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MATERNAL MORTALITY IN NEBRASKA
A FIVE YEAR STUDY

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INTRODUCTION

During the first half of the Twentieth Century, life expectancy has increased from an average of forty-nine years to sixty-eight years. This is illustrative of the great strides forward made during that period; and can be attributed to such improvements as the development of antibiotics, the use of whole blood and its derivatives, the development of other chemotherapeutic agents, the improvement of medical and surgical techniques, etc.

However, deaths, many of them entirely preventable, still occur in one class of individuals; namely women in the active child bearing years. Since 1945 there has been a reduction of over 77 per cent in the maternal mortality in the United States (10). Each year however, in spite of this phenomenal decrease, somewhere between fifteen hundred and two thousand mothers die during or shortly after the birth processes. In an attempt to meet the problem of reducing maternal mortality and morbidity and improving maternal health many states have created maternal mortality committees who study and evaluate all deaths of women who die during, and for varying periods of time, following pregnancy.

The purpose of this paper is to compare the maternal death statistics of Nebraska to those of the United States and to five states which already have a maternal mortality study, in order to show that these committees are serving the purpose for which they were created. It is further

intended to show how such a study might help this state to reduce its maternal deaths.

REPORTED MATERNAL DEATHS

The information for this paper was obtained from a report for the Bureau of Vital Statistics of the Department of Health of the State of Nebraska, along with questionnaires which are sent to the physician after study of the death certificates reveal death occurred in association with pregnancy or abortion (2,11). This questionnaire is sponsored solely by the Bureau of Maternal and Child Health and has never been accepted by the state medical society.

Year	Maternal Deaths	Live Births	Maternal Death Rate per 1,000 live births	
			Nebraska	U.S.
1956	14	33,855	.41	.40
1957	12	33,161	.36	.40
1958	8	32,935	.24	.38
1959	7	34,162	.20	*
1960	6	34,156	.18	*

* Not available yet.
(11,3,4,5)

The number of maternal deaths coded by the state of Nebraska during the years under study (1956 through 1960) are shown in the chart above. The maternal death rate for both the state and nation are presented for comparison. The rate is recorded in deaths per one thousand live births rather than per ten thousand live births. From this it is apparent that Nebraska has compared favorably with the national average. This may account for the feeling

among physicians and other people connected with the medical profession that Nebraska is doing satisfactorily without a maternal mortality committee.

As mentioned before the method of finding maternal deaths in Nebraska include only the death certificates with mention of pregnancy or abortion in the recorded cause of death and use of the Maternal Child Health Questionnaires. It is evident that maternal deaths can be missed solely on the failure of the physician to mention pregnancy or abortion associated with the cause of death. This is particularly prone to happen if the death should occur during the post partum period. In the Philadelphia study it was found that 21.6 per cent of maternal deaths during a three year period were missed because of failure to report pregnancy on the death certificate (14). As a result, many states check the death certificates of all females in the child bearing age against the birth certificates recorded during the previous three months.

The Maternal Child Health questionnaire has been used for a number of years without changes in either its length or its content. Admittedly, by the Bureau itself, the questionnaire is far too short and provided an inadequate amount of information. Because there has never been any precedent established to require their completion, either by the state medical society or other organizations, many of the questionnaires are ignored and never returned. Both the inadequacy and the failure to answer the questionnaire

provide other areas where maternal deaths may be missed.

The information provided by these questionnaires ranged from only the cause of death as stated on the death certificate, with refusal to provide any further information, to that of a comprehensive typed report of the history, clinical course, and treatment in addition to requested information on the questionnaire. Some contained only the coroner's report. Numerous discrepancies were found between the information on the questionnaire and the cause of death on the death certificate. For example, one report showed the patient had retained placental tissue removed two hours following delivery, the patient having gone into shock thirty minutes post partum. However, on the death certificate the cause of death was listed as Coronary Occlusion and this death was not coded as a maternal death.

REVIEW OF MATERNAL CHILD HEALTH QUESTIONNAIRES

Copies of the Maternal Child Health questionnaires, deleting identification of the name of the patient, the city, the hospital and the physician, were carefully studied for the years 1956 through 1960. There were 17, 15, 11, 14, and 13 deaths associated with pregnancy or abortion for the respective years studied. It should be emphasized again at this point that the questionnaires were used only if the death certificate made mention of pregnancy or abortion.

The following classification, reproduced from the American Medical Association's "Guide for Maternal Death

Studies" was used to classify all questionnaires. This classification of deaths was then compared with those coded by the Bureau of Maternal and Child Health as maternal deaths for the respective years.

CLASSIFICATION OF MATERNAL DEATHS

- I. Direct Obstetric Causes
 - A. Hemorrhage
 - B. Toxemia
 - C. Infection
 - D. Vascular Accidents (such as Air Embolism, Amniotic Fluid Embolism)
 - E. Anesthesia
 - F. Other (such as Molar Pregnancy and Transfusion Hemolysis)
 - G. Undetermined

- II. Indirect Obstetric Causes
 - A. Cardiac Disease
 - B. Vascular Disease (such as Hypertensive Vascular Disease and Vascular Embolism)
 - C. Reproductive Tract Disease (such as Uterine and Adnexal Tumors)
 - D. Urinary Tract Disease
 - E. Hepatic Disease
 - F. Pulmonary Disease
 - G. Metabolic Disease (such as Diabetes)
 - H. Other (such as Appendicitis and Peritonitis of non-puerperal origin)
 - I. Undetermined

- III. Non-Related Causes
 - A. Communicable and Infectious Disease
 - B. Blood Dyscrasias
 - C. Malignancy
 - D. Suicide
 - E. Murder
 - F. Accidental
 - G. Other
 - H. Undetermined

(1).

	1956	1957	1958	1959	1960
Hemorrhage					
Coded	8	5	3	3	2
Not Coded	1	0	0	0	0

	1956	1957	1958	1959	1960
Toxemia					
Coded	1	2	3	0	0
Not Coded	0	2	1	1	0
Infection					
Coded	1	1	0	1	0
Not Coded	0	0	1	0	1
Vascular Accidents					
Coded	1	4	1	2	1
Not Coded	2	0	0	0	0
Anesthesia					
Coded	2	0	1	0	1
Not Coded	0	0	0	0	0
Other					
Coded	0	0	0	1	1
Not Coded	0	0	0	2	0
Undetermined					
Coded	1	0	0	0	0
Not Coded	0	0	0	0	0
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
<u>Totals</u>	17	14	10	10	7
Maternal Death Rate Per 1,000 Live Births (2,11)					
	.53	.42	.30	.29	.21

While detailed information was lacking, making exact classification impossible, an honest effort was made to fairly and accurately determine the cause of death. In 1956 there were three more deaths recorded as direct obstetrical deaths in this paper than were coded as such by the State Health Department. The first was a twenty year old Para 1 Gravida 2 who died at delivery

after an uneventful prenatal course, in which there was no evidence of any complication during labor or delivery. An autopsy was not subsequently performed. The cause of death was listed as Pulmonary Embolism and was not coded a maternal death by the state. The second was a twenty-three year old Para 5 Gravida 3 who died two and one-half weeks postpartum of a pulmonary embolus found at autopsy. She had a prenatal course of hypertension, albuminuria and obesity. This too was not listed as a maternal death. The third was the previously mentioned instance involving retained placental tissue.

In 1957 two more deaths were found which were not listed as maternal deaths in the State Health Department bulletin. One, an apparent error, was later found to have been coded as a maternal death. The other was a twenty year old Para 0 Gravida 1 who died at thirty-seven weeks gestation with convulsions and a prenatal course of albuminuria and hypertension.

The following year a thirty-two year old Para 2 Gravida 4 Ab 1 died at thirty-two weeks gestation with hypertension but no albuminuria. She had a previous history of toxemia with her first pregnancy. Autopsy findings were those of dissecting aneurysm secondary to medial necrosis. The same year a thirty-eight year old P 9 G 12 Ab 2 died at twelve to fifteen weeks with no mention of hemorrhage, infection, or convulsions. The information requested on the questionnaire was incomplete

with only a mention of the development of myocarditis during her last pregnancy. The cause of death was listed as myocarditis with decompensation. No autopsy was performed.

In 1959, a thirty-five year old woman died four days post-partum following an uneventful delivery. An autopsy revealed acute atrophy of the liver following intoxication from Marsilid taken during the pregnancy. Also during this year a twenty year old woman died at twenty-eight weeks with albuminuria and excessive weight gain. Included in 1959 was a patient who died of a chorioepithelioma, diagnosed pathologically, which was coded by the state as a Neoplasm, but certainly it is a maternal death.

In 1960, there was one other death listed as due directly to pregnancy. This was a thirty-six year old woman who died thirty-eight hours post-partum with a prenatal course of albuminuria. The patient neglected to fulfill her appointments and was seen only once during her pregnancy. Autopsy findings revealed a bilateral suppurative pyelonephritis.

In addition to the previously mentioned cases which were listed as maternal deaths in this report, there were a number of deaths that could not honestly be considered maternal deaths even though the terminal events occurred during pregnancy or delivery. In 1959 a twenty year old woman died at thirty-six weeks as a result of an automobile accident. A similar death occurred in 1960 from suicide.

These clearly are not maternal deaths.

Using the A.M.A. classification the maternal death rate was again determined and compared to the national average and to the average of five states which have maternal mortality committees in operation.

MATERNAL DEATHS PER 1,000 LIVE BIRTHS

<u>Year</u>	<u>U.S.</u>	<u>Minn.</u>	<u>Ohio</u>	<u>Mich.</u>	<u>N.C.</u>	<u>Ill.</u>	<u>Nebr.</u>
1956	.40	.13	.35	.38	.59	.29	.53
1957	.40	.20	.29	.36	.72	.26	.42
1958	.38	.20	.31	.29	.53	.30	.30
1959	*	*	*	*	*	*	.29
1960							.21

* Not available yet.
(3,4,5,6,7,8,11)

It is apparent again that Nebraska compares pretty favorably with the national average. However, it is interesting to note that the only state higher than Nebraska is North Carolina and it is one of the eight highest states in the nation. Their high average is undoubtedly due to the high number of mid-wives and the large Negro population in which a great many deliveries are done in the home.

Of more interest is the comparison of Nebraska of the three states of Ohio, Michigan, and Illinois. In 1956 and 1957 the Nebraska rate was considerably over that of the other three. Yet, Ohio and Illinois recorded seven times as many live births and Michigan recorded over six times as many live births. In 1958, when the rates were comparable, these states still recorded the same proportionately greater number of live births than was recorded in Nebraska. Even Minnesota, which records around two and one-half more live births each

year than Nebraska, has a maternal death rate far below that of Nebraska and ranks as one of the lowest in the nation.

It is obvious that the feeling among physicians of the state that such a study is not necessary because of the apparent favorable comparison to the national statistics is entirely unfounded. Disregarding the fact that many maternal deaths go undiscovered by any number of ways, even those which were discovered in this report do not present as favorable a picture as is apparent on the surface.

PURPOSE OF A MATERNAL MORTALITY COMMITTEE

The main purpose of such a committee is to help salvage and save as many maternal lives as possible. This is accomplished by the education of the practicing physician to recognize complications earlier and to provide earlier an adequate treatment of these complications by the stimulation to obtain consultation when conditions warrant it, by the education of the hospital staff connected with obstetrics and finally by the education of the medical student and lay public.

In every state which presently has a study committee, the case reports and materials are provided for educational purposes at the state medical schools. These are provided with complete anonymity as to doctor, patient, hospital, and location.

Aside from their use for medical school teaching purposes, it has been found that one of the factors for continued reduction of the maternal death rate in the various

states has been the use of the material for post-graduate and refresher courses in obstetrics. Wisconsin and Minnesota provides lectures at the request of any hospital or local medical society which are prepared by the members of the committee complete with lantern slides, and has found this of great help particularly to the hospital staffs. Ohio approaches the problem of making available to everyone the educational value of each case report by publishing a bulletin containing the information obtained and distributing these to every member of the state medical society. In addition, cases are also published in the state medical journal. Again complete anonymity is maintained.

Nearly every state has also found that education of the lay public has also been a large factor in the reduction of maternal deaths. As a result of this work an increasing number of babies are born in hospitals each year and early and adequate prenatal and obstetric care is sought.

In addition to the study of maternal deaths such a program could be extended into other areas such as perinatal studies.

The various states participating in such a study have found a steady reduction in maternal death rates. In Minnesota, since the study was revived following the war years, there has been a decline from 0.59 per 1,000 live births in 1950 to 0.20 in 1958 (12). Michigan has shown a reduction from 0.53 per 1,000 live births in 1950-52 to 0.29 in 1958 (16). Similarly, North Carolina, between the

year of 1945 and 1954 showed a reduction from 2.8 to 0.8 (18). Since 1948, Illinois has declined from .87 to .30 in 1958 (15).

COMMITTEE FUNCTION

Of the many functioning committees at the present time probably the one used most as a model is that of Minnesota. Each state committee has its own procedures and rules which are peculiar to itself and it must be stressed at this time that each state or organization finds a workable plan for its individual situation. However, the functions of the Minnesota committee will be presented herewith with full recognition that there are many ways to accomplish an end.

The study program is conducted by the state medical society and state department of health with the cooperation of the state university hospital and state hospital association. The committee investigates any death associated with pregnancy (abortion and extrauterine included) or the puerperium for a period of three months. These deaths must be reported within three days after death to the Maternal Child Health Section by the physician and the hospital to insure prompt action and avoid the forgetting of important details of the case. In addition, all female deaths of persons between the ages of fifteen through forty-five are cross matched with all births in the preceding three months.

The next step is the obtaining of the history and pertinent details from the physician, hospital record, hospital staff, consultant, and family if necessary. This is done by one of the obstetrician investigators in an

impersonal, **objective**, noncriticizing manner. After all the data has been collected and the questionnaire completed the investigator summarizes the case.

The data is kept confidential by means of a detachable identification sheet identifying mother, physician, consultants, pathologist, and hospital staff. This sheet is detached and filed with the state department of health. The original questionnaire is then used by the department of obstetrics and gynecology for teaching purposes. The case summary, identifiable only by the case number and year, is presented to the committee which meets about every three months. The committee determines the cause of death, the management of the case, and the preventability of the death. Because of the anonymous presentation free discussion and unbiased conclusions are possible. In the follow-up of the case, copies of the case summary and conclusions of the committee are mailed to the physician and the involved consultant.

At the end of each year a report of the years study together with conclusions is prepared and mailed to each member of the state medical society. Lantern slides and talks are prepared and presented to various groups. Papers on various phases of the program are published from time to time. Obstetric subjects are selected and presented at the state medical association meeting in the form of round tables, symposiums, and formal addresses. All of this is an attempt to familiarize the members with the methods and

findings of the committee.

REQUIREMENTS FOR SUCH A COMMITTEE

It is apparent from the very beginning that the first requirement for such a study committee is a state law which exempts the committee's findings from admission as evidence in any legal proceeding. The basic purpose of the work of such a committee is education, and for it to function properly and achieve the proper results, it is imperative that every practicing physician show willingness to participate. Much more desire to participate is obtained when the physician can be assured that his participation will not subject him to the possibility of legal action.

There are many laws which have been drafted and enacted by the various states. However, they are all basically the same in purpose, but differ only in particulars. It should be stressed that each law has to be adapted to each states particular legal structure and should be evaluated and reviewed by legal counsel.

The following law now known as LB 326 was drafted by the Maternal Child Health Committee for introduction into our state legislature.

FOR AN ACT ENTITLED, An act providing for the Confidential Character of Medical Studies Conducted by the Nebraska State Board of Health, Nebraska State Medical Association or Allied Medical Societies. Be it Enacted by the Legislature of the State of Nebraska:

Section 1.

All information, interviews, reports, statements, memoranda, or other data procured by the State Board of Health, Nebraska State Medical Association, or allied medical societies in the course of a medical study for the purpose of reducing morbidity or mortality shall be strictly confidential and shall only be used for medical research.

Section 2.

Such information, records, reports, statements, notes, memoranda, or other data, shall not be admissible as evidence in any action of any kind in any court or before any tribunal, board, agency or person.

Section 3.

The furnishing of such information in the course of a research project to the State Board of Health, Nebraska State Medical Association or allied medical societies or their authorized representatives, shall not subject any person, hospital, sanitorium, nursing or rest home or any such agency to any action for damages or other relief.

Section 4.

The disclosure of any information, records, reports, statements, notes, memoranda or other data obtained in any such medical study except that necessary for the purpose of the specific study is thereby declared a misdemeanor and punishable as such.

Section 5.

It shall be unlawful to disclose any information, records,

reports, statements, notes, memoranda, or other data contained in any such medical study except that necessary for the purpose of the specific study and any person violating any of the provisions of this section is guilty of a misdemeanor.

The next requirement is two fold. First, any such committee needs the approval and sanction of the state medical association. The Nebraska State Medical Association has never approved such a study in the past, although there exist a nonfunctioning Maternal Mortality Committee. Secondly, a genuine effort should be made to educate the individual physician that such a committee is not intent upon the task of personal criticism. That constructive criticism is inevitable, and indeed necessary, in such a study is obvious. However, the involved physician remains anonymous to the committee members, thus leading to fair and imparital evaluation.

Thirdly, a small measure which could be accomplished with cooperation of the State Health Department is an entry on each death certificate stating whether the individual was pregnant, or had been pregnant within the length of time post partum in which all deaths are studied. This would prevent loss of time and reduce the task of cross matching all female deaths with the birth certificates for that period of time.

And finally, a committee should be appointed by the state medical society with the authority to organize such

a study group, and then investigate all maternal deaths within the state. These committees usually consist of six to twelve members who serve without remuneration. Each member usually serves until they wish to retire. A permanent chairman is appointed and he serves until he wishes to retire. In some states all members are obstetricians from all parts of the state along with the chief of the section of Maternal and Child Health of the State Department of Health. In others the committee consists of obstetricians, a pathologist, a member of the health department, and any physician who is interested in such a study.

SUMMARY AND CONCLUSION

An attempt has been made to show how maternal deaths can and frequently do go undiscovered. A study of the anonymous maternal death questionnaires of the state health department was made and classified according to the classification of the American Medical Association's "Guide for Maternal Death Studies." These deaths were then compared with the official listed maternal deaths of the State Health Department. It was found that Nebraska did not compare as favorably to the National Maternal Death Rate as previously. A comparison of Nebraska with five other states, which presently have a Maternal Death Study, showed that only one of these states had a higher rate.

Next, the purpose of such study groups was stated and a review was made of the means by which this purpose is accomplished. Evidence was presented from the various states

to show how their individual death rates had shown a steady decline since the inception of a Maternal Mortality Committee. A summary of how a committee functions was then presented. And lastly, the immediate needs for the creation of such a committee in the state of Nebraska was presented.

BIBLIOGRAPHY

1. Guide For Maternal Death Studies, Committee on Maternal and Child Care of Council On Medical Education, American Medical Association, 1957.
2. Maternal Child Health Questionnaires, Maternal Child Health Bureau, Bureau of Vital Statistics of Department of Health of State of Nebraska.
3. Maternal Mortality: 1956, U.S. Dept. of Health, Education and Welfare, Office of Vital Statistics, Vol. 48 No. 15 (Oct. 21) 1958.
4. Maternal Mortality: 1957, U.S. Dept. of Health, Education and Welfare, Office of Vital Statistics, Vol. 50 No. 15 (Aug. 27) 1959.
5. Maternal Mortality: 1958, U.S. Dept. of Health, Education and Welfare, Office of Vital Statistics, Vol. 52 No. 6 (Aug. 18) 1960.
6. Merling, R.L., and Ruppertsberg, Anthony Jr., Maternal Mortality in Franklin County, A Five Year Study, Ohio Med. Journal 50:445-459 (May) 1954.
7. Natality: 1956, U.S. Dept. of Health, Education and Welfare, Office of Vital Statistics, Vol. 48 No. 14 (Oct. 15) 1958.
8. Natality: 1957, U.S. Dept. of Health, Education and Welfare, Office of Vital Statistics, Vol. 50 No. 16 (Sept. 10) 1959.
9. Natality: 1958, U.S. Dept. of Health, Education and Welfare, Office of Vital Statistics, Vol. 52 No. 18 (Sept. 10) 1960.
10. Ruppertsbery, Anthony Jr., Maternal Mortality Studies in Ohio-Development and Maintenance. Role of the Medical Record Librarian in the Program. J.A.A.M.R.L. Vol. 29 No. 6 Dec. 1958.
11. Statistical Report, Bureau of Vital Statistics, Nebraska State Department of Health. Page 17, 30 1959.
12. Study of Maternal Mortality Committees, Part 1 , J.A.M.A. 159: 1771-74 (Dec. 31) 1955.
13. Study of Maternal Mortality Committees, Part 2, J.A.M.A. 160: 296-299 (Jan. 28) 1956.
14. Study of Maternal Mortality Committees, Part 3 , J.A.M.A. 161: 74-77 (May 5) 1956.

15. Study of Maternal Mortality Committees, Part 4,
J.A.M.A. 162:981-985 (Nov. 3) 1956.
16. Study of Maternal Mortality Committees, Part 5,
J.A.M.A. 162:1398-1401 (Dec. 8) 1956.
17. Study of Maternal Mortality Committees, Part 6,
J.A.M.A. 162:1632-1636 (Dec. 29) 1956.
18. Study of Maternal Mortality Committees, Part 7,
J.A.M.A. 163:278-282 (Jan. 26) 1957.