during pregnancy. As first reported in 1957 and since confirmed by several other studies, smokers' babies generally weigh around two hundred grams less at birth than

the babies of nonsmokers. It has been proven that there is a positive correlation between the amount of smoking and low birth weight. In other words, the more a woman smokes while she is pregnant, the lower her baby's weight at birth. This effect is "primarily due to intrauterine growth retardation since mean gestation is reduced at most by one to two days among smokers" (Niebyl 173). Many times a smoker's baby will be born prematurely before the baby's vital organs have fully developed. Other times the baby is full-term, but development in utero was so retarded that the baby's development resembles that of a premature baby.

Fortunately, some researchers suggest that if the mother gives up smoking, at any time throughout the pregnancy, the baby's chance of being born fully developed increases greatly. In other words, even if a mother smokes during the first four months, if she then stops smoking, the baby can usually develop normally for the remaining five months. This would suggest that it is never too late to quit. The damage may not have already been done (Fried 64).

In addition to lower birth weight, the rate of spontaneous abortion appears to be much greater in smoking mothers. However, this relationship is not as clear-cut as the relationship between smoking and birth weight. This is primarily because many factors other than smoking contribute to spontaneous abortion. Variables such as general health of mother, age of mother, and whether or not the pregnancy was desired all seem to influence the rate of fetal mortality.

It may seem odd that the fact a pregnancy is unwanted has an effect on miscarriages. In 1971, however, Scandinavian researchers found that incidence of spontaneous abortion occurred twice as frequently in unwanted pregnancies as in pregnancies where the baby was welcomed (Fried 51). This is apparently a result of the mother not caring properly for herself through drug use, poor nutrition, etc. and due to the mother's psychological status. A pregnant woman's psychological condition strongly influences the manner in which she seeks help, cares for herself, and cares for her child. A reliable study conducted more recently took several of these additional variables into account and reported that spontaneous abortions were twice as likely to occur in smokers as non-smokers. The relationship does appear to be consistent (Fried 51).

The correlation of smoking, stillbirths, and congenital malformations are less concrete. Increased cases of anencephaly, congenital heart defects, and cleft palates suggest a definite correlation. However, the incidence of Down Syndrome, oddly enough, seems to be reduced in smokers. This inconsistency results in an ambiguous relationship (Niebyl 182).

Not only does smoking appear to harm the baby prenatally, but damage can be noted throughout the baby's infancy. Negative effects of smoking have been observed in children from birth until at least the age of five. Postnatal mortality during this time period was much higher

for babies of smokers. Hospitalization rates for problems such as bronchitis and pneumonia were higher in infants of smoking mothers. After the age of five these children tended to be more prone to diseases of the respiratory system. Also, the already too familiar sudden infant death syndrome has been proven to be related to maternal smoking. This may be due to the sidestream smoke after birth in addition to nicotine in utero.

In addition to causing physical problems, smoking during pregnancy also results in behavioral and intellectual difficulties. Intellectual impairments, reduced attention spans, and hyperactive behavior have also been noted in affected children. Although these conditions may not appear to be as serious as the physical ones, a child starting with one of these impairments has a definite handicap in his future development (Niebyl 184-5).

Smoking is one of the few known preventable causes of spontaneous abortion and fetal mortality. Many avenues of assistance are available to the pregnant woman. Physicians should inform their patients about the risks involved in smoking during their pregnancies. A recent study indicates that health education has been quite effective in stopping smoking (Niebyl 187). At the first visit to the obstetrician, cigarettes should be included in a list of drugs to avoid during pregnancy. Physicians can also directly measure smoking habits by obtaining an expired carbon monoxide level during each visit. Repeat testing each

visit will indicate cessation or reduction of smoking in the woman. Doctors could also help by prohibiting smoking in their clinics and providing financial incentives for mothers who stop smoking. Insurance companies can assist in charging lower premiums to those individuals who sign an affidavit saying that they do not smoke (Niebyl 188). Perhaps with mounting negative attitudes toward smoking, these expectant mothers will be motivated to stop the habit.

The drug that has had the greatest impact on unborn babies throughout history has yet to be discussed. Alcohol has been recognized as having a wide range of effects on a fetus. Many problems ranging from spontaneous abortion and birth defects to subtle behavioral problems have been observed in affected infants. "Alcohol is now recognized as the leading known teratogen in the western world" (Niebyl 193). In 1899 Dr. William Sullivan, an English physician, conducted a study of 120 alcoholic women prisoners and a similar number of non-drinking women. He discovered that stillbirths and infant mortality were two-and-a-half times higher in the drinking mothers. Little attention was given to this study at the time, however, and alcohol's effects on babies were virtually ignored until 1973 when a pattern of birth defects was noticed in babies born to alcoholic mothers. This study focused the world's attention on these everyday drugs that were thought to be harmless (Niebyl 193).

Fetal alcohol syndrome (FAS) refers to a pattern of problems that appear in children of alcoholic mothers. In

1980 three criteria were set for a consistent diagnosis of FAS. Retardation of growth, a variety of facial anomalies, and central nervous system dysfunction have all been noted in FAS babies. These three characteristics must be noted in a child in order for FAS to be diagnosed. All of these characteristics are non-specific, however, meaning that they can occur to babies of non-drinking mothers also. However, when each of these characteristics is present in one child, FAS is diagnosed (Niebyl 194).

One of the many problems of FAS babies is that these babies find it difficult to compensate for their lower birth weight. In babies exposed to opiates, however, even if the baby is small at birth, "catch-up" growth is often observed, and the child grows to a normal size (Chasnoff 75). Babies with FAS tend to remain smaller than average, which during infancy can create many problems. Low birth weight often results in much higher rates of infant mortality and intensive hospitalization. This hospitalization can greatly detract from the process of bonding that normally occurs between mother and baby during the first few days of life.

Physical anomalies, especially of the face, are easily recognized. These congenital abnormalities include, but are not limited to, unparallel ears, cleft palate, short length of nose, heart and kidney defects, and limb and joint problems. These problems are not merely aesthetic. They can create difficulties in hearing, speaking, breathing, and many other functions.

Many of these physical anomalies can be repaired surgically. However, FAS is the leading cause of mental retardation, and **this** is irreversible and untreatable (Niebyl 196). Central nervous system dysfunction is one of the most studied aspects of FAS. The child can experience delayed language and motor development as he grows, and usually his abilities do not improve as he matures (Chasnoff 76). These babies tend to be more irritable and restless during infancy. This is not to say that all anxious babies are suffering from FAS, but emotional disturbances have been a trend in those babies already diagnosed. Fetal alcohol syndrome children, given IQ tests, averaged much lower than the national standard. Occasionally an affected child will score relatively high on these tests, but this child usually exhibits milder disabilities such as learning difficulties and behavioral problems (Stimmel 107).

Through examinations of babies, it has been noted that all affected babies do not show every FAS symptom. Fetal alcohol effects (FAE) is the general name given to symptoms of babies with only partial expression of FAS characteristics. Some babies will show only a few or one single abnormality at birth. This baby would be an FAE baby--showing some, but not all, of the symptoms.

Some babies of alcoholic mothers show few symptoms of FAS and certainly do not fulfill the three criteria set in 1980. Other more moderately drinking women have children with all the FAS symptoms. This could suggest that FAS may

not be entirely dose-related. However, research has not proven this beyond question. "The smallest reported amount [of alcohol] linked to a case of FAS was six bottles of beer daily throughout the pregnancy" (Stimmel 110). This is a substantial amount of alcohol intake; therefore, some researchers give more emphasis to dosage than others. Merely because a woman drinks heavily, it is not guaranteed that she will have an FAS baby. It is, however, much more likely. And alternatively, a moderately drinking woman can have a severely affected child.

Stillbirth rates have been slightly increased in drinking mothers. Heavy alcohol intake late in the pregnancy may not do enough damage to induce spontaneous abortion but may later produce stillbirth (Niebly 196). A study performed in 1974 showed that stillbirth rates were two-and-a-half times higher in women drinking three or more alcoholic drinks daily than in women who drank less than this (Stimmel 113).

Spontaneous abortion rates are significantly increased in babies of drinking mothers. A study in California concluded that spontaneous abortion risks in the second trimester are doubled for drinking women as compared with non-drinkers (Stimmel 113). Spontaneous abortion is especially related to the timing of exposure to the drug. The later in pregnancy the mother drinks, the less likely it is for spontaneous abortion to occur.

The timing of the exposure to alcohol can play an important role in the effects alcohol has on the baby. The

first trimester is obviously important for morphologic development. The second trimester shows increased risk of spontaneous abortion. But, growth of the fetus seems to be most influenced by mother's intake of alcohol during the third trimester. The vital organs have already formed, but fetal growth is greatly reduced. Even if spontaneous abortion does not occur as a result of heavy drinking in the last half of pregnancy, stillbirth and FAS can and often do result.

One might predict that once a woman becomes pregnant she will quit drinking. However, as is obvious in American society, this does not happen in all instances. Attempts may be made by the mother, but alcohol addiction is difficult to overcome. Blood alcohol levels may be much greater in pregnant women than in nonpregnant women, meaning that even though women may curb their drinking habits, they may still have higher blood alcohol levels (Abel 32). Also, some fetuses are harmed more than others by exposure to the same amount of alcohol, which suggests that other variables are important in the expression of FAE's. Genetic factors may play an important role in the expression of any particular symptom in a child. This suggests that some babies have an increased susceptibility to FAE's, and chances are that the mother cannot accurately predict her susceptibility level. So, even if drinking is reduced greatly, the genetics of the mother and consumption of other drugs still profoundly affect the child. Future research will provide more answers into

this complex issue. Certainly the only sure way of avoiding FAE's is to abstain from all drinking.

From this discussion alcohol seems incredibly negative and harmful, yet many women still crave the positive feelings given by it. The temporary anxiety relief it provides allows a nervous mother-to-be to relax while under the influence of the alcohol. This relaxation seems particularly helpful during pregnancy when so many physical changes are being experienced. Therefore, it is difficult to stop a drinking habit.

A few suggestions can be given to aid in dealing with an alcoholic mother without delving into the complex emotions and problems involved in alcoholism. However, it should be noted that these suggestions alone are not adequate. Alcoholics generally need intensive therapy that can be provided by groups such as Alcoholics Anonymous, Alateen, etc.

Doctors should warn women about the dangers of drinking **before** they get pregnant; after pregnancy occurs, these dangers should be reemphasized. Doctors should monitor the patient's drinking habits throughout the pregnancy. If the physician can remain non-judgmental and supportive, his suggestions will be better received. A referral to a rehabilitation group or clinic is an easy step that these doctors frequently take. Whether or not the patient follows through with this referral is up to the patient, of course. The March of Dimes distributes pamphlets that express well

the idea behind physicians' thoughts--"Before you drink, think" (Stimmel 121).

Another drug commonly used in our society, but not particularly addictive, is caffeine. The stimulant effects of caffeine have become extremely popular. Caffeine is an integral part of many drinks, foods, and medications. The availability of caffeine has created concern among women regarding the effects caffeine could have on a baby. Scientists recognized this concern and compiled information through extensive research regarding caffeine as a teratogen.

Apparently, caffeine has appeared to have little or no negative effects on a fetus. Studies have found "no statistical increase in congenital abnormalities associated with caffeine use..." (Niebyl 231). This study has since been supported by many other researchers. Heavy caffeine consumption can lead to pregnancy complications, however. Many women who consumed large amounts of caffeine during pregnancy had babies with lower than average birth weights. It must be noted, however, that other variables are probably also attributable to this decrease in weight. Factors such as smoking, alcohol use, and socioeconomic level may be more likely causes of these smaller babies. In any case, caffeine was not found to cause any negative effects when used in conjunction with no other drugs.

Opiate-derivatives are drugs of particular concern in today's society. A woman addicted to one of these narcotics poses a formidable threat to her unborn child. Almost every

narcotic drug consumed by the mother crosses the placenta and enters the baby's bloodstream. All drugs enter the baby's bloodstream in this manner, but narcotics are exceptionally dangerous. Narcotics are particularly threatening due to their addictive nature. Not only is the mother likely to be addicted, but her baby may be born addicted also. This passive addiction is only one of many known problems associated with narcotic use. Spontaneous abortion, low birth weight, premature birth, decreased intellectual capacities, congenital malformations, and various infections are just a few of the many complications arising from narcotic use during pregnancy.

Unfortunately, these drugs that do so much harm to the baby, are also the hardest to give up for the mother. They become extremely psychologically and physically addictive. Over time narcotics act as chemicals that affect the emotional condition of the user. Feelings of euphoria and excitement can occur as a result of this chemical change. The euphoric effects resulting from narcotic use are extremely addictive, leaving the user feeling depressed and hopeless when the drug is removed.

When a woman tries to withdraw from narcotic use, physical complications can arise. The body's reaction to the sudden absence of a drug to which it has become accustomed, is many times not pleasant. The withdrawal must be undertaken gradually and supervised by a medical professional. Even with the best care, these treatment

programs are successful only to a varying degree. Much of the rehabilitation process depends on the attitude of the patient.

The primary drug withdrawal treatment for heroin addicts is methadone maintenance. This process consists of the replacement of heroin in the body with methadone, a drug with similar, but much less damaging, effects. A low level of methadone is given to the patient, hoping to gradually reduce her dependency while still keeping her comfortable (Niebyl 210). Methadone treatment can serve many purposes. It prevents the highs and lows in the maternal drug level that occur on a day-to-day basis by inconsistent heroin use. These varying narcotic levels can produce intervals of depression and excitation in the baby, which are extremely unhealthy. Methadone treatment also removes the mother from the drug-seeking environment, which generally improves nutrition and maternal attitude. Women seem to be more prepared for childbirth and motherhood while under methadone maintenance. While the mother is undergoing treatment, the baby is still being affected, although less so than with heroin use. The sooner the mother can begin to abstain from all drug use the better.

Complex problems can develop in a fetus of an opiate-addicted woman. As mentioned earlier, the newborn's withdrawal symptoms are among the most critical side effects of narcotic use. Withdrawal symptoms usually appear within the first seventy-two hours after birth. The duration of the

withdrawal symptoms can last from three to seven days. However, complete manifestations of withdrawal symptoms will usually not disappear until sixteen weeks of age (Ostrea 28).

These withdrawal symptoms can take on a variety of forms. Dysfunctions of the central nervous system are predominant signs. Hyperactivity, irritability, sleep disturbances, and extreme excitability are commonly expressed. Many times movements and reflexes can become jerky and almost spasmodic. The infant's responses to simple stimuli are greatly exaggerated by physical movements.

Other problems affecting several different systems of the body can be experienced. Respiratory difficulties such as hyperventilation and irregular breathing are often seen. This can lead to aspiration pneumonia or respiratory alkalosis. Gastrointestinal signs of withdrawal will appear as vomiting, drooling, diarrhea, and vigorous, disorganized sucking. Many of these symptoms are due to poor coordination in such actions as swallowing (Ostrea 30). Diarrhea and vomiting can lead to more serious complications such as weight loss and severe dehydration.

The severity of the withdrawal symptoms greatly depends on the methadone dose of the mother. Withdrawal symptoms seem to be severe when the mother is still on a relatively high dose of methadone. Therefore, attempts should be made to bring the mother to the lowest level of methadone possible. Interesting to note, however, is the fact that heroin does not seem to produce a similar dose-withdrawal

relationship. Researchers are still trying to figure out reasons for this inconsistency.

Once neonatal abstinence syndrome has been diagnosed, the baby will need a thorough examination to determine the severity of withdrawal. Supervision will be necessary to monitor signs and symptoms. These infants will need to be cuddled more often, since this relieves irritability. A pacifier can be a great tool to relax an anxious baby.

These suggestions are fairly superficial, however. Based on the assessment of the severity of the withdrawal, drugs are often used to curb the effects of the syndrome. Drugs can be very beneficial in reducing the negative impacts of withdrawal, keeping the baby more comfortable. Drugs are certainly not used in all instances, but it is an effective treatment in the more serious cases. Once the baby seems to be over the withdrawal symptoms, the treatment drugs can be gradually diminished until they are completely discontinued (Ostrea 35).

In addition to suffering withdrawal effects, a great majority of these babies are born prematurely, which leads to higher infant mortality rates. With early recognition and treatment during pregnancy, stillbirths and infant mortality can be drastically reduced. As has been noted with most other drugs mentioned, lower birth weights have been observed in affected children. For the most part, these infants are able to catch up to a normal size by the age of twelve months. However, the first year of their lives is strained

in a struggle to deal with their small bodies and developing immune systems.

Developmentally speaking, many affected infants were noted to have less than average scores on developmental tests as children. This may be due more to the lower socioeconomic levels of their home environment than maternal drug use. It has been difficult to isolate one specific cause for this developmental difference, but a definite correlation has been noticed.

When addiction is discovered early in a pregnancy, physicians can attempt to control a woman's rehabilitation. Obviously a great deal is dependent upon the attitude of the mother. She may be very reluctant to end her drug habit, well aware of the negative consequences this action will bring. However, the longer she continues to use narcotics, the greater the chance of harm to her baby. The physician will need to begin methadone maintenance if the best course of action is to be taken. Methadone can prevent the mother from experiencing withdrawal effects and also help her baby avoid neonatal abstinence syndrome. If the mother is willing to cooperate with rehabilitation efforts, her attitude will profoundly affect her fetus. She is more likely to abstain from drug use, eat more nutritiously, and take better care of herself in general.

Yet to be considered in the discussion of narcotics are the legal implications of such drug use. Some states have ruled that an addicted infant must be reported and be

considered an abused child. But patient confidentiality considerations caused federal agencies to step in. Federal regulations have prevented the revelation by hospitals of drug addicted mothers to the police, in an attempt to encourage these women to admit their addiction to their physicians. The disadvantage of this maternal protection is that the infant is many times denied supervision by a child protective worker, who is frequently assigned to protect a child from future "abuse" (Ostrea).

Withdrawal from a narcotic is obviously no simple task. Physicians are obligated to inform their patients of the many complications inherent in their drug use. Drug use can be monitored throughout the pregnancy by urine tests. In this way, the physician can stay aware of the condition and progress of his patient and be better prepared for the birth of a possibly sick infant.

Two other drugs are commonly used in today's society and are important to note. As with heroin, these drugs can present a more complex situation than alcohol or tobacco. Because these drugs are illegal, fear and suspicion are additional problems to the mother's state of mind. Marijuana and cocaine have been shown to affect the mother and child during pregnancy, the birthing process, and the life after birth. Marijuana use has drastically increased in the last few decades. About twenty-five percent of adult Americans have been estimated to be marijuana users. In addition to marijuana, cocaine use has increased since the 1970's.

Approximately five million Americans are reported to be regular cocaine users (Niebyl 223). The widespread use of these drugs forced researchers to study them extensively.

Marijuana has long been noted as having the effect of hastening delivery. Women have enjoyed this aspect as well as the somewhat aphrodisiac effect of marijuana. But, marijuana does have its faults. Experiments using animals provided researchers with their first information regarding marijuana's negative effects. The results of these studies in conjunction with human research will be summarized.

Interestingly, it appears that birth weights are not significantly lower for affected babies. Congenital anomalies are also not greatly increased. Even when these side effects did appear, it was difficult to assess whether or not the difficulties were directly related to marijuana use (Niebyl 226). These fortunate results, or lack of results, have been hypothesized to be related to the transfer of the drug into the fetal bloodstream. Some studies have suggested that the placenta may provide some sort of barrier to marijuana, thereby allowing the baby very little exposure to the drug.

It may appear that no serious birth defects are a direct result of marijuana use, especially when used in moderation. However, children born to marijuana smokers have been noticed to be less responsive to stimuli such as light for the first month of life. After this month, however, responses seem to be the same as in control infants (Niebyl 227). If this

response reaction is the only effect on the baby, marijuana appears to do little damage to the fetus. However, marijuana smokers are often users of other drugs as well which complicate the situation. The use of two drugs simultaneously is more harmful than the use of one drug. This greatly increases the chance of expression of abnormalities. Many times when problems have appeared in these babies, it has been impossible to isolate marijuana effects from the effects of other drugs.

Cocaine is a central nervous system stimulant usually injected or sniffed into the body. As with marijuana, it has been difficult to determine cocaine's specific effects on a fetus because many cocaine users also use other drugs. The results of research into cocaine's effects is still tentative.

Cocaine use seems to result in decreased blood flow to the fetus, which usually has little permanent effect but can cause fetal difficulties such as periodic oxygen deficiencies. These infants after birth seemed to be startled more easily and were more restless than methadone-exposed or control infants (Niebyl 229). Vaginal bleeding in the mother was noted shortly after cocaine use. But, this is usually not serious and does not affect the fetus.

The physician needs to be alert to the possibility of polydrug use. This is the greatest problem associated with cocaine and marijuana use as it relates to the fetus, since these drugs alone do not appear to do significant damage.

The most reasonable approach is for physicians to support and encourage their patients, while at the same time informing them of the dangers and risks involved in drug use. The physician may be the only intervention in the woman's drug habits. If the physician can gain positive rapport with the patient, he has the power to be very influential.

As is obvious from this discussion, severe physical problems in the fetus result from any kind of drug use during pregnancy. In addition to all of these complications, another very important aspect of drug use must be considered--the short-term and long-term emotional effects of drug use. Severe emotional problems are predominant in the drug addicted mother. On the surface she may appear indifferent and complacent, but feelings such as guilt and low self-esteem are commonly experienced feelings. She may have a low level of dedication to her fetus, resulting in missed doctors' appointments, continued drug use, and impulsive behavior. If the mother does not care about herself, she is generally not concerned about her baby. The probability of a healthy child should be emphasized by the physician. If the mother realizes how important her role is on the outcome of the pregnancy, feelings of self-esteem may return (Ostrea 13).

It has been noted that the mother's attitude during her pregnancy and afterward will help determine the health and adjustment processes of her newborn. The mother's "addictive personality, poverty, emotional deprivation, [and] ignorance"

can also lead to poor readiness to be a parent. These are vital aspects to how the baby will develop psychologically (Chasnoff 5). Psychological impairment can often develop as a result of being raised in a substance abusing home. Families that are headed by parents with addictive personalities usually have a difficult time raising their children with no emotional problems. These children begin life at a disadvantage by being born into dysfunctional homes.

A single mother may have extra stress added to her life: lower income, increased responsibility, less time for the parenting relationship, and decreased social outlets. Unfortunately, a high percentage of drug addicted mothers fall into the single mother category. The addictive personality many times goes hand in hand with teenage pregnancy or divorce. This lack of family support leaves a mother especially vulnerable to emotional problems. Many times the mother will need psychological care long after the baby is born. If such care is provided, the baby stands a much better chance of having a normal emotional development.

In summary, it is clear that serious complications are found in babies of addicted mothers. On the lesser side, caffeine, marijuana, and cocaine seem to do little permanent damage. Whereas, alcohol, nicotine, heroin, and many other drugs cause extensive physical and neurological harm. Perhaps one of the most frightening aspects of this entire issue is the unpredictability of the drug effects. Some

babies are affected much less than others exposed to the same drug. This suggests the importance of other variables such as genetic predisposition. Therefore, it is difficult to accurately predict the degree to which a child will be affected.

The prevalence of alcohol and cigarettes leads to great concern among medical professionals. It is difficult to dissuade the use of a product that is legal, so easy to obtain, and provides the positive effects these drugs give. A supportive atmosphere is necessary to help these women overcome these habits.

Even though the effects of maternal substance abuse have been summarized at length, this discussion merely skims the surface of this issue. Unlike drug use at other times, using any kind of drug while pregnant risks two lives. The life of the drug-dependent mother is at risk every time she uses the drug. With each dose, she risks overdose, accidents, or chemical poisoning. And there is the innocent victim to consider--the child who must be exposed in utero to deadly toxins that many people never have to deal with throughout life. In this respect the maternal drug issue is an extremely sad one.

On a perhaps less publicized, yet equally important note, emotional problems take their toll on the baby who manages to survive until birth. Babies are born to mothers who probably have negative expectations about the future of the child. These attitudes do little to foster healthy

psychological development.

Fortunately, these horrible defects and impairments are one hundred percent preventable. Obviously, the easiest way to avoid these damages is to avoid all drug use, especially during pregnancy. But, as is evident from extensive research, this suggestion is unrealistic. Evidence does show that the sooner the woman quits the drug use, the more likely she is to have a healthy baby. Therefore, the sooner intervention occurs, the better. Enough can go wrong in a pregnancy without the body having to handle additional burdens such as drugs. It is never too late to quit.

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