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*The First National Workshop on the
Delivery of Hospital Social Work Services
in Obstetrics/Gynecology and
Services to the Newborn*

*Yale-New Haven Medical Center
New Haven, Connecticut*

Selected Papers based on the Proceedings

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Delivery of Hospital Social Work Services
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*Oct 1-3, 1974 - New Haven
Yale-New Haven Hospital*

**Contemporary Medical/Social
Dimensions and Considerations in
Program Planning and Service Delivery**

**Sponsored by Social Work,
Department of Obstetrics/Gynecology
and Services to the Newborn
Yale-New Haven Hospital
and**

**Supported by a Grant from
The Health Services Administration
Bureau of Community Health Services
Department of Health, Education and Welfare**

**September 29 through October 3, 1974
Yale-New Haven Medical Center
New Haven, Connecticut**

***Perspectives
in Perinatology,
Present and Future***

By

Louis Gluck, M.D.

The evolution of perinatal care is one of the most fascinating events in history. It is specially significant since it is a widespread observation that the course of human civilization closely has paralleled or perhaps was reflected by the type and level of obstetrical care.

Currently, at least in technical skills, we are at the acme of our civilization. In perinatal medicine, we are extraordinarily sophisticated in intrauterine diagnosis. Prenatally we can diagnose genetic defects and chromosomal aberrations. We can assess easily the status of a pregnancy, the maturity of the fetus, and the readiness of his lungs to breathe. We can tell much about the condition of the placenta and soon we will be able to measure its blood flow directly. We can look into the uterus, directly at the fetus. We can sample his blood for oxygenation, measure his heart rate, and take his EKG and his EEG. We do not hesitate to intervene surgically to deliver the fetus with an ever increasing list of indications. But how we have risen to our present plateau is a fascinating story.

How civilization regards a woman is an index of the status, the advances and the regressions of that civilization and is shown best by the care given during labor and delivery of her child.

Primitive peoples accepted childbirth as a natural process and treated it with indifference and often with brutality. The great ancient civilizations such as the Egyptian and Roman, treated childbearing women well. As civilizations declined, the care in childbirth degenerated. There was a period of 13 centuries when the highly developed skills of the Greeks were lost or disregarded in Europe, and it was not until the 16th and 17th centuries A.D. that the art practiced by the Greeks was brought back.

Medieval Christianity regarded childbirth according to Genesis, as the outcome of eternal sin, to be expiated in pain. "In sorrow thou shalt bring forth children." The treatment of the medieval childbearing woman was much worse than the neglect she might have received among primitive peoples.

Urbanization and spread of death-dealing disease during the medieval period saw maternal and infant mortality rise to their greatest heights in history. Indifference, ignorance, backwardness and a low value placed on life contributed to the staggering mortality. With the European Renaissance civilized care finally was accorded the woman at childbirth.

Many examples of strange acts surrounding childbirth have been seen through the ages, including "assistance" of a primitive mother in labor. She might be picked up by the feet and shaken head down, or rolled about in a blanket, or laid on her back and her abdomen stepped on, or hung from a tree by her arms while an assistant bore down on her abdomen with a strap. If she were an American Indian, she might have been placed on the open plains where a horseman might have ridden at her at full speed with the apparent intention of treading on her, but turning away at the last minute and thereby induce a short labor by the fear.

As the earliest recorded communities organized, women who had borne children assisted their neighbors, the beginnings of the midwife. One ancient piece of equipment carried by the midwife from patient to patient was the obstetrical chair, mentioned in the first chapter of Exodus, when Pharaoh commanded the midwife to slay all male Hebrew infants, "when you did the office of the midwife to the Hebrew women, you see them upon the stools."

During the time of Hippocrates, midwives were well organized. Their methods were regulated by the physician and in difficult deliveries he was called in to assist. Upon the birth of the child, the midwife would show the infant to the father who viewed the child before he acknowledged it as his own. If he acknowledged the child he would lift it up. If a family decided not to keep a child, the midwife exposed it on the hillside or temple steps where it died from exposure or starvation or might be taken for adoption by some passerby.

Surgical procedure, manipulations of babies in odd positions, essentially were not done until the 16th century. By religious law cesarean sections in medieval times were practiced only upon the dead woman.

When in the Dark Ages, Christian theology began to dominate medical thinking, revelation replaced reason; diseases were caused by devils, the cure of the disease was attempted by exorcism or miracles. The teachings of rational medicine such as by Hippocrates were replaced by superstition.

Ambrose Pare, who was a surgeon in the early 1500's, began to give scientific attention to the childbearing women and to the child to be born. Pare also established a school for midwives, elevating the level of practice far above that previously achieved.

In 1588, obstetrical forceps were invented. From then, until the middle of the 18th century, drastic surgical interferences, including destructive forceps, cesarean sections when pregnancies seemed not to be going completely normally, and early inductions of labor when it was felt that the mother's pelvis were inadequate, resulted in a phenomenal mortality rate and the practice came to be known as "meddlesome midwifery." Widespread was the practice of bloodletting. Parturient women were bled prophylactically if all seemed normal, and therapeutically if the course seemed abnormal.

In the middle of the 18th century, William Hunter, who became the leading consultant in midwifery in London, who himself had trained at the University of Glasgow, introduced moderation and good medical practices into obstetrics. He used to exhibit his obstetrical forceps covered with rust, to show that he never used them. He had a strong influence over unnecessary intervention and even to this day the practice of obstetrics in England is one where instruments are avoided and rather the perils of nature trusted, even more than in the United States.

When operative intervention in childbirth became frowned upon, obstetrical *art* emerged on its own and no longer was taught as a branch of surgery. In the 19th century, *obstetrics* finally became a recognized part of medical education and practice.

However, the advantages of rational obstetrics of the 19th century, characterized also by the development of lying-in hospitals, was offset by the increasing prevalence of a disease known as childbed fever or puerperal sepsis. This occurred only in women who bore children in hospitals. As obstetrics became more institutionalized, the disease became a frank pestilence. More than 200 epidemics of puerperal sepsis were recorded. In 1773 a great epidemic of puerperal fever raged through the lying-in hospitals of Europe so profoundly that in Lombardy there was a period for *more than a year that not one woman lived after bearing a child!*

In the latter part of the 19th century Semmelweiss described the cause of childbed fever as due to contamination from ill or dead women and a lack of cleanliness when obstetricians (physicians) handling pestilence did not wash their hands. Subsequently the work of Lister in techniques of asepsis brought together the prevention of infection to the already well-developed mechanical skills for childbirth, and with this began the advent of modern techniques of evaluation and care.

The development of care for high risk infants and the forerunners of modern intensive care units for babies enjoy no such ancient traditions. Instead these were rooted about 80 years ago in strange beginnings as side show exhibits at world fairs.

In ancient times premature infants or malformed infants usually were destroyed. Abnormal infants were thrown from the cliffs of Mount Taupetus in ancient Sparta. In the middle ages mysticism developed around the birth of infants with malformations. In 1904, Balentyne recorded the calumnies and destructive folklore through the ages that surrounded infants with malformations. For instance, a child born with a beaked nose was thought to bring pestilence, and the infant and his family might be put to death.

In ancient South America cultures an individual with a malformation was considered holy and often was made a physician or priest and was the frequent subject of the figures in pre-Columbian art.

The development shortly before the turn of the century of incubators that maintained body temperatures of prematurely born infants began the period of modern care for newborns and particularly premature infants. In Paris, Professor Tarnier, who had been concerned about the role of body temperatures and his pupil, Pierre Constant Budin, probably the greatest pedia-

trician of Europe in his time, developed many of the techniques and prototypes of equipment in use today and which led to delivery of scientific premature care. Tarnier published studies showing striking differences in mortality in infants weighing less than 2,000 grams at birth between those with low rectal temperatures and those with normal rectal temperatures. Budin designed an incubator that clearly was a forerunner of our modern incubators. It was provided with a humidification apparatus and a one-way heated air flow, able to keep the premature infant warm. Budin also devised the technique in use today, of feeding premature infants by gavage. He described many physiological imperfections of the prematurely born infant. The Dionne quintuplets, in 1934, survived in an incubator heated by hot water, the type used before the discovery of electricity, based on the studies of Budin.

However, Budin's work largely went unnoticed since nothing in the world of medical science in the 1890's counted without German approval. Professor Budin chose the Berlin exposition of 1896 to publicize premature infant care and to inform physicians and the public that conservation of these babies was possible. He sent a young Alsatian born physician in graduate work with him, Martin Couney, with several incubators to Berlin to exhibit prematurely born infants. Fortunately, the German physicians welcomed this collaborative demonstration. Couney set up an exhibit with six incubators at the World's Fair. Professor Rudolph Virchow, the world famous head of the Berlin Charity Hospital, gladly lent six premature infants to the exhibit from the maternity ward, since these babies were expected to die anyway.

For his exhibit, Couney took the German title, *Kinderbrutanstalt*, meaning "child hatchery." This was a target of many comic songs and musical gags in Berlin even prior to the opening of the exposition. When the exposition opened, throngs of sentimental people each paid a mark to look at these babies. The scientific demonstration became a great crowd pleaser and by the exposition's end, had outdrawn the Congo Village, Tyrolian yodelers and sky ride! Medically, the demonstration was a great success. Dr. Couney graduated several classes of premature infants that summer. As each infant achieved five pounds or more, it was sent home. During the course of the exposition not a single baby was lost.

Couney was invited to present a similar exhibit at Earls Court, in London, the following summer. However, the conservative London hospitals declined to lend Couney babies and he was forced back across the channel to Paris, where Professor Budin came to the rescue. An account in a profile on Couney in the *New Yorker Magazine* in 1939 stated that Boudin took Couney to a foundling hospital, showed him 50 or 60 prematures, and Couney returned to England with three washbaskets full of French babies kept warm by pillows placed over hot water bottles in baskets.

The Earls Court experience, which then was successful, following the successful German exposition had convinced Dr. Couney that show business was his "thing." Altruistically he saw that the exhibits stimulated great interest in the care of premature infants, but selfishly they also were a very lucrative business. So impressive were his results both in Germany and in England

that by the time he came to the United States, in 1898, to exhibit at the Omaha Trans-Mississippi Exposition, Dr. Couney already was well known. He carried with him letters from leading British and German pediatricians and clearly at that time was the most qualified man in the world to give care to prematurely born infants. The Omaha exhibition was a great success, although babies had to be imported from Chicago since a city the size of Omaha could not produce sufficient numbers of premature infants to keep the exhibit going.

In 1900 Couney returned to the Paris exhibition, and in 1901, to the Buffalo Fair. Fairs were held in America every year, and Couney decided to become a United States citizen, exhibiting in each of these yearly fairs. He also opened concessions in well-established amusement centers, including two centers in Coney Island, in New York and one in White City, in Chicago. Perhaps his best known exhibit was at the 1938-39 World's Fair, housed in a lavish building designed by Owings and Skidmore.

By June of 1939, when the few statistics known were related to Dr. Couney, it was apparent that his care of babies was staggeringly good. He had, at that point, about 8,000 prematures under his care with 6,500 survivors. Since these mainly were babies under three pounds, this remains even today a superb salvage rate. He had follow-up of a sort, in that most of the patients kept in touch with him by letter. His own 6 ft. 165 lb. daughter, Hildegard, worked as one of her father's nurses and was a graduate of one of his incubators.

In caring for these infants, Couney hired a bevy of wet nurses, women who themselves had been pregnant and were lactating. Their breast milk was expressed manually by them and fed to the premature babies. A rigid disciplinarian and moralist, Dr. Couney made these women live an ascetic life, eating only wholesome food that he provided. If Dr. Couney should catch one of them eating a hot dog or orange drink, chances were excellent that he would fire her. Regular nurses whom he hired to provide around-the-clock care returned to work with him year after year, as he ran these exhibitions at world's fairs and amusement centers between March and October.

A major inadvertent contribution of Couney, besides demonstrating the feasibility of and popularizing premature infant care, was that he influenced Dr. Julius A. Hess of Chicago, considered the leading American academic authority on premature infants of his day. Hess acknowledged that he had learned a great deal from Dr. Couney. The first premature infant station in the United States was established in the Sarah Morris Hospital in Chicago, part of the Michael Reese Hospital complex, in 1922. Unfortunately, Dr. Hess chose to adapt his incubators from those that had been designed in Vienna in the mid to late 1800 s, instead of adapting those that Dr. Couney showed. The Hess incubator was not as good nor as versatile nor as convenient as the Tarnier-Budine-Couney incubator. The Hess tank was a large kettle with a tiny window on the top, warmed by a light bulb, in which it was impossible to adequately observe an infant. Not until Dr. Charles Chapple's invention of what is now the commercial incubator known as the Isolette that it became possible to view the infant, to watch his patterns of breathing and to make

observations of medical importance.

In the profile on Dr. Couney from the 1939 New Yorker, certain comments are of historical interest:

“In the early years of the century, no American hospital had good facilities for handling prematures . . . even today, it is difficult to find adequate care for premature infants in a clinic. Few New York hospitals are set up with special departments for their benefit because they do not get enough premature babies to warrant it. There are not enough doctors and nurses experienced in this field to go around. Care of prematures as private patients is hideously expensive. One item it involves is a \$6.00 a day for mother's milk, and others are rental of an incubator and hospital room, oxygen, several visits a day by physicians and \$15 a day for three shifts of nurses. The New York hospitals are making plans now to centralize their work of prematures at the Cornell Medical Center and probably will have things organized within a year.”

Shortly thereafter, in the 40 s and 50 s, several New York premature infant centers were established, including those at Cornell and at Columbia. For many years, until the 60 s, when modern intensive care became accepted, premature nurseries were the standard of care.

It was clear to some of us however, that the delivery of care in hospitals for severely sick infants could not be met by the premature nursery. Strict isolation and segregation techniques were in force in nurseries, especially in the 1950 s, due to the great hazard to infants posed by bacterial infections especially *Staphylococcus aureus*. These prevented the mixing of sick and well babies.

When we investigated and showed that the epidemiology of nursery infections was not airborne, so that infants did not need stringent isolation, it was obvious that new systems of care could be designed, leading to the advent of the modern intensive care unit for newborn and prematurely born infants.

The first newborn intensive care unit or, better, Newborn Special Care Unit, was begun by us at Yale, in 1960. The beginnings were humble. A series of studies were begun at Stanford University Medical Center, Palo Alto, in 1959, that suggested the feasibility of antiseptic skin and cord care as a deterrent to infection and its spread among premature and full-term newborn infants. We continued these at Yale and at the same time obtained permission to intermingle newborns and prematures who were ill and to establish a high level of care for the ill and stressed infant. Thus began training of nurses, development of techniques, design of equipment and finally, architectural design of facilities—all establishing at Yale what became the prototype for intensive care units. Four years after beginning our unit at Yale, 1964, a series of grants were given to establish some seven other units and by 1967, the concept had become accepted and fairly widespread. In 1962-63 Dr. Edward Hon, who pioneered fetal monitoring, returned to Yale, and together we established

the first functional perinatal center, later to be joined by several other notables.

Into the Special Care Unit was (and is) admitted all prematures and any full-term infant requiring special observation or care. These include infants with medical and surgical problems, with infection or suspected infection, outborn or inborn infants, of any birth weight and gestational age.

With this variety of deviant infants admitted came the realization that family crises were precipitated by the birth of a deviant newborn. Frequently this occurred to a very young, inexperienced, confused, poverty-stricken couple. Sometimes the deviance was slight—a girl born instead of a boy—sometimes an infant with a major malformation, sometimes a premature infant who died. This prompted us to seek a social worker who was willing to chart new areas of social service and to begin to establish lines of communication and aid that would help in this almost unbearable family crisis medicine. Truly Ruth Breslin made a monumental contribution to care as the key person relating alike to medical personnel and to families at the same time trying to help families with whatever is required to help.

The next equipment may well be special individual treatment centers allowing vital physiologic functions to be measured on the baby, facilitating optimal treatment by eliminating guesswork. Measured data will be collated and interpreted and a course of therapy outlined by extensive help from dedicated computers for sick infants. Preventive care of babies too will require similar adjuncts for the highly trained individual to have at his or her disposal techniques to provide instantaneous trending data and interpretations of the physiologic evaluation of the baby. As these develop, the high risk and premium infants will be cared for at fewer and fewer centers.

Techniques of rooming-in, where mothers and babies are put together had been developed very early at Yale and to a high degree. This had been begun in the 1940 s, largely due to the work of Edith Jackson and others, and was accepted widely as “natural”; today nearly all hospitals have rooming-in units. It was “natural” for us to do the same with the Newborn Special Care Unit. Intensive care units also have become almost rooming-in units, in that parents are allowed, or should be allowed, complete access to their babies 24 hours a day. They are being and should be involved in the care of their infants. Mothers should be allowed to handle even their sick babies, and mothers and fathers both should be encouraged to come in as frequently as possible and participate in the care of the baby.

One of the least thought about, but yet a dramatic advance in the technology of care of babies has been the development of convenience items such as disposable diapers, disposable formulas and formulas that already are pre-mixed.

What are our current trends? The road ahead potentially is a divisive one, —since two conflicting philosophies are extant. The strong environmental orientation in our society has begun to make motherhood and pregnancy objectional words. Overpopulation and its control have been presented by terror tactics instead of by positive approaches, until childbirth often has taken on meaning synonymous with dire consequences. At the same time there is a return to

natural childbirth, breast feeding, family centered maternity care with the father in the delivery room, and a general desire on the part of women to *give birth* rather than be delivered. This is the direction of obstetrics of the future; a return to the older days, so to speak, and with this some softening of attitudes toward giving birth.

Let me address myself to some more broad and basic issues. The health care industry in this country has become our greatest industry. With our sophistications in care, the costs have skyrocketed. Whereas we need to develop greater efficiencies in care, and multi-phasic examination, screening and treatment systems that are applicable even in remote areas, the reactionary tendency often has been to exert the old-fashioned and destructive American prerogative of rugged individualism. When systems of health care are presented that have a spirit of cooperativeness or are launched on a wide scale in our society, there often are accusations of socialism or other politically questionable words of the time. Yet, systems of care like that of the Kaiser Permanente Foundation have shown us that one *can* give outstanding care at great efficiency if this be our goal.

Many medical schools continue to be irresponsible in their delivery of health care or perhaps their non-delivery of health care. Ivory towers still exist where professors in clinical departments fancy themselves as basic science professors, doing laboratory research while their second rate clinical services are run by poorly trained individuals or individuals still in training, often under inadequate supervision. Government administrators have become angry when facts about these odd excesses and the support of frequently nonsensical research programs come to light. The recent federal legislation establishing professional standards review organizations (PSRO) in part is a response to all medicine's — not only academic—disregard of the public interest. No longer will the public tolerate science for science's sake. Yet without research, modern medicine would not advance — a price too high for all mankind to pay.

Basic research and clinical medicine can be and are one and the same. Among the great excitements to be found in the field of perinatal medicine, for example, is the aspect that deals with attempts to solve the unknowns. Many diseases and conditions have, at their base, some sort of perinatal and/or developmental problem. The idea that departments should focus on and study major pressing problems—problem-solving, as a goal, would preserve research in clinical medicine, and integrate basic science and clinical medicine. In the perinatal field the need is critical because we deal with the future generations. In the field of perinatal medicine, we must ask the human fetus many questions directly about his development, but using indirect and minimally invasive techniques so that we do not jeopardize his well being. We need information not only about the development of the fetus, but also to use this information for judgments on delivery and care. But the strange moralistic rumblings in Congress and under pressure from religious and other groups, especially the Right to Life movement abruptly has foreclosed research on the fetus. The recent rulings in Massachusetts regarding fetal viability threatens to close the door forever on human fetal research and could sound the death knell to needed advances in the perinatal field.

What do we need most to know? The most important area in our future file is the one that deals with development of the central nervous system.

Because our techniques for examining newborns are so crude, we are unable to evaluate whether or not the baby's brain is normal at the time of birth. We cannot know until perhaps eight years of life, by our current techniques, whether the child has any neurological deficit, minimal brain dysfunction syndrome, behavior disorder, or communicative disorder, such as dyslexia. Many therapies are given to newborn infants without proper evaluation, and by the time evaluation at eight years would have been made, many more new therapies would have been given in the meantime, none of these properly evaluated. Our number one priority, then, is to establish better systems of evaluation so that by the time an infant leaves the nursery, or no longer than the first few months of life, a sufficient evaluation can be made to declare with certainty that an infant is normal or abnormal.

Secondly, we must learn to employ the newer techniques in acute and critical care medicine, based on principles of physiology and newer biophysical measurements in order to be able to understand the immediate effects upon physiologic systems of therapies and techniques of treatment. For this, the time for the computer in clinical medicine, has arrived.

Another major commitment must be to study the developmental nutrition of the newborn and young infant. Adequate weight gain on a particular formula has been the traditional standard technique for many. This answers no questions; infants can grow on almost anything. We now realize that atherosclerosis well may be a pediatric, neonatal disease. Certainly this major adultcrippler gives us cause to reflect on the fact that we know little or nothing about infant nutrition.

Another very important area of problem solving is environmental perinatology. Various environmental effects must be studied for their influence on reproduction, including pollutants in the air and in the total environment; the epidemiologic aspects and perinatal effects of epidemic or endemic infections in mothers and the outcomes of their fetuses; the epidemiology of teratology; and sociological perinatology in which the aspects of how we live are examined and how they influence the outcomes of pregnancies.

Where are we now? We're in the age of prevention. Primarily we can prevent pregnancy in many different ways. However, the birth rate now is and will continue to be, the lowest in history, less than was projected by Zero Growth Potential. We now have a new worry about the increasing average age of the population if the birth rate drops too low.

Our modern folkways and mores allows the woman now the choice, together with her physician, either to continue or to end a pregnancy. We further, importantly, are becoming more bold about examining critical ethical questions about prolonging hopeless existence.

We have almost wiped out Rh disease since the advent of RhoGam in the U.S. Foreign countries still see a great deal of Rh disease. We will soon control, as necessary, maturation of the fetal lung and thus prevent the respiratory distress syndrome. Early intrauterine diagnosis allows us to prevent many bad pregnancies.

All in all, our advances in a short time have projected us into an entirely new era, but one in which there appears no time for personal dedication of doctors to people. Our scientific explosion and our need to practice defensive medicine for fear we will be sued for negligence are casting us into a sea infested with the man-eating sharks of inefficiency and indifference. Our only hope for making and keeping this situation bearable is the one health professional especially trained to care and to help – the social worker.

The erosion of the stable family unit by the nervous times we live in, by the “sexual revolution,” by the overreaction of women in their pell-mell headlong dash for “equality,” and by the ease with which divorce and dissolution of marriages can be obtained must somehow be counteracted if some semblance of a healthy stable future generation is to emerge. One thing we hope for is some return back to the mother and infant as a unit. The Chinese describe best for us our core attitudes and our hoped for status. The Chinese ideogram for the concept “good” actually is made up of two characters, one character for mother, one for child, nu and su. Together they are the symbol for good. So from antiquity to the culture of today we find that the interdependent mother/child relationship best expresses the central element of goodness in our society, as well as serving as the foundation of our civilization.

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I employed dozens of sources of medical history, including talks with many persons, especially Dr. William A. Silverman and Dr. Charles Chapple. Two written sources were especially helpful:

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