X. SPONTANEOUS ABORTION

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OUTLINE

SUBJECT: Spontaneous Abortion

A. Introduction

I. Definition
   a. Spontaneous abortion
   b. Miscarriage
   c. Induced abortion
   d. Therapeutic abortion

II. Incidence of condition
   a. National
   b. Racial
   c. Religious
   d. Age groups
   e. Social status
   f. Years of marriage

III. Importance in the nursing and public health field

B. History

I. Greece
   a. Recognition
   b. Superstitions
   c. Treatment

II. Rome
   a. Recognition
   b. Superstitions
   c. Treatment

III. Jews
   a. Change in sociological aspects
   b. Treatment

IV. Modern History
   a. Research
   b. Trends

C. Etiology

I. Maternal causes
   a. Local uterine disease
   b. Toxins
   c. Impoverished state of blood
   d. High temperatures
   e. Nervous disturbances
   f. Nutritional dysfunction

g. Endocrine dysfunction
h. Drugs

II. Paternal Causes
a. Constitutional disease
b. Extremes of age
c. Alcoholism-drug addiction

D. Symtoms, Signs

I. Threatened Abortion

II. Incomplete Abortion

III. Inevitable Abortion

IV. Habitual Abortion

E. Treatment of

I. Threatened Abortion

II. Incomplete Abortion

III. Inevitable Abortion

IV. Habitual Abortion

a. Removal of foci of infections
b. Good general health before conception
c. Endocring and nutritional therapy

F. Complications

I. Septicemia

II. Missed Abortion

III. Hydatidform mole-chorionepithelioma

G. Prevention

I. Prenatal care

II. General Health measures

H. Public health responsibility

I. Public education
a. Purpose
b. methods

II. Medical training

I. Summary

INTRODUCTION

In the past there have been many interpretations of the word abortion. The original Greek from which the word is derived meant something that was detached from its site. During some periods, the word abortion has covered the expulsion of the ovum during the first trimester of pregnancy. Today, scientifically, the term denotes "detachment or expulsion of the previable ovum."(1) The laity have commonly used this term as indicative of interruption of pregnancy by unlawful means. The term miscarriage has been applied to the spontaneous expulsion of ovum. However, to avoid misunderstandings and confusion in terminology ther terms spontaneous and induced abortion will be used in this paper.

The purpose of this paper is to investigate those conditions which cause or are factors in the causation of spontaneous abortions, in an attempt to understand the problem which must be solved by the obstetrician and his co-workers, and by the public health organizations, including doctors, nurses and lay members, to avert such tragedies and loss of life.

No one can doubt the importance of this problem to those interested in maternal mortality and morbidity if they are aware of the incidence of the condition. In the United States there is annually one abortion to every five

Before any problem can be adequately studied, one must have available the statistics concerning it. In a large clinic a study was made of four thousand five hundred consecutive pregancies, that has previously been mentioned. Their results seem to be representative of other such reports, and are the most recent that are available. Three thousand two hundred and sixteen patients had seven thousand, seven hundred and twelve viable births in this series. There were one thousand, six hundred and eighty spontaneous abortions and one thousand, two hundred and sixteen induced abortions which totals ten thousand, six hundred and nine conceptions. The average number of viable virths was two and four tenths per individual. There were one thousand, four hundred and ninety seven or forty-six and five tenths per cent of the women who had one or more pregnances terminated by abortion. This means that twenty-seven and three tenths per cent of all the conceptions ended in abortions, fifteen and eight tenths per cent of which were spontaneous. The average number of abortions was one and nine tenths per person. This Imposing array of figures seems indicative of the average in the country at large.

The religious grouping shows that there were twice as many spontaneous abortions in women of Jewish faith as there were in women of Protestant faith. Those of Catholic

religion placed above the Protestant and below the Jewish numbers. In the Catholic group the ratio of spontaneous to induced abortion was one to one. In both Jewish and Protestant sects the ration was two to one.

The average age of this group of patients was thirty-four years. The largest number of spontaneous abortions was found at the period between puberty and twenty-six years, after which there was a gradual decline for ten years, with a sharp rise again at thirty-six, continuing to end of the child-bearing period.

The largest number of spontaneous abortions was during the third month of the gestation. This study would seem to indicate the need for correction of whatever faults may be present.

From the statistics one is inclined to wonder and speculate about what conditions in the Jewish race would predispose to abortion. Is there any thing in their mode of living that would cause this accident of pregnancy? This is a question that can be solved only through aid of doctors, and nurses--particulary public health nurses working in the districts. Theirs is the opportunity of observing home conditions and religious beliefs that might be a clue to the higher incidence.

The average age at which these abortions took place was before twenty-six years of age. This seems to show that it is the young mother that needs the most careful observation. Figures show that the third month of the pregnancy was the most common time of abortion. This indicates the necessity for early

prenatal care to prevent such occurences.

All of the above demonstrate without doubt the importance of this problem to the nurse. It is her teaching and her observations that can aid in the public realizing the necessity of early prenatal care. The public health nurse has contact with the community and by her successful enactment of the policies of her own public health organization she can aid in molding public opinion to the need for early physical examination and continuous medical care during the pregnancy. This is not only a professional responsibility but it also is a civic responsibility of the nurse as a citizen in her own community. She should be interested in this problem as an intelligent, interested citizen. So, the nurse should be motivated by a two-fold desire for remedy of the situation.

That this condition of the spontaneous ending of pregnancy before term is not a modern difficulty, is clearly shown in historical medical works. The ancient Greeks, with their renowned "first man of Medicine" Hippocrates, were waware of this condition. Hippocrates advocated lessened activity, but beyond that had no means of control.

In the further distant days before the advent of any medical knowledge, the ignorant laid the blame on evil s spirits. This superstition is still prevalent in natives of Aftrica and other so-called unvivilized areas. A woman who was with child could not look upon certain sights nor come in contact with various objects for fear of the unborn child's death or if not death, malformation with resultant crippling and deformity in the babe. One wonders

if this is the origin of our still prevalent maternal impression belief. Human nature is such that the individual must have something outside themselves to blame for unexpected and disliked incidents. Perhaps, centuries ago, a brown-skinned maid glimpsed a horrible Neolithic monster, and a few days later gave birth to a dformed child. Since these two occurrences were both unusual, what more natural than the tribe connect them as cause and effect?

In Roman times, the practice of inducing abortions was extremely prevalent. Consequently, most spontaneous abortions were eagerly accepted with no treatment to preserve the pregnant state. However, the Jewish nation felt differently. The preservation of life was sacred, and abortion was the accidental or premeditated murder of a human individual. Because of such belief, every effort was made to carry through the pregnancy. Because the Jewish race had the best conception of sanitation and health of any early group one would be led to speculate that spontaneous abortions should be less prevalent. There are no records to base this on, but it seems a reasonable conclusion. The early Christians did look on motherhood as an exalted state however, and the pregnant woman was treated more carefully than in other societies.

Through the middle ages, superstition again became master, and many were the foul concoctions to prevent

stillbirth and abortion. These were the days of witches and solemn chants in the dark of the moon.

After the Middle Ages with the advent of knowledge of a general nature, the study of medicine began to advance. Little has been done about the specific problem in which we are interested however, until the last few years. For many years it was believed that physical trauma was the causative agent, and rest in bed with sedatives was the only known remedy. Today we discount the theory of physical trauma, but we still rely on the decreased activity and sedation as the main forms of treatment for prevention. Within the last decade, research in this subject has increased and with the advent of knowledge of endocrine secretions the medical world has finally seemed to be on the right road. Formerly, syphilis had been blamed for all havitual abortions. Today, the endocrine balance is studied to determine any increase or decrease in activity as a basis for treatment. Dr. Taussig (3) makes the statement that the next decade should be one of great advance in knowledge of the pathology coincident with and causing spontaneous abortion and tthe treatment of such condition.

The trend today of course is towards better and earlier prenatal care with complete physical examinations, utilizing all modern means of diagnosis in attempting to prevent such accidents and to treat the mother before conception if possible.

There are many things that may cause spontaneous abortion, Several conditions may be responsible equally. Such a common thing as infected teeth and gums may be the causative factor. To facilitate classification of the causes of this condition, I shall make three main divisions: namely, maternal, fetal and paternal causes. It is difficult to segregate these factors because it is often a combination that incites the accident. However, since it is necessary to provide some form, this is the one I am using.

Maternal causes seem to be the most prominent and more numbered.(4) Local uterine disease is naturally an important factor. Chronic infection of the endometrium tends to make the implantation of the ovum less secure and the surrounding area of diseased tissue is an important pathological difficulty. Mechanical displacements of the uterus such as retroversion and anteflexions may make the implantation of the ovum less secure. Any tumorous growth, similar to uterine fibroids, are contraindications to the successful termination of a normal pregnancy. Any congestion in the uterine vessels would naturally interfere with normal placental circulation. Such congestion might arise from cardiac or hepatic disease, plethora, or excessive coitus. Disease of either decidua or placenta will also cause danger to the unborn fetus. Many times the expelled placenta of abortion will contain several infarcts or areas of necrosis which are indicative of disease of the placenta or some other pathology.

Maternal toxins seem to have a detrimental effect also. Through the contamination of the blood stream, these materials circulate to the placenta and fetus. Any kind of infectious disease is to be avoided because of the apparent toxemia which adversely effects the fetus. The accompanying high fever which is common to infectious diseases in itself seems to be a detrimental factor. Dr. Beck has estimated that during the influenza epidemic in 1918, fifty per cent of the pregnant women aborted that contracted the disease. Scarlet fever, malaria, typhoid, cholera, smallpox, influenza, pneumonia and measles seem very dangerous to a woman in the pregnant state. It has been stated that there is a fifty per cent rate of abortion following measles. In lobar pneumonia, the chances of successful carrying of the child seem very few. The diminished oxygen content and increased carbon dioxide content of the blood in this disease seems to be the injurious agent. Also, the preponderance of carbon dioxide over normal may cause increased uterine contractions. (5). This condition of excess carbondioxide is also found in individuals with cardiac involvement. By-products of diabetic metabolism may involve placental and fetal structures.

Toxins from septic foci of infection play a vital part in causing spontaneous abortions. At Northwestern University Hospital, a study was made which indicated that a foci of infection in teeth and tonsils seemed to increase incidence of abortions. (6). In a survey of eight hundred and forty-three cases these investigators found that there was five and six tenths per cent abortions. In those members of the group with infected teeth the percentage was twenty and in that group

with infected tonsils the incidence was fifteen and four tenths per cent. In the group of patients in which there was removal of foci of infection early in the pregnancy the percent was only four and seven tenths.

Constitutional diseases, such as tuberculosis, cardiac disease, kidney disease, and syphilis are extremely important in the causation of abortion. Often in these diseases the fetus lives for several months instead of being aborted early. Chronic nephritis is a dangerous condition to both the fetus and mother. Every obstetrician is familiar with the decrease in the life span that is caused by repeated pregnancies in women who have kidney damage.

The increase in carbon dioxide content of the blood in cardiac disease has been mentioned previously. Besides such conditions being difficult for the fetus, pregnancy is often dangerous to the mother. Tuberculosis does not play as important a part as was previously thought, but it can not be totally disregarded.

Syphilis is an important disease in this condition. Previously, practically all cases of abortion that were not caused by acute disease, were believed to be due to a latent luetic infection. Today, we know that although untreated syphilis is a cause of abortion, there are many other things that may cause this condition. It should not be forgotten that syphilis is a cause of abortion and that complete serological work should be done, and any suspicious history closely investigated.

Impoverished state of maternal blood may result in abortion

This depletion of needed constituents in the blood stream may be caused by vomiting, famine, too frequent pregnancies, deficient vitamins and prolonged suckling.

Physiologists are familiar with the reflex in the mother that is stimulated by the suckling of the young. Somehow, this act tends to cause uterine contractions. Normally, this is desirable for the return to normal of the recently emptied uterus. In the presence of an another pregnancy it might be one of several things that together would cause abortion. Other nervous disturbances that might be influential are extreme mental shock, fear, and worry.

Irritation from the bladder and rectum may set up a series of events that terminate in expulsion of uterine contents.

There are several drugs that may cause uterine contractions that will be severe enough to cause abortion. Ergot, quinine, and aloes are the most important. Pituitary extract, while a glandular product, is very potent in its stimulating effect on the uterus.

Trauma due to direct violence was formerly considered a most important factor. The modern obstetrician discredits most stories of falls and blows in the abdomen as the underlying cause of abortion. Recent studies show that trauma plays a very small part in causing such a condition.

One of the most important causes is an endocrine dysfunction. The research in endocrinology is still comparatively so new that very few emphatic statements can be made. However, these studies do show the possibilities that may be definitely proven in the future. The thyroid gland is most important. Many

cases of habitual abortions have been found to have a chronic hypothyroidism. Since there is normally a slight physiological increase in the thyroid during pregnancy, a hypothyroidism would seem important. The secretions of the pituitary are important also. Since pituitary extract has the aforementioned power of uterine stimulation as one of its actions, it is to be considered. Any substance that renders the uterus more irritible or irritates it to contract is to be closely investigated in determing the cause of an unexplained abortion. The secretion of progesterone by the corpus luteum in the first few months of pregnancy has a quieting effect on uterine muscle, rendering it less susceptible to stimulation. This function is taken over by the placenta about the third or fourth month of the pregnancy. Any decrease in amount secreted would theoreticcally seem to indicate increased ease of uterine stimulation. Very recent ivestigators have stated that the adrenal glands secrete a substance that is important in pregnancy. This is only experimental as yet and not well demonstrated. However, with the increasing knowledge and experimentation in the field of endocrinology it would not be surprising to find other endocrine products playing important parts in this question of spontanious abortion. Endocrine causes of abortion seem most important in the individual who has had several spontaneous abortions, usually at identical periods in the pregnancy.

Good maternal nutrition is a basic need for a successful pregnancy. Wheat germ oil or vitamin E is being used experimentally to determine their part in spontaneous abortion.

Generally speaking, however, any factor which lowers the general resistance of the mother will be worth consideration as a cause of abortion.

Paternal causes of spontaneous abortion are less numerous than maternal, but are frequently the underlying factor. Weakened sperm is thought to be instrumental in causing abortion. Luetic infection or other constitutional disease might cause manufacture of immature and weakened sperm cells. Chronic alcoholism is a commonly demonstrated factor in this connection. Extremesa of age in the paternal organism may be the causative agent, by the immature or dehabilitated sperm cell.

Abnormalities connected with the fetus that are possible causes in abortion are anomalies in development, congenital inanition and amniotic disease. Hydramnios is thought important in this etiology. Myoxma of chorion might cause abortion. Arrest of fetal circulation from kinks in the umbilical cord, and untimely rupture of membranes are to be considered. Any substance or condition that might lead to the lessened viability or death of the fertilized ovum or fetus is to be considered, for normally, the uterus expells a dead fetus.

Placental toxins that result from the toxemias of pregnancy may cause fetal death and resultant expulsion.

Appendectomy, and be-manual examination might be the exciting incidents in the case of abortion. Lessened mechanical resistance to expulsion such as cervical tears and previous cervical amputation.

In some cases abortion may be caused during the period at which a menstrual period would have occured by a minor irritant that would have no effect at any other period. This would be possible because of the believed increase in sensitivity of uterine muscles at this time.

Any interference with nutrition in the placenta such as a hydatidform mole may lead to death of the fetus.

There are probably other items that could be mentioned in the etiology of this pathological condition. These, however are the ones most common and more widely accepted.

Diagnosis of a condition is the responsibility of the physician, not the nurse, but it is necessary that the nurse know enough of the signs and symptoms of a condition to refer a patient to the doctor. Particularly, in the public health field, a nurse must have the knowledge necessary to recognize premonitory symptoms so that the patient may have the earliest possible medical care.

First in considering the possibility of impending abortion one must have evidence that a pregnancy is existent. Amenorrhea, nausea and vomiting, breast changes, and urinary frecuency are all indicative of pregnancy. However, symptoms of pregnancy may be entirely lacking or overlooked if the patient has continued to have apparently normal menstrual periods. Myomata in the uterus lead to menstrual like bleeding in the pregnant uterus.

In the later months of pregnancy subsidence in the size of the breasts might indicate fetal death and an impending abortion. Particularly, if this is associated with absence of enlargement of the uterus and abdomen.

A pronounced lower backache, while in a mild form a fairly normal accompaniement of pregnancy, is indicative of some abnormal cramps. An increased amount of vaginal mucous drainage is commonly found before the blood tinged discharge appears. The first bleeding that occurs is bright red with a few clots. Sometimes, this bleeding is the first symptom. The severity of the bleeding and pain varies greatly. Naturally, the further advanced the pregnancy, the more pain is associated with the abortion. Also, a primiparous individual would have more pain

than the one who had borne children.

The bleeding seems to be more profuse in the more advanced pregnancies. The character of the bleeding varies in whether there has been cessation of uterine contractions or not. Many women complain of dragging sensation in the pelvis and increased frequency. There is a tendency of feeling of pressure in the rectum associated with constipation.

The signs that may be elicited by the doctor are softened cervix, the external os showing increased patency. Hegar's sign(characteristic softening of the lower uterine segment) is absent. The contours of the uterus are more clearly outlined, having a more rounded shape. The position of the uterus is usually more erect. Sometimes, uterine contractions can be felt.

There are several different terms used in describing the stage of the abortive process. Threatened abortion may be described as that condition when definite symptoms are found but it is still possible to prevent the actural abortion. Complete abortion is that condition in which the entire products of conception have been expelled. Inevitable abortion as a term seems self explanatory. Likewise, the term incomplete abortion, meaning the retention of any portion of ovum or membranes or placenta in the uterus.

Threatened abortion would be indicated by vague feeling of malaise, show of blood in vaginal discharge, increased urination, headache, backache, and a few abdominal cramps. Inevitable abortion would be characterized by a large amount of blood loss, sever, cramp-like, regular pains, cervical dilatation, watery discharge, indication of membranes' rupture

and determination of fetal death.

Usually in incomplete abortion there is continuation of vaginal bleeding until the retained part or parts are expelled, or manually removed.

Treatment of abortion is varied with the stage in which the patient is found. With threatened abortion, the regime is usually complete bed rest, elevation of the foot of the bed, sedation and more recently, injection of some form of corpus luteum extract to attempt inhibition of uterine contractions.

Inevitable abortion is treated by permitting expulsion of uterine contents, watching for excess bleeding and giving the patient supportive treatment. Asepsis is very important to prevent post abortal infections.

Incomplete abortion is treated in various ways, the principle being to stimulate the uterus to expel, or to to do so manually, the retained contents. Blood transfusion are sometimes necessary. These individuals should be regarded as post partum patients in the use of technics to prevent infection. Sometimes sulfanilamide compounds are administered as a prophylaxis against post abortal infection when there is indication of inaseptic conditions during the time of the actual expulsion of the uterine contents. If it becomes necessary to perform an operative procedure, such should be regarded as any other surgery and be prepared for as such.

Threatened

Treatment of complete abortion is variable, dependent upon the period of gestation. Early abortion will necessitate only a few days rest in bed with general treatment while late abortion may mean care very similar to that of post-partum technic.

The aim of treatment of abortion may be summed up by saying that first of all it is prevention. If this is impossible then care that will insure the patient the shortest and safest period of convalescence with regard to her future well-being and potentialities for motherhood.

Habitual abortion is the premature delivery before the fifth month of gestation on more than one occasion due to an unknown cause, This is tne condition, wnich in the past, has seemed most hopeless, but which may become more easily prevented in the future. Obstetricians of today are beginning to know more about such conditions. They know that these habitual abortions are most likely to occur around the third month. They know that it seems to be more common during the time the normal menstrual period would have occurred. Now, by using the new knowledge, some of these can be prevented, and as knowledge concerning the mechanism increases, so will the number of abortions decrease.

As has been mentioned, the cause of habitual abortion is not easily discoverable. Perhaps in the past, the research workers have been looking in the wrong direction. Recently, endocrine studies have been made that seem to indicate a definite relation between lack of proper endocrine balance and abortion (7-8) Some workers have demonstrated the apparent cause of lack of progesterone as the terminating factor in habitual abortion. Progesterone is a substance secreted by the corpus luteum in the ovary during the first three or four months of pregnancy. It seems to have the effect of quieting the uterine muscle and making it less susceptible to stimuli. After

the first few months of the pregnancy this function is taken over by the placenta. The period of transition may be the period in which an abortion will take place. Consequently, there has been a great deal of progesterone and corpus luteum products used in this capacity with success. If any sign of abdominal cramps or bleeding appears, injection of the drug is started, and sometimes controls the upset, allowing the individual to carry the pregnancy to term (9). Hypothyroidism has been mentioned previously as a possible cause of abortion. Some physicians have used thyroid extract to help combat this condition. Vitamin E, or wheat germ oil, is being used extensively in the experimental field to help in prevention of habitual abortion.

Naturally, in the case of a woman who has had previous spontaneous abortions, a very thorough physical examination should be made, investigating all possible sources of difficulty. Then, if no pathology is found, the above mentioned products may be used advantageously. One author has made the statement that every case of habitual abortion that is not due to luetic infection, focal infection or gynecological disease, may be successfully treated with the combined therapy of progesterone, thyroid extract, vitamin E, rest, and sedation, if this regime is carried through the first six months of gestation. (9).

Complications of abortions are varied. Septicemia is perhaps the most frequent. Infection during or after the abortive phas is very dangerous to the individual.

Besides the immediate danger to her life, there is the problem of endometrial scarring that results from such infection that may be a factor in causing successive abortions. When under a physician's care during this period every effort should be made to prevent such infection. It must be remembered that post-abortal infection is not confined to the uterus alone, but is spread throughout all the reproductive apparatus, and eventually to the blood stream. If there is infection present at the first contact with the physician, therapy with sulfanilamide compounds is usually of value. Supportive therapy such as bed rest, forcing fluids, nourishing diet, sedation and in extreme cases, blood transfusions are necessary in the treatment of this type of case.

Chorion tumors of some type are complications of pregnancy and abortion. Hydatidform mole is a condition in which chorionic villi are converted into edematous cystic vesicles containing fluid. This condition has been described since the time of Hippocrates. (10)

The condition is more common in multipara and between the ages of twenty-five and thirty-five years. The incidence, according to most authors is about one in two thousand pregnancies. It is probable that milder forms of the disease are common and may be listed as a cause of abortion. Fetuses accompanying molar pregnancies are usually dead and often not demonstrated at time of expulsion. The symptoms of this unusual

but dangerous condition are usually amenorrhea for two or three months, discharge of brown gelatinous fluid, and perhaps portions of the mole may be passed. The toxemia hyperemesis, and anemia are usually out of proportion to the amount of hemorrhage that may be present. Often the first sign of the disease are the symptoms of an impending abortion. Expulsion of the mole usually occurs before the sixth month. Less than five per cent of these cases go to term. Examination by the obstetrician shows the usual signs of pregnancy, with the uterus being larger than usual in a normal gestation. Generally, belateral cystic ovarian enlargements are present. Treatment of these cases is curettage, with histological examination of the tissues being done, because sometimes malignancy can be demonstrated. The mortality rate has been suggested between five and twenty-five per cent. Between two and ten per cent develop chorionepithelioma, which are extremely malignant growths. Those individuals who have had hydatidform moles should have Friedman examinations done frequently for several months at least, after its occurrence to determine the possibility of the presence of a chorionepithelioma.

Missed abortion is another complication. It is not as uncommon as has been popularly believed. This condition may be defined as applying to all cases of death of the fetus in utero before viability with no effort of expulsion within the usual time, which is normally within two weeks

after the death of the fetus. Missed abortion is caused by lack of irritibility in the uterine muscle. The absence of this normal trait may be caused by some central lesion, thin musculature of the uterus, peritonitis, fibroids, or stenosis of the cervix. The incidence is higher in multipara and tends to recur. (11). The symptoms may be signs of abortion with the death of the fetus, regressive changes in breasts and uterus, lack of appetite, chills, and headache. There is often maceration of the fetus with toxemia of the mother. More uncommon is mummification or the production of intra-uterine lithopedian. Infection may occur. Sometimes there is hemorrhage after which placental infarcts and fatty degeneration may be demonstrated.

There is danger of degeneration of the blood vessel walls with the resultant hemorrhage. Sclerosis of the placenta is found after long periods of retention. The placenta commonly appears a month or so older than the fetus.

Treatment is to empty the uterus of its contents Medical stimulation or mechanical means of inducing labor may be used.

Prevention of spontaneous abortion is the important problem to be considered. The basic principle is the accomplishment and maintenance of good general health for both parents. All infectious diseases should be immediately controlled. Diseased tonsils and teeth or other foci of infection should be removed or remedied. Constitutional diseases should be treated before conception if possible. Any health program which aims at the better health of the individual will aid in prevention of spontaneous abortion. In the individual who has had several abortions, basal metabolism tests should be done, and all clinical and laboratory methods utilized in an attempt to find any condition which might be pathological to the pregnancy.

Prenatal care is of course the important consideration. Generally, it should be instituted early and be continuous from a recognized obstetrician. Specifically, the woman of child bearing age should be taught what to expect in a good prenatal care program, so that she may be assured of being cared for by a competent obstetrician. Good prenatal care should include, on the first visit, complete history of all past illnesses, operations or diseases. Hereditary history should be considered. Previous pregnancies should be investigated. Either at the first visit, or the second one, a complete physical

examination should be done. Particular emphasis should be placed on heart and lung examinations, including blood pressure readings. Another vital part of the prenatal examination is the pelvic examination. At this time pelvic measurements should be taken to determine compatibility of the bony structures with delivery. Vaginal and bimanual examination should be carried out to rule out tumorous growths or find pathological indications which may be made worse by pregnancy. Very important is the laboratory work that should be done. Complete urinalysis and blood analysis should be done by a competent technician. Serology must also be checked.

Instruction as to diet, exercises, marital relations, clothing, sleep and rest should be given to the expectant mother. Prenatal instructions can be printed in special forms, and may be valuably used, but they should not supplant the explanations of the doctor,, They should be used only as reminders and summary of what the doctor has told to the patient. An obstetrical nurse can do much in explaining instructions to the patient. Parent's classes are helpful in instructing both mother and father. There has recently been much publicity about such classes. Care should be taken that the courses given are well-prepared and medically correct. These can be utilized by the public health nurse in her maternity program.

The first should ideally be made by the end of the third month. After this initial visit to the doctor, the patient should return about every two or three weeks, until the beginning of the seventh month. At this time, her visits to the obstetrician should be not more than a week or ten days apart. Nearing the date of the delivery, the doctor may want to see her oftener than every week.

The patient should be well-informed concerning sy symptoms that should be reported to the doctor immediately. These would include any bleeding, cramping abdominal pains, severe headaches, eye disturbances, swelling of hands, feet and around eyes, or anything that disturbs her or seems to be abnormal. Failure to feel the baby's movements after quickening may be a sign of fetal death and should be reported as soon as the absence of movement is noted.

At each visit to the doctor, the urine should be tested for albumin, specific gravity and acid or base reaction. Blood pressure should be taken, and weight recorded. After life is felt by the mother fetal heart tones should be checked and the position of the baby ascertained by palpation in the latter months. Plans for delivery should be made early, and, if the patient is a primipara, she should be told what to expect during delivery and something of the character of labor pains and the process that she willbe subjected to.

The individual who is having a child should be given the advantage of all known methods of prevention of

puerperal sepsis. Good prenatal care is of little use if the patient contracts a fatal infection during delivery or in the post-partum period.

Public health workers, both lay and professional members have a great responsibility in this problem. It is there duty to educate the public to seek and demand early prenatal care from a competent obstetrician.

Each public health agency should have as a prominent part of their general program, a division of maternal care. This should not only be a nursing service program, but should deal with means of education and the spread of knowledge to all women, whether they are pregnant or only potential mothers. Through magazine articles, newspapers, clubs, civic talks and projects, this may be done. Presentation of maternal death rates in the particular community served may make the general public more aware of such needs. College courses dealing with married life and its problems might bring in this factor. People may be made aware of sources where lists of recognized obstetricians in the community may be obtained. The medical profession should be more alert to the need for an obstetrician for all cases of pregnancy.

The medical and nursing professions also hold a great responsibility in this question of saving the lives of many mothers. Their duty is that of providing better training facilities in obstetrics for the medical student and for the student nurse. They should

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