Department of Maternal Welfare

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Am J Obs Gyn
1928 V-15

A FRONTIER NURSING SERVICE*

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A MOVEMENT is of just as much value as the goal it sets itself and the success with which its activities tend to reach that goal. The purpose of the Frontier Nursing Service is to reduce the maternal and infant death rate in remote areas by providing resident nurse-midwives, trained and licensed as nurses and as midwives, by civilization's centers for work in its outposts, in cooperation with the nearest available medical supply. Why is such a plan desirable? How is it made practical?

We must start off with a bit of history. Our association, under its original name of Kentucky Committee for Mothers and Babies, Inc., began its work in the Kentucky mountains; first, because those of us who conceived the project and were willing to give time and money to launch it, were Kentuckians, and second, because few mountains are more inaccessible than ours. The area we chose has for hundreds of square miles no railroad, no automobile road, no bridges over its rivers and streams. Horseback and mule team are the only possible mode of travel. We felt that if we could put the project over in the Kentucky mountains it would be feasible to duplicate it afterwards anywhere. The third reason for our choice lay in Dr. Arthur MacCormack—a State Board of Health officer of such broad understanding that a new venture for the public good in Kentucky met at once with his sympathetic and cordial cooperation.

Lastly, we considered the quality of the people, shut off for over a century from the advance of medical science by their towering hills. The Kentucky mountaineer has been faithfully portrayed in the stories of John Fox Jr. and Lucy Furman, and the reports of the famous Berea, Hindman, and Pine Mountain Schools. To these I shall add a word of hard science, procured by Ella Woodyard, Ph.D., of the Institute of Educational Research of Columbia's Teachers College. She came down at our invitation and took the intelligence quotient of over 60 children between the ages of six and ten, children of several counties picked up by the roadside quite at random, none with any schooling to speak of, and about 80 per cent with hookworm. Their median intelligence quotient was 90.6. A similar group of American-born Italian children in New York schools, tested at about this time by the Institute, scored under 90. The old American stock which explored and established this country is still gloriously well worth while.

As we made ready to begin we realized fully, at the outset, the vastness of our undertaking. The Appalachian Mountain range covers 115,000 square miles

*The above is a faithful representation of a situation that is still largely unknown to most of our readers. A brave and courageous little band of women have attacked and are solving this problem to the best of their abilities and evidently with success. There are other localities in this country where similar conditions exist. Upon their amelioration by this or like methods will depend that lowering of the maternal mortality and morbidity rate of which these United States have been so severely criticized.—THE EDITOR.

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and holds about 6,000,000 people of whom something over 200,000 are in the Kentucky mountains alone. Except in its few towns, and at an occasional school or mission station, the medical and nursing service for this population is negligible. No figures are obtainable, but in the area where we began there was not one registered physician for nearly 15,000 people in over fully 700 square miles, covering one whole county and the borders of several others. It took the nearest doctor six to twenty hours to reach a patient, on horseback, at, necessarily, a fee prohibitive for any but a few families. That the financial adjustment of this mileage and time burden should fall on either the overworked practitioner in the little town, or the patient living on land worth only a few dollars an acre, is manifestly unfair to both. In America today people are penalized by geographic remoteness. This is not the case only in the southern Appalachians. A tragic instance of medical need was reported last winter from Idaho, with the nearest doctor 100 miles by dog team away. It is said there is one public health nurse to every 100,000 of the population in Arkansas, where the Ozark country presents vast difficulties. This is all the more deplorable as most of the twenty-odd million Americans living in these frontier sections are (like the Kentuckians) of old pioneer stock, and are practically the only self-sustaining people in our national life. They import almost nothing, but are bred to a hardy livelihood. They export many basic products such as lumber, wool, meat. We could ill sustain our national life without their efforts. But we have left their women and children at the mercy of distance and medieval practices. This is certainly an outstanding factor in our high maternal death rate, which would be higher, not lower, could we get at all the facts, and in our annual loss of 200,000 infants by stillbirth and in the first month of life. This is the condition our organization seeks to ameliorate by an adaptation of methods which have proved successful in other countries with a lower maternal death rate than our own.

Before the actual beginning we took two steps we considered fundamental.

First, we checked up on the existing obstetric situation in a mountain area of 1,000 square miles, with a population just under 30,000. This fell to my lot, and took over two months of horseback travel through three counties. In the preceding year 968 births had been reported from these counties, 144 by 9 doctors (not all, however, were state licensed or qualified doctors) and 824 by 128 midwives. I found 20 other midwives who had not recorded or reported their deliveries, and I am sure there were more, but I did not cover the section minutely. A point I want to stress right here is not the obvious one of local custom in the preference shown for women accoucheurs, but that the mothers in this territory had used at least 157 attendants for their deliveries in one year. Our subsequent experience in the same rough country, without telephones, has taught us conclusively that a delivery service cannot be successfully handled under such conditions in more than a five mile radius. It is difficult to get even five miles on horseback over rough trails and swollen streams on stormy winter nights with any speed.

The rule of our service is simple—if the "daddy" can come for us we can go with him. Once the patient is in labor and the nurse-midwife has been called, she cannot leave her case. If complications supervene she has to send a man on a mule for a doctor. If an emergency arises she must act as she has been taught until he comes. Sometimes we can get a doctor in a few hours. Sometimes the need has passed before he can possibly arrive. Last summer when one of the two doctors in the county was away and one (a married woman) had a young baby, we sent to three counties and were three days getting a doctor for a case of placenta previa. Meanwhile we specialed the patient, and she would have died had we not done that. The doctor who came rode 33 miles on horseback at a stretch, with a fresh horse and sandwiches and a guide provided at our first center, spent

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the night with the patient, did a version, and saved her life. Then he rode the 33 miles back to his own practice the next day. It will be seen that our problem is not academic. We live with it and in it every day.

Our first fundamental step, then, was to study the existing obstetric situation. From this study we learned three things. One was that 30,000 people scattered over 1,000 square miles in a rough country, have got to have a number of obstetric attendants, *decentralized* living at regional intervals within reach of the patients, if the patients are to get any delivery service and any postpartum care whatever. Second, we found that the existing medical supply, especially if limited to state qualified doctors (for a number of so-called doctors practice on county permits and are grossly unfit), could not possibly handle these deliveries even if the mothers wished male practitioners and could afford it. The existing medical supply is not even adequate for consultation, nor always equipped to that end.

Third, we learned by our study that it was useless to try to improve the quality of the native midwife. I had my investigation of 53 (made in their own homes, scattered over three counties) tabulated. The average age was 60.3. That is not a teachable age. The native midwife does not begin to practice until she is over forty and has "raised" her family.

The material in this report covers twenty-seven pages, plus the tables, and has been privately printed. It shows the native midwives just as ordinary citizens, beginning their practice as neighbors in a lonely country, because they had to do it. Their mental levels vary from the extremely stupid to the really intelligent, and their persons and cabins from dirty to clean. All are grossly ignorant and deeply superstitious.

Having then learned that attendants sufficiently numerous to live within reach of their patients were essential to a delivery service in the frontiers, that the medical supply was wholly inadequate, and the native midwife unimprovable, we took our second fundamental step. We accepted the principle of the trained midwife as the right person to replace the untrained one, and began a long study of the methods and the results in those other nations who make use of her. This also fell to my lot and consumed the better part of eighteen months, during which I took a midwife's training in London and qualified by examination under the English Central Midwives Board.

We early decided that the Anglo-Saxon plan of combining nursing and midwifery in country districts would fit better into our American tradition than the Continental system of specialization. It is economically feasible in remotely rural work not to have two people covering the same ground for public health work and for midwifery. It also allows the nurse-midwife to fill her time profitably between cases, which sometimes fall far apart in sparsely settled areas. The famous Queen's Nurses of Great Britain, under the generalized system, have a death rate half the national and one-fourth that of ours in the United States. Their midwifery service cares for some 40,000 to 50,000 women annually in England alone.*

It was in the Scotch Highlands that we found the plan for our local Kentucky formation. In 1924 I made a trip through this region, covering many of the stormy islands of the Outer Hebrides. For every 700 or so of the population I found a splendid resident nurse-midwife, living in the heart of her district, often with the thundering seas between her lonely island and the nearest medical man, with whom she communicated by telegraph, and operating under a local voluntary committee, composed of her own leading people. When we came at last, after this

*British Medical Journal January 8, 1927; Observations on the Maternal Mortality in the Midwifery Service of the Queen Victoria's Jubilee Institute, by John S. Fairbairn.

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long preparation in the summer of 1925, to organize our Kentucky venture, we adapted the Scotch Highland system to our own situation.

Our method is one of *decentralization*. The nurse-midwives live in little houses in the heart of their districts of not more (sometimes less) than a five mile radius, which is about 78 square miles. We have four of these centers to date, with money for a fifth to be opened this summer, and we cover about 250 square miles. Our staff, besides myself, consists of a supervisor, six nurse-midwives and two nurses who are not midwives and do not carry responsibility for this part of the work, except their share of the postpartum nursing. All of our eight nurse-midwives got their midwifery in England, three at their own expense, one on our scholarship, and the rest are English—three out of four members of the famous Queen's service. We have applications weekly from British trained nurses from all over the world (Bermuda, South Africa, Nova Scotia, Great Britain, Canada, the United States) and from American nurses who would come to us if they could get the midwifery. But our scholarship funds are limited, and kept for the few nurses who have been tried out in our difficult field.

Our work is carried forward on horseback. Each nurse saddles and grooms and feeds her own animal. Each nurse has two pairs of saddlebags—one with blue checked, detachable lining for general nursing and one with white lining for midwifery. The nurse-midwife resterilizes its contents and sets a filled lantern by it immediately after a case. Very few of our homes (which are mostly one or two room cabins) have a light other than the open fire. We carry for the delivery a rubber apron, a clean operating gown, and a V.A.D. cap to cover completely the hair. We use white in the dispensaries at the centers, as well as on the cases, but our regular uniforms are cadet gray riding coat, breeches, and overseas cap.

Our midwifery bags weigh 48 lbs. packed (10 lbs. more than the general nursing bags)—the weight evenly distributed to both sides of the horse. The midwifery equipment includes soap, scrubbing brush, gloves, thermometer, enema tube and funnel, artery clamps, hypodermic set, scissors, and cord ties, with more basins than would be needed in the city home, and a two yard square of rubber sheeting. We carry plenty of dry sterile gauze and cotton, in little white bags, and perineal pads baked in the oven, and towels. For the bed, after delivery, we use pads made of clean rags and newspaper, but these, like the baby clothes, are in the home before the call comes. Among drugs we carry lysol, silver nitrate ampoules, and ergot. It is routine to give a teaspoonful of ergot in water before leaving the patient, not less than one hour after delivery. Dr. MacCormack, who gives us our special licenses on the basis of our C.M.B. certificates, authorizes us to practice as nearly in accord with the rules of the C.M.B. as can be carried out in the mountains. Under this ruling we carry pituitrin, in case of postpartum hemorrhage, provided the third stage is complete—and sedatives for the first stage. Our aim is to get a quiet first stage, and a second stage without a tear by delivering between pains when the head is fully crowned, and with a minimum of bleeding. We usually deliver on the left side, as we were taught, keeping careful pressure on the fundus and following down with the left hand.

The third stage causes us the deepest anxiety, because upon our judgment alone hangs the life of the patient should the third stage not be normally complete, as medical aid could not possibly reach us until too late. We have twice in our first 130 deliveries had adherent placentas with terrible bleeding, and these are the only postpartum hemorrhages we have had. Our routine calls for a sterile glove always ready for manual removal in such a contingency.

It is impossible in a paper of this length to go fully into details of special cases, and our service is as yet too recent and too small to afford material of statistical value. The Metropolitan Life Insurance Company is going to tabulate

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our first 200 cases—because they do offer, though on so small a scale, matter for reflection. It suffices at present to indicate a few things which will be of interest to the sympathetic and informed readers of the Journal.

While nearly all of our cases have been normal, the following abnormal conditions appeared in the first 130 deliveries. It must be borne in mind that the 130 do not include all the cases we entered as prenatals, but only those we delivered ourselves or personally called in doctors for the delivery. Some of our prenatals still choose to be delivered by the native midwife—mostly their own grandmothers and great-aunts. Our policy is one of friendliness toward the "grannies." We are oozing in, not bursting in, to replace them, and no new ones begin to practice once we are established in a district. We are letting nature take her time with the old.

In addition to the two hemorrhages from adherent placentas we have had three antepartum hemorrhages from placenta previa—two central and one marginal. We had one eclamptic, the convulsions coming just after delivery. This case was beyond our district and registered late but had normal symptoms until four days before delivery, when her blood pressure rose to 118 and there was a trace of albumin, which had persisted when seen two days before delivery.

We have had one hand presentation at 26 weeks with spontaneous delivery, and one face presentation (an anencephalic monster). There have been several transverse positions restituted and held with binders, several premature births and miscarriages. We have had second degree tears, one case a precipitate before the arrival of the nurse. These will have to be repaired later. We also have had eight cases with elevation of temperature above 100,° though none persisted. No case has been septic. None has needed forceps. None have died.

We gratefully acknowledge help from the medical profession whenever obtainable. The big metropolitan doctors among our trustees in Lexington and Louisville have cared for cases of all kinds (not only obstetrical and gynecologic) sent down to them on passes given us by the Louisville & Nashville Railroad—and always involving at least a day's horseback ride and a night on the train. The scattered doctors through the mountains from three counties come at once if they can be reached when we call. In calling we again follow the rules of the Central Midwives Board. To illustrate: The nurse-midwife on the delivery which turned out to be a face presentation, could not make out the presentation and sent for a doctor on that account. The C.M.B. rules state emphatically to send for medical aid if a normal presentation cannot be made out. A doctor now resident in that part of the county was at home at the time of this case and so the midwife was able to get him.

We have obtained doctors for prenatals with high blood pressure, vaginal discharge, history of stillbirths, general medical conditions, and for miscarriage.

Now, as to the babies. We have had five stillbirths—the two cases of central placenta previa and the monster with face presentation, a case following influenza, and the six months' premature fetus with a hand presentation that was delivered spontaneously, the doctor before mentioned being present. We count the losses which occur when a doctor is present as our own. This is the English custom. A maternal death or stillbirth is counted against the midwife's record even if a doctor has been called and has taken charge, if it was she who first took the case. We have lost only one baby (the six months' premature) in the first month of life. In our baby hygiene nursing we have carried 471 infants under two years since our work began, with one nurse, at one center, two and a half years ago.

Our treatment of the newborn baby is to wipe his eyes, from the center outward, with dry sterile gauze, once the head is born, and to clamp the cord. Baby is then wrapped in his blanket in such a way as to keep his hands out of his eyes, and

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handed to an old woman by the fire. When we can leave the mother we scrub up afresh to put the silver nitrate in baby's eyes and ligate the cord, applying dry sterile dressing. If he weighs less than seven pounds we do not wash, but oil him. We encourage a separate crib for him and help with needed coverings, and now we have a number of home-made screened cribs. We do everything humanly possible, including cod liver oil and the Truby King method of stripping, when needed, to foster breast feeding and are almost wholly successful. We give mother and baby ten days' postpartum care, every day if within a three mile radius, every other day if within five (except at impossible seasons of ice and "tides").

Our prenatal work includes blood pressure observations, urinalysis, abdominal palpations, and pelvic measurements on primipara. We give attention to the breasts and advice about such food as is procurable. Of course we help with the baby clothes and in all the little feminine ways in which women can be of use to women at such a time. The prenatal work is more and more appreciated and the women come increasingly early to established centers. The prenatal and postpartum visits fit in with the general nursing routine, and public health. At the request of the State Board of Health we give hook-worm treatment, chlorinate wells, and inoculate against typhoid and diphtheria. We gave 6,360 inoculations in our first two years.

In fees we follow the Scotch Highland custom of a small, yearly fee of $1.00, which covers all nursing care. We charge a $5.00 midwifery fee and will accept payment in kind, as fodder for our horses or a husband's labor. We follow the Scotch Highland custom also of working through local committees of leading mountaineers who meet monthly at the centers to advise with the nurses. From them, from the Louisville and Lexington specialists who give services innumerable without charge, from the Children's Hospital in Louisville, which has taken many of our children, from the Kentucky Crippled Children's Commission, from the Louisville & Nashville Railroad giving passes to all indigent cases and their nurses, from the U. S. Trachoma Hospital at Richmond, from many, many friends and contributors, we acknowledge assistance with grateful hearts. These friends and the devotion of the staff at all hours and in all weather, have made the work possible.

We know we have only just begun in our attack on a problem where the totals are staggering. Our merit is to have made that beginning. In Kentucky we have a race horse named Fair Play. In those who differ with our methods we invoke that spirit, asking them to remember, as William James reminds us, that it is by our fruits we are to be judged, and not our roots. The mothers we are helping have no other trained assistance near at hand. We are not substituting one method for another. They bear their babies on lonely gaps and creeks unattended but by neighbors. Small wonder we have lost more women in childbirth in America in our history than men in war.

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