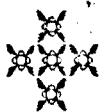


MATERNITY CARE  
IN A RURAL COMMUNITY

*Pike County, Mississippi, 1931-1936*



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*New York*  
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## FOREWORD

FOR some time the Commonwealth Fund has been interested in developing services for the improvement of care of mothers and infants in rural areas. The public health programs to which it has contributed have emphasized the importance of work in this field and through clinical and nursing service have improved the amount and character of supervision in the antepartum and postpartum periods. In 1931 a public health program was established in Pike County typical of those developed in several other areas. By providing instructive public health nursing service and a certain amount of clinical service supplementary to the work of private physicians, it was hoped to influence the general health status of the population. It was apparent that to secure greatest effectiveness for maternity and child health the activities of the health department must be coordinated with the obstetrical care offered by private physicians. To take stock of what had been accomplished and disclose ways of further improving local maternity care, arrangements were made, at the request of the state department of health, for Dr. Lapham, then conducting a postgraduate course in obstetrics for physicians within the state, to study maternity care in all of its phases in Pike County. The plan of study was presented to the local physicians and endorsed by them and through their

active participation what is believed to be a very accurate picture of present obstetrical practice in the county was made possible. It is thought that the suggestions for the improvement of the program which follow the study provide sound guides to physicians and health departments alike.

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## MATERNITY CARE IN A RURAL COMMUNITY

*Pike County, Mississippi, 1931-1936*

THE care of the mother and newborn infant is always a current problem and one to which the medical profession and the public have given a great deal of thought. There is no social or medical question which stimulates public interest more than maternal and infant mortality. Usually the high mortality of women in childbirth is stressed to the exclusion of deaths of the newborn infant and stillbirths. This one-sided emphasis results in an understatement of the problem for as a matter of fact the mortality incidence of all three groups represents the "risk of maternity."

Comparison of maternal mortality with the death rate from other causes of women between the ages of 15 and 45 shows the relative importance of the maternity problem. For the United States in 1934 one death in nine was due to puerperal causes, a higher ratio than for any other cause of death except tuberculosis among women between the ages of 15 and 45. The comparison of puerperal deaths with deaths from other causes is shown in Table 1.

We should from time to time take stock of this maternity situation, determine the present status of the



problem, and attempt to evaluate the efforts that are being made to improve conditions.

Such a stock-taking of the maternity situation was believed to be timely for Pike County, Mississippi, where a rather comprehensive maternity program under the auspices of the public health department had been in operation for six years and where the local physicians indicated a willingness to cooperate in a critical analysis of local obstetrical practice.

Pike County is a community of 32,000 people of whom only 10,000 live under urban conditions. Nearly

TABLE I  
DEATHS IN THE U.S. REGISTRATION AREA FOR FEMALE POPULATION  
15-45 YEARS OF AGE AND THE RATIO OF DEATHS FROM OTHER  
CAUSES TO PUERPERAL DEATHS

	<i>Number of deaths</i>	<i>Ratio to puerperal deaths</i>
Diseases of pregnancy	12,692	1.00
Pneumonia and influenza	9,144	.72
Syphilis and gonorrhoea	2,343	.18
Tuberculosis	20,210	1.59
Cancer and malignant tumors	10,070	.79
Diabetes	1,276	.10
Cerebral hemorrhage	2,623	.21
Heart	11,948	.94
Nephritis	5,666	.45
Violent and accidental	10,565	.83
All causes	115,908	

NOTE: Figures are taken from Table 7, U.S. Bureau of the Census, *Mortality Statistics, 1934*.

half of the county population is Negro. The county, then, is relatively balanced in distribution of population by locality and by race and by commercial and agricultural resources. In Pike County maternity service is furnished by physicians and midwives and by the organized facilities of the public health department and hospitals.

The importance of the maternity problem in Pike County may be judged by the fact that in the period 1931-1936 there were nearly twice as many deaths from maternal causes as from cancer in the female age group 15 to 45. The incidence of deaths from tuberculosis in women between 15 and 45 years of age is the same as the maternal deaths in that age group. Maternal deaths exceed deaths from all acute communicable diseases in all ages by 11. If we consider all the deaths incident to child bearing in one group, maternal and neonatal deaths and stillbirths, we find that in the six-year period there were 368 deaths from these causes in Pike County. This places the risk involved in the perpetuation of the race at the top of the list of the principal causes of death. Even though we may feel that maternal deaths have been overemphasized as one of the greater causes of death, when we consider this group together with stillbirths and neonatal deaths, we realize that the maternity problem is a serious one and one which should receive even greater attention than it has in the past. Stillbirths ranked fourth in the list of the principal causes of death in Pike County in 1936. Neonatal deaths, although they accounted for 58 per cent of the infant deaths in the

United States in 1936, represented 73 per cent in Pike County. With maternal deaths the eleventh principal cause of death in this county in 1935, it is easy to see why the combined maternity and infant problem should have so much attention. In Table 2 mortality rates in Pike County are compared with the state and federal statistics for maternal and neonatal deaths and stillbirths. It will be noted here that maternal and neonatal death rates for this county are higher than for the Registration Area and for Mississippi as a whole.

TABLE 2  
COMPARISON OF MATERNAL, STILLBIRTH, AND NEONATAL DEATHS  
PER 1,000 LIVE BIRTHS IN PIKE COUNTY, MISSISSIPPI,  
AND THE U.S. REGISTRATION AREA

	MORTALITY PER 1,000 LIVE BIRTHS		
	<i>Maternal</i>	<i>Stillbirth</i>	<i>Neonatal</i>
Pike County (1931-36)	7.6	36.3	35.7
State of Mississippi (1934)	6.6	46.4	32.4
Registration Area (1934)	5.9	36.0	34.1

In this study an attempt has been made to determine from all available sources the kind of service in Pike County offered to the mother and newborn infant. The study includes an analysis of the various community services for maternity and infant care: public health department activities, the midwife problem, and the practice of obstetrics by the physicians as represented by one hundred recent cases. The maternal and infant mortality

over a period of six years has also been studied from records and personal interviews with attendants.

There are 22 practicing physicians in Pike County, of whom 16 are carrying the bulk of the obstetrical practice. In the six-year period, 1931-36, 2,616 deliveries, or 55 per cent of the total number (4,795), were attended by physicians. Of the women delivered, 2,052 were white and 564 Negro.

The two hospitals in Pike County have together a total of about one hundred beds for all types of cases. These are proprietary hospitals, having open staffs, and any physician in the county is allowed to take maternity cases to them for delivery. Delivery rooms, although separate, are in the vicinity of the operating room suites. There is not sufficient maternity work to allow for a separate nursing staff nor are there segregated wings for the care of only maternity cases. Of the cases receiving hospital care an unusually high percentage were complicated cases which required operative interference.

A condition exists in Pike County not unlike that in many of the other southern states: nearly half the patients in the county are delivered by midwives. There are at the present time (1937) 31 registered midwives in Pike County, an increase of 10 over those registered in 1931. Of these, 28 are Negro and 3 white. Only 7 of the entire group are under 45 years of age. In 1920 only 15 per cent of the midwives in the state could write, and at present it is estimated that over 75 per cent are able to read and write, and therefore can make out birth certifi-

cates. Even though a state law exists allowing any woman to practice midwifery, the state board of health exercises some control of these women by granting permits to those who attend midwife meetings and conform to regulations made by the state department of health. In the six-year period of the study, 2,179 women, or 45 per cent of the total number of deliveries, were cared for by midwives.

The health department offers nursing service to maternity cases and supplements medical service through clinics primarily for the medical examination of cases who expect to have midwife delivery. Antepartum and antiluetic clinics under the health department are conducted either by the health officer or by some local physicians who assist him.

The nursing staff of the health department consists of four field nurses, among whom the county is divided, and a supervising nurse. The supervisor spends approximately one-third of her time in the field assisting in clinics and making home visits. The rest of her time is spent in keeping in touch with all the nurses' work in the field and discussing with the nursing staff various problems which may come up about individual cases or about the nursing program in general. All of the nurses on the staff have taken postgraduate work in public health.

Approximately 40 per cent\* of nursing time is given

\* This percentage is based upon the relation of the total number of visits for antepartum, postpartum, and infant service to the total number of nursing visits in all branches of the service.

to maternity and infant care. Considering the importance of the problem, this seems an appropriate distribution of service. The nurses also supervise the midwives and carry on an educational program for them which is time indirectly devoted to maternity care.

## FINDINGS OF THE STUDY

### *Health Department Medical Service*

Medical service for maternity cases as it now exists is by no means perfect. Patients who are unable to have the care of a private physician may be given a physical examination at the health department clinics. These patients are, in large part, women who have no particular medical affiliation. Some patients are also referred by physicians and each one is given whatever examination the physician requests.

At the clinic an effort is made to find any complications which may exist. An examination is made of the head and neck, with particular reference to foci of infection, the chest, and the abdomen. External pelvic measurements are taken; no general pelvic examination is made unless the patient seems to have some definite complication. The cervix is usually not examined with a speculum. If the physician at the clinic finds the patient has a complication, he tells her to see a private physician at once. Those patients who are found to have syphilis and cannot afford to have private medical care are treated in a health department antiluetic clinic which

is conducted by the health officer or one of the private physicians in the county. These clinics which are endorsed by the County Medical Society are located in several appropriate parts of the county.

The health department medical service examined 125 women in 1931-33 and 389 in 1934-36. In Pike County at the time of the survey the clinic physician did not see a patient the second time for medical examination unless that patient had a complication. If at follow-up visits the nurse discovered what she believed to be some major complication, the patient was sometimes examined a second time in the clinic and if the condition was found to be serious, every effort was made to induce her to consult a physician. The medical service examined 514, or 36 per cent of the 1,416 cases under nursing service. Some patients had been examined by the private physicians referring them for nursing supervision which partly explains why so few examinations were made in the health department.

Because the health department has taken on the load of the underprivileged, it has assumed the care of the potentially more complicated cases, particularly in the Negro group. As shown in Table 3, there were in the period 1931-36 over twice as many Negro maternal deaths as white and over twice as many stillbirths in the Negro as in the white group. Since the problem of maternal mortality and stillbirths is so predominant in this group, clinic service should not be curtailed even though the majority (477 out of 514) of women who were

served during the period were Negro. Possibly the service to this group should be extended.

TABLE 3  
BIRTHS, MATERNAL DEATHS, NEONATAL DEATHS, AND STILLBIRTHS,  
AND DEATH RATES PER 1,000 LIVE BIRTHS BY COLOR,  
PIKE COUNTY, 1931-36

	<i>Total</i>	<i>White</i>	<i>Negro</i>
Live births	4,627	2,084	2,543
Maternal deaths	35	11	24
Maternal death rate	7.6	5.3	9.4
Neonatal deaths	165	81	84
Neonatal death rate	35.7	38.9	33.0
Stillbirths	168	54	114
Stillbirth rate	36.3	25.9	44.8

Of the 514 women examined by the medical service, 223 had some complication, 53 in the period 1931-33 and 170 in the period 1934-36. There were 12 cases of toxemia or nephritis, 1 case of tuberculosis, 11 cases of hemorrhage of all types, as well as a large number of contracted pelvis. In 1931-33, the health officer referred to private physicians for further care 5 patients or less than 10 per cent of the women with complications. In 1934-36, 22 patients were referred to private physicians, which is only about 13 per cent of the cases who had complications. This percentage of cases referred though better in the second period is far too low. Of the 27 cases whose histories indicated they had been referred, only 16 consulted a physician in the six-year period.



Examinations for syphilis made on 202 of the 428 patients under nursing supervision in 1931-33 disclosed 30 women with positive Wassermanns; 14 of these, or 46.6 per cent, subsequently received treatment. In 1934-36, of the 988 patients under nursing care, 588 were examined; 71 were found to have positive Wassermanns and 46 of these, or 66 per cent, were subsequently treated. A total, then, of only 59 per cent of the pregnant women who were found to have positive Wassermann reactions received treatment during the entire six-year period. The health department antiluetic clinics which have been established for about two and a half years should increase the number of patients receiving treatment. Of 60 positive cases treated by the health department, 28 gave a history of previous stillbirth and after treatment 25 of the 28 gave birth to live infants. The Wassermann study is discussed further under health department nursing service.

The health department has also supervised 8 cases of gonorrhoeal ophthalmia in six years. By the combined efforts of the private physicians and the health department all of them recovered without loss of sight.

It was found that no postpartum examinations were made by the health department medical service.

### *Health Department Nursing Service*

The public health nursing service is not only much more extensive but is also more intensive than the medical service. In the years 1931-36, there were 1,416 antepartum cases under supervision, 539 white and 877

Negro women. This represents approximately 30 per cent of the total deliveries. The yearly increase in percentage of the total births carried by the antepartum nursing service from 1931 to 1936 is shown in Chart 1.

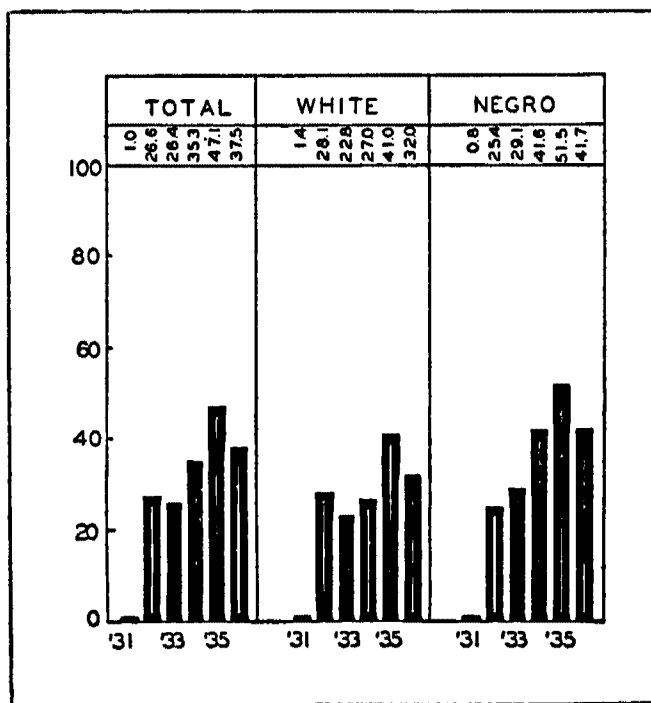


CHART 1. PERCENTAGE OF TOTAL BIRTHS RECEIVING ANTEPARTUM NURSING CARE, BY COLOR, 1931-36

*Who was served.* There are various methods by which patients are referred for nursing supervision. The source of cases for 1931-33 and 1934-35 is shown in Table 4.

TABLE 4  
 PERCENTAGE OF CASES UNDER SUPERVISION REFERRED BY PRIVATE  
 PHYSICIANS, MIDWIVES, SELF, OTHER INDIVIDUALS, AND  
 NURSES, PIKE COUNTY, 1931-33 AND 1934-35

	1931-33	1934-35
Private physicians	10.2	10.0
Midwives	23.4	11.0
Self	13.6	28.5
Other individuals	23.4	35.7
Nurses	29.4	14.8

NOTE: No record of reference in 1936.

Since the organization of the health department, approximately 10 per cent of the maternity cases under supervision have been referred to the service by private physicians. In 1931-33, 23 per cent of the maternity cases under supervision were referred by midwives whereas in 1934-35 this proportion dropped to 11 per cent. On the other hand, the number of patients who themselves sought the service of the nurse has increased from 14 per cent in 1931-33 to 29 per cent in 1934-35. The nurses themselves in 1931-33 brought 29 per cent of the patients under supervision whereas in 1934-35 only 15 per cent of the patients were "picked up" by the nurse. The drop in the incidence of referrals by a nurse may indicate that more cases are referring themselves or that there has been no effort to increase the case load.

*Program for antepartum service.* As part of the routine care of the maternity patient the nurse attempts to make

as early contact with her as possible. Many patients are visited in the home and others are seen in groups either in the home or in one of the four health centers in the county. At the first visit the nurse takes the history consisting of pertinent questions about past medical, surgical, and obstetrical experience and the outcome of previous pregnancies, and procures blood for a Wassermann. At the first and subsequent visits routine questions are asked about such subjective symptoms as nausea, pain, bleeding, eye symptoms, and headaches. Objective findings are noted such as edema, varicose veins, and other unusual conditions. The blood pressure is taken, a specimen of urine is procured, and immediately tests for specific gravity and for albumin and sugar are made. Temperatures and respiration and pulse rates are taken when indicated. The nurse advises the patient concerning maternity hygiene, such as appropriate balanced diets with plenty of fluids in uncomplicated cases, an extra amount of rest, and the importance of wearing proper clothing. She also gives suggestions for the making of baby clothes and assembling materials needed for the lying-in period. The importance of medical care is stressed to every patient even though she may have decided to have a midwife deliver her. The patient who cannot have private medical care is advised to go to the health department medical clinic for a physical examination and then if complications are found, she is again advised to see a private physician and an effort is made to secure private medical care for her.

The uncomplicated case is visited monthly after the first visit, and if there is fear of complication, she is seen more often so that her condition can be determined and reported to the proper medical service.

If the patient is under a private physician's care, a routine, written report of blood pressure and urinalysis together with a statement of any other unusual symptom is sent to the physician. If the condition is acute, the nurse advises the physician by telephone or in person. After giving the physician the report on the patient, an effort is made to have the patient carry out the orders of the physician.

Nursing service has increased from the period 1931-33 to 1934-36 in respect to the number of patients, both white and Negro, as shown in Table 5.

TABLE 5  
CASES UNDER ANTEPARTUM NURSING SUPERVISION BY COLOR AND  
ATTENDANT AT DELIVERY, PIKE COUNTY, 1931-33  
AND 1934-36

	<i>Total</i>	<i>1931-33</i>	<i>1934-36</i>
<i>By color</i>			
<i>Total</i>	1,416	428	988
White	539	184	355
Negro	877	244	633
<i>By attendant</i>			
<i>Total</i>	1,416	428	988
Physician	752	218	534
Midwife	664	210	454

From the standpoint of service, the nursing service was about evenly divided between physician and midwife cases. In six years, 752 physician cases and 664 midwife cases have been supervised. However, during the same period more Negro than white patients were seen—877 Negro and 539 white.

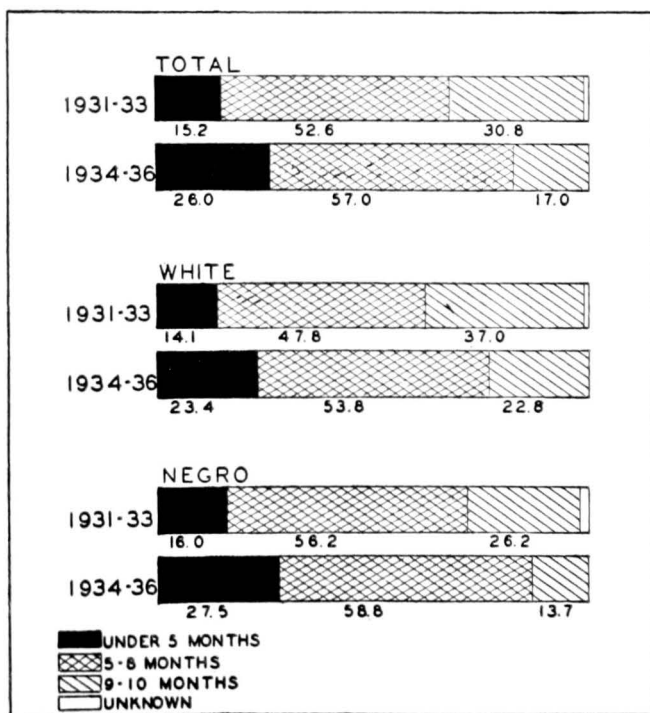


CHART 2. PERCENTAGE OF ANTEPARTUM CASES ADMITTED TO NURSING SERVICE, BY MONTHS OF PREGNANCY AND BY COLOR, 1931-33 AND 1934-36

*Frequency of service.* It is desirable for the patient to be seen by the nurse as early as the second month of pregnancy and at least monthly thereafter up to the last two months of pregnancy when semi-monthly visits should be made. Obviously in Pike County under the present conditions this is impossible since many patients are not referred until much later in pregnancy. As shown in Chart 2 there has been an improvement in the time of first seeing patients. In the second three-year period 26 per cent were seen before the fifth month as compared with 15 per cent seen at this time in the first three-year period. In the second period the average time was the sixth month and more cases were seen in this month than any other one month, while in 1931-33 a larger number of cases were seen in the ninth month than in any other one month, and the average time was the seventh month.

There was an improvement in the average number of visits to all patients from 1931-33 to 1934-36 but the average to complicated cases did not increase. During the 1931-33 period, an average of 2.9 antepartum nursing visits were made to each patient and in 1934-36 an average of 4.7 antepartum visits were made to each patient. The yearly average is shown in Chart 4, page 22. The extent of nursing service for cases showing some complication was 3.1 and 4.7 visits respectively in the two three-year periods. There was, therefore, little difference in the two three-year periods between the average number of visits to complicated cases and to all cases.

*Procedure of the nursing visit.* In the 1931-33 period,

of the 428 patients under supervision, 20 temperatures were taken; 19 were elevated above 99° F. and 4 of these were elevated above 100° F. In the 1934-36 period, of the 988 patients under supervision, 170 had temperatures taken; all were elevated above 99° F. and 15 elevated above 100° F. This high percentage of elevated temperatures probably indicates that temperatures were taken

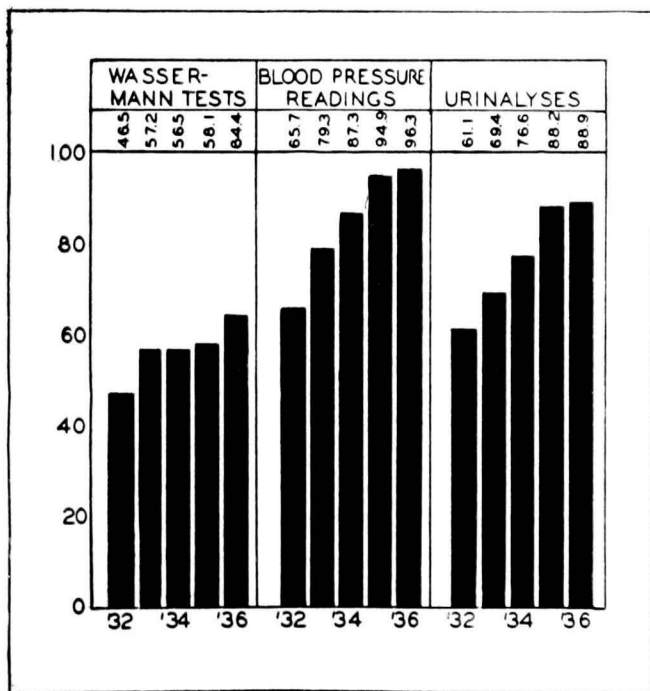


CHART 3. PERCENTAGE OF ANTEPARTUM CASES CARRIED HAVING WASSERMANN TESTS, BLOOD PRESSURE READINGS, AND URINALYSES, 1932-36



only on those who the nurse felt had symptoms indicative of infection and that this service is markedly incomplete.

In 1931-33, 306 patients had blood pressure readings taken and 58 of these had at one time or another during the antepartum period showed an elevation of blood pressure to 140/90 or over. This was 19 per cent of the total number of patients who had blood pressure readings. In the 1934-36 period, of the 919 patients upon whom blood pressure readings were made, 174, or 19 per cent, were found to have an elevation of pressure of 140/90 or over. The reading of blood pressures has been a relatively consistent procedure since all but 191 patients of the total 1,416 under nursing care had blood pressure readings at some time, and in the last three years 93 per cent have had blood pressure readings. The constant improvement in this procedure is shown in Chart 3 and Table 6.

Up to the present time the urinalysis as done by the health department consists in reading the specific gravity and doing chemical tests to determine the presence of albumin and sugar. The test of albumin is the most important of these. In 1931-33, albumin estimations were made upon 275 patients in which 61, or 22 per cent, showed 1+ albumin or more; in the 1934-36 period, albumin estimations were made upon 839 patients and 77, or 9 per cent, showed 1+ or more. Apparently the albumin estimations were more carefully done in the last period than the first or else there has been great im-

provement in the type of antepartum care the pregnant woman is now obtaining. The former supposition probably accounts for the decrease in positive albumin estimations in the 1934-36 period, as shown in Table 7.

TABLE 6  
PERCENTAGE OF PATIENTS UNDER NURSING SUPERVISION WHO HAD  
BLOOD PRESSURES, URINALYSES, AND WASSERMANN'S TAKEN,  
PIKE COUNTY, 1931-33 AND 1934-36

	1931-33	1934-36
Blood pressure	71.5	93.0
Urinalysis	64.3	84.9
Wassermann	47.2	59.5

In the period 1931-33, of the 428 cases which were under medical or nursing supervision of the health department, Wassermanns were taken on 202 patients and in the period 1934-35, of the 988 cases under health department medical or nursing supervision, 588 patients had Wassermanns taken. Only a little more than half—actually 56 per cent—had Wassermanns taken in the six-year period. However, this procedure increased from 47 per cent in 1931-33 to 60 per cent in 1934-36 as shown in Table 6 and Chart 3. It was found in the first three-year period, that 30, or 15 per cent, of the Wassermanns taken were positive and in the second three-year period 71, or 12 per cent, of the Wassermanns were positive. This is shown in Table 7.

**TABLE 7**  
**ANALYSIS OF COMMON PROCEDURES OF ANTEPARTUM NURSING**  
**VISITS, PIKE COUNTY, 1931-33 AND 1934-36**

	<i>1931-33</i>	<i>1934-36</i>
Patients under supervision	428	988
Patients having temperature taken	20	170
Temperatures above 99° F.	19	170
Percentage elevated	95.0	100.0
Patients having blood pressure taken	306	919
Blood pressure above 140/90	58	174
Percentage elevated	19.0	18.9
Patients having urinalysis	275	839
Number having albumin	61	77
Percentage having albumin	22.2	9.2
Patients having Wassermann taken	202	588
Number positive Wassermanns	30	71
Percentage positive Wassermanns	14.9	12.1

**TABLE 8**  
**NUMBER OF CASES UNDER NURSING SUPERVISION HAVING WASSER-**  
**MANN TEST, NUMBER POSITIVE, AND NUMBER OF POSITIVES**  
**TREATED, PIKE COUNTY, 1931-33 AND 1934-36**

	<i>1931-33</i>	<i>1934-36</i>
Number of cases having Wassermann done	202	588
Number of positives	30	71
Number of positives treated	14	46

Many white cases do not have the Wassermann test and this is in compliance with the request of their physi-

cians. Of the patients who had positive Wassermanns in the 1931-33 period, only 14 of the 30 received treatment as shown in Table 8, and in the period 1934-36 there were 46 of the 71 positives who received treatment. A total of only 59 per cent of the positive Wassermanns received treatment in six years.

The nursing program provides that the nurses will advise all patients to go to a physician for care and delivery. In 1931-33, the recorded histories of only 101 patients, or 24 per cent of all patients under supervision, indicated that this advice was given. In this period only 39 patients went to a physician, an incidence of 39 per cent of those advised to go. In 1934-36, 452 patients, or 45.7 per cent of those under supervision, were advised to go to a physician and 235, or 52 per cent, went. This shows a 33 per cent increase in patients referred by a nurse and seen by a physician. However, not as many of the complicated cases were seen by physicians as should have been.

*How adequate was service.* An effort was made to determine the incidence of adequate care given to physician and midwife cases by the nursing service. Adequate care is here defined for the purpose of this study as: service given to the patient admitted in the sixth month or before, seen monthly thereafter until delivery, and seen after delivery within four days with a total of three postpartum visits. This definition is recognized as rigid and is subject to some modification depending upon the period of pregnancy at which the patient comes under

supervision. A fair amount of antepartum and postpartum service was given patients under supervision in 1931-36 both by the physicians and nurses, as shown in

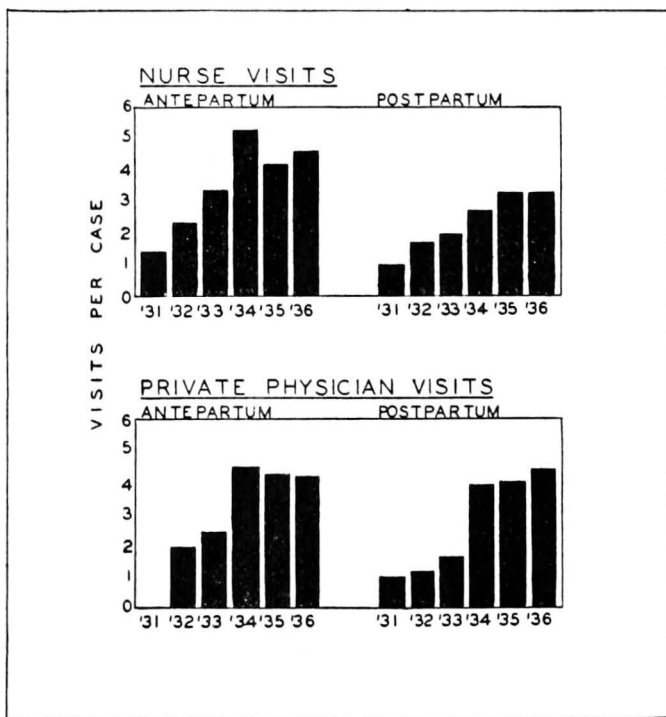


CHART 4. AVERAGE NUMBER OF VISITS BY NURSES AND PRIVATE PHYSICIANS TO ANTEPARTUM AND POSTPARTUM CASES, 1931-36

Chart 4. It is believed that a larger percentage of cases would fall into the group having adequate service as thus defined had the antepartum and postpartum periods been considered separately. The percentage of cases re-

ceiving adequate care each year grouped by attendant is shown in Table 9.

TABLE 9  
CASES OF PHYSICIANS AND MIDWIVES HAVING ADEQUATE NURSING CARE, PIKE COUNTY, 1931-36

	PHYSICIANS			MIDWIVES		
	TOTAL CASES	Number	Per cent	TOTAL CASES	Number	Per cent
1931	6	-	-	2	-	-
1932	103	-	-	95	-	-
1933	109	7	6.4	113	4	3.5
1934	143	21	14.7	156	18	11.5
1935	217	21	9.7	174	27	15.5
1936	174	39	22.4	124	31	25.0
<i>Total</i>	752	88	11.7	664	80	12.0

In the six years that the health department has been in existence, 207 women have had nursing service during more than one pregnancy. Of the patients under supervision during a second pregnancy, 51 per cent were seen earlier than in the first pregnancy and 13 per cent were seen in the same month.

The nursing service apparently has had some success in getting to physicians patients who have never had medical care previously. Of the patients who had nursing care more than once, 42 per cent were receiving medical care at the time of their first admission to the nursing service and 54 per cent during a subsequent pregnancy. This is a 28 per cent increase in cases under nursing supervision who were having private medical care.

*Postpartum service.* During the period under consideration 1,321 individuals received postpartum service, 526 white and 795 Negro. These individuals received an average of 1.9 visits in 1931-33 and 3.1 in 1934-36. In order that the nurse may see the patient as soon as possible following delivery, postal cards are given to the patient under supervision to be sent to the health department as soon as the baby is born. Table 10 shows the number and percentage of patients who had postpartum nursing care grouped by the time after delivery the patient was first seen. This shows a very definite improvement in postpartum service.

TABLE 10  
DAY OF FIRST VISIT TO POSTPARTUM CASES WHO HAD ANTEPARTUM SERVICE, PIKE COUNTY, 1931-33 AND 1934-36

	1931-33		1934-36	
	Num- ber	Per cent	Num- ber	Per cent
First or second day	66	20.6	341	36.9
Third or fourth day	31	9.7	211	22.8
Before fifth day	(97)	(30.3)	(552)	(59.7)
Fifth and before fifteenth day	108	33.8	287	31.0
Fifteenth day and before the end of the second month	115	35.9	86	9.3
<i>Total</i>	320	100.0	925	100.0

In the first three-year period when relatively few patients were under nursing supervision, 7 postpartum pa-

tients out of 109 whose temperatures were taken showed an elevation above 100° F. However, in the last three years, 113 patients out of 932 whose temperatures were taken postpartum showed an elevation above 100° F. This is an incidence of about 12 per cent of the total 1,041 patients who had temperatures taken after delivery in the six-year period and nearly one half of those who had an elevation of 99° F.

TABLE II  
ANALYSIS OF PROCEDURES OF POSTPARTUM NURSING VISITS,  
PIKE COUNTY, 1931-33, 1934-36, AND 1931-36

	1931-36	1931-33	1934-36
Patients under supervision	1,321	352	969
Patients having temperatures taken	1,041	109	932
Temperatures above 99° F.	262	18	244
Percentage elevated	25.2	16.5	26.2
Temperatures above 100° F.	120	7	113
Percentage elevated	11.5	6.4	12.1
Patients having blood pressure taken	70	5	65
Blood pressure above 140/90	22	1	21
Percentage elevated	31.4	20.0	32.3

The average number of postpartum visits made to patients with febrile complications was 2.5 in 1931-33 and 3.5 in 1934-36, which is higher in both periods than the average number of visits to all postpartum cases.

For 1931-33 an effort was made to determine how many patients who had had some indication of toxemia



during pregnancy continued to have an elevated blood pressure at the end of the postpartum period. Of 58 blood pressures which were elevated over 140/90 during the antepartum period, 4 blood pressures were taken at the end of the postpartum period and one was found to be elevated above 140/90. In the 1934-36 period, however, of the 174 patients who had elevated blood pressures during the antepartum period, 62 pressures were taken at the end of the postpartum period and 20 were found to be elevated, an incidence of 32 per cent of those patients upon whom final pressures were taken. Even in 1936, of 61 elevated blood pressures above 140/90 during pregnancy only 26 were taken at final postpartum examination and 9 were elevated at this time.

In a few instances the nursing service failed to get the patient under treatment for syphilis soon after delivery. Six weeks after delivery the luetic mother should be returned to the antiluetic clinic before discharge from maternity service. Since the beginning of the venereal disease clinic two and a half years ago, more pregnant women have come under treatment.

The nursing service is making a strong effort to get under supervision the mothers of all stillbirths in an endeavor to determine the cause of stillbirth. In 1936, investigations were made on 30 stillbirths and 9 were found to have been complicated by syphilis.

There were 23 final examinations done in the first three-year period by physicians and 45 in the second period.

### *Current Midwife Practice*

A great deal of effort has been made by the health department to improve the midwife situation. Unfortunately, there is an existing state law which allows any woman to practice midwifery without previous training and without supervision. The health department permit, however, is issued only to those midwives who have a physical examination, who attend classes, who make out birth certificates, and use drops in the baby's eyes. They are told that they will be penalized by withdrawal of permit for nonconformance and certain bad practices, such as making vaginal examinations, giving douches, or interfering with the process of labor. In three years 3 permits have been revoked: one for doing vaginal examinations, one for failing to use silver nitrate in the baby's eyes, and another for failing to report a birth.

Of the 31 midwives practicing in the county, 15 had had physical examinations: one was found to have a weakly positive Wassermann and one a definitely positive Wassermann; two had had no Wassermanns taken. The one with a definitely positive Wassermann was under treatment.

At midwife classes organized by the health department certain phases of midwifery are discussed. Personal hygiene of the midwife is emphasized. Because of the type of person who is practicing midwifery, very little can be done in the way of assuring sterility during the course of labor and delivery. The women are, however, taught to prepare clean materials for delivery and

these materials are made as sterile as home preparation will allow. The cloth materials are washed, dried in the sun, ironed with a hot iron, and folded so that they are kept clean.

The midwife is taught to cleanse the patient carefully externally with soap, lysol, and water. Only the minimum is taught them so far as diagnosis is concerned, but they are impressed with the importance of watching for certain obvious abnormalities, such as swelling of the feet, headaches, evidence of impending convulsions or actual convulsions, hemorrhages and obvious abnormal presentation, such as prolapse of the arm, and so forth. The care of the infant is stressed, especially the care of the eyes and the cord. Only after the midwife seems to have qualified by showing her ability to care for a patient in a fairly intelligent way throughout labor and delivery is she given a permit. The midwives are also impressed with the importance of making out birth certificates promptly and reporting all births immediately to the county health department.

It was found that the number of midwife cases under nursing supervision to which a doctor was called for delivery amounted to 49, or 7 per cent, of the total 664 in the six-year period 1931-36. Of course, in the cases not under the supervision of the health department, there was no way to determine whether or not a physician was called. However, since the health department carried about 30 per cent of the midwife cases, we can estimate that the physician was called for the delivery of approxi-

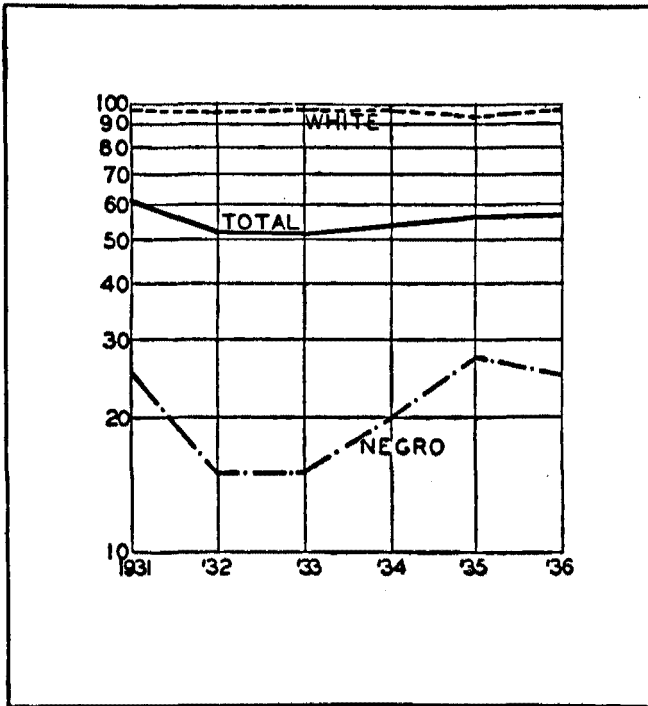


CHART 5. PERCENTAGE OF DELIVERIES ATTENDED BY PHYSICIANS, BY COLOR, 1931-36

mately 165 of these cases. An effort was made to determine the number of cases presenting complications after delivery for whom the physician was called but this was possible only for those under health department supervision since records were available for them. It was found that 38 of the midwife cases under health department supervision were seen by a physician after delivery. Since this occurred in the 30 per cent of midwife cases under

nursing supervision, if we assume that these ratios hold for all midwife cases, we can estimate that about 125 midwife cases were seen by a physician for postpartum service. Including delivery and postpartum calls made by the physician to midwife cases, then, the physician was called in to see approximately 290 or 13 per cent of midwife cases for the period of six years. It would seem that each year approximately 48 cases attended by midwives must have medical attention because of complications.

It is interesting to note in Chart 5 that there was, in the years 1932, 1933, and 1934, a gradual trend away from deliveries by physicians to deliveries by midwives. This may have been due to the acute economic situation in the county during these years, resulting in the gradual shifting of the Negro patients to the midwife. In 1935 and 1936 the trend is toward the physician again, possibly as the result of improved economic conditions.

### *Current Medical Practice: A Study of One Hundred Recent Cases*

*Selection of cases.* Physicians attended 55 per cent of the deliveries in Pike County from 1931 to 1936 and so the following 100 cases under the care of physicians which have been selected for review may be considered to represent a little more than half the births in this period. Sixteen of the physicians who had attended most of the physician deliveries in the six-month period prior to the study were asked to give sufficient case histories of their most recent deliveries to make a total of 100 cases.

The 100 cases were prorated according to the total number of deliveries each of the 16 physicians attended in the year prior to the study. The number of case histories obtained from each physician varied from 2 to 13. Of the 100 patients, 74 were white and 26 Negro. That seems a fair distribution since 22 per cent of the patients delivered by physicians in Pike County in the six-year period were Negro. It was found that there were 34 primiparas and 66 multiparas and, as usual, the greatest number of deliveries occurred in the third decade, between 20 and 29; 64 of the 100 cases occurred in that group.

*Antepartum service.* Eighty-nine of the patients received some medical antepartum supervision. Forty-nine of the group seen in the antepartum period were seen before the fifth month, 40 were seen after that period and 11 were not seen before labor began; 4 of this last group were referred midwife cases. Nursing care by the health department was given to 44 of these 100 cases and only 11 of the 44 were seen before the fifth month. Fifty-six patients received no nursing care at all. This undoubtedly shows that the nurse was not notified by the physicians about the case. The average number of medical visits to patients seen before delivery was 8.7 per patient and the average number of nursing visits was 4.7. Since many of the physicians estimated the number of visits made to these patients, the average number is probably not accurate and relatively high, but represents good service as it stands for those cases who had medical antepartum service.

The study of 100 current cases reveals that too few histories were taken and consequently not enough is known about previous medical, obstetrical, and surgical complications which may have a bearing on the current case. Less than half of the patients, actually 42, had histories taken. These histories showed that a certain number of patients had had previous complications with labor. Sixteen had previous toxemias of pregnancy, 3 severe hemorrhages at delivery, one had severe cardiac disease, and 3 other important complications were noted in the histories. These findings alone show the importance of taking histories and keeping records. There had been 3 previous neonatal deaths and 4 stillbirths. However, there was a group of 58 patients about whom nothing was known so far as previous obstetrical history was concerned. The importance of keeping records, again, is obvious.

A very small portion of the patients had pelvic examinations and a good many had no physical examination at all. Some type of physical examination was made on only 68 patients and pelvic examinations on 45 patients. Pelvic measurements were taken on only 13 of the entire group, of which 11 were primiparas and 2 were multiparas. Less than 50 per cent or only 42 patients had Wassermanns taken, and of those who were tested the proportion of positives was sufficiently high to warrant a more routine application of this procedure. Of the 42 Wassermanns taken, 37 were negative and 5 positive, of which 4 were Negro and one was white. Only 2 of the 5

women who had positive Wassermanns received treatment. The 5 patients who had positive Wassermanns delivered 2 stillborn babies, 2 infants who died shortly after birth, and one infant who survived.

Major complications occurred during the pregnancies in 23 per cent of these 100 patients. Apparently these patients received adequate care by the physician after the complication developed. Little could be determined as to whether or not better care prior to the complication would have lowered this incidence. Sixteen patients developed early or late toxemias of pregnancy, 3 had hemorrhages, one had cardiac disease, and there were 3 other important complications, a total of 23 per cent. This seems a rather high incidence of complications. Of the 23 patients who had major complications, 19 apparently received adequate and 4 inadequate medical antepartum care. The nurse saw only 5 of the 23 complicated cases, of whom 4 received adequate nursing care.

In addition to these complications, past obstetrical history revealed that 6 of the patients were known to have had operative deliveries previously.

*Delivery Service.* The management of delivery varied with the place of delivery, whether hospital or home. Even in the home soap and water and some antiseptic, such as lysol and mercurochrome, were used in 51 cases and 42 patients had the same preparation improved by shaving. The physician wore no gloves in 7 cases and in 3 of these there was no preparation whatsoever. It was stated by most of the physicians that a preparation con-



sisting of soap and water and lysol was usually used not only before delivery but before examining the patient during the course of labor. It was found that an average of about 2 examinations were made on each patient, whether they were multiparas or primiparas. There were a few more examinations made on the primiparas. In 5 cases no examinations were made, and in only 4 or 5 cases were rectal examinations used as a means of determining the progress of labor. The preparation of most of the patients for delivery seemed to be sufficient and the number of vaginal examinations was not excessive.

Some effort was made to determine the length of labor and what the effect of a prolonged labor was upon the infant when there was no operative interference. It was found that of the 34 primiparas, 16 had labor under 12 hours and 15 over 12 hours, with 3 unknown. Of the 66 multiparas, 48 had labor under 12 hours, only 8 over 12 hours, and there were 10 unknown. The 15 primiparas who had labor over 12 hours delivered spontaneously in 8 cases and the 8 multiparas who had labors over 12 hours terminated in 7 spontaneous deliveries. In this group of 23 primiparas and multiparas who had labor over 12 hours, 22 infants were born alive, there were no neonatal deaths, and 1 stillbirth.

In 92 cases, the third stage was less than 30 minutes. There were 3 cases in which the placenta was not delivered in less than 30 minutes; 2 of these were delivered in less than one hour. The third had to be extracted manually at the end of 24 hours. The length of the third

stage of labor for these cases indicates that this part is not as long as many physicians would have one believe.

Some type of analgesia was used in 26 of the 100 cases. The commonest drug used was some form of barbiturate, although morphine alone and morphine and hyoscyne were used in a few instances. Anesthesia was used in 78 of the 100 cases, and in most cases it was used as an obstetrical anesthesia during the latter part of the second stage of labor and during delivery. Chloroform was the commonest anesthetic used having been given in 53 of the 78 cases which received any anesthetic. In the hospital cases, nitrous oxide, oxygen, and ether were more frequently used than chloroform.

Approximately 15 per cent of the labors were complicated by inertia uteri. Inertia does not ordinarily complicate labor quite as frequently as this study showed. In practically all instances, it was overcome by the use of pituitrin. As a matter of fact, pituitrin was used either in the first or second stages in 21 per cent of the cases even though there was not always an indication that a real uterine inertia existed. Labors and deliveries were further complicated by 7 second degree lacerations, 1 retained placenta, 2 cases of rather severe pre-eclamptic toxemia, 2 cases of hemorrhage, and 8 other complications. If one eliminates inertia, there were more or less important complications of labor in 20 per cent of the cases studied.

The diagnosis of position was probably not accurate in many instances since posterior position of the occiput

was only diagnosed in 3 cases. This is a figure much lower than the usual incidence of posterior occiput. There were also 2 cases of breech presentation. There is a possibility, of course, that there was too little effort made to diagnose correctly the position of the infant before delivery occurred. The 3 occiput posterior cases occurred in the group where labor was more than 12 hours long and were terminated by midforceps operation. The 2 breech labors were more than 12 hours in length also. Very possibly some of the delayed labors which were attributed to inertia might have been caused by posterior position, which was eventually corrected by natural forces, as is often the case, or possibly overcome by the use of pituitrin.

Eighty-six of the 100 cases terminated spontaneously. Of the 14 cases which were delivered by operation, 12 were forceps deliveries, and 2 were versions. There were 9 cases in which episiotomy and repair were done. In this group of cases it would appear that the 14 per cent incidence of operative deliveries was not unusually high since there were 11 emergency hospital deliveries caused apparently by some major complication, many of which required operative interference.

Of the deliveries, 26 occurred in a hospital and 74 in the home. Of the 26 delivered in hospitals, 11 were delivered by some emergency operative procedure and, apparently, only 15 were planned hospital deliveries, all terminating spontaneously.

*Postpartum service.* The puerperium was complicated

by 10 febrile infections, none of which was fatal. There were 3 cases of postpartum hemorrhage, and 2 cases in which severe pre-eclampsia was a major complication. This makes a postpartum febrile morbidity of 10 per cent, and a complete postpartum morbidity of at least 22 per cent if the 3 hemorrhages, the 2 severe postpartum toxemias, and the 7 second degree lacerations are included.

An average of 5.6 postpartum visits were made to these 100 cases by physician, and to the 44 seen by the nurse she made an average of 3.4 postpartum visits.

A final examination was made on 40 of the 100 cases and as a result of this final examination, 8 patients had subsequent operations performed to relieve pelvic conditions and 2 cases received medical treatment for complications.

*Outcome of pregnancies.* There were no maternal deaths in this group of 100 cases.

There were 3 neonatal deaths, 2 white and 1 Negro. One of the white neonatal deaths occurred following the interruption of an intractable case of pyelitis at the sixth-month period and the baby lived only a few minutes following a long labor. A Wassermann was not taken on this patient. The mother of the other white neonatal death had a positive Wassermann as well as a severe pre-eclamptic toxemia. The infant in this case was delivered at eight months and survived only a short time. The single Negro neonatal death occurred in a case where the mother had a positive Wassermann. The child was one

of twins, the other survived under antiluetic treatment. The incidence of neonatal deaths was, therefore, not unusually high and all of them can be accounted for by definite complications, apparently having nothing to do with the type of delivery.

In the group of 100 cases, there were 8 stillbirths of which 4 were white and 4 Negro. None of the white patients who had stillbirths had Wassermanns done. However, the 4 deaths can be satisfactorily accounted for by major complications and all of them were premature. One resulted from a severe toxemia. One was an infant delivered at six months and presented by the breech; during the labor pituitrin was used to complete the second stage of labor. The other 2 white stillbirths were twins delivered as a result of severe hemorrhage from placenta praevia.

Of the 4 Negro stillbirths, 2 had positive Wassermanns: one delivered at term following some treatment during the antepartum period; the second was premature and had had no antiluetic treatment. The third Negro stillbirth was premature and the patient had had no Wassermann but had had a severe pre-eclampsia and labor was induced in an effort to prevent eclampsia. The fourth Negro stillbirth was also premature. The patient had a negative Wassermann and the cause of stillbirth was unaccounted for except by prematurity.

The incidence of stillbirths, although relatively high, can be accounted for satisfactorily in the white group by the number of premature births. Among the Negro

group there were 2 premature births and the other 2 resulted from syphilis.

Only 4 of these 100 cases were first managed by midwives. In each case the labor had lasted longer than 12 hours before a physician was called by the midwife. Two cases were delivered by forceps. All 4 infants survived.

#### A REVIEW OF MORTALITY

Maternal and neonatal mortality as shown in Table 2 was slightly better in the United States Registration Area and Mississippi than in Pike County. However, there was little difference between stillbirth rates in Pike County and in the Registration Area although the rate in Pike County was 10 less than in the state.

A careful study of all mortalities related to pregnancy was made over the period of six years from 1931-36. There were 35 maternal deaths, 165 neonatal deaths, and 168 stillbirths. Every death was investigated by consulting the attendant or attendants with a view to getting as complete data as possible on the events surrounding these deaths.

#### *Maternal Deaths*

There were in this period 11 white and 24 Negro maternal deaths, rates of 5.3 and 9.4 per 1,000 live births respectively.

In regard to the Negro maternal deaths, it seems likely that the relatively poor economic conditions under which the patients lived caused a lowered resistance and

greater tendency to develop some of the common conditions causing death, such as infection and toxemia. It apparently is not true that the Negro woman can stand more abuse than the white woman and survive, nor is she less apt to develop an infection.

Of course, all death certificates are signed by a physician but it was found that 11 of the 35 deaths were first attended by a midwife.

The maternal death rate for midwife cases is 5.2 and for physician cases 9.5 per 1,000 live births.

TABLE 12  
MATERNAL AND NEONATAL DEATHS AND STILLBIRTHS AND DEATH RATES PER 1,000 LIVE BIRTHS BY ATTENDANT AT DELIVERY, PIKE COUNTY, 1931-36

	MATERNAL DEATHS		NEONATAL DEATHS		STILLBIRTHS	
	<i>Num-ber</i>	<i>Rate</i>	<i>Num-ber</i>	<i>Rate</i>	<i>Num-ber</i>	<i>Rate</i>
Total deaths	35	7.6	165	35.7	168	36.3
Attended by physician	24	9.5	100	35.6	83	32.9
Attended by midwife	11	5.2	61	30.5	83	39.4
Unknown	-	-	4	-	2	-

NOTE: Live births by attendant are given in Table 1 of the Appendix.

In this study midwives are credited with all deaths and stillbirths which they attended and the rates for their cases are not greater than the physicians'. Some other

cause than midwife practice must be found for this relatively high mortality.

TABLE 13  
MATERNAL DEATHS BY CAUSE AND VIABILITY,  
PIKE COUNTY, 1931-36

	<i>Before viability</i>	<i>After viability</i>
<i>Single causes</i>	(6)	(14)
Abortion with septicemia	5	-
Puerperal hemorrhage	-	5
Puerperal septicemia	-	4
Puerperal albuminuria and eclampsia	1	5
<i>Joint causes</i>	(2)	(8)
Puerperal albuminuria and puerperal septicemia	-	1
Puerperal albuminuria and Cesarean section	-	1
Rupture of uterus with hemorrhage and puerperal nephritis	-	1
Early toxemia and septicemia	1	-
Dead fetus, adherent placenta and Porro Cesarean section	-	1
Abdominal pregnancy and hemorrhage	1	-
Eclampsia and hemorrhage	-	1
Turpentine poisoning and acute nephritis	-	1
Puerperal peritonitis and Cesarean section	-	2
<i>Extra-genital causes (primary)</i>	(1)	(4)
Cardiac disease and pregnancy	-	2
Pneumonia and pregnancy	-	1
Tuberculous pneumonia and abortion	1	-
Cardiac disease and pre-eclampsia	-	1
<i>Total</i>	9	26

NOTE: Period of viability considered 20 weeks.



Maternal deaths were divided into two groups, based on the period of pregnancy at which death occurred, as shown in Table 13, and it was found that 9 occurred before the twentieth week and 26 after that period. In the first period, five deaths were due to an infection complicating abortion; three of them, according to the physician under whom the case ultimately came, appeared to have a criminal aspect. The other 4 were due to combined causes, generally toxemia and infection. More than three-fourths of the maternal deaths occurring after the twentieth week were due to septicemia, toxemia, and hemorrhage, either as single or combined causes.

Infection was the commonest cause in the whole group of maternal deaths. This can be explained on the basis of contamination, a condition to be condemned. However, one should also consider endogenous infection which the patients harbor at all times and which is exacerbated by the trauma and exhaustion of labor. This latter means of infection, though hard to prove, suggests that better antepartum hygiene and eradication of pelvic and other focal infections before delivery might decrease mortality.

An effort was made to separate maternal deaths by type of delivery and it was found that 7 of the 9 deaths that occurred before the period of viability followed abortions, as shown in Table 14.

After the twentieth week, 8 of the 26 deaths were delivered by operative procedures, 1 by manual rotation, 1 by forceps, 2 by version, and 4 by Cesarean section. For

5 of the deaths in this period there was either no delivery or the type is unknown.

TABLE 14  
MATERNAL DEATHS BY TYPE OF DELIVERY AND OPERATION,  
PIKE COUNTY, 1931-36

<i>Before viability</i>		<i>After viability</i>	
Abortion: Total	7	Spontaneous: Total	13
Criminal	4	Operative: Total	8
Spontaneous	3	Manual rotation	1
Operative: Total	1	Forceps	1
Abdominal section	1	Version	2
Undelivered: Total	1	Cesarean section	4
		Unknown or unde- livered: Total	5
<i>Total</i>	9		26

NOTE: Period of viability considered 20 weeks.

TABLE 15  
INFLUENCE OF MATERNAL DEATHS ON LIFE OF FETUS AFTER PERIOD  
OF VIABILITY, PIKE COUNTY, 1931-36

	<i>Total</i>	<i>White</i>	<i>Negro</i>
Live births	19	7	12
Stillbirths*	5	1	4
Undelivered	2	1	1
Unknown	2	—	2
<i>Total</i>	28	9	19

\* All stillbirths were delivered by operation—three were known to have died before delivery.

On a number of death certificates the cause of death was not clear. After interviews with the attendants, 5 of the original causes of death were definitely changed because of new data obtained. It was found during the course of the study that 2 deaths were reported as non-puerperal when, as a matter of fact, they should have been assigned to puerperal causes.

### *Stillbirths*

There were 114 Negro stillbirths and 54 white, or more than twice as many Negro as white. The stillbirths were evenly divided by attendant; 83 were delivered by physicians, 83 by midwives, and 2 by an unknown attendant. Prematurity occurred in more than half of the cases where degree of maturity was known.

TABLE 16  
TOTAL STILLBIRTHS BY MATURITY AND COLOR,  
PIKE COUNTY, 1931-36

	<i>Total</i>	<i>White</i>	<i>Negro</i>
Mature	69	29	40
Premature	66	16	50
Unknown	33	9	24
<i>Total</i>	<i>168</i>	<i>54</i>	<i>114</i>

Well over half of the stillbirths occurred before labor began. About two-thirds of these deaths were due to maternal conditions, such as toxemia, hemorrhage, and

syphilis, the last condition alone accounting for over one-third. Fetal conditions in general accounted for most of the remaining antepartum stillbirths.

Of those stillbirths occurring during labor and delivery, over half, or 19 out of 33, were known to have had an operative delivery. Maternal complications and fetal abnormalities accounted for most of the remainder.

TABLE 17  
STILLBIRTHS BY PERIOD OF DEATH AND CAUSE, PIKE COUNTY,  
1931-36

Stillbirths before labor: Total		104
Maternal hemorrhage	14	
Maternal syphilis	39	
Late toxemia	13	
Other maternal conditions*	7	
Non-maternal conditions†	31	
Stillbirths during labor and delivery: Total		33
Operative	19	
Maternal complications‡	14	
Stillbirths: period of death and cause unknown		31

\* Includes diabetes, cardiac conditions, and so forth.

† Includes unknown causes, congenital causes, disproportion, prematurity without known cause, and so forth.

‡ Syphilis, toxemia, unknown, and so forth.

### *Neonatal Deaths*

All deaths under one month of age were studied and it was found that there were 165 in six years. There were 81 white and 84 Negro deaths in this group. The physician had charge of 100 of these and the midwife of 61

with 4 where the attendant was unknown. Seventy-five per cent of these infants died under five days of age.

TABLE 18  
NEONATAL DEATHS BY AGE, PIKE COUNTY, 1931-36

	<i>Number</i>	<i>Per cent</i>
Under one day	81	49.1
One to four days	43	26.0
Under five days	(124)	(75.1)
Five to seven days	11	6.7
Eight to thirty days	30	18.2
Five to thirty days	(41)	(24.9)
<i>Total</i>	<i>165</i>	<i>100.0</i>

TABLE 19  
NEONATAL DEATHS BY CAUSE, PIKE COUNTY, 1931-36

	<i>Number</i>	<i>Per cent</i>
Maternal conditions	39	23.6
Syphilis	18	
Others*	21	
Birth injury	34	20.6
Accidents before or after delivery†	14	8.5
Infections in child	11	6.7
Prematurity (without other known cause)	37	22.4
Congenital conditions in infant	20	12.1
Unknown	10	6.1
<i>Total</i>	<i>165</i>	<i>100.0</i>

\* Toxemia, acute and chronic infections in the mother.

† Includes injury to mother causing prematurity or injury to infant after delivery causing death.

Neonatal deaths were entirely too prevalent in the first four days of life, and much could be done to improve this condition by giving better care to the newborn, particularly since so many births were premature and the infants needed special care.

Prematurity was a contributing factor in over 60 per cent of the cases, being due in many instances to syphilis, toxemia, and hemorrhage. Birth injury contributed to about 20 per cent of the neonatal deaths.

### *Preventability of Deaths*

From the collected data, an attempt was made to determine the number of deaths which might have been prevented. One should be cautious in attempting to determine preventability of death, for many factors enter into this consideration. However, on the basis of neglect and failure to obtain medical care on the part of the patient or midwife, and possibly ill-advised interference on the part of the physician, it was determined that 26 maternal deaths, 85 stillbirths, and 75 neonatal deaths might have been prevented. It should be clearly understood that this analysis is in part speculative.

If the patients had not sought care and a stillbirth followed, the patient was made responsible. In cases where syphilis was the cause, responsibility was given to the patient if she did not seek care but to the physician or health department service if syphilis were known but untreated. Joint responsibility was placed when there seemed to be some deficiency in the care given by the at-

tendants or, in respect to the patient, lack of cooperation with the attendant.

TABLE 20  
RESPONSIBILITY FOR POTENTIALLY CONTROLLABLE DEATHS,  
PIKE COUNTY, 1931-36

	<i>Maternal deaths</i>	<i>Still- births</i>	<i>Neonatal deaths</i>
Patient (or family)	11	41	35
Midwife	4	10	15
Physician	4	19	16
Physician and midwife	1	3	1
Physician and patient	2	1	3
Midwife and nurse	—	1	—
Consultant (out of county)	3	—	—
Private nurse	—	1	—
Health department services	—	9	5
Consultant and health department	1	—	—
<i>Total</i>	26	85	75

Nearly half of the controllable deaths were due to neglect on the part of the patient, or the patient's family. The midwife, physician, and health department services share responsibility for the other half, jointly or alone. It is felt that the health department services could have prevented 14, or 7 per cent, of these deaths.

In this connection it is interesting to review, in Table 21, the mortality experience of cases who had antepartum supervision from the nursing staff of the health department and those who did not.

**TABLE 21**  
**DEATHS PER 1,000 BIRTHS FOR CASES RECEIVING ANTEPARTUM NURS-**  
**ING SUPERVISION AND CASES NOT RECEIVING ANTEPARTUM**  
**NURSING SUPERVISION, DISTRIBUTED BY ATTENDANT AT**  
**DELIVERY AND BY COLOR, PIKE COUNTY, 1931-36**

	<i>Supervision</i>	<i>No supervision</i>
Maternal death rate*	7.1	7.4
Physician cases	9.3	9.1
Midwife cases	4.5	5.3
White cases	3.7	5.6
Negro cases	9.1	9.0
Stillbirth rate*	31.1	36.7
Physician cases	27.9	33.3
Midwife cases	34.6	40.9
White cases	22.3	26.3
Negro cases	36.5	46.1
Neonatal death rate†	33.5	36.6
Physician cases	23.3	46.3
Midwife cases	45.2	24.6
White cases	19.0	45.6
Negro cases	42.6	28.3

NOTE: The figures from which these rates are calculated are in Table 1, Appendix.

\* Rate per 1,000 total births.

† Rate per 1,000 live births.

A study of the deaths of cases under antepartum nursing supervision and the deaths among cases who did not have this care shows that 100, or 27 per cent, of the 368 deaths in the group received supervision. As shown in Table 21 mortality rates are lower in this group. If, how-



ever, the maternal deaths are separated to show both health department supervision and the attendant at delivery, it is apparent that the lower incidence is in the midwife cases who received health department supervision. The mortality rate for physician cases is, in fact, slightly higher in the supervised than in the unsupervised group. When maternal deaths are separated according to color it is seen that the total improvement is for the white group and that the rate for Negro cases under care is practically the same as the rate for cases not under care. Table 21 shows that the stillbirth rate for cases under care is consistently lower than for cases not under supervision. It is lower in the group of deliveries attended by physician and midwife and is lower for both white and Negro cases. A review of the neonatal death rate shows that when a separation is made by attendant at delivery the lower rate is found only in physician cases. When a separation is made by color, the lower rate is found only in the white group. The neonatal death rate for midwife cases under nursing care is 45.2 per 1,000 cases as compared with 24.6 for cases not under care and 42.6 for Negro cases under care as compared with 28.3 for Negro cases not under care.

## A SUGGESTED MATERNITY PROGRAM

This suggested program is based on the belief that a woman who receives adequate medical care during her entire antepartum, labor, and postpartum period runs much less risk of serious morbidity or death than the woman who receives inadequate care or no care at all.

A maternity program for Pike County should provide for 1) medical service through private physicians or the health department; 2) the supervision of midwives; 3) nursing supervision for as many cases as the community can afford; 4) the education of the public in the essentials of maternity and infant care.

### *Medical Service*

Every woman regardless of her station in life should have the advantages which medical service can give during the maternity period. The primary responsibility for this service rests upon the physicians of the community. If, for any reason, they are unable to render an adequate service to all women, it becomes the responsibility of the health department through planned effort coordinated with the work of private physicians to provide, so far as possible, the necessary service. The health department medical service should examine those patients who are unable to procure private medical service. The health officer should, after examination, use his influence to se-

cure for the complicated cases care from the physicians of the community.

The health department should be so established and conducted that every patient who comes under its jurisdiction receives as good service as can be procured in the community. The standards of examination, clinical diagnosis, and laboratory diagnosis should excel.

The following specific suggestions are made for the improvement of the medical service.

1. The medical, surgical, and obstetrical experience of the patient should be carefully inquired into to discover any difficulty which may arise during the present pregnancy and to put the physician on his guard as to the possibility of complications.

2. More careful and complete examinations of maternity patients should be made, particularly pelvic examinations.

3. Appropriate laboratory tests should be made at the initial examination and throughout pregnancy, when indicated.

4. All complications arising during pregnancy should be recognized and treated as early as possible.

5. All patients should be examined for syphilis regardless of class, and it is the responsibility of the physician to see that those with syphilis are adequately treated. This may require establishing antiluetic clinics in various parts of the county at different hours so that a maximum of cases can be reached and treated.

6. The health department medical service should be extended, especially to Negro patients because they are not seen by private physicians.

7. More patients showing complications at health department examinations should be referred to private physicians and a record of every case referred should be made.

8. The health department should be equipped to give more complete laboratory service, particularly microscopic urine examination.

9. Sterile packages should be furnished to physicians by the health department for home deliveries either at a minimum charge or free.

10. Every patient should be shaved and cleansed thoroughly for examination and delivery. Physicians should routinely wear sterile gloves for pelvic examination and delivery.

11. Diagnosis of position should be made. In some cases of delayed labor, pituitrin is undoubtedly used to overcome a so-called inertia when, as a matter of fact, diagnosis of position would have revealed posterior occiput position or some other malposition.

12. A conservative management of labor should, generally speaking, be the ideal of the physician. Operative interference should be resorted to only when definitely indicated. The interference with the progress of labor by ill-advised use of pituitrin or by frequent operative means should be avoided and, above all, these proce-

dures should not be used merely as a convenience for the doctor.

13. A final examination should be routinely made by private physicians. Evidence from the one-hundred-case study shows that complications frequently exist at the termination of the puerperium, and treatment, both medical and operative, is indicated.

14. Postpartum examinations of midwife cases should be made by the health department medical service or the health department should make sure that these cases are examined by a private physician.

15. More attention should be paid to the newborn infant and definite instructions concerning its care should be given to a nurse or a competent member of the family so that fewer will succumb in the first days of life.

16. Care should be used in making out death certificates. Accurate causes for maternal deaths conforming to the International List of Causes of Death should be given. If the child is stillborn a cause for the stillbirth should be given if possible. The cause of neonatal death should not be listed simply as premature if cause for the prematurity is known.

17. All maternal and infant deaths should be queried by the health department when there is any doubt as to the accuracy of the assigned cause.

18. Viable births should be reported and whether the fetus has reached the period of viability should be established by measurement and by weight of the fetus rather than by the estimated period of pregnancy.

19. The physicians should assume the responsibility for assisting midwives but a careful history of the case prior to consultation should, for the physician's protection, be obtained so that in case of death responsibility and accurate diagnosis can be made.

### *Midwife Service*

The question constantly arises as to the necessity of having midwives. It seems apparent that in Pike County it would be impossible for the existing number of physicians to care for all the deliveries. If the midwives were prevented from practicing, it would be necessary for each physician in the county to deliver between 40 and 50 cases a year.

The condition of the midwife can be improved by greater interest and control on the part of the medical profession and health department. The following suggestions should improve this service.

1. The legal status of midwives in Mississippi should be further defined and limited.
2. Minimum educational requirements should be established.
3. Younger and better educated women should be encouraged to become midwives.
4. Certain alliances should be arranged so that all midwife cases can receive an antepartum medical examination either by a private physician or by the health department medical service.

5. The midwife should be made to realize, by education, the importance of conservative management of a case. She should be taught not to interfere in labor and to recognize complications so that a physician can be called before emergencies have existed too long.

6. Midwives should be required to call for medical assistance if labor lasts longer than twelve hours or if some major complication arises at any time.

7. Every patient under the care of a midwife should also have a final examination either by a private physician or through the health department so that any sequelae of childbirth can be recognized and treated.

### *Nursing Service*

The nursing service of the health department ideally should reach all pregnant patients in the community. Theoretically, every person who pays taxes has a right to expect some service from the health department if the service is desired. However, the nursing service at present is not staffed to care for every patient.

The combined service of the private physician and the health department nurse is undoubtedly more effective than either one alone and their cooperation is to be desired. A physician may not feel that all his patients need service by the nurse, but in many instances he may find such service desirable because he may not have time to give all the details of supervision himself. In other cases, the physician may ask the nurse to render some particu-

lar service to his patient and thus augment his own supervision of the case.

In short, the health department nursing service acts as an auxiliary to the services of the private physician by caring for patients whom physicians cannot see regularly.

In a community like Pike County where so large a part of the women are delivered by midwives, the nursing service of the health department has a very large responsibility in supervising and educating the midwife.

To insure a high standard of nursing service in the health department the following specific suggestions are made:

1. The nurse should refer every patient to a physician and should impress upon her at all times the importance of reporting complications to the doctor directly, or through the nurse.

2. The nurse should herself report complicated cases during the antepartum and postpartum periods promptly to the physician and if the patient is not already in the care of a physician, the nurse should make it her duty to obtain a physician's services for the patient.

3. Every patient under nursing care should have blood pressure readings, urinalyses, including microscopic examinations when indicated, temperature readings, and Wassermann tests.

4. Every woman showing a positive Wassermann reaction should be treated at once because even though the infant may not escape luetic stigmata, still the mother



will have had some benefit by a short antepartum course of treatment. Every untreated luetic patient should be considered as a mark of failure on the part of the health department.

5. Since the coding of Wassermann reactions on the nursing record is often confusing, the simple terms "negative," "positive," or "doubtful" should be used.

6. An effort should be made to increase the number of nursing visits to those patients in whom complications are found and particularly to those whose blood pressure is elevated, whose urine contains albumin, or who show other symptoms of toxemia, such as edema and headaches. These symptoms, together with elevated temperature and hemorrhage, should, of course, be called to the attention of a physician as soon as possible.

7. Seeing patients in clinic groups or nursing conferences might help the nursing staff to carry the heavy case load and, at the same time, to give greater thought and attention to complicated cases.

8. Records should be kept of every patient referred to a physician; the date the visit was made, and the diagnosis of complication if it is known should be noted.

9. A report on every physician's case should be made to him after each visit and more pertinent data given upon complicated cases, such as a résumé of the blood pressure readings to give him an idea of its trend.

10. Puerperal cases and newborn infants should be seen as soon as possible after delivery.

11. A nurse should follow the case under her supervi-

sion to the termination of the puerperium. She should make every endeavor to have the patient examined by a physician at this time and if there are severe complications at the end of the puerperium, then an extra effort should be made to obtain medical care for the patient.

12. Every puerperal patient should have a temperature taken at each visit and cases with a temperature of 100° F. or over should be immediately reported to a physician.

13. In all toxemic cases blood pressure reading should be taken at the final postpartum visit and if it is elevated the patient should be surely placed under the care of a physician. Patients showing elevation of blood pressure should, of course, have special supervision because the symptom may mean the existence of kidney damage so extensive that further pregnancies should be prevented if possible. These cases should be followed for a longer period than six weeks postpartum.

14. Midwife instruction should be improved for it appears that this service must be continued for economic reasons.

15. An attempt to control the incidence of stillbirths should be made by giving greater attention to antepartum care and by stressing the treatment of syphilis which accounted for about 25 per cent of the stillbirths, the incidence of operative procedures might be lowered with better results in terms of stillbirths.

16. Because of the relatively high incidence of maternal mortality and morbidity from infection following de-

livery, and the continued high incidence of toxemia, complicating labor, nursing service at delivery should be provided as an aid to the doctor.

17. Because of the high incidence of early neonatal deaths which are frequently due to prematurity and injury at birth, more adequate nursing supervision should be instituted for the premature infant, since the care of the premature infant is particularly a nursing problem.

18. Mothers and families should be educated in the importance of early and intelligent treatment of the newborn baby.

19. The study of the underlying causes of stillbirth now being carried on should be continued indefinitely.

20. Lay committees should be organized to facilitate the work of the health department thus increasing its effectiveness without added expense.

21. With responsibility for nearly 50 per cent of the apparently controllable deaths assigned to the patient or family, the educational program in maternal and infant care should certainly receive more emphasis.

## APPENDIX

TABLE I  
 TOTAL BIRTHS, CASES UNDER ANTEPARTUM NURSING SUPERVISION,  
 LIVE BIRTHS, MATERNAL DEATHS, STILLBIRTHS, AND NEONATAL  
 DEATHS, BY ATTENDANT AND BY COLOR, PIKE COUNTY,  
 1931-36

	<i>Total</i>	<i>Supervision</i>	<i>No supervision</i>
Total births	4,795	1,416	3,379
Physician	2,616	752	1,864
Midwife	2,179	664	1,515
White	2,138	539	1,599
Negro	2,657	877	1,780
Live births	4,627	1,372	3,255
Physician	2,523	731	1,792
Midwife	2,104	641	1,463
White	2,084	527	1,557
Negro	2,543	845	1,698
Maternal deaths	35	10	25
Physician	24	7	17
Midwife	11	3	8
White	11	2	9
Negro	24	8	16
Stillbirths	168	44	124
Physician	83	21	62
Midwife	85	23	62
White	54	12	42
Negro	114	32	82
Neonatal deaths	165	46	119
Physician	100	17	83
Midwife	65	29	36
White	81	10	71
Negro	84	36	48

TABLE 2  
SERVICES OF THE HEALTH DEPARTMENT FOR ANTEPARTUM AND POSTPARTUM CASES BY COLOR,  
PIKE COUNTY, 1931-33 AND 1934-36

	TOTAL		WHITE		COLORED	
	1931-33	1934-36	1931-33	1934-36	1931-33	1934-36
<i>Antepartum nursing service</i>						
Individuals served	428	988	184	355	244	633
Total visits	1,220	4,673	511	1,609	709	2,994
Average visits per case	2.9	4.7	2.8	4.5	2.9	4.7
<i>Cases referred by*</i>						
Physician	44	69	36	47	8	22
Midwife	100	76	3	-	97	76
Self	58	197	13	54	45	143
Nurse	126	102	66	34	60	68
Other	100	246	66	109	34	137
<i>Total</i>	428	690	184	244	244	446
<i>Month of pregnancy admitted</i>						
Before fifth	65	257	26	83	39	174
Fifth to eighth	225	563	88	191	137	372
Ninth to tenth	132	168	68	81	64	87
Unknown	6	-	2	-	4	-

\* No record of referral for 1936.

TABLE 2 (continued)

	TOTAL		WHITE		COLORED	
	1931-33	1934-36	1931-33	1934-36	1931-33	1934-36
<i>Antepartum nursing service (cont.)</i>						
Individuals under care of private physician	163	604	114	318	49	286
Visits to or by physician	360	2,609	253	1,733	107	876
Average visits per case	2.2	4.3	2.2	5.4	2.2	3.1
Referred by nurse to physician	101	452	42	115	59	337
Seen by physician after referral	39	235	24	91	15	144
<i>Postpartum nursing service†</i>						
Individuals served	320	925	152	337	168	588
Total visits	597	2,894	301	1,124	296	1,770
Average visits per case	1.9	3.1	2.0	3.3	1.8	3.0
Days after delivery of first visit						
First to second day	66	341	39	147	27	194
Third to fourth day	31	211	16	55	15	156
Fifth to fourteenth day	108	287	49	111	59	176
Fifteenth day to two months	115	86	48	24	67	62

† Includes only individuals who had received antepartum service.

TABLE 2 (continued)

	TOTAL		WHITE		COLORED	
	1931-33	1934-36	1931-33	1934-36	1931-33	1934-36
<i>Antepartum medical service</i>						
Individuals served	125	389	13	24	112	365
Total visits	157	587	16	33	141	554
Average visits per case	1.3	1.5	1.2	1.4	1.3	1.5
Cases with complications	53	170	3	7	50	163
Referred by clinic physician to private physician	5	22	-	1	5	21
Seen by physician after referral	4	12	-	-	4	12