

Additional Writings and Speeches of Henry W. Foster, Jr., M.D.

Articles

Foster, H.W.: The Papanicolaou Smear and Early Cervical Cancer. Journal of the Volunteer Medical Association, 6:17-20, 1965

Das, S.K., Foster, H.W., Bhattacharyya, D.K.: Gestational Age Assessment by Estimation of Palmitic Acid Content of Amniotic Fluid Lecithin. IRCS Journal of Medical Sciences, 3:175, 1975

Das, S.K., Foster, H.W.: Amniotic Fluid Lipids of Patients with Sickle Cell Disease (Letter). American Journal of Obstetrics and Gynecology, 138(5):591 November 1, 1980

Raghunathan, R., Foster, H.W.: Gestational Changes in Pyruvate Carboxylase Activity of Human Amniotic Fluid. IRCS Journal of Medical Sciences, 11:75-76, 1983

Foster, H.W.: Maternal Death Associated with Sickle Cell Trait (Letter). American Journal of Obstetrics and Gynecology, 153(3):346-347, November 1, 1980

Foster, H.W., et al.: 2001: The Challenge in Education in Obstetrics and Gynecology. American Journal of Obstetrics and Gynecology, 159:13-21, July, 1988

Foster, H.W.: President Foster's Inaugural Report. The Quarterly Report: Association of Professors of Gynecology and Obstetrics, Vol. XX, No. 2, 1993

Foster, H.W.: The Times Interview - Meharry's Foster Foresees Hospital Transformation, Metropolitan Times, 13(31):1-3, June, 1993

Foster, H.W.: What Does Health Care Reform Portend for Undergraduate Medical Education? The Quarterly Report: Association of Professors of Gynecology and Obstetrics, Vol. XX, No. 3, Summer 1993

Abstracts and Presentations

Foster, H.W.: "Statement: Study on Infant Mortality (SJR 96)" Presented at the Tennessee Legislative Council Committee, State Capitol Building, Nashville, Tennessee, August 6, 1974

Foster, H.W.: "Consensus Development Conference on Transfusion Therapy in Pregnant Sickle Cell Disease Patients" Co-Chairman, Presented at the National Institute of Health, Washington, D.C., April 23-24, 1979, reprinted in National Institutes of Health Consensus Development Conference Summaries, Vol. 2, 1979

Foster, H.W.: "Maternal and Infant Health" Participant, The Surgeon General's Workshop, Reston, Virginia, December 14-17, 1980.

Foster, H.W.: "Reproductive Trends: Implications for Planned Parenthood" A Keynote Address, Planned Parenthood Association of East Tennessee, Inc., 23rd Annual Meeting, Knoxville, Tennessee, September 7, 1984

Foster, H.W.: "Hemoglobinopathies in Pregnancies," Audio Cassette Transcript, American College of Obstetricians and Gynecologists, CME Series, Vol. 12, No. 6, 1987

Foster, H.W.: "Resident Working Hours" Presented at the Program Directors Retreat, Council on Resident Education in Obstetrics and Gynecology (CREOG), Park City, Utah, July 20-21, 1989

Foster, H.W.: "20/20 II Conference Keynote Speaker" Morehouse College Sponsored Health Sciences Minority Student Counselor Awareness Program, Atlanta, Georgia, November 11, 1993, summarized in President of Meharry Medical College Addresses Opening Symposium, Conference 20/20 II: Update, Vol.1, No. 2

Foster, H.W.: "Career Opportunities in Biomedical and Public Health Sciences" Eighth Annual Symposium for the Association of Minority Health Professions Schools, Second General Session, Dr. Roy Hunter, Jr. Presiding, Nashville, Tennessee, March 31, 1994

changing pattern of applicants to Meharry. Negro applicants are decreasing . . . white applicants are increasing. In fact, the ratio of applications to the School of Dentistry is three whites to one Negro; in the School of Medicine, there are two white applicants to every one Negro.

Meharry's 112-strong freshman class of '64 included 24 white students, 12 in the School of Medicine and Dentistry, respectively.

President of Meharry Medical College (its fifth and first Negro) Dr. Harold D. West has commented:

"As racial barriers continue to disappear, Meharry will no longer exercise a special function, but will take its place as just another of the medical schools in this nation.

"Meharry began as an experiment in interracial cooperation and that same cooperation continues in a high degree today. As integration becomes more general, the need for this institution and the services it has to render will grow, not less but, greater than ever."



Memphis, Jackson, Nashville, Johnson City,
Louisville, Shreveport and Baton Rouge, La.

Serving the Physically Handicapped by Medical Supervision

SURGICAL GARMENTS—BRACING—AMPUTATIONS

[16]

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V. 6, 1965



THE PAPANICOLAOU SMEAR AND EARLY CERVICAL CANCER

by

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INTRODUCTION

To many the Papanicolaou smear is viewed as an enigmatic entity. To a few it is almost unheard of, or is considered only an experimental medical adjunct. None of these impressions could be farther from reality.

The broad objectives of this paper are (1) to familiarize the reader with the principles and mechanics of the Papanicolaou smear and (2) to emphasize the far reaching value of this simple but invaluable tool when properly employed as a routine diagnostic aid, not only for the specialist but for all practitioners of medicine who diagnose and treat adult female patients.

HISTORY

Although not successfully introduced until 1943 by Papanicolaou and Traut, clinical cytology dates back to the middle of the nineteenth century. The tremendous interest in exfoliative cytology which exists at the present time is due almost entirely to the ease, inexpense, and accuracy with which this tool can be utilized in the early detection of cancer of the cervix. The practicing physician has now within his grasp a means of early diagnosis, which when properly followed up, can lead to the successful treatment of one of the most serious diseases of the female reproductive organs.

PRINCIPLES, MATERIALS AND TECHNIQUES

The basis for the Papanicolaou smear is derived from the biologi-

[17]

cal principle that all epithelial surfaces of the body, healthy or diseased, continue at all times to shed their surfaces. The recognition of cancer is best facilitated if the cells are well preserved. Drying will damage and alter the cells; therefore, it is imperative to obtain the best and most rapid fixation of the specimen. For all of the simplicity which embraces this procedure, herein lies one of the most critical areas if the smear is to be of value. Under no conditions should it be allowed to dry prior to fixation. The container which holds the fixative should be opened prior to obtaining the specimen. Drying is just this critical, for if it occurs cytoplasmic transparency and cellular differentiation are lost.

The materials necessary for collecting the cervical smear are listed below:

1. Clinical data sheet containing the patient's name, address, age, gravity, parity, last menstrual period, whether non-pregnant, postpartum or postmenopausal. Previous cytological studies should be noted so comparisons may be made and any form of hormonal therapy should be noted.
2. Sharpened pencil of the lead or graphite type. (Never use ink)
3. Clean glass slide of the frosted type for labeling of the specimen.
4. Paper clip to attach to slide for handling and for protection of the smeared surface from scraping by other slides which may also be placed in the same fixative bottle.
5. Normal saline solution to serve as lubricant since jelly lubricants are to be avoided because they interfere with staining and obscure cellular detail.
6. An applicator either of a non-absorbent cotton swab or a wooden spatula. Specifically, the Ayre type spatula is designed especially for this test or one may be made by splitting or cutting an ordinary tongue blade to the desired shape.
7. Wide-mouth bottle $1\frac{1}{4} \times 1\frac{1}{4} \times 4\frac{1}{2}$ inches, containing a solution of 95% ethyl alcohol and either, equal parts. 95% ethyl alcohol alone or isopropyl alcohol (absolute) may be used but are considered inferior to the ether-alcohol mixture.
8. Bivalved (duck-bill) vaginal speculum for exposing the cervix.

The office collection technique is as follows:

1. Avoidance of vaginal instrumentation 12 hours prior to collection of specimen. This includes coitus, douching and bathing (showers are allowed).
2. With adequate lighting and preferably the patient free of menses, she is placed in the lithotomy position. The bivalve speculum is moistened with normal saline (no lubricant used) and the cervix is brought into sight under direct vision. This means avoid traumatizing the cervix with the tips of the speculum blades.

3. The swab or spatula is then placed in the region of the squamocolumnar junction at the external cervical os and rotated through 360 degrees. Any area of the cervix which appears grossly suspicious should also be smeared separately.
4. The material is then spread evenly on a slide as quickly as possible and immersed immediately in ether-alcohol solution.
5. Routine pelvic examination is now carried out.

If necessary to send the slide through mail to a distant laboratory, this may be done by air-drying, after fixation for at least fifteen minutes, then adding glycerine lubricant to the slide and applying another slide over it for protection.

This simple portion of this procedure has now been carried out in the office. The microscopic examination, after proper staining, on the other hand, is long and meticulous. The interpretation and recommendations require the training and wisdom of a physician skilled in cytopathology. No other measures are necessary until these results are reported. Appropriate measures, depending upon results, will be mentioned briefly later.

CLINICAL VALUE AND SCOPE

The Papanicolaou smear is valuable because it can save lives. It can reduce sharply a most lethal form of cancer affecting the female genitalia. In the United States it is the second most common site of malignancy in the female with only breast malignancies occurring more frequently. Moreover, in many countries it is by far the most frequent form of cancer in women. In Puerto Rico cancer of the cervix represented 40% of all malignant tumors of the female from 1946 to 1950. It accounts for 31% of cancer in the American Negro female for compared to 14% for the non-Negro population. It appears that in Negroes of this country cancer of the cervix ranks ahead of cancer of the breast. This appears to be due solely to socio-economic reasons. At this moment it is estimated that 23 out of every 1000 females in this country harbors cancer of the cervix. No less than 17,000 American women will die of this disease this year alone. Indeed, any tool that can reduce this figure is one of prime importance.

Cancer, if hope of cure is anticipated, must be detected in its incipency. Carcinoma in situ or preinvasive cancer as the earliest form of cancer of the cervix is a fact now well established and well recognized. The five year salvage rate in carcinoma in situ is about 100%. In most instances carcinoma in situ cannot be diagnosed clinically for usually there are no signs, symptoms or gross cervical changes as with invasive carcinoma of the cervix. The only consistent method to diagnose carcinoma in situ is to have a high index of suspicion, employ routine Papanicolaou smears and educate the patient to seek this service.

Carcinoma in situ is said to exist when morphological changes which meet all the criteria of malignancy except the element of invasion are found in the epithelium usually covering a surface. From this definition it becomes evident that a diagnosis of carcinoma in situ cannot and should not be made from a Papanicolaou smear. This test is a screening tool and designed only to arouse suspicion of the possible presence of malignancy. With suspicion aroused, however, it becomes axiomatic that a biopsy specimen be taken for histological confirmation, for the final diagnosis must depend on the microscopical picture of the biopsy specimen. Definitive therapy must never be initiated on cytological studies alone. Two facets which affect definitive treatment directly cannot be known from a smear positive for cancer cells. (1) the location or site of origin of these cells is not known and (2) whether or not invasion is present cannot be known.

If after biopsy or conization cancer is found, the course to be pursued will depend upon (1) whether or not invasion is present and (2) if invasion is present the clinical stage which exists.

When the lesion is noninvasive (carcinoma in situ) the treatment is total hysterectomy with adequate vaginal cuff resection. However, at this point one fact must be clearly established. Carcinoma in situ is not a medical emergency. This is not to imply that the lesion may be ignored. It does mean, though, that the lesion may be followed closely to allow the patient to fulfill such vital functions as childbearing. It is established that it takes an average of ten years for carcinoma in situ to become invasive. However, two fallacies here are the fact that 4% of preinvasive lesions become invasive in a year and 9% in five years. Also, when a patient has not been seen previously and carcinoma in situ is discovered, its time of origination cannot be known. Nonetheless, one may temporize if the reason is justifiable.

For invasive carcinoma of the cervix radiation alone may be used. It may be used in conjunction with surgery or surgery alone may be used. This is determined by the extent of invasion, the ability of the patient to withstand radical surgery and often the particular geographical area in which one practices.

SUMMARY

1. In order to diagnose cervical cancer in its early phases, the patient must be educated; but patient education begins with physician education.
2. The field of exfoliative cytology is not new but is simply experiencing a renaissance.
3. The principle is simple—epithelial surfaces exhibit continuous shedding, healthy or diseased. The materials needed to study these cells are inexpensive and the technique for their collection is simple. The interpretation is long and tedious.
4. The Papanicolaou smear, because of its effectiveness in face

of a dread disease, can be considered a medical breakthrough. However, it is not diagnostic but only a screening tool. Diagnosis must be made only from histological specimens.

5. Carcinoma in situ is not a medical emergency.
6. If histological studies reveal invasive carcinoma, the therapy is often radical and complex and unless one has special training in treating gynecological cancer, appropriate referral of the patient is the most prudent course.



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FLOWERS

IN
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CHATTANOOGA

GESTATIONAL AGE ASSESSMENT BY ESTIMATION OF PALMITIC ACID CONTENT OF AMNIOTIC FLUID LECITHIN

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Lipids are normal constituents of human amniotic fluid and are intimately associated with gestation and fetal lung maturity. Some tests based on lipid composition have already been proposed for actual clinical evaluation of gestational age and fetal lung maturity. One can assess the progress and age of gestation and hence fetal lung maturity from the proportion of lecithin relative to sphingomyelin in the phospholipids of amniotic fluid (1), and from the amount of palmitic acid in the fatty acids of the total lipids of amniotic fluid (2). According to these authors, these two components continuously increase with gestational age and are maximum at term in labor. The present study was undertaken to investigate whether palmitic acid content of lecithin could be an index for evaluating fetal lung maturity.

Materials and methods: Amniotic fluid samples were obtained from normal patients at four different periods of gestation: Group I, 18-22 weeks (3 cases); Group II, 27-33 weeks (4 cases); Group III, 34-40 weeks (3 cases), and Group IV, labor at term (3 cases). 5 ml of amniotic fluid were extracted twice with 15 ml of chloroform-methanol (2:1, v/v). A known aliquot of total lipid solution was used for thin layer chromatography (TLC) to separate phospholipids from other lipids (neutral lipids, glycolipids and prostaglandins) using the solvent system benzene:dioxane:acetic acid (20:20:1, v/v). All neutral lipids, glycolipids, and prostaglandins migrated from the origin, while leaving phospholipids at the point of application. The unresolved phospholipids ($R_f = 0$) from the TLC plate were scraped directly into Teflon-lined screw cap culture tubes (16 x 100 mm) and extracted with a small known volume of methanol. An aliquot of this methanol solution was used for the separation into various phospholipid classes by one dimensional TLC using chloroform:methanol:acetic acid:water (200:120:25:15, v/v), and ultimately lecithin (L) and sphingomyelin (S) were quantitated from the TLC plate by the application of charring-transmission densitometry (3). Another aliquot of the methanol solution was used for the preparative TLC for separation of lecithin. The adsorbed layer of lecithin on the TLC plate was scraped directly into a 25 ml round bottom flask, saponified with 0.5 N methanolic KOH, and the fatty acids released converted to methyl esters by heating for 5 min with 14% boron trifluoride in methanol (4). An aliquot of total amniotic fluid lipids was also saponified and the fatty acids released thereby were methylated in a similar manner. The fatty acid esters were separated and quantitated by the use of a Model 7400 Packard Gas Chromatograph equipped with a flame ionization detector and 10% diethylene glycol succinate polyester column. Assignments for each peak were obtained from a semilogarithmic plot of relative retention time vs chain length and degree of unsaturation of standard mixtures of fatty acid methyl esters. Peak areas were determined by multiplying the height by the width at half height. The relative percentage of palmitic methyl ester was determined by dividing the area under its peak by the

Gestational variation of L/S ratio and palmitic acid of lecithin of amniotic fluids

Parameters	Group I	Group II	Group III	Group IV
Lecithin (mg/100 ml $\pm$ S.D.)	1.97 $\pm$ 0.21	4.62 $\pm$ 0.38	7.08 $\pm$ 0.43	8.13 $\pm$ 0.19
Sphingomyelin (mg/100 ml $\pm$ S.D.)	1.99 $\pm$ 0.32	3.11 $\pm$ 0.17	2.97 $\pm$ 0.31	1.74 $\pm$ 0.18
L/S ratio	0.99	1.48	2.38	4.67
Palmitic acid content of total lipids (% of total fatty acids $\pm$ S.D.)	40.6 $\pm$ 3.2	35.2 $\pm$ 2.96	27.2 $\pm$ 1.3	37.4 $\pm$ 2.4
Palmitic acid content of lecithin (% of total fatty acids $\pm$ S.D.)	17.9 $\pm$ 0.9	20.0 $\pm$ 0.8	54.2 $\pm$ 1.3	58.1 $\pm$ 1.2

total peak area.

Results and discussion: The data on the amounts of lecithin and sphingomyelin, and L/S ratio of amniotic fluid, and % palmitic acid of total fatty acids of both total lipid and lecithin of amniotic fluids at different gestation periods are shown in the table. An increase was noted in the amounts of both lecithin and sphingomyelin during the advancement of pregnancy from 2nd trimester (18-22 weeks) to 3rd trimester (27-33 weeks). Beyond 33 weeks of pregnancy, the amount of lecithin, but not sphingomyelin, increased strikingly. The L/S ratio was maximum at term with labor. We could not establish any relationship between the palmitic acid content of total amniotic fluid lipid and gestational age. On the other hand, we obtained a distinct correlation between the palmitic acid content of lecithin and gestational age. It was observed that palmitic acid of lecithin steadily increased with the progress of gestation and the increase suddenly accelerated near the 34th week of gestation; beyond that point the increase was not significant.

We therefore suggest that gestational age and hence fetal lung maturity can be assessed by estimating the palmitic acid content of the lecithin fraction of amniotic fluid lipids instead of the palmitic acid content in the total amniotic fluid lipids. This palmitic acid content of lecithin combined with the simultaneously determined L/S ratio can serve as a conclusive index of gestational age and fetal lung maturity.

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all patients with elevated prolactin levels. In this way an extensive workup with its inherent risks of radiation to the fetus could be avoided.

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Amniotic fluid lipids of patients with sickle cell disease

To the Editors:

This letter is in reply to the comments of Dr. Eric J. Sing (*Am. J. Obstet. Gynecol.* 136:1089, 1980) on the publication of S. K. Das and H. W. Foster, "Amniotic fluid lipids in sickle cell disease," in the January 15, 1980, issue of the *JOURNAL*, on page 211.

We are pleased that Dr. Sing has expressed an interest in our views on the presence of polyunsaturated fatty acids in amniotic fluid lecithin.¹ In our study, we analyzed total lecithin that included not only surfactant but also nonsurfactant lecithin. Lung surfactant lecithin is mostly of the dipalmitoyl type. It is produced by a complex mechanism involving either a deacylation-reacylation or a deacylation-transacylation process to

retailor the fatty acyl moieties of phosphatidylcholine (PC) produced de novo by the cytidine diphosphate choline pathway. PC produced de novo contains unsaturated fatty acids including prostaglandin precursors in the 2-position. It is possible that in sickle cell anemia the auxiliary processes function at a reduced capacity and thereby the unsaturation at the 2-position of PC is preserved. Polyunsaturated fatty acids at the 2-position of PC may thus be precursors of prostaglandins in sickle cell anemia and thereby linked in some way to the respiratory distress syndrome. In regard to the high amounts of phosphatidylserine and phosphatidylethanolamine found in the amniotic fluid of sickle cell patients, we suggest that these lipids may be involved in blood clotting in sickle cell patients since these two lipids are known to be responsible for the thromboplastic activity of platelets.²

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GESTATIONAL CHANGES IN PYRUVATE CARBOXYLASE ACTIVITY OF HUMAN AMNIOTIC FLUID

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Fetal enzymes in amniotic fluid should prove useful in developmental studies or for prenatal diagnosis of genetic diseases/inborn errors of metabolism or assessment of fetal health (1). Deficiencies in one or more of the four key enzymes involved in gluconeogenesis can give rise to different pathological conditions (2-6). Our long range goal is to develop suitable methods for prenatal diagnosis of disorders associated with the carbohydrate metabolism. We have recently reported fluctuations in the activity of phosphoenolpyruvate carboxykinase (PEPCK) of human amniotic fluid during gestation (7). Pyruvate carboxylase (PC) (EC 6.1.4.1.1) is another key gluconeogenic enzyme which catalyzes the first step in the synthesis of glucose from pyruvate in liver and kidney. Methods for the optimal assay conditions for pyruvate carboxylase in human amniotic fluid must be established before this enzyme could be used for diagnostic purposes or developmental studies and the range of their normal values throughout gestation must be known. The purpose of this paper is to report the developmental pattern of pyruvate carboxylase in human amniotic fluid between 14 weeks of gestation and term labor.

Materials and methods: $\text{NaH}^{14}\text{CO}_3$ and Aquasol were purchased from New England Nuclear, Boston, Massachusetts. Other analytical enzymes and cofactors were purchased from Boehringer-Mannheim Corp. New York, New York. All other chemicals were of reagent grade and were obtained from readily available sources. Amniotic fluid samples were obtained by transabdominal or direct amniocentesis at the time of cesarean section and the methods for obtaining the sonified extract of amniotic fluid cells and amniotic supernatant were essentially the same as described earlier (7). The sonified extract (amniotic fluid cells) and the supernatant were used immediately for enzyme assays. The patients were divided into three gestational groups: group 1: 14 to 18 weeks; group 2: 19 to 25 weeks; and group 3: in-labor at term. Pyruvate carboxylase was measured at 37 °C by the (^{14}C) bicarbonate fixation assay described by Utter and Keech (8), except that acetyl Co-A was generated *in situ* as described by Henning and Seubert (9). The total volume of the reaction mixture was 1.0 ml. After a five minutes pre-incubation at 37 °C of all the assay ingredients, the reaction was started by the addition of enzyme extract, mixed well and incubated for an additional 20 minutes at 37 °C and then it was stopped with 0.5 ml of a 10 percent solution of trichloro-acetic acid and cooled. The tubes were centrifuged to sediment the precipitated proteins. The clear supernatant layer was removed and bubbled with CO_2 for 10 minutes to remove the unreacted (^{14}C) bicarbonate used in the assay and a 0.5 ml aliquot was added to 10.0 ml of Aquasol and counted in a Beckman Model LS-355 liquid scintillation spectrometer. Protein was determined by the method of Lowry *et al.*, using bovine serum albumin as the standard (10). To study the effect of avidin, which specifically inhibits biotin-dependent carboxylations (11) on PC-activity, avidin was freshly dissolved in aqueous 1.0 M sodium bicarbonate solution and added to the PC-reaction assay mixture just before use. The respective controls contained PC-assay mixture without avidin, but with an equivalent amount of sodium bicarbonate solution. The enzyme assay was done using the enzyme extract as mentioned earlier.

Table 1: Pyruvate carboxylase activity (nanomoles/mg protein/minute) in human amniotic fluid during various stages of gestation

Fraction of amniotic fluid	Weeks of gestation		
	Group I 14-18 weeks (n = 9)	Group II 19-25 weeks (n = 14)	Group III Term labor (n = 12)
Cells (devoid of supernatant)	3.63 ± 0.46 (89)	6.48 ± 0.77* (159)	4.06 ± 0.52 (100)
Supernatant (devoid of cells)	1.81 ± 0.24 (95)	1.63 ± 0.21 (85)	1.92 ± 0.23 (100)

Enzyme activity represents nanomoles of HCO_3^- fixed per mg protein per minute. The values given are means ± SEM of 9-14 different samples as indicated, each sample assayed in duplicate. Numbers in parentheses indicate the percentage of activity with the activity from term labor samples taken as 100. *Significantly different ($P < 0.05$) for group I and III.

Results and discussion: The variation in the activities of pyruvate carboxylase in human amniotic fluid with gestational age is represented in table 1. The enzyme activity (specific) is expressed as nmoles per mg of amniotic fluid (cells or supernatant) protein/minute. As seen in table 1, a significant increase in PC activity of the human amniotic fluid cells from 14-18 weeks to 19-25 weeks was observed during the increase of gestational age from 14-18 weeks to 19-25 weeks. However, this activity dropped down to 4.06 nmoles in samples of amniotic cells obtained at term labor. The amniotic fluid supernatant PC-activity fluctuated very little during the entire gestational period and varied only from 1.63 to 1.92 nmoles. Avidin, has been shown to inhibit pyruvate carboxylase activity of human cultured fibroblasts. Results on the effect of avidin on the amniotic fluid pyruvate carboxylase activity shown in table 2, reveal that 100 µg of avidin/assay inhibited amniotic fluid

cell pyruvate carboxylase activity by 57 per cent, while the inhibition seen with amniotic fluid supernatant was 53 per cent of the respective control values.

The foregoing results show that the specific activity of pyruvate carboxylase in amniotic fluid cells observed at 14 weeks increased with gestation, reaching a peak level at 19 to 25 weeks and decreased in term labor samples. The PC activity seen at 19 weeks (table 1) is significantly different from that seen at 14 weeks or in term labor samples ($P < 0.05$). The reason for this variation in PC activity is not clear. However, we have recently reported a similar gestational pattern in PEPCK activity of human amniotic fluid (7). Similarly, fluctuations in activities of various enzymes of human amniotic fluid are well documented (12-15). The increase or decrease in amniotic fluid enzymes during gestation may be related to its specific function. Inhibition of PC activity of amniotic fluid with avidin gives us other evidence for the presence of this enzyme in human amniotic fluid (table 2) and we are presently characterizing the products of PC-activity.

Table 2: Effect of avidin on pyruvate carboxylase activity in human amniotic fluid

Fraction of amniotic fluid	Addition/assay	Enzyme activity nmoles/min/mg protein	Percent activity
Cells	Nil	4.0 (3.5-4.3)	100
	+ 100 µg avidin	1.7 (1.5-1.9)	43
Supernatant	Nil	1.9 (1.7-2.1)	100
	+ 100 µg avidin	0.9 (0.8-1.0)	47

Amniotic fluid of a term labor sample was used in these studies. Avidin (100 µg/assay) was added to the test reaction mixture before the addition of the enzyme extract and assayed. The values given are the means of a triplicate assay on a single sample. Ranges are given in parentheses.

PC activity (nanomoles) has also been reported in several lines of human cultured fibroblasts (6, 16, 17) and lymphocytes (6) and the level of activity seen in human amniotic fluid cells and supernatant are comparable to that seen in cultured fibroblasts and lymphocytes. To our knowledge this represents the first work to show the existence of pyruvate carboxylase in human amniotic fluid during gestation. Presently, we are focusing our attention to obtain some data on the levels of PC-activity in amniotic fluid of high risk pregnancies.

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The assistance of all the departmental staff members in obtaining the necessary amniotic fluid samples used in this study is highly appreciated. Excellent typing by Ms. Wanda Harris is acknowledged.

John L. Pauly,
Depo

Interleukin-2 (IL

IL-2 PRODUCTION	
1.	POOL BUFFY COAT CELLS (N = 8 DONORS)
2.	PLASMA GEL SEDIMENT BLOOD CELLS
3.	FICOLL-HYPADIC 100 MONONUCLEAR LEUKOCYTES
4.	INITIATE PHASE-1 CULTURE (100 µl + 35 µl + 17.25 MILLION CELLS) SPINNER CULT., 4 D.
5.	ADD 8 LYMPHOCYTES (PBL-2 CELL RA70.1)
6.	ADD PHORBOL ESTER (PMA, 10 µg/ml)
7.	INCUBATE (24 H., 37°C)
8.	ADD PHYTOHEMAGGLUTININ (PHA, 10 µg/ml)
9.	INCUBATE (24 H., 37°C)
10.	DEPOSIT CELLS
11.	DISCARD "SPENT" FOR PMA AND PHA
12.	INITIATE PHASE-2 CULTURE (100 µl + 35 µl + 17.25 MILLION CELLS) SPINNER CULT., 4 D.
13.	HARVEST IL-2 CO

Figure 1: Procedure for isolation of T cells and mitogenic stimulation of lymphocytes culture having high level growth-promote

procedure (Me isolated from p These leukocy 10⁶/ml of cultu neomycin and virus transform phorbol ester 48 hours, phyto cells were depo cells resuspen spinner bottle cell-free SN w IL-2 in the removed (M addition, the compared to accordingly, designated as IL-2 activi T cells of the ml of T cell concentration determined a laboratory also prepare prepared in

laser surgery is an important therapeutic modality and was previously discussed in detail by Dr. V. Cecil Wright and others (references 1 to 10).

It is highly surprising that Drs. Baggish and Dorsey are not aware of the substantial literature on gynecologic laser surgery.

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Reply

To the Editors:

Thank you for the opportunity to reply to Dr. Ed Rubinstein.

This letter represents one of a series written by acquaintances of Dr. V. C. Wright. The list of references is almost identical to that accompanying Dr. Wright's letter. In our opinion this particular correspondence is the most intellectually impaired since Dr. Rubinstein pitifully cites not peer review literature but (1) a personal course workbook compiled by Dr. Wright himself, (2) meetings that Dr. Rubinstein did not attend, (3) a pamphlet of a special interest society, (4) references submitted or published after our article had been received by the *AMERICAN JOURNAL OF OBSTETRICS AND GYNECOLOGY*. Dr. Rubinstein critically implies that we do not read the literature about laser surgery in gynecology. However, had Dr. Rubinstein's scientific curiosity been minimally piqued he would have needed to read only a few more pages of our description of the combination technique.

This work was first described by one of us (J. H. D.) at an organizational meeting of the Gynecologic Laser Society convened at the Watergate Hotel, Washington, D. C., September 5-8, 1979.

The meeting cited as reference 1 by Rubinstein was a seminar sponsored by another of the authors (M. S. B.) which of course Dr. Rubinstein did not attend. A substantial body of literature that led to the development of the combination cone was unfortunately neglected by Dr. Rubinstein.

We hope that the *AMERICAN JOURNAL OF OBSTETRICS AND GYNECOLOGY* does not foster this sort of cynicism, since it serves both scientific purpose.

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Maternal death associated with sickle cell trait

To the Editors:

I read with interest your recent article reporting a maternal death in a sickle cell trait patient (Pastorek JC, Siller B. *AM J OBSTET GYNECOL* 1983;151:295). I wish to raise a question and make two comments.

First, I would very much like to know the quantity of 5 hemoglobin your patient possessed. Your article only indicates that she had sickle cell trait (AS). Ordinarily, sickle cell trait patients possess 30% to 40% S hemoglobin; however, rarely there are circumstances in which sickle cell trait patients possess quantities of S

hemoglobin that ranged 50% and they are designated as having SA rather than AS hemoglobin. Was this a possible factor in this patient's death?

I have a comment regarding the autopsy finding of massive sickle cell in all organ systems. Although it was alluded to in your article, I would like to emphasize that such postmortem findings, even with sickle cell trait patients, is the rule rather than the exception. However, almost always they represent changes that occurred after death when, of course, there is total deoxygenation of both arterial and venous blood. Hence, one actually cannot assume that these post-mortem sickle cell changes also preceded the actual event.

Lastly, it is interesting to note that your patient had premature rupture of the membranes. I am familiar with a single uncontrolled retrospective study in the literature which suggests that premature rupture of the membranes occurs more frequently in sickle cell trait patients than in the general population. Perhaps this finding for sickle cell trait patients warrants further study.

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REFERENCE

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Reply

To the Editors:

We appreciate Dr. Foster's comments regarding autopsy findings of massive sickle cell in patients with sickle cell trait. As we mentioned in the paper, this is far from conclusive evidence that a sickle cell is a direct cause of problems in these patients. We are making a clinical observation with the intention of arousing interest in this matter. Perhaps further case studies, including antemortem red cell morphologic studies will clarify this matter.

We thank Dr. Foster for his clinical observation that premature rupture of the membranes may be associated anecdotally with sickle cell trait. We are currently engaged in a large multicenter cooperative study funded by the National Institutes of Health which ex-

amines prematurity, premature rupture of the membranes, etc., from the point of view of genital infectious etiology. However, once this study of 15,000 to 20,000 patients is completed, there should certainly be enough data to include sickle cell trait as a variable in patients with premature rupture of the membranes.

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Confirmation of xeroradiography as an important postmortem fetal diagnostic technique

To the Editors:

We were delighted to see the recent report by Eljalel and associates stressing the importance of xeroradiographic imaging techniques for fetal material (Eljalel BR, Eljalel MM, Gilman M. *Am J Obstet Gynecol* 1985;151:666). Our program has been using this technique for the past 8 years, and we have also found it to be a useful approach for examining aborted fetuses. In our study we emphasized the enhanced visualization of soft tissues with this technique and reported examples of such fetal abnormalities as acardia, neural tube defects, nuchal cystic hygroma, and arthrogryposis. Using newborn kittens and chickens, we were able to compare images derived from standard radiographs, xeroradiographs, and alizarin staining. The quality of the xeroradiographic images is clearly superior. We were delighted to see this technique applied to skeletal dysplasias and also to witness the use of contrast media to better visualize lumbar viscera.

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Eileen P. Ramsey, R.N., B.S.
G. Millard Simmons, Jr., M.D.
Harte C. Crow, M.D.

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Clinical Articles

2001: The challenge in education in obstetrics and gynecology

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The Association of Professors of Gynecology and Obstetrics (APGO) Initiative '86 was an invitational forum conducted in Dallas, Tex., on November 23-25, 1986. The majority of APGO Member Departments sent representatives to discuss the major problems confronting education in obstetrics and gynecology. Ninety faculty members, including 37 chairmen, participated in the discussions. Solutions and recommendations were developed for each of five major issues:

1. What and how should we teach?
2. How should the emphasis in education change?
3. How can we salvage the fourth year as an educational experience?
4. How do we use the changing patient care environment in planning education programs in obstetrics and gynecology?
5. How do we identify, motivate, and teach the teachers?

Issue 1: What and how should we teach?

Expectations of our graduates continue to be redefined as our knowledge base expands and teaching methods evolve. We must decide what and how we should teach.

Problems

Inconsistent input by the clinical departments into the basic sciences curriculum. The basic science curriculum should provide the solid foundation that students need to pursue a clinical education. Many basic science curricula are designed to the needs of the graduate student rather than to those of a medical student. Therefore, despite the enormous amount of time devoted to the

completion of the basic science curriculum and the significant student effort that is required, the result may not be the most appropriate one for the student of medicine.

Lack of uniformity of obstetrics/gynecology curricula nationwide. The significant variation in obstetrics/gynecology course content throughout the nation makes it difficult to evaluate the entry level knowledge of obstetrics/gynecology medical graduates from various colleges of medicine. This is true not only for students planning a career in obstetrics and gynecology, but also for those planning careers in which a solid fund of knowledge, skills, and behavior relative to obstetrics and gynecology is pertinent. The lack of uniform curricula contributes to the inherent difficulties in the resident selection process. Also, the lack of uniformity makes it difficult to structure the first year of residency because resident candidates enter with differing backgrounds in obstetrics and gynecology.

Lack of precision in student evaluation and feedback. The lack of precision in student evaluation interferes with the ability to provide appropriate feedback to students to promote their growth and development and impedes counselling to students and the suitability of various resident education programs to the individual student. Inadequate evaluation or feedback contributes to the difficulty in discriminating among residency candidates.

Skills, attitudes, and values receive less emphasis than cognitive knowledge. The expanding knowledge base in obstetrics and gynecology, coupled with the limited time devoted to the third year clerkship, causes the emphasis to be on the acquisition of cognitive knowledge to the detriment of skills, attitudes, and values. Lost is the unique opportunity of our specialty to teach the skills, attitudes, and values associated with women's health care. These are important to all students regardless of future career goals. The emphasis on cognitive knowledge causes the students to reduce their attention to clinical activities. This diminishes the acquisition of skills, attitudes, and values.

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Proceedings of "Initiative '86" forum of the Association of Professors of Gynecology and Obstetrics, Dallas, Texas, November 23-25, 1986. Additional contributors are listed at the end of the article.
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The knowledge base is oriented to the interests of the specialty rather than to the needs of the undifferentiated medical graduate. Although more than 90% of all students do not enter obstetrics and gynecology as a career, the curriculum often is aimed at a pre residency or postgraduate year 1 level. Such a curriculum does not satisfy the needs of the third-year student but rather promotes the incomplete learning of unnecessary information. This approach interferes with a solid grounding in the basic knowledge, skills, attitudes, and values pertinent to the undifferentiated medical student graduate.

Inconsistent utilization of problem solving formats and other teaching methods. Many teaching programs still use the lecture format exclusively. They do not take advantage of teaching methods such as problem solving formats and case study formats. Such interactive formats not only address the cognitive knowledge base but also the development of clinical reasoning, skills, attitudes, and values that are pertinent to all students.

Inconsistent utilization of the unique teaching opportunities of the obstetric/gynecologic patient environment. The obstetric/gynecologic patient environment provides teaching opportunities in many areas including primary health care, specialty health care, preventive medicine, and patient education. Also, multiple social and ethical issues are encountered that provide unique teaching experiences. Opportunities to teach skills, attitudes, and values are neglected because of curriculum design, teaching methods, constraints on faculty time, and faculty preoccupation with other activities.

Lack of coordination nationwide within organizations and institutions to maximize efforts and resources in the continuum of education (student/resident/continuing medical education). Organizations such as APOG, Council on Resident Education in Obstetrics and Gynecology (CREOG), and American College of Obstetricians and Gynecologists (ACOG) expend considerable time and dollars in education, often overlapping each others' efforts. Similarly, duplications occur within institutions and departments due to a lack of communication and coordination.

Recommendations

Obstetric/gynecologic departments should participate in the planning and teaching of the basic science curriculum. In addition to involvement in curriculum development, the department faculty should assist in teaching by the presentation of clinical correlation conferences and clinical subjects. The basic science curriculum will better prepare the student of medicine for further learning and skills development in the clinical years if the basic science curriculum is relevant and attuned to the needs of the student of medicine.

APOG should continue to update the Instructional Objectives regularly. It is important that the Objectives de-

fine what is expected of the undifferentiated medical graduate. The Objectives also should stress the unique patient care relationships and other opportunities of the obstetric/gynecologic clerkship to teach cognitive knowledge, skills, attitudes, ethics, interpersonal relations, and the health maintenance of women. Many obstetric/gynecologic clinical situations involve contact with other services, which promotes the teaching of the consultative role and departmental interactions. The Objectives should not read like the table of contents of a textbook.

Departments should use the APOG Objectives to expose students to a consistent core curriculum. The use of the APOG Objectives nationwide would provide indirect benefits including the ability to better evaluate resident candidates. Knowing that all first-year residents have common entry-level knowledge exposure would allow for more effective design of the resident education program. This would promote the concept of education as a continuum from medical school through residency.

The National Board of Medical Examiners should continue to link its examinations to the APOG Objectives. The linkage of the examination process to the objectives appropriately demonstrates curriculum-driven evaluation process. Commonality of curriculum content and testing methods promotes the ability to evaluate students and programs nationwide.

Faculty should use multiple education formats. Lectures continue to receive criticism from both students and educators as a teaching technique. The use of additional teaching formats becomes necessary, as do teaching efforts directed toward areas outside the cognitive knowledge base. Methods should include but not be limited to problem solving techniques, case study methods, gynecologic teaching associates (standardized patients), and computer technology. Small group clinical conferences and patient management problems provide the opportunity to teach skills, values, and attitudes and to practice clinical reasoning/problem solving. Curriculum (clerkship) coordinators (directors) should act as leaders in their departments to introduce and use various teaching methods. Gynecologic teaching associates (standardized patients) should be used in teaching and evaluating history, physical examination (including pelvic examination), and interpersonal relations. Students must have adequate cognitive knowledge if they are to function effectively in the clinical setting.

The Undergraduate Medical Education Committee should coordinate the development and utilization of multiple evaluation methods and feedback. Evaluation techniques must assess the students' cognitive knowledge as well as non-cognitive factors pertinent to the functioning of the physician. As the process of evaluation becomes more defined yet more complex and as more interactive eval-

uation methods using computer technology develop. APOG should play a leadership role in the development of such methods. APOG should provide evaluation instruments to departments as requested. The Undergraduate Medical Education Committee should pursue joint evaluation efforts with the National Board of Medical Examiners, CREOG, and ACOG. To complete the evaluation process, each department must have a well developed system of feedback to the students. The student needs definitive feedback (management plans) regarding strengths and weaknesses on which to build and improve.

APOG should continue the Faculty Development Workshops. These workshops are designed to appeal to faculty in all aspects of obstetric and gynecologic education. These seminars provide the opportunity for faculty, department chairmen, and curriculum coordinators to refine and create education and evaluation theory and techniques and to be exposed to educational developments in departments across the country.

APOG should work to promote the concept of education in obstetrics and gynecology as a continuum. It should be stressed to students that medical school is the beginning of an ongoing continuous education through their years as students, residents, and practicing physicians. A basic medical school education and residency promotes the development of core knowledge, technical skills, and attitudes. This is a foundation on which to build for the future by continuing medical education. APOG, CREOG, and ACOG should combine their resources to promote a continuum of learning objectives, develop an electronic data base with a user network, develop evaluation methods and an evaluation center, prepare educational manuals of education techniques and methods of evaluation, develop and coordinate teaching materials, and conduct education seminars. Cooperative efforts should be productive and cost-effective. These efforts to educate our students, residents, and practicing physicians will in turn support the objective of maintaining and improving the health care of women.

Issue 2: Should the emphasis in education change?—Living with general professional education of the physician (GPEP)

As we look at the evolving educational programs, we discover that our expanding knowledge base has been indiscriminately directed at the student, and that this vast knowledge has been concentrated rather than focused. We must decide if our current approach is acceptable for student education.

Problems

Overemphasis on the knowledge base to the exclusion of other concerns. The knowledge base is expanding rapidly. Student education programs have tried to embrace this

knowledge explosion without consideration of whether this knowledge is appropriate to an undifferentiated graduate.

Specialty oriented curriculum. Unlike disciplines in which the knowledge base transcends specialty lines, obstetrics/gynecology has directed its curriculum toward a highly specialized knowledge base that the majority of students will seldom use. Students have been required to develop this specialized knowledge base to the exclusion of the general knowledge, skills, attitudes, and values that can be taught by obstetrics and gynecology and used by the students regardless of their long-term career goals.

Lack of focus on the purpose of a general professional education. The purpose of a general professional education includes acquisition of knowledge, stimulation of self-directed learning, and development of skills, attitudes, and values.

Recommendations

Departments should promote a curriculum that stresses a strong knowledge base appropriate to the undifferentiated medical graduate rather than the special interests of the specialty and its faculty. The student should develop a knowledge base that can be specialty choice to provide better health care of women regardless of their specialty choice. Considering the magnitude of the knowledge base, the idea of a continuum of education (students/residents/continuing medical education) is particularly important.

Departments should incorporate the balanced formal teaching of skills, attitudes, and values into the curriculum. A sound knowledge base is essential to the ability to solve problems and care for patients. Therefore, a balanced teaching emphasis is important. Skills, attitudes, and values cross specialty lines and are important in the education of the undifferentiated medical student.

Departments should maximize the unique teaching opportunities in obstetrics and gynecology. These opportunities include the role modeling of patient-physician interpersonal skills; clinical experiences pertaining to skills, attitudes, and ethics; various aspects of the preventative health care of women; and the interaction with other specialties and health professionals. These teaching opportunities represent areas of lifelong concern to the student. They exist in all obstetrics/gynecology clerkships and should not be lost.

The curriculum and faculty should emphasize self-directed, self-sustaining learning and evaluation as a career pattern. Curriculum design and the use of various teaching methods can promote the necessity and methods of lifelong learning and self-assessment. Conscious promotion of this concept can contribute to the success of our students as lifelong learners and providers of good health care.

Departments should utilize computer technology. As the

knowledge base expands and technology improves, computers can be used in information management, teaching, and evaluation. Personal recall will not be sufficient for the practice of medicine as the knowledge base continues to evolve. Time and cost-effectiveness can be served by the adaptation of computer technology to appropriate teaching situations.

Departments should expand their evaluation methods beyond measurement simply of the knowledge base. As the development of knowledge, skills, attitudes, and values is emphasized, appropriate methods must be used to evaluate the knowledge base and noncognitive factors. The evaluation process should be combined with prompt in-depth feedback (management plans) and development of special programs for exceptionally talented students as well as for those students needing improvement. The feedback process is a critical aspect of enabling the learner to develop to his or her utmost.

Issue 3: How can we salvage the fourth year as an educational experience?

Fourth-year curriculum time, which is aimed at completion of the general medical education for the undifferentiated graduate, has been eroded by residency search efforts. This must be remedied.

Problems

Efforts of the students are directed at residency search rather than the completion of a general medical education. The competitiveness for residency programs in obstetrics and gynecology, coupled with the desires of some residency program directors to have resident candidates serve fourth-year electives ("interview electives"), interferes unnecessarily with the education of students. These issues have caused many students to spend a significant portion of their fourth year performing electives related to residency search rather than spending their time completing their general medical education. Other clinical experience that would complement their education and future career goals are missed needlessly. This cascade of events has compromised the effective completion of the general medical education during the fourth year.

Lack of curriculum objectives. The fourth year has become unstructured, with no specific goals or guidelines for students as they design their fourth-year experience. The lack of constructive criticism, effective feedback, and development of long-range management plans for students as they progress through the third year interferes with the selection of fourth-year activities that would build on prior experiences. The absence of fourth-year curriculum structure results in students relying on their own interpretation of which electives and selectives to pursue.

Lack of an effective faculty advisor career counselling program. Ineffective or nonexistent faculty advisor career counselling programs result in third-year students re-

lying on their own interpretation of which electives and selectives to pursue in the fourth year. Just as ineffective, students may rely on the casual advice of classmates, fourth-year students, residents, or random faculty who may be providing anecdotal "curbside advice." Thus opportunities may be lost to pursue learning experiences that will complement career goals.

Lack of meaningful evaluation and feedback to promote learning in the fourth year. Students are left to wander through the fourth year without productive faculty evaluation or feedback to help them in their future learning experiences. Feedback is essential for fourth-year students. Without evaluation and feedback, students who may require special experiences designed to improve their performance will not be identified. Without feedback, improvement cannot occur. Thus such students graduate without having their weaknesses identified and improved. Feedback is equally important to exceptional students to help them excel and determine career areas in which they may be able to use those special talents.

Recommendations

Faculties should promote the fourth year goals as (1) completion of the general medical education rather than initiation of specialty training, and (2) preparation of students for lifelong learning. Adoption and statement of these goals by faculties would add direction to fourth-year curriculum planning, impact positively on students' attitudes regarding the fourth year, and support a more structured approach to the fourth-year curriculum, by which students would choose electives and selectives to meet their individualized needs.

Department chairmen should support a structured fourth-year curriculum, to take place primarily on campus. The fourth-year curriculum should be divided into (1) a core curriculum for all students and (2) an enrichment segment consisting of electives and selectives for students' individualized needs and career goals. Faculty advisors should be knowledgeable about the students and their curriculum options and serve in a guiding, motivational role. It was the consensus of this Forum that department chairmen should support the philosophy that more structure and direction is necessary in the fourth-year curriculum. A core of information exists that should be offered in the fourth year that is pertinent to the general medical education of all students of medicine. Additionally, based on prior evaluation of, feedback to, and the career goals of students, an enrichment segment of electives and selectives should tailor the fourth-year curriculum specifically for individual students. Improvement of the advisor and career counselling roles of faculty members and by having them well grounded in the goals and curriculum of the fourth year, would contribute to an educational fourth year.

APGO should develop recommendations for the "enrich-

ment" portion of the fourth-year curriculum for students preparing for a career in obstetrics and gynecology. A consensus was reached that recommendations for the fourth-year curriculum would allow standardization across the country. Residency education programs would know that students who completed such a curriculum would have similar entry characteristics. Although the curriculum would not be "required" but rather recommended, this would provide a framework for the students and their faculty advisors as they make their fourth-year decisions. Such a recommended fourth-year curriculum would promote a smoother transition from the fourth year to residency and promote the concept of a continuum of education from student years to residency.

Departments should agree to abandon the stated or implied requirement that students serve on-site electives to be considered for residency. Many departments have such requirements and many students have the perception that these electives will enhance their consideration for a residency position. This practice interferes with the completion of a general medical education. This detrimental infringement on the fourth-year curriculum has been created by many factors including our residency programs themselves. This problem will not be resolved until departments universally agree to abandon this requirement of residency search electives and stress this message to students in a believable manner. APOG should work with the American Association of Medical Colleges and other groups to eliminate the concept of residency search electives and to promote a smooth transition from the fourth year to residency.

Students planning careers in obstetrics and gynecology should have experiences in the fourth year that include little or no obstetrics/gynecology. The APOG recommendations for the fourth-year curriculum should include no obstetrics and gynecology but rather include those disciplines that would contribute to a well-rounded general medical education. Emphasis should be placed on courses that promote knowledge, skills, values, and experiences useful as student begins a career in obstetrics and gynecology. Spending substantial fourth-year time in obstetrics/gynecology electives is considered unnecessary and potentially detrimental to residency preparation.

Department faculties should endorse a strong faculty advisor, career counselling program. Counselling should include considerations such as: (1) what really is the specialty of obstetrics/gynecology; (2) what personal factors impact on consideration of obstetrics and gynecology as a career choice; (3) what will be the impact of obstetrics and gynecology as a career on one's personal life; (4) what are the unique career opportunities within the specialty; (5) what curriculum endeavors will help to prepare a student for a career in obstetrics and gynecology; and (6) what are the special characteristics

of various residency programs across the country? The Forum concluded that the current faculty advisor systems in many schools should be modified because they do not provide students with a true understanding of the role of the obstetrician-gynecologist. Furthermore, they do not provide insight to students into the personal characteristics beneficial to a career in obstetrics and gynecology, and they do not counsel students for "success in the residency match in obstetrics and gynecology." APOG should develop a recommended format and specific guidelines for faculty advisor and career counselling role.

Departmental chairmen and deans should support modification of the match process through National Resident Matching Program. The turnaround time for match results should decrease to less than 3 weeks. A structured interview process should occur and be limited to 4 to 6 weeks. The release of "Deans' letters" and faculty letters of recommendation should be delayed until later in the year (November 1). Fortnight faculty letters and Deans' letters should be encouraged and include specific comments regarding cognitive knowledge and noncognitive factors. The APOG Undergraduate Medical Education Committee should develop a list of suggested key items for inclusion in faculty and Deans' letters of recommendations for fourth-year students for residency positions. Alternately, a standardized recommendation form could be developed for students pursuing a career in obstetrics and gynecology. Such an approach would improve the overall match both for the student and the residency education programs. These changes that have been proposed should be accomplished as soon as possible in order to reduce the detrimental impact of residency search on the fourth-year curriculum.

Issue 4: How to utilize the changing patient care environment in planning education programs in obstetrics and gynecology?

The changing patient care environment is having a tremendous impact on the potential for, and methods of, education. A course of action must be charted to meet these challenges and changes.

Problems

Reduced patient population. As attention is directed toward outpatient care, the number of appropriate patients in inpatient services is reduced.

Fewer teachers. Full-time faculty have had to decrease the amount of time they devote to teaching because of an increase in their activity in other areas such as income-producing practice.

Increased reliance on technology. There has been increased reliance on technology, coupled with increased reliance on nonphysician educators. This interferes with student education by decreasing faculty role modelling.

Recommendations

Encourage outpatient activities. The faculty should increase their role modelling opportunities in patient contact situations rather than abdicate this role. To allow students and residents to participate in the decision making process relative to the care of obstetrics and gynecologic patients, the use of faculty-supervised outpatient clinics should be increased. Because outpatient care is a major activity for the obstetrician/gynecologist, increasing student participation should increase the role modelling opportunities relative to patient interaction. As the majority of the meaningful patient management decisions are made before the admission of patients to hospital services, such outpatient opportunities are absolutely necessary to teach clinical management.

Department chairmen should emphasize to the full-time faculty their responsibility to teach students. Such responsibility should not be delegated to others.

Faculty should be mentors and advisors. Education of students can be promoted by an appropriate mentor advisor system that recognizes the inherent benefit of such an approach and rewards participation in such a program. As with role modelling relative to patient care, this becomes a strong force in the education of students. Successful planning of a student's fourth-year curriculum and planning for future career activities could be markedly enhanced by well-informed, active faculty involvement as mentors and advisors.

Encourage evaluation of the curriculum by department self study and by school curriculum committees. An effective curriculum can be promoted if departments evaluate themselves, as they would review a research program or as they would approach a quality assurance program relative to patient care. Without such an ongoing critical appraisal of the process of education, successful strides cannot occur.

Use other specialties and health care professionals in teaching. Other health care professionals and specialists who have contact with obstetrics/gynecology students should be encouraged to fulfill their roles and responsibilities in teaching. The specialty of obstetrics and gynecology involves unique interactions with numerous health care professionals and involves multiple consultation services. These can be unique learning opportunities for students relative to personal interaction with colleagues and appropriate use of consultative services.

Departments should coordinate their teaching at regional centers when appropriate. In many areas, multiple teaching services exist within a confined geographic area. In such situations, certain teaching opportunities for several schools might well occur at a regional center rather than teaching within the more limited resources of the individual schools.

Marketing and education of the consumer. Departments should emphasize the benefits rather than apologize for the presence of these programs. An aggressive marketing and education effort could portray the educational endeavors as a positive force in the health care delivery system. This approach should be used in discussions with patients, universities, and legislatures concerning education and funding for patient care.

Technology. Departments should promote the use of technologic advances in information management and interactive teaching without sacrificing student-faculty contact. Technology should be used to its utmost but should not be a replacement for student-faculty interaction and role modelling. The appropriate use of technology should increase the amount of time the faculty can spend in productive activities with students.

Issue 5: How do we identify, motivate, and teach the teachers?

Despite the expanding knowledge base and expanding methods for teaching and evaluating, schools of medicine place less credibility on student education than other faculty activities. Therefore, as other pressures mount, the faculty members abdicate teaching responsibilities for other pursuits. In time, education programs and health care could suffer. It is imperative that teachers and teaching efforts be placed in perspective.

Problems

Faculty perception of their teaching efforts as undervalued, underpraised, underpaid, and of low priority. Those with a "subspecialty" in education are second-class department citizens. Despite the fact that a major responsibility of a "medical school" ought to be medical education, the maximum prestige, recognition, and rewards go to those whose primary efforts are in research and clinical practice. This is particularly true as the practice plan pressures mount to provide funding for departments and schools of medicine. Despite the teaching education expertise of the faculty and the devoting of time and energy to teaching, education efforts go unrecognized and unrewarded, with a "who cares" attitude in many departments.

Lack of deans', department chairmen's, and faculties' commitments to student education. With the lack of commitment of our leadership, it is natural that education programs and educators should soon become second-class citizens. With a lack of commitment to education, the efforts and hours devoted to teaching will decrease and ultimately education for all will suffer. The secondary benefits of education programs will diminish and the quality of health care will deteriorate.

Conflicts relative to tenure and promotion for teaching. Those with expertise and interest in education find that this track usually will not lead to appropriate promotion

and tenure. Thus education and educational endeavors become relegated to a lesser position.

Inadequate methods of evaluation of teaching ability. As a significant attempt is not made to evaluate teaching ability and acknowledge success in that regard, there has not been an effort to recognize teaching ability.

Allocation of department resources to other priorities. As competition increases for department resources, the previously noted problems contributed to education programs failing to achieve an appropriate allocation of department resources.

Economic pressures from faculty, deans, and department chairmen to devote time to practice plan and patient care activities, with teaching time becoming a liability. As it becomes necessary for patient care activities to finance departments and medical schools, faculty feel the pressure to produce financially. Teaching activities and their preparation require time, which therefore decreases time for financial productivity. Therefore, teaching is considered a liability and the faculty abandons educational endeavors.

Recommendations

Deans should acknowledge student education as a primary mission of medical schools and provide budgetary support. A significant change will not occur in perceptions and efforts regarding education until administrative leaders decide and proclaim that student education is important and that there is budgetary support for faculty education activities. As long as the leadership perceives teaching time as "nonproductive time," education endeavors and student education programs of excellence will not be fully developed and promoted. As research is funded from various sources and practice time is paid by patient care dollars, teaching time must be reimbursed by direct budgetary support of the departments and the schools of medicine. The schools of medicine should support and reward the faculties' educators in student education.

Department chairmen should support and reward student education as a primary departmental mission by their own role modelling and dedication of resources, including staff, time, and dollars. Until department chairmen demonstrate their doubt and carry out their responsibility for student education, the faculty will not consider education an important activity. As department chairmen encourage and reimburse patient care time, they should encourage, budget, and reimburse for efforts relating to education. Until this is accomplished, talent and time will be devoted to other activities considered by deans and department chairmen to be of greater importance than education. Students will be less likely to excel and health care will suffer.

Department chairmen should provide funding for local and national education seminars for faculty. To promote growth of the department educators and the department ed-

ucation programs, education seminars should be funded as are other professional educational activities. Departments that do not have enough faculty with educational talents and academic administrative expertise should devote special funding to qualified faculty to improve their educational ability as quickly as possible.

Departments should conduct annual seminars on "teaching residents how to teach." Residents have significant contact hours with students but at the same time often are the most inexperienced and uninterested teachers. Such seminars could increase the residents' teaching abilities to maximize the educational benefit of their contact hours with students, promote residents' self-learning concepts and styles, and serve as a means to stimulate and recruit residents to the faculty.

Department chairmen should establish a "division of education" in the department. This division should have a physician director, budgetary allocation, and a support staff. Such a division would be equivalent in all regards to the other subspecialties. This division would recognize the educational interest and expertise of those faculty who devote their time and administrative talents to education. The responsibilities of members of such a division would be the coordination of the efforts of the members of the faculty regarding all aspects of education, teaching, research in education, and patient care. The members of such a division would not be the only teachers within the department but rather would coordinate and plan the efforts of all regarding the various department education programs. As with the department's other subspecialists, the day-to-day activities of the educators would deal with patient care, research, and teaching. The educators would not be segregated but would instead be using their special interests and expertise as would any subspecialist, in addition to contributing to the overall efforts of the department.

As with any subspecialty, it is the obligation of those with a major interest in education to pursue and publish research in education. Such efforts should include interdisciplinary projects and goals coordinated with the professional educators of the department/or school. Research in education will contribute to growth and development in education programs. This in turn will promote the academic growth of the department and school, produce better prepared students and residents, and contribute to quality medical care.

Department chairmen and deans should establish an institutional or a departmental education office. Such an office would provide professional educator and administrative support to the department's student, resident, and continuing medical education programs. Many advances have been made in the field of education. Just as the specialty relies on the capabilities of many consultative and support services, departments should

have available the support services of an education office and its staff of professional educators. Such support can contribute to the growth and success of student, resident, and continuing medical education programs.

Departments should evaluate teaching ability. The evaluation of the teaching ability of the faculty is important to promote the success of the teaching programs. It should be recognized that education is a science and can be taught. Teaching talent is not necessarily "born" nor is it bestowed on physicians when they receive their medical degree. Just as poor researchers or poor clinical practitioners would not be allowed to continue their activities without remediation, poor teachers should not be allowed to continue in their teaching roles without help. Multiple formats are available to evaluate teaching. One format would be to develop a mentor program by which faculty with education expertise would critique and assist other faculty.

The APO Council through the Undergraduate Medical Education Committee or an ad hoc task force should develop recommendations for a system for the evaluation and certification of educators. The intent is to promote education as a subspecialty within the discipline. Such a system could include recognition for completion of advanced study, attendance at education seminars and workshops, and research, publications, and presentations relative to education and ongoing activities within the field of education in obstetrics and gynecology.

APGO should continue the annual education seminars. Teaching methods, evaluation methods, and other educational issues should be included. These seminars are important forums for faculty to communicate and exchange ideas. The APO efforts should be coordinated with CREOG and ACOG. The APO Annual Faculty Developmental Workshops could provide student and resident educational topics in various concurrent sessions that would be useful to department heads, student curriculum directors, residency program directors, senior faculty, and junior faculty. These types of meetings are important to communication and the interchange of ideas and to keep faculty informed of educational developments, just as other professional meetings keep faculty abreast of scientific developments in the various other subspecialties.

APGO should assist regions and departments in providing local education seminars. Regional meetings of several departments or meetings conducted especially for local departments can promote the teaching skills of the faculties. Departments that do not have education expertise within their department or school could utilize the assistance of APO in providing education seminars for their faculty. Such seminars could contribute to improving the overall teaching ability of the faculty in the various student, resident, and continuing medical education programs.

APGO should provide consultant groups to departments. The consultant groups, on request, would survey departments' education programs; brainstorm with the department chairman, education director, and faculty; and evaluate department resources and identify budgetary and staff needs. Such efforts could be particularly useful to departments as they assess their staffing needs, conduct budgetary negotiations, and pursue long range planning.

APGO should develop educational manuals for faculty development, curriculum planning, and evaluation. Cooperative development of such manuals with CREOG and ACOG as joint projects would allow this to be accomplished with greater ease than could be done individually by departments throughout the country. The cooperative efforts of APO, CREOG, and ACOG could be brought into play thus capitalizing on individual strengths and avoiding duplication of efforts.

Recommended APO projects

1. The APO Council should initiate a cooperative effort with other groups including ACOG and CREOG to develop a vehicle to promote education in obstetrics and gynecology as a continuum.
2. The APO Undergraduate Medical Education Committee should regularly update the APO Instructional Objectives.
3. The APO Council should encourage department chairmen, deans, and university administrations to support and recognize teaching by (1) establishment of a division of medical education within each department of obstetrics and gynecology; (2) promotion of faculty based on factors including teaching ability; and (3) reward of faculty for teaching efforts and excellence.
4. The APO Council should endorse the unique opportunities of obstetric and gynecology to teach and evaluate skills, attitudes, and ethics. These opportunities should be stressed in the APO Instructional Objectives and included as a topic for the annual faculty workshops.
5. APO should provide regularly scheduled education seminars—the Annual Faculty Development Workshop, small group discussions and panels at the APO annual meetings, and regional/local seminars for department faculty and residents.
6. The Undergraduate Medical Education Committee should provide education consultant teams.
7. The Undergraduate Medical Education Committee or an ad hoc task force should develop educational manuals including the topics of faculty development, curriculum planning, teaching methods, as well as student, faculty, and cur-

riculum evaluation. These manuals should be developed as a cooperative effort with other groups such as CREOG and ACOG.

8. APOG should serve as an educational materials resource clearinghouse in association with ACOG. The APOG Bulletin Board and the educational manuals could serve this function. Utilization of computer technology in information management should be considered in coordination with the resources of ACOG.
9. The APOG Council should endorse the use of gynecologic teaching associates (standardized patients) in teaching and evaluation.
10. The Undergraduate Medical Education Committee should coordinate the development and use of multiple evaluation methods and feedback through joint projects with the National Board of Medical Examiners, ACOG and CREOG and through local, regional, and national education seminars and consultant site teams.
11. The Undergraduate Medical Education Committee should develop a list of key items for inclusion in faculty and deans' letters of recommendations for fourth-year students for residency positions.
12. The APOG Council through the Undergraduate Medical Education Committee or an ad hoc task force should develop recommendations for a sys-

tem for the evaluation and certification of educators to promote education as a subspecialty within our discipline.

13. The Undergraduate Medical Education Committee should develop recommendations for a fourth-year curriculum for students pursuing a career in obstetrics and gynecology.
14. The APOG Council through the Undergraduate Medical Education Committee or an Ad Hoc Task Force should interact with the American Association of Medical Colleges and work in concert with the recommendations of the American Association of Medical Colleges to eliminate the concept of "residency search electives" and promote a smooth transition from the fourth year to residency.

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or compromised airway, the obstetrician proceeds single-mindedly with a cesarean section to save that premature baby while a tracheostomy may save the lives of both the mother and fetus.

I accept that management of the airway is the anesthesiologist's responsibility. I also know that the latter may be able to ventilate the lungs through a cannula or a tube in the cricothyroid membrane.² Nevertheless, a tracheostomy may be the last resort to save the patient's life. I believe that such a surgical procedure should be mastered by every obstetrician, especially with increasing cesarean section rates and in dealing with high-risk obstetrics.³ I also believe that performing a cesarean section with the mother under local anesthesia, although far from being ideal, should be taught to residents and practiced periodically. It may be the only safe way to deliver a baby when all anesthetic methods fail or are life-threatening.

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Correction

In the article by Cummings and Waxman, entitled "2001: The challenge in education in obstetrics and gynecology" (*AM J OBSTET GYNECOL* 1988;159:13-21), the additional contributors listed on page 21 should have been included as authors. The correct author and city lines are as follows:

Robert V. Cummings, MD,* Henry Waxman, MD,* Charles R. B. Beckman, MD,* George Carson, MD,* Henry W. Foster, Jr., MD,* William E. Gold, Jr.,* William N. F. Herbert, MD,* Frank W. Ling, MD,* Sharon E. Pichon, MD,* and Robert H. Seidman, MD*
Tempe, Texas, Washington, D.C., Chicago, Illinois, Calgary, Alberta, Canada, Nashville and Memphis, Tennessee, Chapel Hill, North Carolina, Albuquerque, New Mexico, and Los Angeles, California

The correct From line is as follows:

From Texas A&M University,* George Washington University,* University of Illinois,* University of Calgary,*

The value of endometrial histology in ectopic pregnancy

To the Editors:

Ollendorff et al. (Ollendorff DA, Fejgin MD, Barzil M, et al. The value of curettage in the diagnosis of ectopic pregnancy. *AM J OBSTET GYNECOL* 1987;157:71) rightly point out that the changes in endometrial histologic characteristics associated with an ectopic pregnancy are unpredictable. The more practical problem is that the variable histologic pattern affords no predictable value that might assist in the suggestion of a possibility of ectopic pregnancy when endometrial biopsy specimens or curettage material is examined from any patients in the reproductive age range. In their review of the literature, the authors apparently overlooked our publication in the *Journal of Reproductive Medicine*, which indicated a false-positive rate of 97% when any of the standard histologic criteria for predicting the presence of an ectopic pregnancy are used. We attempted to point out that the effort on the part of the pathology department to exclude an intrauterine pregnancy by a thorough examination of endometrial material was a fruitless exercise and also contributed unnecessarily to increased medical costs.

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PRESIDENT'S REPORT

President Foster's Inaugural Report

"APGO continues to reinvigorate itself by utilizing the rich reservoir of talent residing in its membership."

APGO continues its unique contribution of providing excellence in medical student education as is attested to by this year's successful CREOG and APGO meeting. This is especially true given the fact that midpoint in our meeting preparation, a rather late change in locale was necessary because the original site began extensive hotel renovations. Much of the success in effecting this midstream site change is attributable to APGO Executive Director Donna Wachter, her staff and the staff of CREOG. Even with a few inconveniences in the exhibit area, our meeting goal was achieved.

Annual Meeting Reviewed

The 1993 annual meeting co-chairs, APGO's G. William Bates, MD, and CREOG's Robert J. Thompson, MD, and their committee chose a timely topic—"Technological Innovations in Medical Education." The meeting was designed to keep members fully and currently apprised of rapidly changing medical technology and techniques. The program focused on both the application of new technology in patient care and the use of new technologies as teaching tools for medical educators. For the latter, the APGO Quiz '93 computer interactive education tool is but one example as demonstrated by Doctors Diane Magrane and Mel Barclay to meeting attendees.

As was anticipated, Warren Pearse, MD, ACOG Executive Director, delivered an eloquent Wayne Johnson Memorial Lecture, "And David Sang the Psalms—A Reprise." We again welcomed the Association of Managers of Gynecology and Obstetrics (AMGO) and the Council of University Chairs of Obstetrics and Gynecology (CUCOG) as full participants in the annual meeting.

'94 Officers Announced

APGO continues to reinvigorate itself by utilizing the rich reservoir of talent residing in its membership. R. Jeffrey Chang, MD, has been named President-Elect; Frank Ling, MD, Secretary-

Treasurer and William Herbert, MD, Secretary/Treasurer-Elect. The chairmanship of the Nominating Committee moved to Martin Pernoll, MD, our Immediate Past President. Serving with Doctor Pernoll are Joanna M. Cain, MD, Frederic Frigoletto, Jr., MD, Harry Jonas, MD and Leslie Walton, MD.

UMEC Acclaimed

In my judgment, the Undergraduate Medical Education Committee (UMEC) is the very soul of our organization. I had the honor to serve on this Committee under the able leadership of our departed colleague, Benny Waxman, MD. The high standard that he set has been advanced most effectively by Joanna M. Cain, MD; the current Committee chair. Other UMEC members include Lee Lee Doyle, PhD, Dee Fenner, MD, Martin Gimovsky, MD, Lewis Hamilton, MD, Gaylyn Li-Ma, MD, Diane Magrane, MD, Gary Thurnau, MD, and Louis Vontver, MD.

APGO Challenges and Concerns

The challenges facing our organization are numerous, continuous and often inimical. Two are of particular concern to me. I have to pause when the Association of American Medical Colleges (AAMC) recommends abolishing obstetrics and gynecology as a required clerkship for American medical students. I am unaware that a similar recommendation has been made for pediatrics. However, as is known, we rank 21st, 19th or 17th, depending upon who is counting, in infant mortality in industrialized nations. The biological interrelatedness of obstetrics and pediatrics, in fact, makes the two disciplines a continuum, not only functioning in tandem, but also in parallel during gestation. The pedagogical separation of pediatrics from obstetrics and gynecology is, in fact, an artificial uncoupling done primarily to facilitate teaching. Students' ability to best learn pediatrics will be compromised significantly if they are not taught the biodynamics of intrauterine human development—an integral part of the



Henry W. Foster, Jr., MD
Meharry Medical College
President, Association of Professors of
Gynecology and Obstetrics

course in obstetrics and gynecology for medical students.

The second major concern for our organization relates to the clinical environment in which our future teaching will likely occur. The primary care provided by obstetricians/gynecologists is not being recognized. And the need to recognize and acknowledge this role becomes greater as we move more toward managed care and as health care coverage is extended to the uninsured and the underinsured.

'94 Annual Meeting Plans Underway

APGO is very fortunate that Susan Cox, MD, is serving as chairperson of APGO's Program Committee for our 1994 CREOG and APGO Annual Meeting in Nashville, Tennessee. Robert Thompson, MD, continues as CREOG's Program Chair.

The meeting theme has been chosen: "Medical Education for the Twenty-first Century: A Need for a New Paradigm." The 1994 program is being designed to be proactive. We must do our best to anticipate how changes, such as managed care, the primary care role of the obstetrician/gynecologist and the new ethical imperatives mandated by changing technology, will affect how we can best teach obstetrics and gynecology in this changing academic milieu.

The 1994 meeting promises to be most meaningful. I look forward to seeing you here in Nashville, March 2-5, 1994, at the Opryland Hotel. ■

See photo of the passing of the gavel, page 4.

Metropolitan Times, Week ending June 22, 1983

Vol. 13, No. 31

The Times Interview

McCarthy's Foster foresees hospital transformation



Metropolitan Times, Week ending June 22, 1933

Vol. 13, No. 31

The Times Interview



... Meharry's Foster

Cont. from pg. 1

when the merger is completed.

Foster and Dr. David Satcher, president of Meharry, as well as Mayor Phil Bredesen, are looking increasingly like heroes. Bredesen got the merger plan through the council last summer by proposing a gradual phasing-in so the process could be halted at any time — a masterful stroke that disarmed council members skeptical of Meharry's ability to attract ample qualified physicians to staff General Hospital.

A consortium of nine of the city's financial institutions agreed to provide loans for recruiting physicians to Nashville for the merger. "That's a tangible expression of the confidence by the economic community of Nashville in this whole venture," says Foster.

A national blue ribbon committee was formed in January to advise Meharry on the merger, but he says its first formal meeting probably won't be scheduled until later this summer or in the fall.

The biggest remaining concern of the public as well as some council members is that "somewhere the quality of care will be less. They can't tell you why, except that that's just how they feel," shrugs Foster. "But what we're seeing here is nothing more than the same kind of support Vanderbilt has gotten in perpetuity when it was responsible for staffing General.

"If we're supported and have well-trained people, we can meet the standards as well as anybody — if not better. The real question that ought to be asked is, How can the school, with the many barriers it has had to face, continue to turn out these quality physicians year after year?"

About 50 percent of the medical schools in the country don't operate the hospitals for which they provide services. The "quintessential example" is Harvard University, which

doesn't own the hospitals where its interns and residents train. But while Metro will run Hubbard under the merger, Meharry will be the entity that determines "who the chiefs of the medical services are, defines what medical services we will deliver, and how we will meet the ... standards in delivering these services."

Meharry's mission

Meharry turns out an estimated 40 percent of the nation's African-American physicians and dentists. More amazingly, it produces 43 percent of the black faculty at American medical schools — schools where some of those professors would not have been admitted as students. "That's what justifies the mission of this school. It is real important for your readers to understand this.

"Meharry's mission is to provide care to the underserved, to the disenfranchised — that's our basic goal because those people have to be taken care of and nobody makes them a priority. That's been Meharry's priority since its inception."

Foster cites an independent study in the early 1980s which "stated clearly that individuals who are most likely to go into underserved areas to practice are those individuals who themselves are products of those environments."

This year Meharry received 4,600 applications for 80 slots in its medical school. The school could easily have accepted only those students whose Medical College Aptitude Test (MCAT) scores were as high as Vanderbilt's medical school candidates.

"But that would be counter to our mission. Because to my knowledge, and I don't care if you print this, I don't know of a Vanderbilt graduate that's ever gone into North Nashville to practice. Not one. And I've been here 20 years."

Meharry medical students are

required by the school to pass the national certifying examinations, which is optional at half the country's medical schools. Why the requirement? "We're in a racist culture. Our product is going to be second-guessed the minute a black doctor walks in there's this mentality. So, I want to make sure that everyone knows that the people we send out of here have met the very highest medical standards that this country has."

The School of Medicine realizes that its students come in "with a lot of baggage. They don't have the top MCATs all the time, but I know people can catch up. So, we put the [emphasis] not on entry to medical school but on exit, and that's not completely novel because a number of European countries do that. That's exactly what we do. We say, 'We'll take you.' Ninety-four percent graduate at Meharry. They might not all do it in four years but that doesn't terribly disturb me because I've known people who took up to 12 years to get a Ph.D."

"The real proof in the pudding is: Do we get them out? Yes. When they get out, are they well trained? Yes. And when they go, where do they go? Primarily to inner-city or underserved areas."

Foster recently was awarded the honorary Doctor of Science degree by the University of Arkansas for Medical Sciences, Little Rock. He is a native of Pine Bluff, Ark., who received his undergraduate education at Morehouse College in Atlanta and his Doctor of Medicine degree from the University of Arkansas in 1958.

Hubbard renovation

The next step toward merger, says Foster, is to let the bids for the architectural drawings to decide who's going to renovate Hubbard Hospital. There will be \$34 million in renovations and \$10 million worth of new equipment—a total

down," Foster observes. "Nashville, like so many cities, is over-bedded. On any given day there are 3,000 hospital beds in Nashville, but 1,000 of them are empty. We don't need to add new beds, we need ambulatory facilities," asserts the physician.

Hubbard's specialty units, which provide skilled nursing and psychiatric care, will be expanded and operated separately from the Metro hospital at Hubbard, but it will be housed in an existing building contiguous to the high-rise hospital building.

"The city will only be leasing the high-rise," he explains.

Nobody knows how many Hubbard employees will be displaced by General Hospital workers during the relocation. "We have been very sensitive and proactive about that since the beginning. We have recognized that this possibility could result; we did not ignore that. We are working toward early retirements. Number two, first right of refusal for job openings in the specialty units go to people from Meharry already. Thirdly, as positions open up at General Hospital we have asked for Meharry people to be given a choice of applying for those positions, which are going to be shuffled back to Hubbard" as the merger process continues.

No General Hospital employees will lose their jobs. "Combining the two hospitals will probably require a 25 to 30 percent increase in overall [personnel] from what is now at General. That's why we'll be able to retain some of the people over here," Foster explains.

North Nashville revitalization
Meharry's economic impact on Nashville now stands at \$220 million a year, Foster says. The institution, with 1,700 employees, is the largest minority employer in the Southeast. One out of every \$3 spent by African Americans in Nashville can be traced to Meharry.

opposed to a weakness.

"Yes, people have perceptions and knowledges and misperceptions and, of course, prejudices, which comes from the word 'prejudge'—without information. Surely, but that can be overcome. People have fears, apprehensions. But we've done a good job in helping lessen this barrier. Part of it emanated from the fact that we defined mutually with the city and Vanderbilt what the criteria would be for bringing people aboard."

"Now, that never bothered us. I felt people who had their suspicious worried, not knowing what we know. That the people we have brought on have been... board-certified by the American boards of whatever their specialty [is]. They've received all of their training."

"People really don't know what makes a good hospital; they know if they like it or they don't like it but they don't know whether it's good or bad," continues Foster. "That's why we have agencies to try to keep lawyers ethical and doctors honest, because people really don't know. People don't know that Hubbard is fully approved by the Joint Commission on the Accreditation of Health Care Organizations, which has very rigid standards which all hospitals have to meet to remain accredited, and we're accredited."

Some people wonder if whites will come to the city hospital when it relocates to Hubbard. Foster has a ready answer for that, too.

"They come here all the time. In our dental school, the majority of the patients are white and have been for years and years and years. They come. If you have a good product and the need is there, and you can meet that need, it'll work. The Martin Luther King Magnet School is a perfect example. Almost 80 percent of those kids are white and they're there by choice. Once we get this building recapitalized, they'll come because we have well-trained physi-

...Meharry's Foster

Cont. from pg. 2

three phases for the recruiting process: the awareness phase, the engagement phase and the replacement phase.

In the first phase he spent four months making everyone in the national health care and academic communities aware of Meharry's recruitment campaign by advertising in medical journals, mailing 1,500 flyers to the deans and department chairs of the 125 other American medical schools and giving talks at various medical meetings. Foster visited Meharry alumni in Orlando, Chicago, New York and Los Angeles. "So, everybody knew. That was phase one."

Next, he screened all 408 curricula vitae that came in response to the campaign and forwarded them to the appropriate departmental chair, who then assumed responsibility for recruiting that person.

"I made sure that the spouses were always highly recruited. I made sure that the first thing the chairman found out was: Was this physician's spouse seeking employment? Where can we be helpful? I sent information on schools, churches, banks, museums, parks — the quality of life. I didn't just start recruiting yesterday; I ran a department for 17 years. You learn that you don't recruit one person when they're married; you recruit a couple. You're a unit. That was the engagement phase."

The replacement phase was the phase after a person had committed to come, and that's the place where you do not allow your interest to wane. In fact, it should be just as high during that phase as it was when you were trying to entice them to come. And it's very important. And we help with things like moving, banking, locating houses, finding schools and getting their kids in. We kept up this interaction. It's very important when coming into a new venue. It's understand-

able that there's a lot of uncertainty, and the more reassurance you can have the better this whole process," Foster explains.

Of the 74 physicians recruited, 75 percent are African-American, 15 percent are Caucasian and 10 percent are "other."

Much concern has been expressed about possible language barriers between foreign-born physicians and patients at the merged hospital.

"I can understand that; I had trouble understanding people in Tennessee when I first moved here," quips Foster.

Actually, Meharry "agreed without a great degree of hesitation to a test of spoken English for many of our foreign resident graduates, but we did not impose that on staff physicians; someone who has been successful in passing their American boards of surgery knows how to talk — that would have been a humiliation."

Administration

Meharry officials expect Hubbard Hospital to break even for the fiscal year ending June 30, for the second consecutive year after losing an average of \$5.6 million a year between 1988 and 1990.

"What made the playing field uneven for us, not level, is the fact that we've had to absorb an enormous amount of indigent care for which we were never reimbursed. The city made promises but it was never forthcoming. Many years, nothing was forthcoming from the city. Probably the most [in reimbursement from the city] in any one year might have been one-fourth of what we did in indigent care."

"A private, struggling, historically black institution — it's an imposition to ask them in a community like Nashville to take care of indigent health care, and this is what we've had to do at this one."

"These are real dollars; people forget that. If I operate on a woman

at three o'clock in the morning and she uses \$350 worth of fluid, \$200 worth of sutures, \$1,000 worth of anesthesia, we've got to pay all of those vendors, we get nothing from the [indigent] patient. But we have to pay our vendors or we don't get their services."

Andre Lee, who has a doctorate in public administration, was appointed administrator of Hubbard on Jan. 1. "He's tried to run the hospital more efficiently. He's consolidated some services, he's moved pediatrics to a different area of the

hospital. We've just become more cost-effective, using the nursing pool less — more efficient scheduling of nursing personnel, particularly, and other personnel," Foster reports.

"We have had some increased utilization of the service by better capitalization of Hubbard Hospital. We are on the brink of bringing aboard a cardiac catheterization unit which is going to enhance the whole hospital because it impacts services other than just cardiology. I'm a gynecologist, and if I have an 80-year-old woman who I'm going

to do a surgical procedure on for an ovarian tumor, I want a facility that has a cardiac back-up as well. We have brought on highly skilled new people with the recruitment who have special skills in ophthalmology, otolaryngology.

"It's rather ironic, but just before Thanksgiving I developed a tear in the retina, and this new doctor on our staff was able to reattach it using an argon laser which we bought a couple of years ago. Had he not been here I would have had to have gone someplace else." ♦

— 30 —



The Quarterly Report

ASSOCIATION OF PROFESSORS OF GYNECOLOGY AND OBSTETRICS

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What Does Health Care Reform Portend for Undergraduate Medical Education?

A crystal ball is needed to answer this question. But, alas, no such implement is available. The fate of undergraduate medical education, including obstetrics and gynecology, in this changing health care milieu is uncertain. We are all in a fog on this issue. Currently, we are dealing with the unknown and it is the unknown that renders us ineffectual in either acting or reacting, thus creating a state of significant anxiety. Several scenarios are plausible.

There is a phenomenon already occurring in my home state of Tennessee and, according to my colleagues, in some other states as well. Specifically, as states have increased Medicaid reimbursement rates for obstetrical care for both physicians and hospitals, sizable numbers of obstetric patients have opted to utilize private physicians and hospitals. For some teaching services, the obstetric census has dropped by as much as 50% during the past three years. Further, unpublished reports suggest that health care outcome is now poorer for these former teaching hospital patients. Many of the social supports attendant to teaching hospital services, which are critical for high risk patients, are either absent or minuscule in many private settings. With health care reform, it is not known if this trend will continue, contract or expand.

In the state of Tennessee, the Governor recently went to the White House to request a waiver from Medicaid. In lieu of this, the state will use federal matching funds to implement a competitive system of managed care, called TennCare, to cover not only its existing 950,000 Medicaid recipients, but also an additional 500,000 uninsured or underinsured individuals. Moreover, it is to provide all of this care at the same dollar amount as in the previous year. Twelve geographic capitation regions have been established for Tennessee with



"It behooves us...to be proactive now rather than waiting until health care reform is fully upon us and then attempting to react."

Henry W. Foster, Jr., MD
Meharry Medical College
President, Association of Professors of
Gynecology and Obstetrics

an average capitation rate per enrollee of \$153 per month or \$1,836 annually. This seems woefully inadequate to provide ambulatory care, surgical and non-surgical hospitalization, pharmaceuticals and health promotion/disease prevention interventions. Does this mean that the private sector will discontinue providing this care? This is but one of the unknowns that can impact patient availability for medical education.

You may wonder, "How can Tennessee provide an acceptable level of care for an additional 500,000 patients without increasing funding?" Herein lies another ominous unknown for medical education. That portion of previous Medicaid funding designated as disproportionate hospital share will now be applied to funding the patient capitation rate. No replacement funds have been identified to supplement postgraduate education, which disproportionate hospital share funds did. And all of us in medical education understand the interdependence of undergraduate and

postgraduate education.

In spite of the uncertainty attendant to health care reform, there exist three well-known factors: 1) education of health professionals must continue; 2) health care education is costly; and 3) health care education must be funded by some source. It behooves us, to the extent that we can, to be proactive now rather than waiting until health care reform is fully upon us and then attempting to react.

To help set the stage for a proactive forum, Doctor Hugh Gorwill, Professor and Head of the Department of Ob/Gyn at Queens University in Ontario, Canada, and a member of the Association of Professors of Obstetrics and Gynaecology (APOG), will provide us insights as to how this issue is being addressed in Canada. He will make this presentation at the CREOG and APGO Annual Meeting being held in Nashville, Tennessee, on March 3-5, 1994. We look forward to the words of wisdom Professor Gorwill can share with us. ■



ACOG President Issues A Call to Action

Details on page 3.

STATEMENT: STUDY ON INFANT MORTALITY (SJR 96)

Henry W. Foster, M.D.

August 6, 1974

Chairman Wilder, members of the Legislative Council Committee, Mr. Mynatt, ladies and gentlemen, I am most appreciative that I have been afforded the opportunity to make this presentation. The Eighty-eighth General Assembly of the State of Tennessee is to be commended for its adoption of Senate Joint Resolution Number 96. This action in my judgment demonstrates an appropriate sensitivity to basic human problems that sometimes goes overlooked as the wheels of government grind.

In reviewing some of the communications regarding this resolution, I note with special interest that two specific references are made calling for a study of the causes of infant mortality. Certainly, before problems can be solved causes must be known, however, I am hoping that this legislative body will not needlessly have valuable resources, economic and otherwise, expended searching for much of what is already well known.

This nation's disproportionately high infant mortality rate is caused by social and economic isolation in those groups characterized by these poor health outcome statistics. Such isolation especially economic precludes their entering the health care system. Sociologists when describing barriers to health care often use the terms "attitudinal" and "organizational." Generally attitudinal barriers prevent the individual from becoming motivated to seek the available services whereas organizational barriers keep the motivated individual from utilizing the service that is desired. We have available in this country, and

in this state the medically sophisticated hardware, personnel, and know-how to drastically improve the quality of human reproduction. The problem in our country and state is not one of services and facilities not existing, but rather a failure to link these medical needs with the care that is available. In short, the inability of a needy segment of our population to fully enter the health care system is indeed the source of our problem as reflects in our state and national maternal and child health outcome statistics.

As an obstetrician-gynecologist especially concerned with health care delivery systems, I am aware that the two most important input factors that affect maternal and child health outcome are (1) maternal risks, and (2) health care. Maternal risk assessment becomes vital in terms of making the most judicious use of resources. Experience and well documented studies clearly show that 20 to 30 percent of the obstetric population gives rise to 70 to 80 percent of perinatal mortality and morbidity.¹ Further, the majority of this high-risk group can be identified during the prenatal period. It thus becomes apparent that the larger segment of our obstetrical population is uncomplicated and, consequently does not require the utilization of our most sophisticated manpower. Such manpower can and obviously should be utilized with the smaller group of high-risk mothers and infants. The economic advantages of such an arrangement should be apparent.

Generally, risk factors are divided into social risks and medical risks. Social risks are such factors as age, gravidity, parity, race, marital status, income, education, etc. As you will note these are rather rigid within a given pregnancy, and therefore, cannot be greatly augmented in a short period of time.

Medical risks on the other hand are more amenable to change within a given pregnancy. Such examples would be dental and nutritional status, anemia, infec-

tion, diabetes, hypertensive cardiovascular disorders, certain genetic disorders, etc. Practically all of these risk assessments can be made early in pregnancy by paramedical personnel. Currently, in too many situations no one is so trained and no such assessments are made until a crisis situation has developed--the results, of course, reflect adversely in our perinatal statistics.

The quality of health care provided the expectant mother and the child she carries also impacts heavily on perinatal statistics. Very important components of this care are (1) early pregnancy evaluation and ample number of evaluations during pregnancy and (2) ready access to adequate secondary and tertiary levels of care for both the mother and her recently delivered offspring.

This first health care component and a significant portion of secondary level care can be provided completely by paramedical personnel such as certified nurse midwives with adequate medical back-up. Other levels of secondary care and tertiary levels of care are appropriately performed by highly skilled obstetricians, pediatricians and others.

From the foregoing, it becomes obvious that the poorest maternal child health outcome is in the high-risk patient who receives inadequate care. Our challenge as health care providers and legislators is to create a health care system that identifies the high-risk patient, does it early in her gestation, follows her adequately and has readily available all levels of required subsequent health services. It is apparent that some form of regionalization of health services will be required to create a milieu that will provide a linkage between the underserved and the services needed. Such regionalization, use of minimum care facilities and other cost-saving approaches can provide the services needed and do it at a financial level that can be borne by the system. Our conventional method of health care delivery is too costly and in great part explains the existence of this same health need that brings us here today.

The mechanism by which the above ideas can be implemented is by far the most difficult task facing us. I am hopeful that the legislative sub-committee assigned to this study will in addition to other areas look deeply into the following considerations.

A Council on Maternal Health created by the legislature should be a first step. Admittedly, this is a bold step, however, the state of Georgia has done this quite well. The presence of such a committee is necessary to help create and maintain the momentum required to assure first-rate maternal and child health care. The legislature should determine the council's size and make-up of its members and instruct the governor to make the selections.

Because of time constraints, I can only list the immediate areas of concern to be addressed by a Council on Maternal Health and Public Health Agencies such as the Bureau of Health Resources, the Bureau of Personal Health Services, the Bureau of Medical Care Services and others. Some of these areas are: (1) local maternal health program planning and implementation, (2) nurse midwifery services, (3) nurse midwifery education, (4) newborn transport systems, (5) hospital maternity facilities and service, (6) continuing education for maternity nurses (7) maternity health insurance, (8) care and education for school-age expectant mothers (9) newborn health insurance, (10) aid to dependant children/medicaid relationships, (11) maternal nutrition, (12) minimal care facilities for obstetric patients, (13) support for family planning services, (14) education program in family life and human sexuality.

In conclusion, it can be restated that isolation—social and most of all economic—prevent too many high-risk patients from entering the maternity health care cycle resulting in high infant mortality rates. Monies can best be used to redress this problem by utilizing where needed paramedical per-

Page 5

sonnel in a system regionalized to provide varying levels of care. Possibly, this can best be achieved by the creation of a Council on Maternal Health by the State Legislature and addressing primarily the 14 items of consideration set forth above.

Again, I would like to express my genuine appreciation to you the members of the Legislative Council Committee for affording me the opportunity to make this statement.

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Poster

National Institutes of Health Consensus
Development Conference Summaries. Vol. 2; 1979

Transfusion Therapy in Pregnant Sickle Cell Disease Patients

Sponsored by the National Heart, Lung, and Blood Institute
April 23-24, 1979

A Consensus Development Conference on Transfusion Therapy in Pregnant Sickle Cell Disease Patients was held at the National Institutes of Health on April 23-24, 1979.

In general, four consensus work groups explored the question of whether there was sufficient evidence about prophylactic transfusion therapy to advocate its use to treat pregnant sickle cell disease patients. Other aspects of sickle cell disease treatment addressed included the need for further research, including clinical research, perinatal considerations, and sociomedical issues. The work groups were divided into four subject areas—the need for further research, clinical research approaches, perinatal considerations, and sociomedical issues. Each group then reached conclusions on its subject.

Work Group I

Further research in transfusion therapy for pregnant sickle cell disease patients is needed, but the question must be approached in a systematic fashion.

In transfusion therapy, pregnant sickle cell disease patients are divided into two major groups for management. Group 1

is treated symptomatically, but the majority of these patients still receive blood components. Blood transfusions are used whenever judged to be necessary but are not given prophylactically. Group 2 is treated with prophylactic blood transfusions. Transfusion in this group is used to elevate the Hgb and Hct significantly and to suppress Hgb S containing cells, while replacing them with Hgb A cells. Other patients in Group 2 are managed with exchange transfusions.

The following question was posed: Have the positive effects of transfusion therapy for pregnant sickle cell disease patients been satisfactorily proven? The consensus of the group is that the value of this type of transfusion therapy has not been proven. Although most studies regarding transfusion therapy have examined effects on maternal infection, toxemia, jaundice, anemia, sickle cell crisis and hospitalization, and on fetal growth retardation, perinatal mortality, and premature delivery, there is no consensus as to the effects of transfusion on these parameters. Some of the reasons for neither proving nor refuting the value of transfusion therapy are that the problems associated with sickle cell disease and pregnancy are not well defined; previously reported data are retrospective; there are no controls for gathering information about pregnancies in sickle cell

disease patients; data regarding patients are not comparable among institutions; and pathophysiologic mechanisms leading to poor outcome in sickle cell disease patients are not understood.

The problems of the pregnant sickle cell disease patient must be defined before there can be an attempt to solve them. Which parameters to study and modify must be determined before the best outcome for both mother and infant can be sought. Because some of the pregnant sickle cell patients seem to be at low risk, a method must be found to determine which mothers need, and which do not need, transfusion therapy.

Studies of pregnant sickle cell patients may shed light on reasons for intrauterine growth retardation, reasons for and management of fetal stress and distress, and on the importance of various parameters in determining degree of risk for individual pregnant sickle cell patients.

Since the positive effects of transfusion therapy have been neither proved nor refuted, a task force for study design should be formed. The task force would develop a protocol for a prospective randomized study to determine the benefits and risks of transfusions in the pregnant sickle cell disease patient. To provide for an adequate data base, The National Cooperative Study of the Clinical Course of Sickle Cell Disease should be expanded to include additional perinatal information decided upon by a task force. Further input should come from interested perinatal centers. This "natural history" study has been funded by NIH for five years and involves 15 medical centers and 23 hospitals.

Studying the problem further indicates that the management of the pregnant sickle cell disease patient is not well established. The impact on the lay population

and decisions of the sickle cell disease patient regarding future pregnancies should be carefully considered.

Work Group II

Further research is necessary to define the relationship between outcome and transfusion therapy during pregnancy. To be definitive, this research must be prospective and randomized. Since it is apparent that no one hospital or city has a sufficient patient population to perform such a study within a reasonable interval, a national cooperative multi-center approach should be utilized. The study should be integrated with the ongoing "natural history" study. To be well conducted, such an expensive and extensive task must be given priority, organized through mechanisms of the National Heart, Lung, and Blood Institute, and adequately funded.

Patients should not be excluded from the study on the basis of genotype, but criteria must be developed for those who will be included. For example, is the patient's history helpful? Should Sickle B + thalassemia and patients with $\geq 10\%$ hemoglobin F be included in the study?

Data must be accumulated to determine more fully the risks of transfusion, and methods must be defined for reducing transfusion risks to the minimum. Followup data are mandatory and must include careful collaboration among obstetricians, hematologists, pediatricians, pathologists, and blood banking personnel. In addition, bloodtyping and processing requirements must be carefully defined.

Patients should be randomized to transfusion or no-transfusion therapy in a pro-

spective way after informed consent has been given. However, patients randomized to "no-transfusion" therapy, may be transfused for specifically defined indications.

Data collection must start as early as possible, and the benefit and timing must be determined by the study design analysis group. Following initial therapy, frequent monitoring of high hemoglobin S levels must be performed and an upper limit defined (possibly from data from the natural history study) which, when exceeded, warrants repeat transfusion. Additionally, maximum hemoglobin levels not to be exceeded, must be defined.

Work Group III

Perinatal considerations for transfusion therapy in sickle cell patients should address these questions:

1. How should patient monitoring be considered?
2. What are the challenges of intrapartum management?
3. What is the approach to infant followup?

A detailed series of clinical and laboratory procedures could be used to follow patients through the ante, intra, and postpartum periods and to establish a data base. The comprehensive nature of the outline recommended reflects the importance of gathering complete data during pregnancy. Important retrospective information might be obtained from these data and prospective therapeutic guidelines developed.

Regardless of the specific guidelines followed for pregnant sickle cell patients, medical care should be provided in a tertiary center, with a joint effort among obstetricians, hematologists, and pediatricians. It should involve awareness of the clinical course of the disease process during pregnancy as well as therapeutic

modalities that may modify the course and outcome of pregnancy. Infants born to sickle cell disease patients, who may or may not have had transfusion therapy during pregnancy, should be followed for a minimum of two years.

Since an appropriate study has not been performed to document its value, the detailed list of procedures prepared by the group should not be considered as recommendations for patient management.

Work Group IV

The data are insufficient to advocate a large scale nationwide policy of transfusion therapy or to reach definitive conclusions about ethical considerations. A study to determine (within 1-2 years) in a limited number of centers the value of therapeutic versus prophylactic transfusion in management should be undertaken, however. Justification would appear to be the marked difference in opinion as regards the value of various treatment modalities.

Any study design must consider psychological considerations, including patient and physician levels of awareness and knowledge and must allow for prejudice or feelings concerning fear of transfusion, possible intimidation from the community regarding transfusion needle marks (confused with addiction), pressure on family for repeated blood donations, convenience factors favoring time of transfusion for physician versus patient, overprotectiveness of patient's family, and possible "addiction" of patient to transfusion. Economic, geographic, and educational data relating to patient and physician must be considered, and continual updating of information about the progress of the study for all concerned must be planned.

Counseling should be available both pre- and post-conception. Information about the value of amniocentesis in selected instances should be made available to patients. Any study design should take all of the psychosocial aspects into account.

Access to the study must be available to all patients who wish to become involved, but they should not be coerced.

Informed consent should be obtained from all participants. Innovative methods, such as audiovisual presentations with subsequent question and answer sessions, should be developed to avoid coercion of patients. Patient feedback mechanisms to test levels of comprehension need to be developed. Paramedical personnel may need to be included.

Funding for patient care in such a study should be through private or public means and not grant support. Analysis of data and reporting can be related to NIH support, but patient care funding cannot.

The presence of hemoglobin-SS, SC, or sickle thalassemia, which constitute sickle

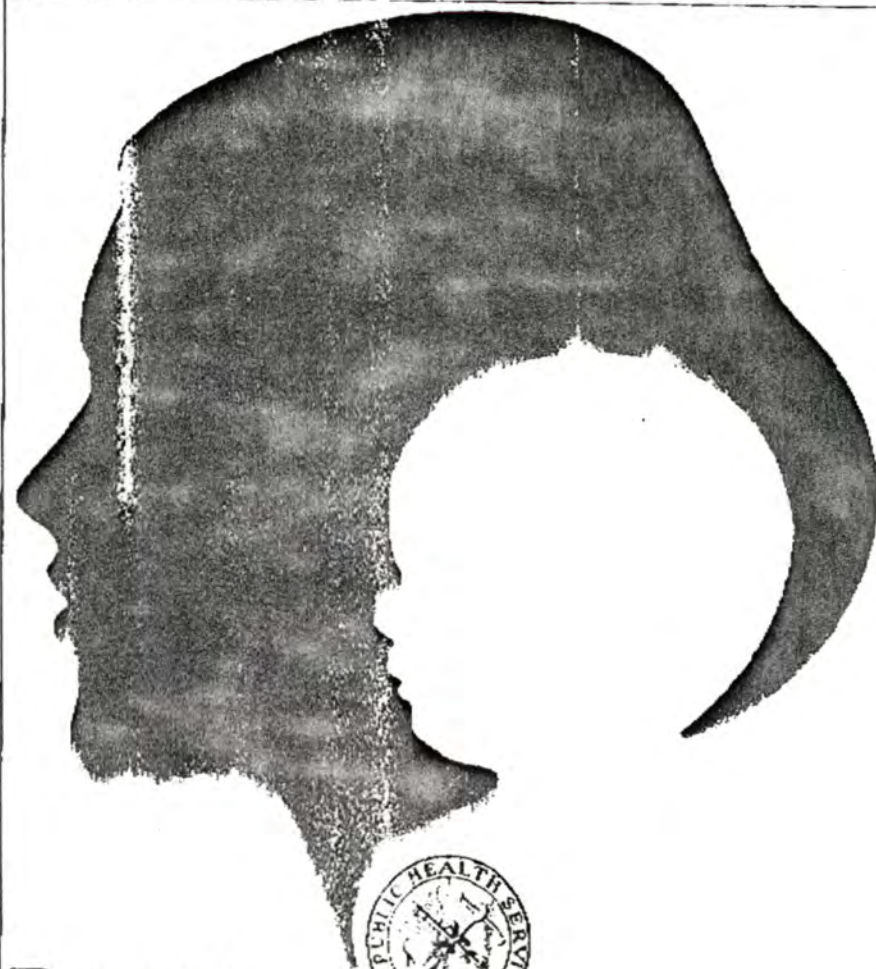
cell disease, should not be the sole justification for either abortion or sterilization. These procedures should be performed on the basis of medical indications and/or patient desire. The medical and legal communities need to be apprised of this consensus.

The conference was sponsored by the National Heart, Lung and Blood Institute, National Institutes of Health. At NIH, consensus development conferences bring together biomedical research scientists, practicing physicians, consumer, and others as appropriate, in an effort to reach general agreement on the efficacy and safety of a medical technology.

Co-chairmen for the consensus meeting were John C. Morrison, M.D. University of Tennessee, Memphis; and Henry Foster, M.D., Meharry Medical College, Nashville.

The Surgeon General's Workshop on:

**Maternal
and
Infant
Health**



Report

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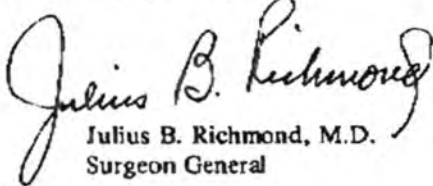
Preface

"Every woman should have quality prenatal care during the first three months of pregnancy."

Julius B. Richmond
Surgeon General of the United States

The Surgeon General's Workshop on Maternal and Infant Health was held because of our abiding interest in improving the health of this Nation's children. We can take great satisfaction with the recent decline in infant mortality which has been substantial; however, we may once again reach a plateau similar to that which occurred between 1955 and 1965, if we do not target our resources effectively. In addition, several population groups in the United States continue to have a significantly higher infant mortality and morbidity. These disparities require very careful attention if we, as a Nation, can reduce and eliminate them.

The participants at this Surgeon General's Workshop were called on to develop recommendations for a social strategy to insure that all of our knowledge is being applied fully in the service of better health for parents and their infants and to help target our efforts, especially for those who remain vulnerable—the unserved and the underserved.



Julius B. Richmond, M.D.
Surgeon General

Planning Committee

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Contents

INTRODUCTION	1
RECOMMENDATIONS AND FINDINGS	3
EXCERPTS FROM KEYNOTE ADDRESSES	18
Julius B. Richmond — Opening Remarks	18
Patricia Roberts Harris — Address	19
George I. Lythcott — The Invisible Children	21
An International Perspective	23
Norman Kretchmer	
Robert E. Greenberg	
A Domestic View: Federal Maternal and Infant Health	24
Services Programs	
Gilbert S. Ommen	
PANEL PRESENTATION SUMMARIES AND EXCERPTS	27
Review and Assessment of the Current Status of Knowledge, Services and Deficiencies	27
Obstetrical Perspective (Ryan)	
Pediatric Perspective (Avery)	
Psychosocial Perspective (Barnard)	
Dimensions of the Problem	31
Who are the Underserved? (Davis)	
The Multi-Risk Family: Clinical Perspectives (Greenspan)	
The Promise of Regional Perinatal Care (Johnson)	
Social Strategy Influences	35
The Epidemiology of Adverse Outcomes (Oakley)	
Statewide Strategies for Developing Effective Perinatal Care Systems (Graven)	
Data Systems and Information as Tools for Making the System Operate More Effectively (Brann)	

Introduction

The Needed Resources	40
Public/Private Financing of Maternal and Child Health Care (Jones)	
Highlights from the Report of the Select Panel for the Promotion of Child Health (Schorr)	
Human Resources for Delivering Needed Maternal and Child Health Services (Green)	
Appendix A - Participants	45
Appendix B - Needed Services	50
(from Report of Select Panel for The Promotion of Child Health)	

Since the turn of the century, the United States has made great advances in improving infant health, as indicated by the infant mortality rate. From an infant mortality rate of more than 100 deaths per 1,000 live births in the early 1900s, infant mortality declined steadily until the 1950s. After almost ten years of relatively little change from the mid-1950s to the mid-1960s, the marked decline in infant mortality resumed, to a rate of 13.0 deaths per 1,000 live births in 1979.

While recognizing this significant achievement, Surgeon General Julius B. Richmond has said: "If we are to accelerate or even continue the progress we have made in improving maternal and infant health in this Nation, we must have a firm knowledge base drawn from science and sound professional practice, assess our commitment of current health resources and services directed at improving pregnancy outcome, and develop the social strategies needed to target our efforts, especially toward those who remain unserved and underserved."

To contribute to the achievement of these goals, as well as furthering the over-all disease prevention and health promotion objectives set by the Department of Health and Human Services for the 1990s, Dr. Richmond convened the first Surgeon General's Workshop on Maternal and Infant Health, December 14-17, 1980, in Reston, Va. The Workshop brought together 72 health and social services professionals, economic experts, consumer representatives and State, Federal and local government officials for intensive discussions of the subject.

The principal objective of the Workshop was to survey and analyze the state-of-the-art and to develop policy recommendations for a national social strategy that would help assure the continuation of past progress in reducing infant mortality and morbidity and improving pregnancy outcome in the United States, with particular attention to populations at greatest risk. The Workshop participants reviewed national objectives for maternal and infant health, explored the development of alternative indices for maternal and infant health status and addressed the unresolved problems that raise barriers to further reduction of infant mortality and morbidity.

The Workshop was asked to build on the work of the Child Health Initiative of the Secretary of Health and Human Services, the Surgeon General's Reports on Health Promotion and Disease Prevention, *Healthy People*, and *Promoting Health and Preventing Disease: Objectives for the Nation*, and the Report of the Select Panel for the Promotion of Child Health.

The Workshop focused on three basic themes: improvement of service delivery to the underserved; expansion of health promotion and prevention services; and knowledge development. The participants were divided into three discussion groups to consider Urban Issues, Rural Issues and Issues of Knowledge Development and Application. Their assignments were two-fold:

- A. To review and assess the current status of:
 - The state-of-the-art of knowledge concerning health services and treatment interventions that affect maternal and infant health.
 - The present systems, approaches and services available to improve maternal and infant health.
 - The deficiencies in current services and knowledge related to improving maternal and infant health.
 - Allocation of resources for maternal and infant health.
- B. To develop social strategies to:
 - Target, improve and expand services to maintain the improvement of maternal and infant health, especially for populations at risk of adverse outcomes.
 - Expand health promotion and prevention services for maternal and infant health.
 - Develop and apply knowledge needed to continue to improve maternal and infant health.

In considering these strategies, the participants were asked to include and identify the roles and responsibilities of government, public and private agencies and organizations, private health care providers, and the public at large for the development of partnerships and coalitions in meeting identified needs.

After separately discussing the issues, the three participant groups combined to consider the various findings and recommendations in a total context and refine them for presentation to the Surgeon General.

Presenting the findings and recommendations of the Workshop to the Surgeon General, Workshop Chairman Ezra C. Davidson, M.D., summarized the deliberations that concentrated on social strategies that will be needed to continue to reduce infant mortality in the United States and to assure that no groups are left out of future progress as further reductions are achieved.

One of the main messages growing out of the Workshop was that services and public education should insure that care to pregnant women begin in the first three months of pregnancy and continue through the early life of the infant.

Recommendations and Findings

INTRODUCTION

In a democratic society, public support is essential to political decisions favorable to any policy and program initiatives. In the area of maternal and infant health, with its complex medical, social and economic implications, several elements are necessary to the achievement of favorable decisions and goals.

First, there must be an effort to maintain the problems of infant and maternal health high on the national agenda.

Second, there is a need to form strong coalitions of leaders and interest groups in the public and private sectors who support the cause of healthy mothers and infants and are willing to work toward advancing that objective.

Third, an informed citizenry is a source of strength in working to achieve national objectives.

These three principles require placing relevant information before leaders in the administrative and legislative branches of government, members of the involved professions, public interest groups and the public at large. Available data and other information can be mobilized to attract the attention of many sectors of society and to mold a strong constituency for maternal and child health and well-being. Themes to recognize in supporting the cause of maternal and child health include:

- Problems in maternal and infant health are social problems, in addition to being those of individuals and families, and, therefore, are legitimate and significant domains for public policy.
- The effect of resources allocated to these problems, and the programs these resources helped to mount, are among the very few in health and human services that can be measured in solid and quantitative ways. Data demonstrate spectacular relations between national investments and results obtained. They also indicate a strong measure of efficiency and effectiveness in the use of resources.
- Controlling a problem is different from liquidating it. Health problems related to infants and mothers are controllable and great strides have been made. However, the levels of control already attained can be reduced if vigilance is lowered or resources and efforts are cut back.
- There remain wide variations in rates of mortality and morbidity among different sectors of the population, some of the rates being unacceptably high.

• Support for policies and programs related to infant and maternal care is rooted in basic human decency and certainly in prevailing American values. It is important, however, to make the point that there are many economic benefits that flow from the proposed policies and programs. Information can be compiled about the reduction in rates of hospitalization and long-term institutionalization, about reductions in the need for other costly services, and the economic returns from adults whose health was spared from serious problems through these programs. It would also be useful to gather and disseminate information about the relationship between infant morbidity and handicaps; subsequent abuse and neglect; and potential for crime, delinquency and other deviance.

The goals of policies in this area, the nature and organization of proposed programs, and information concerning infant and maternal health care should constitute the subject of public debate in national, regional and local forums encouraged by concerned agencies and interest groups.

The pluralism of American society is most likely to be reflected in pluralistic solutions. And, it is through debate at the various levels that programs can be evolved to meet general standards of quality and effectiveness while being tailored to unique local needs and environments.

It is with these concepts and principles in mind that the Workshop presents the following recommendations and findings which are not comprehensive, but point out high priority areas:

Recommendation 1

There should be a national initiative to assure prenatal evaluation and counseling in the first trimester of pregnancy for all pregnant women.

- a. There should be a linkage of pregnancy diagnosis to opportunities to receive this care.
- b. There should be no fiscal, categorical or administrative barriers to receipt of this prenatal evaluation.
- c. The counseling should include information on the risks of smoking, consumption of alcohol and other drugs, and environmental hazards.

Recommendation 2

The Surgeon General's Workshop endorses the standards of prenatal and infant care, including psychosocial support and family planning services, proposed by the Select Panel for the Promotion of Child Health (See Appendix B).

Recommendation 3

Maternal and Child Health (MCH) care should take place within a regionalized system which focuses on primary providers and has service, education and quality assurance or evaluation components. This system should function under the direction of a regional council which works with MCH resource centers and other providers. Each MCH area should have a designated MCH center to serve as an educational, consultative and care resource to the region.

All MCH programs should have a strong mental health component which includes capacities for:

- a. Identification and recognition of the special cultural and other individual differences in family functioning and prenatal and early child care patterns to guarantee appropriate service availability and effectiveness.
- b. Provide expert consultation including where appropriate, diagnosis and preventive intervention planning to meet the needs of families where for a variety of reasons traditional clinical services are not available or are ineffective.
- c. To make available appropriate expertise for integrated health, mental health, and special education services during the time of rapid central nervous system growth in the early years of life.

Rationale

There is evidence that regional perinatal programs are able significantly to improve pregnancy outcome with a comprehensive system functioning at all levels of health care delivery. The regional concept can be broadened to include all MCH activity. The focus of most MCH activity should be where primary care is given. Programs which function to centralize care at tertiary centers do not maximize outcome.

In addition to service, the ideal system must have sophisticated educational activities to improve and maintain professional skills and research or outcome evaluation to provide an objective basis for improvement and change. Systems with an objective data base are necessary for the efficient use of human and financial resources, and they allow targeting of specific problems.

The lack of appropriate effective MCH services are often related to an inability to understand and/or meet the special needs of at risk populations, especially the underserved.

Implementation

The lead agency for the implementation of a regionalized system should be the State health department. This agency, because of its responsibility to the entire State, should identify the appropriate regional structure. Regions must be logical and follow patient service patterns and not be bound by political jurisdictional boundaries (States, counties and health service agencies).

The State health department should create a statewide MCH council and regional councils when more than one region is designated. The councils should have memberships of health professionals and representation from a broad spectrum of organizations with an established interest in MCH and consumers.

Regional MCH resource centers should be designated by the councils for each region. These centers, often located at universities, would contract with the State to provide personnel, skills and leadership to meet the goals

and objectives established by the council. These centers must work in concert with the entire region. Specific activities of the resource centers should include: specialty and subspecialty medical services, including consultation and patient transportation, education, data collection and evaluation.

Much of the basic framework and maintenance of the regionalization effort can be accomplished through improved utilization of existing resources, such as Social Security Act Titles V, X, XIX, XX; WIC; and State matching funds, State education funds and private sector support.

Recommendation 4

To improve maternal and infant health, adequate financial support should be available to provide services, especially to the underserved and adolescents. Public programs and private insurance should provide comprehensive coverage for all pregnant women and infants, through such considerations as:

- a. Revision of Title XIX State matching formula should be considered to address criteria such as low-income population, available State tax base funds, number of mothers and children in need, number of mothers and children served by public programs and hospital reimbursement policies.
- b. Studying of revision of the Title V formula should be undertaken with consideration of links to need (e.g., number and rate of live births, infant mortality, low birthweight rate, adolescent pregnancies, adjusted income, level of education and performance criteria) as factors in the formula.
- c. Increasing State legislature funding for perinatal services.
- d. Finding ways to provide for the special needs of pregnant women and their children who do not have U.S. residential status.
- e. Taking immediate remedial action before the above long-term changes are effected, to meet the financial crisis currently existing in urban inpatient and ambulatory care institutions for underserved populations.
- f. Initiating policy changes that would permit service dollars to follow patients across political jurisdiction boundaries.

Recommendation 5

Expand mechanisms to pay for prenatal care, delivery and ongoing child health care for the uninsured.

Expansion of public financing programs.

Over seven million children and pregnant women are poor but ineligible for coverage under the Medicaid program. Many live in urban and rural areas but remain uncovered because they fail to meet restrictive eligibility criteria. For example:

- Many low-income women and children live in two-parent families, yet only 33 States cover children in intact families.
- A high proportion of pregnant women and children are poor but do not meet very strict State income requirements.
- Most States fail to cover women for their first pregnancy.

As a first step designed to address the most pressing coverage needs of the uninsured poor, we recommend that Federal/State health financing programs be required to cover all poor children and pregnant women regardless of family composition. This will assure that those most in need will not be denied access to vital pregnancy-related or child health services because of inability to pay for care.

Expansion of private insurance

Most Americans receive insurance coverage through the workplace. Yet a high proportion of urban and rural residents are without such protection because they tend to be employed in small firms, farming or self employed where there are no insurance benefits. Those residents who do receive insurance protection through employers are far more likely to have only minimal benefit coverage. We recommend that groups be formed to work with State legislatures to assure that all States require all insurers to include a minimal set of pregnancy-related and infant care benefits in all plans including:

- prenatal care
- all labor, delivery and postpartum care
- all medical care needed by infants in the first year of life and all preventive services up to age 5.
- making efforts to educate and mobilize interested parties (employers, employees, unions, legislatures) to assure that employer health insurance packages include comprehensive care for women and children.

These recommendations do not preclude other innovative approaches (e.g. "completion") but the basic necessity of ensuring universal coverage of services for mothers and infants cannot be compromised.

Recommendation 6

There must be support for extension of existing Federal, State and local programs to provide ambulatory prenatal care to areas without adequate resources.

Rationale

- a. It is recognized that ambulatory prenatal services are woefully lacking in rural America in general. This may be the result of the lack of opportunity for a pregnant woman to enter the health care system because of the absence of trained personnel to provide these services.
- b. The patient may not be able to pay for the services that are needed for optimal prenatal care. Many private providers are requiring payment in advance of services to be rendered.
- c. Without adequate quantity and quality of prenatal services, early assessment or high risk identification may not be done in time to identify the type of specific care that may be needed.

Implementation

- a. Require the provisions of prenatal care in all NHSC programs (free-standing and RHIs).

- b. Require that CHCs provide ambulatory care for prenatal patients. Both a. and b. must be a system of referral for delivery and for return follow-up care.
- c. Make it mandatory that prenatal services are a priority where local health departments receive Title V funds and that Title V agencies provide prenatal services if no other appropriate means are available.
- d. Provide support for existing nurse midwifery and/or nurse practitioner programs; and accredited PA and Child Health Associate Programs.
- e. Encourage the development of prepaid insurance programs, i.e. HMOs.
- f. Concentration of efforts so that third party companies will be made to cover certain ambulatory services, i.e. outpatient sterilization, laboratory services, genetic counseling.
- g. Create a regional perinatal council that may assist in recruitment and continuing education of the providers in rural areas.
- h. Support the development of transportation systems for women to receive prenatal care as well as well-baby care for their infants.
- i. Revise the definition of manpower for underserved areas to include areas where there may be a physician, but the physicians will not provide prenatal care and will not deliver babies.
- j. Revise the GMENAC recommendations on the future need for training obstetricians and gynecologists in the light of the newly emerging information that many family practitioners in small rural areas are refusing to provide prenatal care and to deliver babies.

Recommendation 7

To improve nutrition the following recommendations are made in accord with those of the Select Panel:

- The Nation must be educated by all appropriate sectors of society—the health system, schools, the media, private industry and government—about health promoting and risk reducing diets.
- Employers and health care providers should take steps to encourage breastfeeding and support mothers who choose to breast feed and are able to do so.
- Policies of both the public and private health care sectors should ensure that nutrition services become an integral part of health services for mothers and children.

Recommendation 8

The trend towards physicians in rural areas discontinuing the provision of maternity services should be moderated and if possible reversed.

Rationale

- a. This trend is generally detrimental to the desired outcomes for mothers and infants.

- b. The workgroup believes that all women should have accessibility to maternity services appropriate to their individual risk status as near to their homes as possible.
- c. Maternity services delivered in community hospitals as appropriate under (b) will be generally more personal, convenient and less expensive.

Implementation

The Office for Maternal and Child Health should call a joint conference to include the American Academy of Family Physicians, American College of Obstetricians and Gynecologists, American Academy of Pediatrics, American Hospital Association, American Osteopathic Association, American Medical Association and other appropriate private and public agencies to examine this issue and make appropriate recommendations for correcting this problem.

Recommendation 9

Federal Food Programs (WIC, Food Stamp, Food Commodity and School Lunch) shall be introduced or extended to provide low income pregnant and postpartum women and infants with nutritious food and provide cultural and ethnic food choices.

Rationale

Nutrition has not been adequately recognized as an integral part of maternal/infant health services. Good nutrition is essential to the development and maintenance of optimum health. In addition, good nutrition reduces the frequency of such problems as anemia, toxemia, low birth weight, and nutritional deficiencies.

Implementation

Federal: The USDA should change the regulations of the Federal food programs to allow alternative ethnic and cultural foods—especially for Indo-Chinese, Korean, Vietnamese and other minority groups whose needs have not been previously addressed.

State: Each State should see to it that low income pregnant and postpartum women and infants should receive food from one or more of the Federal food programs.

- Pregnant women should be given priority
- Within three years low income women and infants in all geographic areas of the State should have access to WIC services
- These services should be coordinated with maternal and child health programs.

Each State should see that the food programs offer education regarding maternal and infant health and family food budgeting and preparation.

Local: School Lunch Programs should be introduced or expanded to provide a free lunch for students who are low income expectant mothers.

Recommendation 10

The following data systems should be developed to improve management of perinatal programs:

- a. Birth-death record linkages.
- b. Uniform patient data base.

Recommendation 11

The Surgeon General should promote a single standard definition of maternal mortality, perinatal mortality and other measures of mortality relevant to maternal and infant health and work with State registrars and health officers to assure that standard measures are adopted in each State.

Recommendation 12

To improve maternal and infant health, the Secretary of HHS should convene a task force to explore approaches to developing effective quality assurance programs in public and private ambulatory care settings encompassing all members of the professional care team.

Recommendation 13

The Surgeon General should bring together the relevant parties, such as, public health, nursing, medicine, nutrition and other health professionals, to plan for the training of maternal and child health professionals. Service models for maternal and child health should be created as a basis for training and delivery of services. Elements of this training that the Workshop considers important include the following:

- Use of health teams.
- Utilization of mid-level practitioners.
- Emphasis on growth and development, psychosocial factors and nutrition.
- Emphasis on training in public policy and public administration.

(The above are in accord with the recommendations of the Select Panel.)

Recommendation 14

An organized program of education in systems development and community resource development pertaining to regionalized maternal and child health care should be provided for staff at State Health Department Perinatal Centers and university perinatal staff.

Rationale

There is enthusiasm for this concept in some rural areas which lack persons with expertise in developing such services. Providing training to appropriate persons would facilitate planning and implementation of regionalized perinatal services.

Implementation

Approach the Office for Maternal and Child Health, and private foundations for initial funding of such services.

Recommendation 15

We strongly recommend that in rural areas, maternal and infant services be strengthened through utilization of indigenous workers (Resource Parents).

Rationale

The traditional health care system has not been completely successful in promoting and enrolling women into early prenatal care. In addition it has been difficult to sustain mothers and infants in the system through the perinatal cycle (21 months) for a variety of reasons.

Indigenous workers have been successfully used in numerous health programs to extend accessibility, acceptability and continuity of care.

Indigenous workers (Resource Parents) could:

- Identify pregnant women who are not in a system of care
- Facilitate entry into the health care system and other community agency resources as needed
- Serve as interpreters for language and/or cultural values between patient and care provider
- Provide support so that mothers and infants will continue in the health care system for the prescribed course of care.

Qualifications

Resident of target area and respected member of target population, preferably a parent, who has demonstrated leadership, and has interest and ability to convey concepts and skills to parents.

Functions and Training

Job description, initial training, continuing education and consultation should be developed through the Area Resource Center jointly with the primary care and mental health providers and members of the local community. The curriculum may be based on guidelines from already established training programs, but should be designed to meet specific community needs.

Identification and Recruitment

The primary care provider may request selected agencies to assist in the identification and recruitment of Resource Parents, who may be volunteers or may be funded through the following sources: CETA, Title XX, Agricultural Extension, public agencies, project grants, local community funding such as service clubs, voluntary health services or church groups.

Recommendation 16

The Workshop supports the continued implementation of the Public Health Service genetic diseases program and encourages further regionalization and extension of the program to uncovered areas. Infants with abnormalities identified through mandated neonatal screening programs should be assured of follow-up and treatment.

Recommendation 17

Adolescents represent a special population with problems of sexuality, pregnancy and parenting. There should be special programs to meet the needs of this population, to include health, education, social, nutritional and other support services.

Recommendation 18

Each State should develop a plan to make prenatal and parenting education available to all families during pregnancy and to those families with preschool infants.

Rationale

Many families in urban and rural areas have no, or limited, access to prenatal and parenting information.

Implementation

The Office for Maternal and Child Health should work with State health departments to develop plans in cooperation with State and local prenatal and parenting education groups, and health providers to utilize present programs when available and create new programs where not available.

Recommendation 19

The Workshop supports the organizational changes recommended by the Select Panel to reduce fragmentation and improve administration of maternal and child health programs on the Federal level and the State level, including:

- Every State should review its options for consolidation of program effort related to maternal and child health and attempt to place authority over all relevant funding streams in an appropriate division in the State health unit.
- Creation of a Maternal and Child Health Advisory Council in each State.
- Establishment of a Maternal and Child Health Administration as an agency of the Public Health Service, which would include, at a minimum, the Title V MCH program, the Adolescent Pregnancy Program and Title X Family Planning.
- Creation in legislation of a National Commission on Maternal and Child Health.

Recommendation 20

The Workshop recognizes that there are a large number of people who are currently denied access to adequate maternal and infant care which interferes with improving pregnancy outcome and improving infant health. The Surgeon General and the Secretary of HHS should take strong measures to remove these barriers where they exist within programs providing maternal and child health training or services, such as:

- Racial, age and residential status discrimination.
- Insensitivity of providers.

- Lack of respect for patients.
- Refusal to place services in areas where the clients are located.
- Lack of recognition of clients as equal partners in efforts to provide services to the needy population.

Recommendation 21

Research should be continued to find more information concerning the initiation of labor.

Rationale

The knowledge already gained in this field holds great promise for attacking the high rate of pre-term births since the large portion of neonatal deaths comes from the pre-term births.

Recommendation 22

A research program on pregnancy, birth and the infant should be supported to help increase the understanding of the problems of pregnancy, embryonic and fetal development, the birth process, lactation, and neonatal development.

Rationale

A research program in this area can and will contribute knowledge on methods to assess and determine fetal distress and immaturity, as well as knowledge concerning the transmission of genetic material and techniques for intrauterine diagnosis.

Implementation

Additional research opportunities should be pursued to find out:

- a. What changes occur in uterine, placental, and fetal circulatory patterns following maternal exercise, stress, alcohol consumption, or smoking;
- b. Effects on fetal development of chronic oxygen deprivation;
- c. Fetal adaptation to less than optimal intrauterine environments;
- d. Maternal and fetal roles in the onset of human labor;
- e. Management techniques for high risk pregnancies; and
- f. Neonatal disorders that compromise successful adaptation to extrauterine life.

Recommendation 23

A research program to study the causes of Sudden Infant Death Syndrome and to identify the risk factors that predispose an infant to SIDS should be carried forward.

Rationale

Efforts have already contributed toward understanding the relationship between chronic hypoxia and SIDS as well as the realization that SIDS victims are not as healthy as once believed.

Implementation

Two major groups of studies should be undertaken which include: an epidemiological study of SIDS risk factors and an expansion of basic studies on the causes of SIDS.

Recommendation 24

A research program should be carried forward on congenital defects which would support studies on inborn structural, functional, and biochemical defects found in the fetus and the newborn.

Rationale

Research in the past led to the rubella virus vaccines as well as techniques to detect congenital defects in utero.

Implementation

Studies should be carried forward to determine what genetic and cultural factors may regulate or interfere with normal development; how maternal, paternal and fetal exposure to potential teratogenic drugs and agents may be causes of newborn congenital malformations; and how genetic environmental factors interact to contribute to congenital defects.

Recommendation 25

A nutrition research program should be carried forward to gain more knowledge on infant feeding patterns, the development of dietary patterns and tastes, and the role of social and cultural factors in human nutrition.

Rationale

We have increased our understanding of nutrient requirements during pregnancy and infancy, the control of glucose metabolism in pregnant diabetic women, and the contribution of nutrients to hyaline membrane disease.

Implementation

We should continue and expand studies to:

- a. Determine the nutritional status and requirements of pregnant women and the fetus;
- b. Increase knowledge about nutritional management for premature infants;
- c. Find the precursors and determinants of childhood obesity; and
- d. Find out more about the role of breast milk in prevention of infection in the infant.

Recommendation 26

Develop an index of morbidity including indices of assessing and measuring the well-being of populations of infants and families.

Rationale

Such an index would provide us at Federal, State and local levels with a sensitive tool to measure continued progress.

Recommendation 27

Facilitate the establishment of a State and/or subarea perinatal surveillance system along with the training of persons (perinatal epidemiologists) who would collect, analyze and distribute on a timely basis, perinatal information.

Rationale

The vital statistics system of the United States is the one certain data resource for developing trend information on birth weight and neonatal and postneonatal mortality for all areas. Some States have greatly enhanced the use of the system by linking birth and death records to increase our knowledge about risk factors which helps focus programs more closely on high risk sectors of the population.

Implementation

As linked birth and death record data become available, increased attention should be given to the production, analysis and dissemination of the data that are useful for policy and planning agencies. Fetal death statistics which vary from area to area require that new attention be given to improving the data base in all parts of the country for fetal mortality, particularly at gestation ages of 20 weeks or more. The National Center for Health Statistics should place these recommendations high on the agenda of its relationships with State health statistics agencies.

The Birth Defect Surveillance activities of CDC should be continued and expanded to broaden the search for causes of birth defects and to monitor the causes of infant pediatric morbidities.

CDC should expand the Epidemiologic Intelligence Service specifically to increase epidemiologic capacity in State perinatal and Maternal Child Health departments as it has done in State infection control units in State Health Departments.

Recommendation 28

Institute and/or continue population based longitudinal surveillance of significant childhood morbidities to help understand the magnitude and the correlation of these morbidities as the population matures.

Rationale

These represent major methods for better understanding risk factors and assessments of interventions for which new investments are needed. These studies are essential to understanding morbidity in children.

Recommendation 29

Establish community oriented, university based health services research centers responsible for collecting, analyzing, and disseminating data as well as training investigative perinatal health professionals.

Recommendation 30

Institute studies in health services, behavioral, and social research specifically looking at the characteristics of populations which do not receive prenatal as well as child care services. These studies should follow subsequent developmental patterns including infant and family patterns from the prenatal stage through the early years of life. They should also examine the characteristics of the present health care system which impede the delivery of such services as well as the patterns of care which provide effective services.

Rationale

Considerable new knowledge is needed to improve health services for mothers and infants especially for underserved segments of society. To improve health outcomes as much as possible, we need a better understanding of the precise events that affect pregnant women and infants and the range and variation in subsequent developmental patterns in the infants and their families.

Also, there is the need for more information about the nature and utilization of the interventions health professionals use to meet such risks and how to improve clinical service approaches and outcomes. The problem is complex considering the extended period from anticipation of pregnancy to the development of the fetus and the newborn through infancy.

Implementation

Significant investigations are needed to:

- a. Determine the characteristics of populations not receiving prenatal and well-child care services and their subsequent developmental patterns and the characteristics of the supposed health care delivery system serving those populations and the ingredients of a more effective health care system.
- b. Determine the differences in pregnancy outcomes between well served and unserved or underserved groups.
- c. Study the organizational aspects for health services for mothers and infants including: the layout of services, the relationship of infant and maternal health care to other services, interprofessional relationships between professionals and other members of the staffs and develop the clinical science of intervention for the population at risk for poor outcomes.

Recommendation 31

Evaluate the effects of pluralistic service delivery approaches on maternal and infant health problems which have a multitude of causes.

Recommendation 32

Evaluate and monitor the consequences of diminishing and/or reallocation of resources currently supporting maternal and infant health services.

Recommendation 33

The Workshop urges the Surgeon General to use the influence of his office to develop a strategy of public information and education to promote the recognition of the great value to the nation of healthy pregnant women and infants.

Excerpts From Keynote Addresses

OPENING REMARKS, DECEMBER 14— JULIUS B. RICHMOND, M.D.

Surgeon General and Assistant Secretary for Health, U.S. Department of Health and Human Services

In recent years, we have made considerable progress in the reduction of infant mortality. Chances that a child will be born alive and will live to his or her first birthday are better now than at any time in our history. Between 1965 and the present, infant mortality rates dropped almost 50 percent to the present rate of fewer than 13 deaths for each 1,000 live births.

Although this progress is dramatic and encouraging, the mortality rates for black infants—twice the rate for whites—is unacceptable in our society. And it is disturbing that the gap in the rates between white and black is not narrowing.

In the light of progress we have made, and in view of the glaring gaps, it was felt there should be a review of where we have been and where we are going in order to make improvements and to sustain and, even, accelerate progress. It is time to take an inventory and for that reason this Workshop was organized to bring to bear expertise and competence on the subject of parental and infant health, which underscores the role of both mother and father in the assurance of good infant health.

There are inequities within the general progress we have made in promoting infant and child health. For example, low income populations today are seeing providers of care as frequently as the more affluent. The problem is they are not necessarily getting the right kind of services, not receiving preventive services and, usually, services characterized by lack of continuity.

We need now to develop strategies that will enable us to cope with these and other problems in effective ways.

I think that we are very fortunate in this country that these efforts to improve maternal and infant health do not come from one source exclusively; not exclusively or even predominantly a Federal effort. Much health care is provided in this nation through the private sector and bringing together private and public actions becomes important as we pursue this effort.

Last year, the Surgeon General's Report on Prevention set as a national goal the reduction of infant mortality to a rate of nine per 1,000 live births by 1990. But we must recognize that the present rate of 13 per 1,000 is low enough to plateau once again. Then, the issues become much more complex

and difficult to assess and resolve. I am sure this group recognizes the seriousness of that problem and will provide valuable guidance as to how to proceed to continue to improve maternal and infant health for all parts of our society.

The shaping of public policy in a pluralistic society is a complex process. Three major factors interact in the development of improved programs.

The first is clearly a sound knowledge base from which we can generate improved programs. Certainly, through research and professional experience, we have a much richer knowledge base than we had several decades ago. It must continue to grow, but the knowledge base isn't always applied fully or evenly.

Therefore, we must turn our attention to the need for two additional dimensions: political will—or commitment of appropriate and adequate resources, and a social strategy to harness the knowledge base and the political will. Clearly, the commitment of resources is not enough unless we have the overall social strategy through which we will be able to exercise that will.

As to the timing of this Workshop, I suggest the agenda we are considering is an important one for our nation and I do not believe any administration will be refractory to considering the issues that will come out of this Workshop and the recommendations you will be generating. Those recommendations will need to go into the public domain and I believe they will be considered seriously by all decision makers in the public and private sectors. Recommendations from this Workshop will be important for all of those with responsibilities for the health and welfare of our population.

The health and welfare of our children is of particular importance. There is a special urgency because children have only one childhood that they pass through and, if they don't get the benefits of all that our society has for them, it becomes very difficult to go back and make restitution.

The Chilean poet Gabriela Mistral summed it up in these words: "The child cannot wait. Many things we need can wait, but he cannot. . . To him we cannot say 'tomorrow,' his name is 'today.' "

It is in that spirit that we meet. Your work will be important over time.

I am calling upon you to assist in developing the social strategy devoted to improving maternal and infant health in this nation. The strategy involves not only the Federal government, but also State and local governments, private voluntary and for-profit organizations, and academic institutions and foundations, all working together toward the common good.

ADDRESS, DECEMBER 15— PATRICIA ROBERTS HARRIS *Secretary of Health and Human Services*

The fundamental issues which face this country will remain the same no matter who holds the reins of power and, traditionally, we have functioned within a broadly defined consensus about what we seek to accomplish in order to make this a "more perfect union."

In the area of health and human services, our shared concern about the well-being of our fellow citizens insures that we will face a number of issues, but today I want to focus on one issue about which all of us share concern—the health and well-being of mothers and children.

Every one of us—from President to private citizen—bears a special responsibility for the fate of the Nation's children. Children are at one and the same time our most valuable and our most vulnerable human resource. Their future is, in a very real sense, our future; and each generation owes to the next an investment in the health and well-being of children.

We need not approach the issue of child health today as a crisis. On balance, the statistical information indicates quite the contrary—that the health of our children has never been better. The infant mortality rate is at its lowest point in the nation's history; infectious diseases have been reduced dramatically; parents today have a better chance of raising healthy children into adulthood than at any point in world history.

We can be proud of those accomplishments. At the same time, a closer look indicates that not all the vital signs are good.

The most disturbing sign of trouble is that Americans do not share equally in this improved health status. Black infants, for instance, have a mortality rate which is nearly double that of whites. Furthermore, among children aged one to four, minority children die at a rate 70 percent greater than white children; and non-white children die from disease and birth defects at rates 25 percent higher than whites.

Poor children—a disproportionate number of whom are minorities—inherit ill health along with their poverty; and ill health at such an early age can become a lifetime affliction.

The health of American children might be better than ever before, but the health of some American children and the health of countless other children beyond our borders is far worse than any of us can, or should, accept. I did not come here today, however, to wring my hands about such conditions. Those of you in this audience appreciate both our successes and the enormous challenge which lies ahead. And so, for us, the question is: "Where do we go from here?"

In my judgment two obstacles lie before us—one, a largely technological and managerial challenge and the other a test of our moral commitment. On the one hand we must have the tools to do the job and, on the other, the will to get it done.

In our evolving understanding of the full meaning of the words "equal opportunity," we must now recognize that adequate health care is a prerequisite to equal opportunity in this society. Health care must be a right for all our people and adequate health care for infants and children, those who are just beginning life, is clearly essential.

This, then, is my message to you today. As involved as you are every day, in the delivery of services, in research, and in the better management of programs, you and this country cannot afford to lose sight of the other obstacle

which stands between us and better health for our children. In addition to those specific roles which must be played in securing maternal and child health, you must become advocates of a cause; this country needs your help in making certain that all your fellow citizens understand as you do how much remains to be done if all children of this planet are to have a chance for decent health.

We can bring about change. We may complain about shrinking resources, but the task can be accomplished if we manage those resources well and if we remain committed to the cause.

With help from millions of caring people in every walk of life, we can save children from the ravages of disease and poverty, and we must. For if we do not save the children, we shall have lost everything.

DECEMBER 16: THE INVISIBLE CHILDREN— GEORGE I. LYTHCOTT, M.D.

Administrator, Health Services Administration, Department of Health and Human Services

When we compare our progress in recent years with that of many other industrialized Nations, we find that we are not performing as well as we might in maternal and infant care. We rank 14th among the Nations in infant mortality. Our percentage of infants born with a low birthweight—7 percent—is not as good as Nations like Sweden, with 4 percent, or urban China, which was said to have had a prematurity rate of 2.5 percent during the 1970s.

At least in this context, then, the issue before us here is why have we done so poorly in comparative terms? And how can we improve our record?

My answer to the first question is: We have neglected the fundamentals of maternal and child health. That neglect is manifestly evident among the poor and most minorities. I call the young of these Americans our "invisible children." Tucked away in urban slums, rural backwaters and Indian reservations, they are all but invisible to most of America. They are hungry, ill-clothed and living in hostile environments. These children need a full measure of primary health care if they are to make it safely to adulthood.

The terrible irony of it all is that we have all but mastered the difficult, the complex and the heretofore considered impossible, but have overlooked the fundamental and the basic. Our health care system is a bit like a ballet virtuoso who can perform feats requiring the utmost agility, onstage, only to tumble headlong over a curtain rope, offstage.

Consider these facts: some 3.3 million rural poor families in America have no running water in their homes; another 7.2 million have to use "well water" which fails to meet drinking standards; and 6.5 million more use community water systems which also fail to meet standards. The answer lies less in advancing our already sophisticated medical science and technology and more in paying closer attention to the needs of those invisible mothers and children living in forgotten squalor.

It is the nature of these problems which lie at the very heart of this workshop's agenda. And it is the solution to these problems that will do the most to help us achieve those three goals for 1990 that Dr. Richmond spelled out in *Healthy People* last year: reduce infant mortality by 35 percent; reduce deaths among children one to 14 by 20 percent; and reduce deaths among adolescents and young adults by 20 percent.

Ambitious as these goals sound, they are achievable. Given the resources, the imagination and the commitment, we can reach those targets. Committing the resources is a decision that the Nation as a whole must make and the mood of Congress will be critical here. But imagination and commitment are ingredients well within the grasp of the health care community itself.

We must continue developing ideas that bring the programs of maternal and child health into a cohesive, productive relationship with one another. To achieve this does not necessarily require acts of law, but it does, indeed, require acts of imagination. The 34 improved pregnancy outcome projects scattered around the Nation are an example of this. These projects seek to make pregnancy and childbirth safer events for high-risk mothers living in poverty. They take dead aim at those invisible children and mothers. When federal support funds for these projects come to an end, the structures of collaboration they have brought into being will stay in place—bringing together the people and the resources of the State, the community, the hospital and the university medical center.

Ideas like this are helping to erode the petty rivalries and turf problems that I believe lie at the root of our so-called categorical health dilemma. Exciting experiments in integrated service are afoot now which shatter the myth that unbreachable walls exist between us. The laws which govern our categorical health programs were never meant to divide our enterprise, but were intended to fix responsibility and accountability. I submit that we can have the latter without sacrificing the former, if we keep our eye on what matters.

A critical reassessment of the economic and programmatic direction of our financing system is central and essential for all of us concerned about the health of mothers and children. We must redirect the billions of dollars of public and private reimbursements to provide incentives for keeping mothers and children well, and not merely paying for their care after they are sick.

We must plan for the future—select strategies that hold the promise of returning more to the Nation than their cost. Few areas of health offer more potential for realizing that aim than the health of children. We must begin making the case that our children are not only valuable in their own right, but represent the Nation's primary investment in its future.

We have it within our technical grasp to complete the agenda in maternal and child health in the next ten years. Whether we shall do so depends in great part on the will, the vision and the imagination of experts like you.

An International Perspective

Norman Kretchmer, M.D., Director, National Institute of Child Health and Human Development

Robert E. Greenberg, M.D., Chairman, Department of Pediatrics, University of New Mexico School of Medicine

(These two scientists presented impressions of their recent 18-day visit to the Republic of China under a scientific study agreement between that Nation and the United States. The ten areas of study include child health and nutrition and human genetics. During the visit, urban and rural areas were observed.)

Kretchmer

One overriding impression of the Chinese situation regarding child health, nutrition and human genetics was the policy set by the government: "One child is the best, and two the most." Our hosts sought information from us from a technological viewpoint regarding human genetics and antenatal and postnatal diagnosis and postnatal care and nutrition in an effort to produce a perfect child.

One professor of obstetrics said the idea was: "Since we are dealing with one child, that child is a treasure and, consequently, that child must be perfect." The Chinese are looking to the Americans to provide technological know-how to help them achieve that level throughout the Nation.

Prematurity rates were surprising: 6-10 percent in urban areas and 2-3 percent in rural areas, compared to the United States rate of 4-5 percent at the very best and 12-14 percent at worst.

The Nation is seriously deficient in research and medical education; the cultural revolution which took place some years ago put China back two generations in research.

Greenberg

We noted a sharp contrast in the implementation of a system of care—rural and urban—and a coalescence of therapeutic and preventive efforts, opposed to frequent separation that characterizes the American situation.

There are some 50 minority groups in China, but they represent only a small portion of the population so the people are generally of a quite common genetic stock. One is offered the research opportunity of investigating general genetic uniformity, compared to the disparity in the United States.

From our viewpoint, the reduced incidence of low birthweight infants that seems to characterize many areas of China is absolutely incredible. This represents an important area for investigation. If true, a marked reduction of low birthweight infants can be effected in the absence of technology and even secondary resources. I hope one of the outcomes of this Workshop will be the recognition of the importance of cross-cultural research efforts to determine low birthweight infant statistics.

A DOMESTIC VIEW: FEDERAL MATERNAL AND INFANT HEALTH SERVICES PROGRAMS

Gilbert S. Omenn, M.D.

Program Associate Director, Human Resources, Office of Management and Budget

Much progress can be documented by using the infant mortality rate as an indicator and a proxy for other health objectives. The infant mortality rate fell 44 percent in the United States between 1965 and 1978, dropping from 24.7 to 13.8 infant deaths per 1,000 live births. Masked in this significant overall decline, however, are substantial racial and geographic variations:

- In 1978, the nation's infant mortality rate for blacks was 23.1. In contrast, for Indians it was 13.7 and for whites 12.0. (No separate rate for Hispanics is currently available.) The rate for black thus was roughly twice the rate for white.

- In 1978, Statewide infant mortality rates ranged from 10.4 to 27.3. State rates for blacks ranged from 11.0 to 35.2, while the rates for whites ranged from 9.9 to 14.9.

For the five-year period 1971-75, county infant mortality rates ranged from 1.9 to 63.1. Nearly one-third of our 3,100 counties had rates in excess of 20.0.

My staff and I recently began an in-depth review of major programs which have as an explicit major goal the improvement of the health of mothers and children. It includes the Supplemental Feeding Program for Women, Infants and Children (WIC) in the Department of Agriculture and the Maternal and Child Health, Family Planning, Community Health Center and Head Start programs in HHS. It has been fascinating and gratifying to hear the budgets for these important, large federal programs justified by good results in terms of health status measures. In FY 1980, these five programs spent more than \$1 billion on health and related services for more than 10 million American mothers and children. Many of the services provided through these programs are also funded by Medicaid. Thus, the total Federal funding channeled through these programs is substantially in excess of \$1 billion.

Several recent efforts can be cited as examples of effective maternal and infant health program coordination.

In predominantly rural areas of Alabama, an Improved Pregnancy Outcome project was organized to combine funds from maternal and child health, family planning, National Health Service Corps, Appalachian Regional Commission and State programs. Regional health consulting and advocacy teams were established, county-based plans were developed for local maternal and child health services, and commitments are being negotiated between state and county health officials regarding the quantity and quality of services. Major improvements have been made in the analysis of vital sta-

tics and in improving the data available on individual use of health services. The initiative has been most effective in reducing the State infant mortality rate—down from 20 in 1976 to below 14 in 1979. Maternal and fetal mortality rates have also decreased. Not all indices have improved, however, the incidences of teenage pregnancies and illegitimate births have increased.

Again, in a rural area, north-central Florida, MHC, WIC and Title X Family Planning, Title XIX Medicaid and Title XX social services resources have been combined under the cooperative direction of the State and county health departments and the University of Florida Medical School. Teams dispatched from central project offices in Gainesville to different rural locations each day have helped reduce operating costs by centralized accounting, recordkeeping, external reporting and other administrative activities. They have been most effective in reducing repeat teenage pregnancies from 40 percent in 1977 to 5 percent in 1979. Other positive health achievements between 1977 and 1979 include a decrease in cesarean sections to 3 percent and decreases in the rates of fetal mortality and low weight births.

Other examples of effective State and local program coordination are found in South Carolina, Cincinnati, Denver and Portland. I trust that many of you in this Workshop will provide detailed information on these and other successful coordinating efforts. We need to encourage and strengthen these initiatives and develop effective methods of replicating them.

Resources from Federal health programs should go disproportionately, I believe, to those areas of greatest need with the best plans for addressing those needs successfully and efficiently with both public and private resources. Targeting can be based upon clear, quantified objectives for improvements in health status and health outcomes for defined population groups in specific geographic and political units. Local and State officials should be encouraged to tie together the resources available from the related Federal programs in a plan that offers the best chances in particular settings to achieve these objectives.

Despite the focus of Federal programs on improving maternal and child health, none allocates funds to States primarily on the basis of measures which directly reflect poor health status. WIC allocations are based primarily on each State's proportion of poor children under age five. The State's relative infant mortality rate is used in the formula, but it receives much less than equal weight. In addition, adjustments are made in the allocations so that States are able to maintain program levels from year to year. The WIC formula is not established by law, but at the discretion of the Secretary of Agriculture. Given the 1990 goals and WIC's health objectives, I recommend that we examine the desirability and feasibility of making formula changes which would more closely target WIC funds to States with the greatest health needs.

In the MCH program, almost half of the total program funds, by law, are allocated on the basis of the State's proportion of live births. Additional

funds are allocated to States using a formula determined by the Secretary of HHS. This administrative formula currently uses the State's proportion of live births, but factors in the proportion of rural births and relative per capita income. Again, given the 1990 goals and MCH's objectives, we might consider changes in the MCH formulae, particularly administratively determined formulae.

I can recommend three immediate actions that might be considered by the working groups at this conference:

- Despite the availability of population, income and vital statistics for States, counties and some subcounty areas, there apparently has been no systematic effort to identify the "pockets" of poor health which represent our highest national priorities. Measured changes in health status should supplant simple input measures of "underservice" in allocating human and fiscal resources. Where improvements in quantifiable health status indicators are warranted, these should be developed.
- Current Federal programs, taken together, contain considerable flexibility to target funds by the methods and to the places where they can have the greatest impact. There should be support for cross-program strategies to guide operating decisions.
- Each of the five programs reviewed requires area need assessments in connection with project applications for funds approval. Specifications for these assessments are similar but their quality and usefulness vary widely across programs. Arrangements for cross-program sharing of need assessment data could improve current project grant awards and enhance administrative efficiency.

Panel Presentation Summaries and Excerpts

REVIEW AND ASSESSMENT OF THE CURRENT STATUS OF KNOWLEDGE, SERVICES AND DEFICIENCIES

Obstetrical Perspective

George Ryan, M.D.

Prenatal care for most patients begins in the first trimester of pregnancy, but approximately one-fourth of all pregnant women in the United States today receive less than adequate prenatal care.

The first physician visit is an opportunity, a time for identification of risk factors for a poor obstetrical outcome—for classification of patients as low risk, at risk or high risk and for planning the care of patients in a facility capable of handling expected and unexpected problems. Screening for preventable risks is also possible. For example, patients may be found to have bacteria in their urine. If undetected, serious kidney infections will be seen in about 50 percent of these cases, whereas prompt antibiotic therapy can virtually eliminate this risk.

Though not as yet possible, the prospect is that through screening a low risk group may be identified which could be cared for in a less expensive manner than the present classical care by obstetrical and gynecologic specialists and hospitalization in an expensive acute care facility.

Amniocentesis may be offered to patients at risk for genetic abnormalities and to women 35 years of age and older, due to the increased incidence of Down's syndrome (amniocentesis is highly recommended for those over 40). The risk of amniocentesis in prenatal diagnosis of genetic diseases is low, with less than one percent complications.

Most obstetricians and gynecologists today offer patients an opportunity to enroll in some sort of childbirth education program and to participate in some non-critical decisions related to the way they wish to have their babies—natural childbirth, anesthesia choices, analgesia during labor, breast feeding or bottle feeding, for example.

As the prenatal period enters its later phases, the physician is now able to assess growth and development of the intra-uterine fetus to a degree that was impossible even a decade ago. And, if there is some question of the rate of fetal growth, intra-uterine growth retardation may be assessed by serial ultrasound measurements of the biparietal and thoracic diameters of the fetus. Whether the fetus is thriving or in danger may be assessed by a non-

stress test which, when abnormal, can be followed by a stress test which has greater specificity.

If premature labor occurs, newer additions to the armamentarium include beta sympathomimetics, such as ritodrine, which have the effect of slowing or even stopping labor. Widespread use of these types of drugs will mean that more infants will reach the 2,500 gram dividing line between prematurity and maturity.

At the time of labor and delivery, family-centered maternity care has become a reality in all parts of the country and today not to have the husband or "significant other" present in labor and delivery is probably more the exception than the rule. Medication in labor has significantly decreased nationally and anesthesia tends to be local or regional with both saddle blocks and epidural anesthesia being very popular.

Delivery is still predominantly in hospitals—at 99 percent—but a growing realization that the hospital setting frequently does not supply a satisfying emotional experience for the mother and family has prompted the development of "birthing rooms" within hospitals. This, combined with an aggressive approach to family-centered maternity care, means the safety of the hospital can be combined with the home-like atmosphere and satisfying emotional experience promoted by advocates of alternative birth systems. Although a few alternative birth centers have grown up as freestanding and separate from hospitals, experience has not yet been broad enough with these entities to assess their safety or their future role. A small group of proponents of home birth exists, but conventional wisdom supports the view that the inevitable unexpected complications that occur at the time of labor and delivery place patients choosing this option in a less safe status than those delivered in the hospital. Nevertheless, no large scale study in this country has been performed to answer the question of whether there is some low risk group that can be delivered at home with reasonable assurance of safety.

Electronic fetal monitoring has become available widely, a modality that can be helpful in identifying fetal distress prior to serious damage to the baby. The role of this technology in the low risk patient, however, has been questioned and, at the present time, is not recommended for all patients, only for those at risk.

The increasing rate of cesarean sections has been a cause of concern for both the profession and the public. Analysis of indications for cesarean sections indicates that failure to progress in labor has increased rapidly and accounts for approximately one-third of all cesarean sections, and repeat cesarean sections account for another 20 percent. Avoidance of traumatic delivery with difficult mid-forceps, and avoidance of breech deliveries, are other evidences of changing practices which increases the cesarean section rate. But, at the same time, they have contributed to the fact that newborn and maternal mortality have fallen to all-time lows in the United States.

The current explosion in technology related to communications and data processing offers an opportunity to improve regional systems of perinatal

care far beyond what we might have imagined a decade ago. The dream of a widespread common data base (a sophisticated system to allow for multivariate correlational analysis) and the ability to more readily identify problems, are successful modes of therapy today.

Maternity care, which for years had almost a "tradeschool" aspect, has become a much more scientifically based discipline. In recent years, it has tempered the scientific trend with a move toward the humanism demanded by the women of this nation.

Pediatric Perspective

Mary Ellen Avery, M.D.

Of the more than three million infants to be born next year in the United States, some 2 to 3 percent will be born before 32 weeks of gestation and weigh less than 1,500 grams. About 30,000 infants will be born before 28 weeks and weigh between 500 and 1,000 grams—and about half of them ought to live.

Our society has charged pediatricians to provide optimal care for these very low birthweight infants, but what is optimal care? It must be based on understanding of the needs of the infants and, since experience with very small infants is relatively recent, continued observation and study of post-natal adaptations and careful evaluation of all interventions is a major responsibility. The challenge is to reduce morbidity as well as mortality. A continuing problem is hyaline membrane disease and its complications. It can sometimes be prevented, but it requires more attention to improved ventilatory assistance and other kinds of supportive care.

The nutrition of small infants also deserves continued study. Our knowledge of precise protein, fatty acid, vitamin and mineral requirements is minimal.

Behaviorists remind us that infants should not be overloaded by stimuli which can be a problem in our well-lit, noisy nurseries where physicians and nurses feel the need to perform many tests and where parents are intent on touching to establish a relationship with the infant.

Although I have focused on low birthweight infants, which comprise most neonatal deaths and account for a major share of the costs of intensive care, we should carefully note the occasional tragic loss of term or near-term infants.

Although neonatal mortality nationwide was down to 8.7 per 1,000 live births in 1979, in the best of circumstances, it would have been under 5. Thus, increasing availability of present knowledge must be a major priority. The long-term goal of prevention of premature onset of labor and understanding of the special needs of the newborn depend on continued major support of basic research in perinatal medicine and prenatal diagnosis.

I think the scientific community is poised to make major advances in understanding the biology of human reproduction, perhaps greater than at any time in history.

Psychosocial Perspective

Kathryn Burnard, R.N., Ph.D

In spite of attempts to collect scientific evidence identifying factors associated with a poor or good outcome of pregnancy, the resulting body of knowledge does not allow one to outline assured sets of variables that will enable us to identify which factors to attend to or change. It is important to identify which aspects of the individual and the individual-environment interaction are significant if we are to continue to reduce the rate of infant mortality and thereby improve the outcome of pregnancies and later health of children.

The interrelatedness of living systems must be recognized and it should be remembered that in providing health care we are dealing primarily with organization-family/group-person/organs-cell interplay which represents a complexity that has not been part of our scientific models of causation.

Since 1954, there has been a growing body of evidence that relates maternal anxiety and psychological conflict with complications of pregnancy and dysfunctional and prolonged labor. In spite of a 25-year span of recorded awareness of psychological states influencing the course of labor, it is only recently that our understanding has gone beyond the known association of anxiety and poor labor outcomes. One study has found that a woman's degree of conflict regarding her acceptance of pregnancy was positively correlated with her measured state of anxiety and serum level of epinephrine during phase 2 of labor, for example.

Several studies have related a general trait anxiety with complications of pregnancy, but few health care providers have reported specific means of assessing anxiety in relation to pregnancy or studies seeking to deal with anxiety reduction.

The emotional state of mothers has been associated with children's health. One study of children under 3 years of age with weights below the third percentile (in 23/40 cases where there was no organic cause for the growth retardation) found that the mother perceived herself as being depressed.

Another study concerned the effects of seven behavioral variables on fetal growth which seem to coincide with motivation for health. The behavioral variables included cigarette smoking, indulging in certain drugs, low weight gain during pregnancy, failure to obtain sufficient prenatal care, undertaking pregnancy when too young or too old, and being underweight for height at conception. There was an interrelationship among variables—mothers who had one tended to have another; some had as many as 4/7. In mothers with multiple behavioral variables, there was an associated high incidence of premature birth and low birthweight, irrespective of socio-economic status.

Emotional state, whether it be anxiety, depression, conflict or motivation, cannot be considered apart from the environment. It is probable that emotional status of the mother both interacts with broader social and eco-

nomic factors and is greatly influenced by these variables. In turn, these social forces, given a particular emotional state, can either increase or decrease her susceptibility to pregnancy complications. However, few studies of emotional status have been done, other than on Anglo, middle-class samples.

There are several variables that most recent research into psychosocial aspects of pregnancy suggests as profitable when attempting to develop strategies for reducing infant mortality and in general improving pregnancy outcomes and infant health. Many authors point out that the outcomes of fetal death, immediate neonatal and death before the first year, may be related to different factors. In general, the longer the child lives, the more the general environment influences outcome, whereas during fetal and early neonatal periods, the greatest share of the influence comes from the status of the mother.

Evidence suggests that emotional state is associated with biological function and, furthermore, there is evidence that links the general and more specific qualities of the environment to the emotional status of the mother. None of these factors is considered adequately in prenatal or postnatal care. Additional research is needed to replicate the findings regarding conflict about acceptance of pregnancy, anxiety, life change, father involvement, motivation for self-care and prenatal care with pre-pregnant health state controlled.

Even with the need for more research, it seems justified to redesign prenatal care to meet the varied needs of different cultural groups; that the teaching and counseling role of the nurse be strengthened; and that these services be considered a routine of pregnancy care, rather than nice if available. In spite of frequent reference in the literature to the positive benefit of nursing services, the economic support of nurses to provide maternal-child care in communities has declined. Likewise, the increasing gap between infant mortality rates in black and poor populations demand that we reassess the services provided and, either through additional research or a reassessment of what we have done, change ineffective strategies. There is no escaping the fact that social equality must be considered. The opportunity for employment, food housing, day care and health services must be improved if we are to improve pregnancy and infant health outcomes.

DIMENSIONS OF THE PROBLEM

Who Are The Underserved?

Karen Davis, Ph.D.

The poor today are most often likely to be children, female or minorities. Slightly more than one-fifth of all children living in families are in low-income households. Women represent a disproportionate 60 percent of all persons at or below the poverty level and about one-third of them are between the ages of 16 and 44.

Mortality rates provide a basic means by which to assess health care services for poor children and pregnant women and the fact that infant mortality rates for blacks and other minorities are 80 percent higher than for whites speaks for itself. Further, in 1977, 12.3 of every 1,000 white infants born alive died before reaching the age of one, while the rate for non-whites was 21.7 per 1,000. Minority preschool children have a 50 percent higher death rate than their white counterparts.

Among indicators of healthful and preventive prenatal maternal and child health behaviors are disparities in utilization of health services. In this connection: children in fair or poor health in the the highest income groups made nearly 2.5 times more physician visits than children in the lowest income groups who reported similar health conditions. Data from 1976 show that low income women were half as likely to receive early prenatal care as high income women and women from high income families were 40 percent more likely to receive a breast examination or Pap test than women from low income families.

The Multi-Risk Family: Clinical Perspectives

Stanley I. Greenspan, M.D.

Infant morbidity, including social, psychological and cognitive functioning, is now a major national concern. This concern has perhaps necessarily been of secondary importance to those related to reducing risk factors associated with infant mortality.

But, as we become increasingly successful in reducing mortality rates through improved technology and delivery of services, we shall find that more babies are potentially capable of optimal development in social, psychological and cognitive dimensions. However, as the families we have studied taught us, the risks for morbidity are grave.

These risks encompass a broad range of human needs: the fundamental need to survive, associated with physical protection and care; the need to form a human attachment; the need to read and respond to the signals of the baby correctly; and the need to foster the youngster's own capacity for basic skills, such as reality testing, impulse modulation, mood organization, initiative and mastery. The risks of morbidity will remain great until programs are organized which integrate a prenatal and postnatal focus for at least three to five years.

These programs should take into account the needs of the infant and the family and plan their approaches by building on the potentially solid constitutional status of the infant as well as the specific vulnerabilities in the infants and their families. These approaches will offer promise to reverse the trends we see in multi-risk factor families, where one generation of a multi-problem family leads to another. Many of the families already represent the third or fourth generation and, on a case by case basis, have shown a capacity to reverse the trend of deteriorating cognitive, social and emotional functioning with appropriate preventively oriented services. Such services

must, in addition to the integrated prenatal and postnatal developmental focus, offer: (a) help with concrete supports, including food, housing and medical care; (b) an ongoing, consistent human relationship characterized by trust and positive expectations; and (c) specific expertise and services geared to help the infants and their families with their individual different needs at each phase of development.

While the costs of offering such programs are great, the costs of not offering them are even greater. The six percent who it has been estimated use the 50-70 percent of all services present an economic and social cost compounded by the additional loss to society in potential contributors to the labor force and to creative endeavors.

Preventive programs are not as costly as may be imagined. When services are offered to an entire high-risk community, only a small percentage of families actually need the most intensive help. For example, a Michigan program found that the average cost per family was \$850. In terms of screening and backup for an entire community, the cost per family for such services would average out into a significantly lesser amount.

Such approaches are necessary lest more children enter the ranks of those who are too late for prevention and too many for treatment.

The Promise of Regional Perinatal Care

Kenneth G. Johnson, M.D.

Within the past six years, much attention has been given to the strategy of regional planning for perinatal care. In the history of the delivery system for perinatal care, the attempt to broadcast the benefits of modern perinatal medicine to entire regions is a startling development. The concept of a regionalized system of perinatal care took off in the early 1970s. At that time, a great deal of optimism was generated among leaders in perinatal medicine about the potential benefits of regional planning for perinatal care. It was postulated that a regional plan would ensure access to the appropriate level of care for all women and their newborn within an entire region. In the past 20 years, we have moved along a continuum of increasing expectations, from life-or-death to the quality of the survivor—and to the social environment that will provide every child with a fair chance for optimal growth and development.

There is a danger in citing regional perinatal care as the modal strategy of the delivery system for such care. How well the system functions is determined by a complex interaction of natural and social supports, the physical environment and the medical support system. Within the highly complex delivery system for perinatal care, it is difficult and unwise to choose one determinant as the most important. The effects of poverty, unplanned pregnancies, poor nutrition and other social factors contribute enormously to the poor outcome of pregnancy.

Even with the virtual elimination of social and economic gaps in our society, there would still remain high-risk mothers and infants in need of effective

tive medical intervention. To develop an effective delivery system, we cannot afford significant omissions. Uneven access to effective perinatal medical care has been and remains a problem and I believe all segments of providers of maternal and infant care should welcome the new strategy of regional perinatal care.

A regional plan is a network, within a defined region, of all providers of care at all levels of care and the target population includes all pregnant women. The functional elements include risk assessment, the use of a uniform information system and services provided by the regional perinatal center—consultative services, laboratory services, continuing education and training and transport services. The only reliable identifier of a participating hospital in this model is its inclusion in the regional information system.

Within the past five years, regional perinatal plans have become ubiquitous, one cannot cite a single State without some regional plan within its borders. Despite many variations, the concept of regional planning has been widely implemented.

As to benefits, in a 1979 survey by the American College of Obstetricians and Gynecologists of obstetricians practicing in five regions where perinatal care had been regionalized, physicians reported improved access to consultation and care for their high-risk patients; and for themselves, improved educational programs. The physicians reported substantial improvements in facilities and equipment in community hospitals, in the level of obstetrical nursing, and in coordination of regional perinatal services.

Feasibility in 1980 is not an issue. For example, in the Cleveland region, 64 percent of all hospitals participate fully in the regional network, and 76 percent of all annual pregnancies and births are in the system.

How well the regional plan is working to anticipate poor outcome is reflected in changes in the number and proportion of high-risk mothers who are referred to perinatal centers before delivery (such patients usually being described as maternal transports or transfers). In the first two years of regionalizing perinatal care, sharp increases in the number of maternal transfers have occurred. In Arizona, for example, the number of mothers transported before delivery to perinatal centers in Tucson and Phoenix was 300 in 1975, the first year of the program, and exceeded 600 in 1979.

As to the cost of regionalizing perinatal care, a regional information system and a staff to provide consultative services to a region has been estimated in one study to be about \$20 per mother-infant pair, or \$200,000 per 10,000 deliveries per year. This is an incremental cost offset to some extent by the current cost to hospitals of maintaining obstetrical and neonatal records. Obviously, the cost is a tiny fraction of the cost of providing direct perinatal services in a region.

I am unable to cite any studies relating to the evaluation of the efficiency of regional perinatal care. But I believe that the case for regional perinatal care presently rests on its presentation as a prudent investment in organizing a system to improve standards of perinatal care and to assure access of the pregnant woman and newborn to the level of care they require. Considering

the alternative, at best an informal centralized network, regional perinatal care is a prudent investment.

It seems to me that the good news is that for the first time in an otherwise dismal history of efforts to regionalize personal health services, there has emerged from the medical professional sector vigorous support for regional perinatal care. Another good feature of regional perinatal care, largely unappreciated, is its melding of the private and public sectors in a common mission. I believe that the level of interest generated by regional perinatal care in coordinating and integrating the resources and actions of both the public and private sectors is unprecedented in our society.

When we consider the deep pockets of rural and urban failures of the nation's perinatal delivery system, we should welcome their inclusion in an orderly network of perinatal care. Bringing the ghetto hospital and the isolated rural hospital into the mainstream is clearly different from neglect.

Regional perinatal care is not a panacea, but it is a strategy that holds much promise. Despite its apparent ubiquity, regional perinatal care is still in its infancy and has far to grow before it will impact substantially on improving the outcome of pregnancy. Unless joined closely with the social support system, its benefits will be limited.

Regional networks of perinatal care can provide a substructure to which multiple programs that provide an array of services to mothers and infants can be affixed.

Perhaps the best feature of regional perinatal care is its unitary focus on the individual patient, assessing her needs and bringing interventions into place to reduce the risk of pregnancy to mother and infant. The success of regional perinatal care is totally dependent on the strength of the partnership that has created the network.

I believe that regional perinatal care offers the best opportunity to begin to structure an organization of maternal and infant care that will begin to deal with the complex interplay of social, medical and environmental factors that determine the outcome of pregnancy and early life; that it will start to close the gap in outcome between the haves and the have-nots in the society.

SOCIAL STRATEGY INFLUENCES

The Epidemiology of Adverse Outcomes

Godfrey Oakley, M.D.

There have been substantial reductions in the infant mortality rate in the United States over the past 30 years, including continued improvement over the last decade. Less attention, however, has been paid to trends in the major childhood morbidities—birth defects, mental retardation and cerebral palsy.

The best-studied trends are birth defects. Infant mortality due to congenital malformations has increased from 7 percent in 1916 to 18 percent in

1977. Present birth defects and prematurity account for 40 percent, or 16,000, infant deaths each year.

Up-to-date trend data for birth defects are collected through the Birth Defects Monitoring Program of Center for Disease Control. Each quarter, the incidence of some 150 birth defects is monitored for approximately one-third of all births. The majority of the categories have been stable since 1970, indicating that we are not making a great deal of progress in reducing these problems. The lack of progress is mainly due to lack of effective intervention strategies. Some large decreases are expected for several tube defects as soon as maternal serum alpha-fetoprotein screening becomes available.

Dramatic decreases were seen in the early 1970s for rhesus hemolytic disease. The decrease has plateaued in the last few years and it is not known how much lower the rate can go. Several cardiac defects have had an increasing evidence reported since 1970 (patent ductus arteriosus and ventricular septal defect).

The trends of major mental retardation have not been actively monitored in the United States. It is likely that there has been little overall improvement in this country as the rates reported from western countries over the last 40 years have been consistently in the 3-5/1,000 range. The largest and most recent study from the United States—the Collaborative Perinatal Study—had rates at the upper end of this range.

The prevalence of severe mental retardation has changed little, primarily because concomitant with decreased infant mortality in general has come a substantial improvement in survival of Down's syndrome babies—the most prevalent known cause of major mental retardation. Another 20-25 percent is due to single gene diseases.

Effective mental retardation prevention strategies have been implemented over the last decade for congenital rubella syndrome, PKU, hypothyroidism, lead poisoning and rhesus hemolytic disease. These diseases account for less than 5 percent of mental retardation. Similarly, the prevention of mental retardation from better prenatal and intrapartum care is directed at the 10 percent of mental retardation due to these factors. Progress can be expected as our health care improves and particularly as prenatal diagnosis for Down's syndrome and neonatal services for metabolic diseases becomes available to an increasing proportion of pregnant women and children.

There has been a great deal of concern about whether cerebral palsy would increase with decreasing rates of infant mortality. The most recent data for the United States is the Collaborative Perinatal Study which showed no trend. Population studies of cerebral palsy in Sweden and Australia have shown decreases in cerebral palsy parallel with decreases in infant mortality in the 1950s and 1960s. There is some concern over data in the early 1970s indicating that the rate could be increasing slightly.

The Collaborative Perinatal Study also pointed out that only nine percent of the cerebral palsy is among those at highest risk—infants weighing 1,500

grams or less. The Study showed that more than half of children with cerebral palsy were full-term infants. Prenatal factors can predict infant mortality. The Collaborative Perinatal Study data showed, in contrast, that some 60 prenatal factors could not distinguish among 50 children with severe mental or physical handicaps and normal controls.

With data presently available, it is reasonable to conclude that the dramatic decrease in infant mortality has not been accompanied by a similar reduction in prevalence of birth defects and mental retardation. Cerebral palsy, on the other hand, has decreased although there is concern about a possible recent rise.

Demographic changes that focused our attention on teenage pregnancies during the 1970s will lead to an increasing proportion and number of births to women 35 and older in the next decade. We must be prepared to deal with the expected near doubling in the number of babies born to women 35 and older over the next decade.

We need to continue to monitor the trends in birth defects. We must establish in the United States population-based studies to measure the prevalence of major childhood disabilities—especially severe mental retardation and cerebral palsy. Such studies would not only permit us to measure the impact of various interventions, such as prenatal diagnosis, neonatal screening and neonatal intensive care units, they would also permit the base from which to conduct epidemiologic studies of the causes of these diseases. We must remember that some of the predictors of, risk factors for, infant mortality are not the same for major pediatric morbidities. Attention is needed specially to defining the predictors of, and risk factors for, morbidities.

Statewide Strategies for Developing Effective Perinatal Care Systems

Stanley Graven, M.D.

Development of statewide strategies to improve the delivery of perinatal health care is a complex and intricate task. Each state and area has its own unique set of problems and resources. While there are many different strategies, there appear to be several principles or premises operative in locations where strategies have proved highly successful. The following operating principles or premises, which form a common thread, are proposed as important to the process of developing a strategy to improve health care for mothers and infants in an area as large as an entire state.

- People and institutions must be cultivated and encouraged to do things, not ordered or directed. Very little is accomplished by executive orders or centralized administrative directives.
- Areas or regions should be of manageable size and fall into logical area which provide some common basis for addressing problems and developing solutions. Relatively little is accomplished through approaching the state as a whole.

- Constituencies and coalitions must be developed within each area and problems must be divided into manageable-sized component parts.

- Efforts should be focused on achieving small but long-term or permanent gains. Major thrusts usually die for lack of broad support and most long-term gains involve changes in peoples' attitudes and care practices.

- Sequence and timing are usually crucial for success—some issues and problems need to be left alone for periods of time while others need to be addressed promptly while the opportunity exists.

- Finding and involving the right people is essential. Plans and activities should focus on what people and institutions can do. Far too many plans and programs focus on legislating what individuals and institutions cannot or should not do. Most have the potential to do much more than they are presently doing, given support and encouragement.

- Solutions to care problems must involve a chemistry of resources, a partnership between private and public resources, perinatal centers and community hospitals and professional disciplines and the recipients of care.

- Professionals and patients do care, none wants adverse outcomes. Most health professionals, however, are working hard to keep up with often very unrealistic workloads and are doing a very reasonable job. What is often interpreted as opposition or indifference is fatigue, stress or inability to take on one more problem or issue.

- Health care for mothers and infants is closely tied to family, culture, and religion and should be delivered as close to home and support systems as is possible.

Among the components that should be included in the development of a statewide strategy: regional or area resource perinatal centers; health care institutions of varying capabilities; health professionals; community institutions and organizations; agencies that administer funds and programs and, of course, recipients of care. Any strategy must incorporate these six components and how they are involved, linked, motivated and supported will determine the shape of the strategy as well as its likelihood of success.

Data Systems and Information as Tools for Making the System Operate more Effectively

Alfred Brann, M.D.

Perinatal surveillance is a dynamic process through which data on the occurrence and distribution of perinatal events in a defined population are collected, tabulated, analyzed and disseminated. Because of improved knowledge and techniques today, epidemiologic data of this kind is more important than ever before in the effort to improve maternal and child health systems.

As long ago as 1862, Dr. Little pointed out a causal link between sub-optimal perinatal care and negative outcomes in a report entitled "On the Influence of Abnormal Parturition, Difficult Labors, Premature Births and Asphyxia Neonatorum, on the Mental and Physical condition of the Child, especially in Relation to Deformities."

Since that time, there has been a continuing need, variably met, for the collection of adequate data to delineate factors in sub-optimal perinatal care that lead to poor outcomes. Today there is a need for an on-going perinatal care surveillance system. Surveillance has evolved from monitoring the individual with a specific disease to the present monitoring of the health status of the population or populations and factors which influence it. Data collection has, in the past, shed light on maternal and infant health.

For example, it has been pointed out that low birthweight rates from the Renaissance to the early 1900s were approaching the rates of today's middle and upper-middle income groups in the United States. Although the data are relatively crude, they do suggest that birthweights in early times were improving, long before the availability of modern technology and techniques in perinatal care.

Surveillance has also shown us that the United States has the lowest birthweight-specific neonatal mortality rate in the world, but not the lowest general neonatal mortality rate. Sweden has the lowest general neonatal mortality rate in the world. When one examines these two statements, it is important to differentiate between birthweight-specific neonatal mortality rate and neonatal mortality rate. In Sweden, for example, we find the lowest neonatal mortality rate and a very low low-birthweight rate. This tells us that an American baby of any weight has a better chance to survive than one in Sweden. This also suggests that our ability to care for neonates has progressed to great heights but that our ability to help mothers reach full term has not improved in the past 20 years, as it has in Sweden. Through this bit of information, we now see clearly that if we are going to reduce infant mortality we must now concentrate on reducing low birthweight rates rather than placing emphasis on keeping smaller and smaller babies alive.

The progress in reducing infant mortality to 9 per 1,000 by 1990 is going to be very difficult in that there now exists a unique problem - pockets of high infant mortality. This fact alone makes it mandatory to have a perinatal surveillance system which: can provide an accurate and detailed definition of perinatal problems; can reflect changes in the epidemiology of perinatal problems; can provide data for evaluation of infant morbidity, effectiveness of programs and services, and allocation of resources; and can indicate priorities for research that will lead to prevention of future problems.

My overriding recommendation would be for the establishment of a State and/or subarea perinatal surveillance system along with the training of perinatal epidemiologists who could collect, analyze and distribute on a timely basis, perinatal information and data on infant morbidity.

THE NEEDED RESOURCES

Public/Private Financing of Maternal and Child Health Care *Stanley B. Jones*

Although insurance and financing systems for health care are extremely diverse, it is possible to distinguish five basic methods of financing health care for pregnant women and children: private payment, federal grants, Medicaid, public provider and voluntary giving. One can consider several kinds of changes that might lead to more desirable health care for children and pregnant women: (1) modification in the present private insurance system; (2) improving Medicaid as an insurer of health services for poor women and children; and (3) giving State governments substantial new roles in using public providers, grantees and others in the planning and start-up of community resources for care, in providing selective preventive and related services and in ensuring and coordinating appropriate utilization of care.

The objective is the establishment of an expanded government financing role only when private insurers and providers are unable or unlikely to meet the need. Although many changes might be made to improve the system, the following are just a few that could be considered in connection with more comprehensive revisions.

In the private system, all health insurance plans might be required to offer as an option or to actually include a standard set of services for children and pregnant women established by law, and changes made based on continuing review by the Secretary of Health and Human Services and recommendations of an Advisory Council on Health Insurance for Children and Pregnant Women. The standard set of services would include specified high priority preventive, prenatal and postnatal services and specified well-child care as mandatory minimums in every insurance policy sold.

The Medicaid program might be amended to require States to cover both mandatory and voluntary standard benefits without deductibles or coinsurance (similar to the CHAP proposal) and to reimburse providers at rates comparable to those used by private insurers without limits on amount, duration and scope, except as set by the Advisory Council. Medicaid eligibility requirements might be changed to require States to include all children (through age 18, for example) and all pregnant women who meet a uniform income standard.

Recipients of federal and federal-state grants for health services and public providers who receive federal funds might be required to negotiate "enrollment agreements" and "participating provider agreements" with Medicaid and private insurers. HMOs and self-insurers who insure a significant number of children and pregnant women in their area. They might also offer such services as they are qualified to offer to all pregnant women and children who seek services and collect for all covered services from

Medicaid and private insurers as broadened by this proposal in accordance with the rule for enrolling and/or participating providers.

Highlights from the Report of Select Panel for the Promotion of Child Health: Needed Maternal and Child Health Services *Lisbeth B. Schorr*

The analysis, findings and recommendations of the Select Panel cover an extremely wide range of issues, including risks in the physical environment, health behavior, nutrition and health research, as well as the organization, financing and delivery of health services.

This presentation focuses on that aspect of our work which dealt with the personal health services needed by pregnant women, infants, children and adolescents.

The "needed services" identified by the Panel include not only traditional medical services, but a broad array of services to respond to health problems with major social and behavioral components. The Report focuses mainly on services that are preventive and typically delivered through primary care systems. This orientation stems from the Panel's mandate and from a belief that many of the strategies most likely to decrease overall mortality and morbidity in mothers and children lie in the domain of preventive services and primary care.

The process of defining needed services led the Panel to three major findings. First, and most important, the Panel identified three broad classes—of services—prenatal, delivery and postnatal care; comprehensive health care for children from birth through age five; and family planning services—that are so clearly effective, and so essential to good health, that no one needing these services should be without them. The Panel concluded that access to these basic minimal services be systematically and universally assured. National health policy must move from attempts to make these services more available to a much more active posture of assuring access. Needed action includes:

- Removal of all financial barriers to basic essential services, most immediately by improvements in Medicaid, private insurance and grant programs;
- Strengthening provider arrangements to provide or mobilize a broad range of services and to reach out into the community;
- Clear designation of ultimate responsibility among public agencies for assuring availability and access to the basic essential services.

A second category of services which merits special attention includes mental health and related psychosocial services, dental services, genetic services and, especially, services that promote access to care. Although each of these has unique attributes, they have in common an importance to health and also the fact that they are not now adequately available, particularly to some of the groups most in need of these services.

Third, a new mechanism must be created or mobilized to serve a variety of functions aimed at improving the content, quality and availability of health services for mothers and children—a Board on Health Services Standards or similar body. One reason many needed services are unavailable or underutilized is that public and private third-party payers tend not to finance them, and purchasers of third party payment programs are reluctant to purchase coverage for these services, in part because of the nature of the services. They are difficult to define precisely and their effectiveness appears closely related to circumstances under which they are provided, by whom and in relation to what other services. To help provide information on such issues, the Panel recommended that a Board on Health Services Standards be created, or that existing institutions be strengthened and consolidated, to perform the following functions:

- Review and define health services that should be available to mothers and children in light of new knowledge and changing health problems;
- Provide guidance to third-party payers and purchasers of health insurance regarding the effectiveness and appropriate use of a given service or sets of services, and the circumstances under which such services should be provided and financed.
- Provide information to third-party payers regarding the likely effects of their payment policies and practices on the availability of needed services, professional personnel, facilities and other health resources.

Targeting of services and funds, is emerging as an important theme of this Workshop: it is essential to distinguish among various kinds of targeting. The implications of targeting resources on underserved geographic areas, or on all children and pregnant women are very different from targeting programs to serve only those individuals and families which meet narrow definitions of medical, social or economic need. The pressures to allocate scarce resources are very real, but must not glibly be translated into ever more restrictive eligibility requirements that ultimately become barriers to the receipt of prompt and appropriate services.

The costs of certain forms of targeting must be considered along with the savings. Costs of targeting include the increased probability of a given individual falling through the cracks between programs, the lack of public support for programs limited to the poor, and the expense of sorting and resorting large numbers of families that move in and out of poverty and risk status.

Thus it is possible to advocate, as the Panel did, targeting resources on assuring that a range of particularly effective services is available to all who need them, and on programs to assure that resources are made available in underserved areas. We concluded, on the other hand, that with regard to long-term financing of personal health services, a program of universal entitlement is decisively preferable to one directed solely at the poor. When eligibility for a health financing program is tied to poverty status, the results are so detrimental in terms of quality, continuity and appropriate use of

care, incentives toward economic independence, public support and administrative efficiency that the price of targeting, in this instance, is too high.

Human Resources for Delivering Needed Maternal and Child Health Services

Morris Green, M.D.

Of some 3.3 million infants born alive annually in the United States, approximately .5 million (1:7) are considered to be at high risk and, of this number, approximately 50,000 infants die before the age of one year. In addition, 33,000 fetal deaths occur before or at birth and some 250,000 infants are born annually with congenital anomalies. The incidence of prematurity and low birth weight babies is twice as high for black as for white infants.

Of the projected 3.67 million women expected to become pregnant in 1980, 980,000 live in poverty; 560,000 of these women are on Medicaid and 420,000 women are below the poverty line but are not on Medicaid. The patterns of prenatal care vary widely among mothers of different social, racial, educational and demographic backgrounds. Black mothers consistently receive less prenatal care than white mothers; 58 percent of women with less than a high school education received prenatal care in 1977, compared to 82 percent of those with more than a high school education; pregnant adolescents are at the highest risk of receiving no or only third trimester prenatal care and unmarried mothers have one-fourth the prenatal care received by married mothers.

By increasing access of mothers and children to comprehensive services, current and past Federal and foundation initiatives in maternal and child health have made major contributions to the reduction of infant mortality. But inequities in services remain. Many mothers and infants, especially those of low income, are unserved either because services are unavailable or not properly utilized. Deficiencies include: limitation in personnel; uneven geographic distribution of personnel; low Medicaid reimbursement; patient disinterest or attitudinal barriers due to life experiences; lack of community understanding and support; fragmentation of programs and lack of coordination among community health and human service agencies; lack of education, outreach and followup activities; and inadequate adolescent health services.

In considering possible solutions to the situation, certain assumptions should be made, such as: improved access to and utilization of needed health services would lead to better health of mothers and infants; adequate prenatal care is associated with a reduction in birth of premature and other low birthweight infants; and while the ultimate goal of accessibility to appropriate health services for all is a valid one, population groups with the greatest needs should receive priority.

The system of health care services should be a cooperative one, integrating at administrative, service and educational levels the public and voluntary agencies, private and voluntary sectors and both the providers and

recipients of services. I would propose the term "District Health Cooperative for Mothers and Infants" (HCM). The precise way in which HCMs would be formed would depend on local settings and whether urban or rural.

Services would include treatment, prevention and health promotion for pregnant women and infants during the first year of life and services would be organized by districts. In the development of individual cooperatives, planning would attend not only to the problems and vulnerabilities in the individual patients, families and the community, but also to their strengths and potential resources. The package of services to be delivered would be determined in each district within national guidelines.

Among program elements to be included in cooperatives would be prenatal care, including risk assessment and management; access to secondary and tertiary consultation, ambulatory or inpatient, for assessment and treatment; linkages to hospitals for labor, delivery and newborn care outreach to ensure that mothers and infants receive the care they need; followup; adolescent health and family planning services; nutritional programs; mental health and psychologic support services; health education; education for parenting and home visits in early infancy.

Incentives would be offered for participation—patients receiving increased food stamps or other allowances; professionals, tax incentives or salary supplement; and individual citizens or corporations would receive tax incentives. Funding for cooperatives would be a blend of federal grants, local governmental funds, United Way, individual and corporate gifts, fundraising events and grants from voluntary health agencies.

Staffing of cooperatives would depend on availability of professionals, but use of nurse practitioners, public health nurses and nurse-midwives linked to physician backup would be explored. In areas without obstetricians or pediatricians, family practitioners would be utilized.

APPENDIX A

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APPENDIX B

NEEDED SERVICES

(Excerpted from the Report of the Select Panel for the Promotion of Child Health, Vol. 1, 1980, pages 153-58.)

In reading the lists,* several important caveats and explanatory notes should be kept in mind: First, the lists often describe a set of services preceded by the phrases "such as," "as needed," or "as appropriate." These phrases are designed to convey the notion that services must be tailored to an individual and take into account age, stage of development, past history, present risk and so forth. The lists are not a practice manual, but rather a compendium of broad categories of services that should be available and used to varying degrees and in varying combinations by an individual. Second, the lists also use the phrase "to include." This phrase is intended to suggest that the units that follow are minimum components of a broad category, rather than examples or possible items for inclusion. For example, the topics to be covered in prenatal counseling—which in the list are preceded by the phrase "to include"—are viewed by the Panel as essentially a minimum set. Third, the lists intentionally avoid notations of periodicity—such as the desired frequency of health examinations or specific immunization schedules. In general, the Panel believes that the practice standards developed by such groups as the AAP and ACOG are most adequate at present for those services for which they have recommended specific schedules. Fourth, the age and developmental boundaries of the lists were somewhat arbitrarily determined. Although they correspond to the boundaries of many other lists of services reviewed, we recognize the inherent artificiality of such compartmentalization.

Health Services for Women of Reproductive Age, With a Special Focus on Services Relevant to Reproduction

- I. Services for nonpregnant women that relate to the occurrence and course of future pregnancy
 - A. Diagnosis and treatment^b or referral and followup of general health problems, both acute and chronic, that can adversely affect future pregnancy, fetal development, and maternal health such as:
 1. Sexually transmitted disease
 2. Immune status (such as rubella)
 3. Gynecological anatomic and functional disorders
 4. Organic medical problems such as renal and heart diseases, hypertension, diabetes, and endocrine problems
 5. Inadequate nutritional status, including both under- and overweight
 6. Problems relating to fertility

7. Genetic risk (see I D)
 8. Significant dental problems such as periodontal disease
 9. Occupational exposures
 - B. Diagnosis and treatment^b or referral and followup of mental health and behavioral problems, both acute and chronic, that can adversely affect pregnancy, fetal development, and maternal health such as:
 1. Alcohol abuse, drug addiction or abuse, other substance abuse, and cigarette smoking
 2. Significant mental disorders such as schizophrenia and depression
 - C. Comprehensive family planning services, including:
 1. Information, education, and counseling regarding family planning concepts and techniques, and other issues such as the importance of prenatal care, and risks to mother and child of childbearing at extremes of the reproductive age span
 2. Physical examination, including breast and pelvic examination, as indicated, and tests such as a Papanicolaou smear, G.C. culture, urinalysis, and serological examination as appropriate
 3. Provision of family planning methods and instruction regarding their use
 4. Pregnancy testing with attendant counseling and referrals as appropriate (including for prenatal services, adoption, and abortion)
 5. Infertility services, including counseling, information, education, and treatment
 6. Sterilization services, including counseling, information, education, and treatment
 - D. Genetic screening and related services as needed to detect persons at risk, with counseling and referral as appropriate
 - E. Home health and homemaker services^d
- II. Services in the prenatal period
 - A. Early diagnosis of pregnancy
 - B. Counseling regarding plans for pregnancy continuation
 1. For those electing to carry to term, referral for and provision of prenatal care and of adoption services if indicated. Referral to childbirth preparation classes as desired
 2. For those electing abortion, referral to and provision of first or second trimester abortion, including family planning counseling
 - C. Prenatal care services including:
 1. History (general medical, social and occupational, family and genetic background, health habits, previous pregnancies, and current pregnancy)
 2. General physical examination including blood pressure, height and weight, and fetal development
 3. Laboratory tests as appropriate, such as VDRL, Papanicolaou smear, G.C. culture, hemoglobin/hematocrit, urinalysis for sugar and protein, Rh determination and irregular antibody screening, blood group determination, and rubella test
 4. Diagnosis and treatment^d or referral and followup of general health problems, both acute and chronic, preexisting or arising during the prenatal period, that can adversely affect pregnancy, fetal development, or maternal health

5. **Diagnosis and treatment^b or referral and followup of mental health problems, both acute and chronic, preexisting or arising during the prenatal period, that can adversely affect pregnancy, fetal development, or maternal health**
 6. **Nutritional assessment and services^c as needed. Provision of vitamin, iron, and other supplements as appropriate**
 7. **Dental services with special attention to detection and treatment of periodontal disease**
 8. **Screening, diagnosis (including amniocentesis), and counseling with followup for selected fetal genetic defects (such as neural tube defects, Down's syndrome, Tay-Sach's disease and sickle cell disease) with abortion services available**
 9. **Services to identify and manage high-risk pregnancies to include provision of appropriate prenatal and perinatal care services for labor, delivery, and newborn care**
 10. **Counseling and anticipatory guidance with followup and referrals as needed regarding:**
 - a. **Physical activity and exercise**
 - b. **Nutrition during pregnancy, including the importance of adequate but not excessive weight gain**
 - c. **Avoidance during pregnancy of smoking, alcohol and other drugs; and of environmental hazards including radiation, hazardous chemicals, and various workplace hazards**
 - d. **Signs of abnormal pregnancy and of the onset of labor**
 - e. **Preparation of the woman (and her partner where appropriate) for labor and delivery, including plans for place of delivery and feelings about use of anesthesia**
 - f. **Use of medication during pregnancy**
 - g. **Infant nutritional needs and feeding practices, including breast feeding**
 - h. **Child care arrangements**
 - i. **Parenting skills, including meeting the physical, emotional, and intellectual needs of the infant, with specific appraisal to detect parents at risk of child abuse or neglect**
 - j. **Planning for continuous and comprehensive pediatric care following delivery, including arrangements for a pediatric antenatal visit to link the family to pediatric care**
 - k. **Emotional and social changes occasioned by the birth of a child, including changes in marital and family relationships, the special needs of the mother in the postpartum period, and preparing the home for the arrival of the newborn**
 - l. **Other relevant topics in response to patient concern**
 - D. **Home health and homemaker services^d**
- III. **Services in the perinatal and postpartum periods**
- A. **Assessing the progress of labor and the condition of the mother and fetus throughout labor**
 - B. **Medical services during labor and delivery for diagnosis and management of conditions threatening the mother and/or infant, including the availability of a Caesarean birth operation when indicated**

- C. **Delivery of the baby by a qualified professional in a facility that has services needed to manage medical emergencies of the mother and/or newborn, or has ready access to such services**
 - D. **Diagnosis and treatment^a or referral and followup of general health problems, both acute and chronic, preexisting or arising during the perinatal and postpartum periods that can adversely affect the mother's child-caring abilities.**
 - E. **Diagnosis and treatment^b or referral and followup of mental health or behavioral problems, both acute and chronic, preexisting or arising during the perinatal and postpartum periods (including maternal depression) that can adversely affect the mother's child-caring abilities.**
 - F. **Counseling and anticipatory guidance with referrals and followup as needed regarding:**
 1. **Infant development and behavior**
 2. **Infant nutritional needs and feeding practices, including breast feeding**
 3. **Automobile restraints for infants and children, and general accident prevention concepts (especially home accidents and accidental poisoning)**
 4. **Infant stimulation and parenting skills, with specific appraisal to identify parents at risk of child abuse or neglect**
 5. **Need for and importance of immunizations**
 6. **Effect on children of parental smoking, use of alcohol and other drugs, and other health-damaging behaviors**
 7. **The importance of a source of continuous and comprehensive care for both mother and child, including identification of available resources to help with such problems as illness in the newborn or breast feeding difficulties**
 8. **Recognition and management of illness in the newborn**
 9. **Hygiene and first aid**
 10. **Child care arrangements**
 11. **Other relevant topics in response to parental concern**
 - G. **Home health and homemaker services^d**
 - H. **Routine postpartum examination, with referrals and followup as needed, including:**
 1. **Laboratory services as appropriate**
 2. **Family planning services**
 3. **Counseling as appropriate regarding the topics noted in III F above and other relevant topics in response to parental concern**
- IV. **Health education regarding such topics as:**
- A. **Items in I(C)10 and III F above**
 - B. **Developing positive health habits**
 - C. **Using health services appropriately**
 - D. **Using community health resources such as WIC, food stamps, welfare and social services that bear significantly on health status**
- V. **Access-related services:**
- A. **Transportation services as appropriate including**
 1. **Emergency medical transport services for both mother and newborn**
 2. **Transportation services associated with a regionalized perinatal and/or tertiary care network**
 3. **Transportation services that facilitate obtaining needed health services**
 - B. **Outreach services**
 - C. **Hotline, translator, and 24-hour emergency telephone services**
 - D. **Child care services to facilitate obtaining needed health services**

Health Services for Infants in the First Year of Life

I. Services in the neonatal period

- A. Evaluation of the newborn infant immediately after delivery and institution of appropriate support procedures such as nasal/oral suctioning
- B. Complete physical examination, including length, weight, and head circumference
- C. Laboratory tests to screen for genetically-determined diseases including PKU, hypothyroidism and galactosemia
- D. Diagnosis and treatment^a or referral and followup of general health problems, both acute and chronic
- E. Preventive procedures to include
 1. Gonococcal eye infection prophylaxis
 2. Administration of vitamin K
- F. Services of a newborn intensive care unit as appropriate
- G. Nutritional assessment and services^c and supplementation as needed
- H. Bonding and attachment support activities including provision for extended contact between parents and their infant immediately after delivery and, where desired by the parents, rooming-in arrangements or the equivalent
- I. Arrangements for continuous, comprehensive pediatric care for the newborn following discharge from the hospital
- J. Home health services^d

II. Services during balance of first year of life

- A. Periodic health assessment to include:
 1. History and systems review (general medical and social, family and genetic background, with items of inquiry determined by age, developmental stage, and likelihood of potential problems)
 2. Complete physical examination to include:
 - a. Height and weight
 - b. Head circumference
 - c. Developmental-behavioral assessment
 - d. Vision and hearing evaluation
 3. Screening and laboratory tests as indicated, including hemoglobin/hematocrit and tuberculin skin test; and, for infants at risk, such procedures as lead poisoning, parasite, and sickle cell screening
 4. Nutritional assessment and services^c and supplementation as needed (including provision of such supplements as iron and vitamin D, and fluoride if community water supply is not fluoridated)
- B. Immunizations according to nationally recognized standards
- C. Diagnosis and treatment^a or referral and followup of general health problems, both acute and chronic
- D. Home health services^d

III. Services for families during infant's first year of life

- A. Counseling and anticipatory guidance with referrals and followup as needed regarding:
 1. Infant development and behavior
 2. Maternal nutritional needs, especially if breast feeding, and infant nutritional needs and feeding practices
 3. Automobile restraints for infants, and general accident prevention concepts (especially home accidents and accidental poisoning)
 4. Infant stimulation and parenting skills, with specific appraisal to identify parents at risk of child abuse or neglect

5. Need for and importance of immunizations
6. Effect on children of parental smoking, use of alcohol and other drugs, and other health-damaging behaviors
7. The importance of a source of continuous and comprehensive care for mother and child, including identification of available resources to help with such problems as sudden illness or breast feeding difficulties
8. Recognition and management of illness
9. Hygiene and first aid
10. Child care arrangements
11. Other relevant topics in response to parental concern
- B. Counseling and provision of appropriate treatment^{a,b} and/or referral to appropriate services (including home health and homemaker services^d) as needed for parents:
 1. Who have chronic illnesses, handicapping conditions, alcohol or drug problems, mental health problems (including maternal depression) or other health problems that seriously affect their capacity to care for the infant
 2. Whose infant is seriously ill
 3. Whose infant has a chronic illness or handicapping condition
 4. Whose infant is or is about to be hospitalized
- IV. Health education regarding such topics as:
 - A. Items in III A above
 - B. Developing positive health habits
 - C. Using health services appropriately
 - D. Using community health resources such as WIC, food stamps, welfare and social services that bear significantly on health status
- V. Access-related services (see section V, Health Services for Women of Reproductive Age)

^aIn the lists:

^bServices for both acute and chronic medical conditions include inpatient and outpatient services, clinic and physician office services, emergency services, laboratory and X-ray services, provision of prescribed drugs and vaccines, medical supplies and rehabilitation services.

^cServices for both acute and chronic mental health conditions include inpatient and outpatient hospital services, long-term psychiatric care, clinic and physician office services, counseling and anticipatory guidance, crisis intervention services, laboratory services, and provision of prescribed drugs.

^dNutrition services include screening/assessment of nutritional status; dietary counseling to assist people to meet their normal and therapeutic nutrition needs; nutrition education; and provision of, or referral to, resources needed to improve or maintain nutritional health, i.e., supplemental food assistance, special feeding equipment, and food service programs.

^eHome health services include the provision of medical, nursing, dietary, and rehabilitative services in the home; homemaker services including assistance for the family in routine household responsibilities when illness or disability interferes with such functions.

Members of the Board of Directors, Staff and Friends of Planned Parenthood Association of East Tennessee, I am indeed genuinely honored to have been chosen as the keynote speaker for this your 23rd Annual Dinner. You are to be congratulated for the productivity of this superb affiliate. The more than 13,000 clinic visits attest to this and the nearly 3,000 new patients, who received your services, are indeed fortunate.

My charge for tonight is broad in scope. I am to address for you trends in reproductive health care and their implications for our organization and our movement. This I will do, however, to simplify and facilitate this task, a brief review of the evolution of our current health care system seems in order.

Our current health care system has evolved through several tiers. I believe it fair to state that, by and large, our concept of a "health care -system," certainly up to the 1950's, was that of

personnel and facilities. If these two components were in place, a health care system was then thought to exist.

About then, medical sociologists were beginning to educate us. They were helping us understand that adverse health care outcome resulted fundamentally from a failure to link those in need with the health care system whatever its configuration might be. Sociologists described barriers to health care and have categorized them as organizational and attitudinal barriers. The former being defined as obstacles to health care which are recognized but cannot be surmounted by the consumer. These are entities which usually occur as a result of inadequate economic resources. On the other hand, attitudinal barriers are described as those obstacles to health care which are not recognized by the consumer and result from such factors as fear, superstition, social deprivation and the like.

Well, with this recognition, the 1960's heralded "the access" to health care movement. We were finally beginning to realize that conduits had to exist between the health care system and those in need. And without question, most of you here are poignantly aware of the implications of the access issue as it relates to much of our movement--more about this later.

By the 1970's another term had crept into our provision of health care and was the issue of utilization. This could be called our third tier of recognition. We learned that the mere existence of facilities and personnel with structured conduits did not translate a priori into utilization. We have now realized that our access conduits cannot remain passive access ways which anticipate that those in need will flow into the health care system; but rather we now know that the conduits must allow for two way passage

which will facilitate the health care system's moving out into the community through outreach activities.

Perhaps the fourth and final tier in this scenario is that of evaluation. In order to truly be effective and to be fiscally responsible, it is not enough to have a system that affords access to care which is utilized; we must determine if this process, in fact, translates into improved health care outcomes. Much of what the Alan Guttmacher Institute is about addresses this aspect of the health care system. Hence, with this background in mind, the implications of changing reproductive health care trends should be better understood.

Trends in reproductive health care as they relate to the activities of Planned Parenthood can be placed into three broad categories, (1) fertility control, (2) obstetrical care, and (3) infertility services. Fertility control conveniently is subdivided

into temporary control i.e., contraception, abortion and permanent control or sterilization.

As an obstetrician-gynecologist, I am more than eager to share with you my views regarding the purely medical aspects of medical reproductive health care trends. However, for this presentation to be of greatest utility to most here, it is essential that I do this within a context that keeps sharply focused the operational format of Planned Parenthood. Basically, this operational format relates to the provision of direct services, education, advocacy and research. Hence, the implications of trends in reproductive health care will hold the most significance for these operational areas.

There is an adage that states when one makes chicken soup the most important ingredient is the chicken. To extrapolate this to Planned Parenthood it is clear that if we espouse reproductive freedom

then our most important activity is fertility control. Obstetrical care and infertility issues are no doubt important, but our true raison d'etre is indeed fertility control.

The perfect contraceptive can be defined as 100 percent effective all the time, free of side-effects, not interfering with the spontaneity of sex, with its actions being immediately reversible when conception is sought and its use the shared responsibility of both partners. Now, obviously, this is an ideal that is not likely attainable, but there are, however, numerous methods available each having its own advantages and disadvantages. Temporary contraceptive measures commonly used can be categorized as steroids (the pill), IUD (intrauterine device), and barrier methods (which include the diaphragm, condom, jells, foams and the sponge).

With any contraceptive, the major considerations

are effectiveness and safety which tend to act reciprocally, i.e. as effectiveness increases safety decreases. Convenience is also a very significant consideration.

By far, the pill continues to be the contraceptive of choice for the majority of new patients utilizing Planned Parenthood facilities. It has the best theoretical-effectiveness and the best use-effectiveness of all of the contraceptive modalities. As an attestation to this fact, more than 10 million women in this country are current users. In 1982, 61 percent of all new patients, cared for by Planned Parenthood, chose the pill as their contraceptive method. The second most frequently chosen method was barrier contraception, which was 35 percent of patients. This included all forms of barrier methods. It is important to note that 1974 was the peak year for pill usage for our patients at 79 percent. However, as more adverse

information reached the public regarding the pill's side-effects, there was a progressive reduction in pill usage, and by 1980, only 56 percent of our patients were choosing the pill. However, over the past 3 years, there has been a gradual increase to our current level of 61 percent.

Many of the past oral contraceptive side-effects have been reduced or eliminated and in great part explain the increasing pill usage. The dramatic decrease in the hormonal strength contained in these newer generation pills has often made many reports of side-effects outdated before they are published. Think how far we have come, moving from 10mg of the progestin down to 1 mg and decreasing the estrogen content from 100 micrograms down to 30 micrograms. The significance of this decreased dosage with its resultant decrease in side-effects is that more patients can now use these agents. More younger and more older women are now

candidates to use these compounds with much greater safety. This clearly has far reaching implications for us.

Beyond their increased safety, it is incumbent upon us to also promote the many positive benefits that are attendant to pill usage. There has been a significant reduction in the rate of hospitalization for a variety of problems including functional ovarian cysts, ectopic pregnancy and pelvic inflammatory disease just to name some. And you can quickly discern that the avoidance of these conditions will greatly enhance future fertility. Hence, this reproductive trend will impact what we do in education, and service delivery and will influence much of our research emphasis regarding low dose steroid contraceptive therapy.

Only 3.8 percent of our patients now choose the IUD as their contraceptive choice and that rate has declined steadily since 1977. Its peak usage

occurred in 1971 when 13.4 percent of all new patients choose this method. There are two primary reasons which explain this low and declining use of the IUD.

First the IUD is associated with an inordinate rate of pelvic inflammatory disease. Secondly, a large proportion of our patient population is young and nulliparous, hence, the relationship between infection and subsequent reproductive failure has significantly curtailed the use of this contraceptive method. Nearly 10 thousand women per year of this country's 2.3 million IUD users are hospitalized with pelvic inflammation.

The IUD does, however, have one very unique characteristic that is not present with any other form of contraception; it is the only contraceptive that requires positive action to discontinue its usage. It cannot be discontinued passively. One of the major implications for Planned Parenthood with respect to the IUD is our need to promote continued research in

the development of an effective gonococcal vaccine. Success here would greatly enhance the acceptability of this otherwise excellent contraceptive modality.

The barrier methods constitute the last group of temporary fertility control measures. This broad category encompasses the diaphragm, foams, jells, sponges and the condom; 34.9 percent of all of our new patients currently choose one of these for their fertility control method. Of this figure, one-third choose the diaphragm. In 1971, only 4 percent of the patients chose the diaphragm. In 1982, its use had climbed to 11.7 percent; a trend that started in 1976 when its use almost doubled going from 5.7 to 10.4 percent. This increase coincided in great part with publication of much of the data on the adverse effects of birth control pills.

Because of the rather high failure rate of the diaphragm, jells, foams and creams, it is not likely that their utilization should or will increase

significantly--particularly at the expense of more effective methods. The first year pregnancy rate with the diaphragm is 18.6 percent and for foams and jells, it is 17.9 percent. However, over time, particularly after the first year, the pregnancy rate decreases by 40 percent. Nonetheless, this rate remains inordinately high.

It is not commonly apparent, but worldwide, condoms are the most widely used contraceptive method. Historically, condoms were developed in the 1840's with the introduction of vulcanized rubber and their mass marketing became established by the 1870's. In 1936, the FDA began regulation of condoms and placed their effectiveness in preventing pregnancy at greater than 90 percent.

With introduction of the pill in the 1960's, condom use decreased sharply and by 1976, only 10.8 percent of married couples in the United States relied

on this method. However, with controversies regarding pill side-effects and the recognition of new sexually transmitted diseases such as herpes and Chlamydia, condom use has increased by a 100 percent over the 1976 figure.

Earlier in the year, I read John Naisbitt's number one best-seller, *Megatrends*, as perhaps did some of you. As you will recall, one of the ten megatrends addressed in his book is entitled, "from institutional help to self-help." It is my thinking that the new over-the-counter sponge contraceptive called *Today* is an expression of this self-help movement. Here we see the availability of a new, convenient and possibly more reliable barrier contraceptive method that can be obtained without the direct involvement of the established health care system. Planned Parenthood should support measures that facilitate increased utilization of contraceptive modalities even

if it follows a less traditional health care approach.

Other temporary contraceptive measures that warrant brief mention include some developments in the rhythm method and new aspects in male contraception. As mentioned earlier, this movement towards self help will make rhythm methods more attractive to a larger segment of the population. Self-administered tests on the cervical mucus are being developed which will help better predict the presence or absence of ovulation or impending ovulation.

The biological responsibility of childbearing still resides with the female, at least for the present time. Again, however, I feel it is incumbent for Planned Parenthood to continue to forge ahead with those programs that promote increased male responsibility in contraception. And again, it has to be emphasized that worldwide condoms are still relied upon as the major form of contraception, and even today in this

country, one in five marriages depends upon this contraceptive method.

With an eye toward the future, there are already some exciting possibilities for male contraception. Some of you have probably heard of the compound "gossypol", which is extracted from cotton seeds. Chinese demographers noted and confirmed that men who worked in the cotton seed mills had a significantly higher rate of infertility than did their controls. A male birth control pill containing this substance has been used in China and without question it causes infertility. However, unanswered questions remain regarding its health hazards, reversibility, and possible genetic effects.

In Sweden, and here in the United States at our own Vanderbilt University in Nashville, experiments are being conducted to develop a nasal spray for men prepared from a hypothalamic hormone. This spray

decreases spermatogenesis to the point of infertility. Also, high-frequency ultrasound is being experimented with to reduce sperm formation in males. These are exciting trends but by and large will remain outside the major operational format of Planned Parenthood for some time to come.

Permanent fertility control or sterilization is a most important modality for Planned Parenthood. The majority of white married couples in this country, past the age of 30, have chosen this permanent form of fertility control and it is most encouraging that here males are participating almost equally. In 1983, 15 percent of women in marriages and 14 percent of men in marriages had opted for sterilization. This trend has shown a continued gradual increase over the past 20 years.

Planned Parenthood Affiliates are now providing both male and female outpatient sterilization procedures. The provision of this service both directly and by

referral linkages must remain a priority for our organization. With current efforts to control health care costs in this country, outpatient minilap sterilization procedures will become increasingly attractive--particularly to health care funders, as we move more into the area of DRG's and TEFRA.

Infertility and obstetrical care will receive only brief comments. It is absolutely essential that Planned Parenthood remain sensitive to that 10 percent of patients who suffer involuntary infertility. When infertility services are not otherwise available in a community, it is my strong feeling that Planned Parenthood has a significant responsibility to provide this service--this is particularly true for those affiliates who provide abortion services. In 1982, only 700 women chose to have a Planned Parenthood Clinic provide their prenatal care. And perhaps this is appropriate given the wide availability of prenatal

services. But here again, as with infertility services, when prenatal care is not otherwise available in a community, Planned Parenthood must give this need high priority. This also may be the time for us to demonstrate that our organization can provide prenatal service safely and conveniently at a lower cost.

Without question, as an organization we must commit a major share of our energies to assuring abortion availability to those unsuccessful at contraception. We must continue to the fullest extent possible to have these services provided within the first trimester. There are many exciting developments occurring with respect to noninvasive early pregnancy termination utilizing prostaglandins. Vaginal suppositories are being developed that eventually could render obsolete the majority of our current abortion methods that require mechanical evacuation of the uterus. We must continue

research in this area.

Although we have had some recent successes in assuring the continuation of the option of abortion access for American women, by no means can we become less vigilant in our efforts. It has long been my feeling that as an organization, our greatest utility lies in our advocacy role; the vehicle through which we accomplish this is you - the volunteers. You espouse and articulate the theme of our movement. For our organization and our movement, the most significant reproductive trend today is the unremitting forces that are in opposition to reproductive rights and the concept of personal freedom. The implications of this trend are clear--we must understand the issues and anticipate and not simply react to the opposition. Clearly, decisions by the Supreme Court last year provided a significant impetus to abortion access when it struck down in-hospital requirements for the performance of

second trimester abortion. However, the Court upheld consent laws for minors; hence, our opponents can still create abortion deterrents by seeking legislation which will necessitate such an approval.

Massachusetts has already enacted a minority consent requirement law which has been described as "an excruciating legislative failure". This statute has caused significant emotional stress for numerous pregnant adolescents and it appears that a considerable number of such patients are now leaving the state to obtain abortion services. There are data to support this contention. Health Departments from Massachusetts between 1980, just before the law took effect, and 1982 show a 45 percent decline in abortion services to patients 17 years and younger. This seems to be a particularly valid observation given the fact that births to minors during the same time period increased by only one percent.

Attorneys and Planned Parenthood officials in Massachusetts have characterized their State's minority consent requirements as a meaningless exercise and gratuitous burden because in more than 95 percent of cases judges have found the minors sufficiently mature to make their decisions. In the remaining 5 percent of cases in which the minor has not been found to be mature, it has nonetheless most often been decided that the bearing of a child would not be in her best interest and the abortion request has been granted.

The Supreme Court, in this decision (Akron and Ashcroft), upheld by a single vote margin the constitutionality of minority consent requirements, but in doing so, it did not examine how such laws work in actual practice. Hence, an opening has been left for those of us who would like to see such laws invalidated. This clearly has to be a future strategy

for us.

With respect to the issue of second trimester abortion, it is commendable that the Court struck down the in-hospital requirement. Their decision cancelled existing such laws in 18 states. Hence, there are now no laws governing this procedure in those states. Physicians in those states, however, are cautioned and must be extremely circumspect in providing this service. They cannot simply start performing any type of termination procedures at any gestational age. They would be well advised to be guided by acceptable medical standards and they must be mindful that the 1973 Roe vs. Wade decision indeed holds that the states have a legitimate interest and responsibility in protecting maternal health in second trimester abortions. However, these "protections" will not be legally valid if they are judged as being unduly burdensome or designed to confound and obfuscate access to the procedure. We,

in the movement, must work to prevent the erection of such barriers to late abortion access.

In closing, there is one other area of national activity that certainly will affect the future of our movement and that is the impending change that is most likely to occur in our United States' Supreme Court make up. With five current justices now past the age of 75, it should be apparent that the winner of this Fall's Presidential Election will be in a position to significantly shape abortion policies well into the next century. In my judgement, the threat or safeguard to the right to choose abortion resides in the next presidential appointees to our highest judicial body.

Obviously, there are many other areas of urgency and concern that simply cannot be addressed in a single presentation. However, I believe it is clear to all of us here that much has been accomplished and there is

much yet to be done. . With the caliber of dedicated volunteers and competent staff which characterize our organization, I hold not the slightest reservation that we will prevail.

Thank you very much for allowing me to share these thoughts with you tonight.

Hemoglobinopathies in Pregnancy

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MODERATOR: Henry W. Foster, M.D.—Professor and Chairman, Department of Obstetrics and Gynecology, Meharry Medical College, Nashville, Tennessee

DISCUSSANTS: David Z. Kluy, M.D.—Associate Professor, Department of Obstetrics and Gynecology, University of South Alabama, College of Medicine, Mobile, Alabama

John C. Morrison, M.D.—Director, Division of Maternal-Fetal Medicine, Professor, Department of Obstetrics and Gynecology, University of Mississippi Medical Center, Jackson, Mississippi

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Past President, ACOG*

This continuing medical education program includes:

- Statement of learning objectives
- Pretest questions and answers
- Audiocassette recording and printed transcript of panel discussion
- Post-test questions
- Post-test response form
- List of recommended supplementary reading materials



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MEDICAL EDUCATION

Learning Objectives

After completing this program, the physician should be better able to:

1. Appreciate the adverse effect on perinatal outcome inflicted by the hemoglobinopathies.
2. Describe a diagnostic screening method for sickle hemoglobinopathy.
3. Discuss the possible advantages and disadvantages of prophylactic partial exchange transfusion.
4. List an approach to contraception for patients with sickle cell disease and sickle cell trait.
5. Describe at least two current approaches to antenatal diagnoses of sickle cell disease.

Transcript of the Panel Discussion

(As recorded
in the Audiotape)

DR. HENRY W. FOSTER: I am Henry Foster, Professor and Chairman of the Department of Obstetrics and Gynecology, Meharry Medical College, Nashville, Tennessee.

DR. DAVID Z. KITAY: David Kitay, Associate Professor of Obstetrics and Gynecology, University of South Alabama College of Medicine, Mobile, Alabama.

DR. JOHN C. MORRISON: I'm Dr. John Morrison, Director of Maternal-Fetal Medicine, in the Department of Obstetrics and Gynecology at the University of Mississippi Medical Center in Jackson, Mississippi.

DR. FOSTER: Welcome to ACOG Update. Our topic for discussion for today is the hemoglobinopathies in pregnancy. Although more than 150 abnormal hemoglobins have been identified, the vast majority produce no clinical manifestations. However, the hemoglobinopathies most often seen in Afro-Americans involve hemoglobin S and hemoglobin C. Although the existence of sickle cell disease dates back to antiquity, it was not until 1910 in Chicago that Dr. James B. Herrick first described this condition. Dr. Herrick, a hematologist, had a West African student working in his laboratory who had bouts of illness characterized by frequent joint pain, abdominal pain, and when Dr. Herrick looked at his blood cells under the microscope, they took on a peculiar sickle shape. The disease remained an enigma until 1949 when Linus Pauling, the Noble Laureate, identified the molecular basis for this disease, demonstrated hydrophobic bonding of amino acids and clarified this cellular interaction. The homozygous hemoglobin SS and the doubly heterozygous SC and S beta-thalassemia hemoglobinopathies are associated with the greatest maternal morbidity and mortality and fetal wastage. It is, therefore, this group of hemoglobinopathies that will be the focus of our discussion today.

David, what is the extent of maternal and

Pretest Questions

Before listening to the audiotape or examining the transcript of the panel discussion, you will find it useful to test your general understanding of the subject of this program with this brief introductory quiz. (The correct answers will be found on page 9 of this booklet.)

- | | |
|---|--|
| 1. The majority of known hemoglobinopathies cause extensive perinatal morbidity.
☐ True
☐ False | 4. Narcotic administration during sickle cell crises is seldom responsible for causing drug addiction.
☐ True
☐ False |
| 2. Solubility screening tests can distinguish sickle disease (homozygous) from sickle trait (heterozygous).
☐ True
☐ False | 5. Amniocentesis with umbilical or placental vein sampling is now the most commonly used method of antenatal diagnosis.
☐ True
☐ False |
| 3. Prophylactic partial exchange transfusion is now accepted as the method of managing pregnant patients with sickle cell disease.
☐ True
☐ False | 6. The type of obstetrical anesthesia can affect breastfeeding effectiveness.
☐ True
☐ False |

This information does not dictate an exclusive course of treatment or procedure to be followed and should not be construed as excluding other acceptable methods of practice variations, taking into account the needs of the individual patient, resources, and limitations unique to the institution or type of practice which may be appropriate.

fetal morbidity and mortality inflicted by this disease is your hospital or setting?

DR. KITAY: In Mobile and in Atlanta, the two cities that I've had experience with, the maternal morbidity and mortality are quite different. In Atlanta, maternal sickle cell disease which is homozygous SS or the sickling disorders, which includes everything you've said, is rather benign. In Mobile, we're about halfway between being totally benign and the experience that Mississippi has where it is totally bad. The maternal mortality rate, in general, in Atlanta approaches zero. In Mobile, it also approaches zero.

DR. FOSTER: John, in Mississippi it's totally bad. Perhaps you might comment about what perinatal outcome is in your experience.

DR. MORRISON: Well, if we look at maternal mortality as an isolated statistic, we also approach zero as the former institution where I was, the University of Tennessee, in Memphis. I would say since 1970, 1971, the reproductive statistics, particularly as it applies to maternal mortality, have really been quite different from those we observed in the '40s, '50s, and '60s. So maternal mortality I think is not a good yardstick to use as far as morbidity from sickle cell disease or anything else is really concerned.

DR. FOSTER: Good. What would you estimate, David, is the overall maternal mortality incidence with this disease? Would you say 1% or about 10% as it was reported two decades ago.

DR. KITAY: No, Henry, I'd say that—first of all, when I speak about maternal mortality in Mississippi I am talking without therapy and the basic natural history of the disease. Secondly, as far as your question is concerned, I would say maternal mortality in the United States now is probably between 1 and 5%.

DR. FOSTER: You share that experience, John?

DR. MORRISON: Yes, I think so. In a recent review we did during pregnancy, my assessment would be around 1 or 2 or 3% maternal mortality, and that includes treated and untreated.

DR. FOSTER: I would presume, of course, that there's a different story with respect to pregnancy loss and I like to use the term pregnancy loss to include both

abortion and perinatal wastage. What comments would you like to make regarding this, John?

DR. MORRISON: Well, in the data that we've compiled in Mississippi and in Tennessee and in looking at the data from other centers, I think that probably we're looking more at about a 10 or 15% loss rate. The abortion rate, if you take the normal loss of abortion of 15%, we're talking about that much more on top of the normal loss rate.

DR. FOSTER: David, what about perinatal loss in Mobile?

DR. KITAY: Perinatal loss is about what Dr. Morrison said, but I think that you need to understand that if you get to the childbearing age the odds are that your disease is going to be a lot milder, and, therefore, your perinatal loss will probably be a lot lower than it might be early on in life.

DR. FOSTER: Why don't we explore the variation in the different hemoglobinopathies. Twenty-five years ago, an article was reported that showed four deaths with sixteen cases of hemoglobin SC and, of course, it was quickly concluded that the maternal mortality rate was 25%. John, the difference in pregnancy performance with SS vs. S vs. SC?

DR. MORRISON: Yes, I think it's the issue of quantity and quality. In the SS patients the disease is usually more severe. They have a greater chance of having severe morbidity, including death overall. The thing that's worrisome is that in the SC patients they can appear quite healthy in the nonpregnant state and even have delivered several gestations, only to succumb to severe morbidity in, say, the third or fourth pregnancy, as quite nicely demonstrated by the statistics from Dallas.

DR. FOSTER: David, there's always been a question raised about the fecundity in these patients. Is it higher, lower?

DR. KITAY: In females with SS-, SC-, or S-thal disease, I have never seen a difference from the general population in terms of ability to get pregnant.

DR. FOSTER: What's your experience, John?

DR. MORRISON: I would have a similar view. There were a lot of data I think generated in the late '50s and mid-'60s that

would have suggested that fertility rates were lower and because, probably, of severe maternal disorders in the nonpregnant state, I think that fertility is just as normal.

DR. FOSTER: John, what about screening and counseling? What tests do you use for screening and what could you say perhaps about accuracy and cost?

DR. MORRISON: We are using one or many solubility tests that are simple screening devices, used on maternal blood that will for a very inexpensive cost, 5 or 10 dollars, you'll be able to easily tell whether or not a hemoglobinopathy is present. Then, of course, you have to go to more subtle tests such as the hemoglobin electrophoresis to actually identify the hemoglobinopathy. Is this simple trait or are we dealing with one of the major hemoglobinopathies like SS disease?

DR. FOSTER: David, what is your feeling regarding the choice of screening tests?

DR. KITAY: In support of what John said, that solubility test is cheap and quick. It can be done nicely, but it does have some false positives. Not only that, it does not tell you the doubly heterozygous state because you're only looking for hemoglobin S. We have gone to the hemoglobin electrophoresis routinely with quantitated A2 hemoglobin.

DR. FOSTER: We, too, use primarily hemoglobin electrophoresis with further subtests if they become necessary to differentiate. I think there are a couple of other advantages, too, with hemoglobin electrophoresis. Obviously, it's only a one-time thing. It also tells you a good bit about A2 hemoglobin and you might be able to diagnose thalassemia with this testing. What about counseling, David?

DR. KITAY: I have found that I am totally ineffective at that and that training nursing personnel or other special counselors, to use special audiovisual aids which we have developed, and the audiovisual aids are important. I think over the entire pregnancy, since the woman is a captive audience, that seems to work and most patients wind up the pregnancy knowing something about their hemoglobin.

DR. FOSTER: John?

DR. MORRISON: As David pointed out, it has been a problem and what we have done is gone to the training counselors, developed in conjunction with our depart-

ment and the department of hematology, to address their concerns along ethnic lines as well as their concerns along medical lines.

DR. FOSTER: One of the things that I always try and feel that's a very important part of counseling is to reduce stigmatization by this disease. I think it's very important to always inform patients that it is very likely that this mutation occurred in response to falciparum malaria in equatorial Africa. I think people feel a lot better about what they have, and, in fact, almost tell them, was it not for this mutation, you probably wouldn't be sitting here talking today because you wouldn't exist. But I do think that that's a part of a counseling. I believe the question may have been resolved regarding whether screening for sickle hemoglobin should be voluntary or mandatory. What's your position on this?

DR. KITAY: It's totally voluntary in any program I've been in.

DR. MORRISON: Same, Hank. It's totally voluntary in Mississippi and in Memphis as well.

DR. FOSTER: John, why don't you tell us what your attitudes are regarding sickle trait—not disease.

DR. MORRISON: Well, basically, we view sickle-cell-trait patients during pregnancy as a normal pregnant patient. I must admit we do screen them three times during pregnancy for urinary tract infection, for asymptomatic bacteriuria, where in our normal patient population only once for pregnancy. We are a little bit more, I guess, judicious in that way, but other than that we treat them quite normally, and our experience over the last ten years would support that treatment.

DR. FOSTER: David, do you have any additions?

DR. KITAY: We treat our sickle-trait patients as perfectly normal pregnancies with the exception of the urinary tract which we recognize has a three times chance incidence of getting infected, and, therefore, we do check them quite a great deal.

DR. FOSTER: How do you manage these patients once they have positive cultures? How long do you treat them? What agents do you use to treat them?

DR. KITAY: We approach urinary tract infection, be it active and clinical or sub-

clinical, and just asymptomatic bacteriuria as the same. We treat them aggressively initially with any appropriate antibiotic, sulfas or ampicillin, or anything else that you consider effective, but the most important thing is follow-up. If these patients, after one course of therapy, continue to show bacteriuria or a recurrence of the disease, we will then treat them the remainder of their pregnancy with prophylaxis.

DR. FOSTER: Yes. You mentioned sulfas. Do you use that in any other trimesters of pregnancy?

DR. KITAY: Well, I haven't seen troubles with bilirubin in the third trimester. Other people have and some people even say theoretically that it can't exist. I've never seen it clinically.

DR. FOSTER: John?

DR. MORRISON: We primarily would use ampicillin because of its cost and because it does such a good job with *E. coli*, which most of the time is what you're going to find on your cultures. I think follow-up is the key here and after they've had their course of therapy, which is usually 10 days, then we bring them back in 2 weeks, which would be 4 days after they stop the therapy, and re-screen them. I think that's the most important aspect. As to the use of sulfas, I think if you're talking about the generic sort of approach, like Gantrel or something like that, I think that can really be realistically used in any trimester. Clinically, I don't think I've ever seen a case where it was harmful.

DR. FOSTER: Let's move to the disease—the SS and the SC, perhaps the S beta-thal. David, should iron therapy be used with these patients in pregnancy?

DR. KITAY: The medical hematologists are fond of telling us that pregnancy is the best thing for a patient with sickle cell disease because it's a great iron drain and, in fact, it is. On the other hand, I have seen patients with bone marrow evidence—patients with SC disease which is milder—with marrow evidence of iron deficiency, so that I guess my position would be that iron therapy shouldn't be used aggressively. The amount of iron in a multivitamin pill is adequate.

DR. FOSTER: John, your comments.

DR. MORRISON: Well, we're a bit more aggressive. What we do is perform iron

studies which certainly are notoriously not as accurate during pregnancy. Nevertheless, I think that it's reasonable to give our patient population to take a look at the iron hemostasis in these patients and then give them iron if they need it. In a recent study in reviewing 40 such patients, 29 of them had evidence of iron need during pregnancy.

DR. KITAY: I agree with the recent study, but that evidence of iron deficiency may actually be beneficial to the patient since microcytes, the smaller the cell gets, the better they'll get through the microcirculation, and this has been shown in nonpregnant patients and I would hope one day would be shown in pregnant women.

DR. FOSTER: Will either of you disagree with the need for folate or folic acid in these patients?

DR. MORRISON: Not at all. I think that it is required.

DR. KITAY: I think so.

DR. FOSTER: John, what is the role of prophylactic partial exchange transfusion in these patients?

DR. MORRISON: Well, obviously it's a very controversial question. Many people who have reported large series of patients have evinced good results without the use of the partial prophylactic exchange transfusions. On the other hand, we have not been able to get those good results without using the transfusions. I think the obvious advantages of the transfusions would be to decrease the number of sickle cells while increasing the number of normal donor cells, hemoglobin A-containing cells, and at the same time, of course, reducing, because of those two things being true, the chance that the patient will have a vaso-occlusive crisis. Of course, obviously the disadvantages are those associated with the transfusions themselves, namely, hepatitis and then, of course, the alloimmunization that can occur with donor blood.

DR. FOSTER: Yes, what are your comments, David, regarding prophylactic partial exchange transfusion?

DR. KITAY: Well I agree with John in everything he said. I would add AIDS to the disadvantages. That is a big problem these days in terms of patients accepting blood transfusions. One of the questions is, is there a subgroup of hemoglobinopathy patients who are more likely candidates for

the exchange transfusion? I think what we ought to do is look at the subgroup who are not candidates, in my opinion, for exchange transfusion, and that is the patient who has done well all her life despite a packed cell volume of 14 to 20%, who has had very little, if any, crises and who goes through the pregnancy very nicely without growth retardation.

DR. FOSTER: John, could you say a word about the technique of prophylactic partial exchange transfusion. Any particular tips?

DR. MORRISON: We've been using it for quite some time. Initially we simply did what we call manual exchange transfusions and that simply involved hydrating the patient and then performing a phlebotomy and draining off 500 cc of blood and replacing that with two units of buffy coat-poor washed red cells and then continuing that modern, usually through two or three exchanges, until we got to a hemoglobin A of about 40 to 50% and a hematocrit between 25 and 30%. Now most recently, within the last 4 or 5 years, we've used a technique called automated erythrocytapheresis which simply means that we use the blood bank's IBM cell separator and are able to draw the patient's blood via phlebotomy into a centrifugally forced drum where R's separated, and the actual patient's plasma with all the clotting factors and white blood cells, etc., are given back to the patient with the donor cells, and all that's lost is the patient's red cells, the sickled cells, if you will. This is a much simpler and I think more effective and efficient technique. We can, for example, obtain hemoglobin A's upward of 80 or 90% with this methodology.

DR. FOSTER: Why don't we move to another aspect of this disease that causes us all great difficulty. David, let me ask you. Regarding crisis management, during pregnancy, what are your comments or ideas?

DR. KITAY: Why don't we start it with missed diagnosis first because I think that the most amazing thing I have seen are patients who come to us with hemoglobin SC disease where the diagnosis isn't made until pregnancy, until the third trimester or until even postpartum, so these patients obviously don't go into crisis or if they do go into crisis, as John said they may do later on in pregnancy, then we shouldn't

miss the diagnosis. As far as analgesics, hydration, and oxygen therapy are concerned, they're all part of it, and I would place these patients into the subgroup where if I didn't exchange transfuse I might depending on the severity of the crisis.

DR. FOSTER: When you mentioned, David, missed diagnosis, the other thing came to my mind immediately is inadvertently attributing to a crisis what was some other perhaps intra-abdominal catastrophe such as an ectopic pregnancy or acute appendicitis and I think the listening audience must always keep that in mind that one cannot assume a priori that the pain is secondary to a crisis.

John, say a word about analgesics and perhaps narcotic medication during the height of a crisis. How liberal are you?

DR. MORRISON: Well, in a fairly well-documented crisis, hemoglobinopathy crisis, we're fairly liberal and aggressive in our attempts to control pain, but we do it sparingly with analgesics. The reason we're able to do that, if you have a patient with a crisis, usually one can either transfuse them or hydrate them and reduce the pain from the crisis by those two methods. So what we try to do is use analgesics sparingly in dosages for example, meperidine or Demerol, 25 mg, with a non-narcotic supplement. That usually will get the patient through until you can address it physiologically with hydration or with transfusion.

DR. FOSTER: It's been my position that you don't make drug addicts out of patients during an acute crisis, although that's been raised. David, what is your feeling regarding using narcotics in these patients?

DR. KITAY: You don't make drug addicts, as far as I'm concerned. I think the baseline must be remembered that approximately 20% of patients with SS or SC disease may have a personality disorder to begin with, probably as a result of their disease and, therefore, you shouldn't attribute all their problems to narcotic addiction.

DR. FOSTER: I would think that if it's only 20% personality disorder, they're better than the normal population, perhaps. What about oxygen therapy, John? Do you use it? What's its utility?

DR. MORRISON: Well, we certainly do use it. I must admit that there haven't been

good studies documenting how it actually helps the patient. For example, you might even have difficulty finding the best way to give oxygen, whether it's by face mask, nasal cannula, etc. We can demonstrate that not a lot of oxygen gets down in the lungs via some of those mechanisms, so then one asks, is it any good at all? But I think during a pregnancy-associated crisis, a vaso-occlusive crisis, we always use it because it doesn't hurt and it certainly may help.

DR. FOSTER: Do you have any additional comments, David, regarding oxygen?

DR. KITAY: I agree with John 100%. The problem with the crisis is once the crisis occurs, the essential deoxygenation has occurred and, therefore, giving oxygen isn't going to affect the crisis. What it will do is affect the number of sickle cells per unit time that hits the microvasculature and, therefore, causes further pain.

DR. FOSTER: The internists, however, feel that perhaps if there is a specific application for oxygen, it is a person with pneumonia.

What about the route of delivery in these patients, David? How do you think these patients should be delivered?

DR. KITAY: There was at a time the feeling that abdominal delivery was better. I don't think that's true. I think cesarean section should be reserved for obstetrical conditions only.

DR. FOSTER: What about monitoring these patients, John? Do you begin to treat these patients as some other high-risk categories, in terms of doing intrasternal assessment?

DR. MORRISON: Well, we are treating those with homozygous sickle cell disease or SC disease, for example, or S beta-thal, as a high-risk pregnancy in that we start their monitoring with nonstress tests at about 34 weeks. We also assess them at that time and one time in the last 4 weeks of pregnancy with an ultrasound to look at biophysical profile and particularly the volume of amniotic fluid. I think we have to rule out intrauterine growth retardation. Whether you use transfusions or not prophylactically, that is a risk, and we need to address that by following these babies, I think, as a high-risk pregnancy.

DR. FOSTER: David, has it been your

experience that even though these fetuses are stressed, perhaps they have accelerated fetal lung maturation?

DR. KITAY: No, it hasn't. I think that the searching for growth retardation in these babies is an extremely important thing especially when the mother is doing well.

DR. FOSTER: John?

DR. MORRISON: I would consider splitting that into two groups. The woman who has multiple crises, has been in the hospital several times during this particular pregnancy, and in general hasn't done well, it's been our experience that we find the fetus of that woman to have accelerated lung maturity. But I completely agree with David, the majority who sail through pregnancy and do quite well, there is simply no evidence just because they have a hemoglobinopathy with a low hemoglobin concentration that that baby has accelerated lung maturation from stress at all.

DR. FOSTER: Let's turn to another topic that's somewhat new and perhaps controversial and that's the whole question of antenatal diagnosis perhaps for making decisions regarding pregnancy continuation. What is occurring in South Alabama, David, with respect to amniocentesis?

DR. KITAY: Well, Henry, we've had very little experience with either that or chorionic villous biopsies since the latter takes a whole new setup to do, and the former, although we're certainly set up to do it, hasn't come up that often. It's a matter of a voluntary participation just like hemoglobinopathy is, although the test is excellent.

DR. FOSTER: John, do you have comments regarding antenatal diagnosis and what you're doing in Mississippi?

DR. MORRISON: Yes, I do. In our place we are offering the antenatal diagnosis prior to 16 weeks. In other words, if they register in our clinic or in our private office prior to that, we are offering them this technique. We are not offering the chorionic villous sampling technique but rather the amniocentesis, and its diagnostic possibilities through restrictive endonucleases, as far as the diagnostic techniques are concerned.

DR. FOSTER: We are also offering the same application in Tennessee. We're receiving patients from throughout the state before 16 weeks, offering simple amni-

ocentesis and looking at the amniocytes, as they are called, with restriction enzyme analysis and we're making some headway. We are not either, as you, doing anything with respect to chorion villous sampling at the present time.

DR. FOSTER: What about neonatal diagnosis? What tests are you using? What are you doing for the newborn infant?

DR. MORRISON: We're using the electrophoretic techniques because of, of course, the high amount of fetal hemoglobin in the cord blood makes the solubility testing quite impossible. So we're using that on patients who even have sickle cell trait or disease, at their request. Again, this is a voluntary sort of program, but we do offer that to women, and then, of course, test the cord blood with electrophoresis, thereby letting the education process of that family start quite early depending on what hemoglobinopathy, if any, we find.

DR. FOSTER: John, do you ever culture any of these cells to get a larger yield of hemoglobin?

DR. MORRISON: No, we have not been doing that. You're speaking of the neonatal samples now?

DR. FOSTER: Yes.

DR. MORRISON: No, we have been quite happy with the electrophoretic data that's been generated particularly if one uses the Tris and BDTA buffer within that solution. It reduces the number of false positives and negatives and gives you a much better separation on the plate and it is required to do that, to give you that nice separation because of the large amount of fetal hemoglobin.

DR. FOSTER: Very good. David, did you ever have any experience with amniocentesis and umbilical vein or placental vein sampling and culturing of cells before Kan and Dozy's work with hemoglobin restriction analysis?

DR. KITAY: We've not had experience and not done it, probably because no one has really gotten fired up over it because of the pregnancy loss rate, although I know that there were various places in this country where the pregnancy loss rate has been kept to a minimum.

DR. FOSTER: The other important fact to remember, which John really alluded to, is that you must remember it is possible to have a

patient with hereditary persistence of fetal hemoglobin and this must be considered any time a patient with this is bleeding and you're looking for fetal red cells or any time you're considering looking for fetal red cells.

DR. FOSTER: Let's move to another topic. I think that's very interesting that raises a question, that is a fertility control. First of all, David, what about fertility control in patients with sickle cell trait?

DR. KITAY: Well, I think that patients with sickle cell trait, as we decided before unanimously, are essentially not abnormal in the nonpregnant state if you don't take them up to 15,000 feet for 15 minutes, or expose them to any other oxygen-lowering problem. Steroid contraception in patients with the sickle gene, and especially the homozygous sickle gene, is important to sort out. The homozygous sickle patient has sickling. Sickling is not a clotting phenomenon, it's a mechanical phenomenon, so the idea would be to reduce sickling with a contraceptive in any way you could. There is some evidence to indicate that steroids, especially single steroids, tend to stabilize the red cell membrane, and I would vote for Depo-Provera if you're going to use a reversible contraception.

DR. FOSTER: John, react to those comments by David.

DR. MORRISON: Well, I certainly couldn't agree more, although we have trouble in a very clinical or practical sense in getting the Depo-Provera for our patients for contraception, and I think practitioners probably had the same difficulty in obtaining it and using it. It's certainly an approved drug, for a nonapproved indication and we do that all the time, but it does cause a concern.

DR. FOSTER: I've been very interested in the studies that have come from the Ivory Coast—from Africa—where they have used steroid contraception by birth control pill, the standard ones we've used, even the older ones, and have just had excellent results with them.

DR. FOSTER: I think, however, in the current medical-legal climate, even with the physiologic data that David has mentioned, that is, that it is not a steroid-mediated effect, if one did develop a blood clot while a sickler was on steroid contraception, it would be too risky to use them. So if you're going to

use that sort of contraception, something with progesterone in it, like Depo-Provera, would have to be your choice. In the future, we may be able to use the low-dose or the progestin-only pill, but we simply don't have data from this country at this time to indicate that we could recommend that.

DR. FOSTER: John, let me press you just a little bit more on something you mentioned. Do you think it's completely appropriate to extrapolate the data with birth control pills from the Ivory Coast to that in this country? Isn't there some good evidence that we may be dealing with two basically different types of sickle cell disease?

DR. MORRISON: I'm glad you brought that up, Hank, because I think there are several different kinds of sickle cell disease. We know that the sickle cell disease that electrophoretically, for all purposes, appears to be SS on electrophoresis, in persons living in India, Saudi Arabia, those areas, are much, much milder than, say, the African population, and the reason I used that as an example is because they should be considered the most severe. The other reason I used that as an example is the contraception that was used in those studies was Enovid B which has much more estrogen than we would use. Their data, which was not very well controlled, appears to not link any adverse effect with steroid use in those patients. If they can use that much contraception from the steroid and get good results with the worst population, if we can call it that, then I think in this country we probably could do it with the much lower doses that we commonly have on the market today.

DR. FOSTER: I think maybe both of you—I'm not sure whether it was you, David, or John—mentioned difficulty in the obtaining Depo-Provera. Did I hear that? John?

DR. MORRISON: Yes, I mentioned that.

DR. FOSTER: In terms of its availability or the fact that it has not been approved by the FDA for contraceptive purposes?

DR. MORRISON: I think the latter, Hank.

DR. FOSTER: Oh, O.K.

DR. MORRISON: It's certainly available. One can use it, but I think that we went through a period of euphoria 8 or 10

years ago and used it a lot for contraception and then the FDA, as you know, has taken a pretty dim view of that—of the use of it for that purpose, and they've had great difficulty in getting it licensed for contraception, although I think it works perfectly well and is the ideal contraception in these patients.

DR. FOSTER: We are using Depo-Provera and we are providing informed consent to the extent that we can and it indicates that the drug is approved by the FDA but is not approved for this purpose and that we feel that its effectiveness as a contraceptive agent is certainly better than anything other than perhaps the combination oral contraceptive pill. As you know, there are no manufactured intrauterine devices any more in this country; however, there are patients still wearing devices, particularly the non-metallic-containing devices that go back years, and a few people still have their copper-containing devices. My question to you is twofold—once, did you ever use IUDs in sickle cell disease patients and if a patient had an IUD now would you remove it?

DR. KITAY: The answer is no and yes. I've felt all along that this is contraindicated which is really violating some of the basic principles of iron loss—iron menstrual loss—in these people, which you want. However, the risk of infection is too high, and yes, I would remove any IUD I found present in a patient with SS disease.

DR. FOSTER: John, what's your position regarding IUDs?

DR. MORRISON: I totally agree with David. We have not used them in my 15 years at work in the field in these patients because I do feel that although there is controversy about infection rates in patients who have sickle hemoglobinopathies, in my opinion they are immunocompromised, and for that reason I would not use an IUD in those patients and have not. If someone came to me with an IUD I believe I would recommend that it be removed for those reasons.

DR. FOSTER: Let's move a bit further in terms of fertility control and look at the issue of permanent sterilization since so many patients who negotiate a successful pregnancy who have sickle cell disease will opt for sterilization. John, why don't you perhaps share your thinking regarding sterilization procedures, timing, methods.

DR. MORRISON: What we do is ask the patient with sickle hemoglobinopathies to decide on their family size, as anyone else would. We feel that with the methods that we've used over the past 10 or 15 years, that we can offer them a very good reproductive experience, and I think other people who, as we've said, don't use the prophylactic exchange method, likewise can offer good success to their patients. For that reason, unless they've had, as David described, a tremendously complicated pregnancy antepartum or nonpregnant state, we are not advising permanent sterilization on the basis of their sickle hemoglobinopathy. If one requested that, as they frequently do, as all women do, we are usually performing this with the postpartum tubal ligation with an infraumbilical incision. If I was doing it in a nonpregnant state, I would use a mini-laparotomy incision under general anesthesia. I think, rather than laparoscopic sterilization where one has to fill the abdomen with the gas, which can give anesthetic problems to that woman.

DR. FOSTER: David, any reaction, comments?

DR. KITAY: I totally agree with John. I think that the interesting thing that he said is that you offer these patients sterilization based on them as patients with some extra education as to the disease problem. I would use the mini-lap. I would fear non-control of the patient's breathing. If there's no snoring, there's no problem with anesthesia, and I think that that's a principle that even some anesthesiologists need to learn.

DR. FOSTER: I certainly share both of your comments on that. Further, using the laparoscopic sterilization, in this country 90% achieve their pneumoperitoneum with carbon dioxide and there are several studies that indicate that hypercarbia can develop with this, only further increasing the likelihood of sickling.

DR. FOSTER: Before we turn to future directions, I have a couple of questions to go back. I'll start with you, David. Are you routinely using the Polyvac or the vaccine for pneumococcal vaccine in these patients? And at what point and how frequently are you revaccinating?

DR. KITAY: Well, it's interesting, we have an extremely strong Outreach Program in Southern Alabama, and if a patient

requires the vaccine, meaning that she hasn't had it already, we'll of course administer it. I think that this is a vaccine that can be administered during pregnancy if I remember correctly. Is it not a dead vaccine?

DR. FOSTER: No, I don't believe you can give it during pregnancy. It's not recommended.

DR. KITAY: We have given it outside of pregnancy when it was required.

DR. FOSTER: Very good. Do you have any comments regarding polyvaccine?

DR. MORRISON: We have not used it. We have been very pleased with our very intensive risk assessment system and we educate the patients about respiratory complications during pregnancy, etc., and we are finding, I must say, many of the patients having had the pneumococcal vaccine prior to getting pregnant. As far as us giving it postpartum or something like that, we really have not and really don't see any need to.

DR. FOSTER: Yes, I share that by and large, but you know we are in the so-called unfortunate litigious climate now and one of the specific indications for the Polyvax is patients with homozygous and doubly heterozygous sickle cell. I think it certainly ought to be given strong consideration. I think it might offer a degree of protection. I do believe, David, that not only shouldn't it be given in pregnancy, I think the patient should not conceive for at least 3 months after receiving the vaccine, and I believe it's now recommended that it be repeated every 3 years—it used to be 2 years.

DR. KITAY: Do you know what the data is that supports the recommendation about pregnancy?

DR. FOSTER: Those are the recommendations by the manufacturer.

John, what would you advise your patients who would want to breastfeed their babies, now that nursing is increasing and the Surgeon General has a new proclamation that 75%, I believe, of patients will be nursing their babies when they leave the hospital and 35% 6 months later by 1990, so people are going to ask you this. How do you advise them?

DR. MORRISON: We, like you, Hank, have noticed a tremendous increase in the interest in breastfeeding amongst all our patients and we do not restrict it at all in the

patient with sickle cell hemoglobinopathy. We heartily encourage it in these women. We do offer them dietary supplementation and education regarding breastfeeding. So far as I know, we've not had any more women fail to breastfeed successfully in this group of patients compared with the norm and so unless they're debilitated from the severity of their disease which can happen with severe morbidity on occasion, then we heartily encourage it.

DR. FOSTER: And David, your aspects regarding nursing, breastfeeding?

DR. KITAY: It's interesting to contrast our population with what John said. We have not noticed an increased interest in breastfeeding in our population, our sickle cell population as well as the general population. What we've noticed is an increased interest on the part of the doctors, and I think that we would allow any sickle cell patient to breastfeed. However, the folate acid cost of pregnancy is pretty high, but the folate acid cost of lactation is out of sight, and I think that it's important to understand that the breast takes up folate acid preferentially even prior to the bone marrow so that supplementation with folate acid needs to continue as if the patient were pregnant even though she's breastfeeding.

DR. FOSTER: Do either of you do any studies regarding G6PD deficiencies in any of these patients?

DR. MORRISON: We have not routinely, unless they have symptoms that would lead us to be suspicious.

DR. FOSTER: And David.

DR. KITAY: We don't routinely although I have had extensive experience with this in Atlanta, and the interesting thing about it is you will pick up the heterozygous state of G6PD deficiency quite often and the homozygous state fairly often, but the clinical incidence of problems with this disease has been very, very low.

DR. FOSTER: And that's probably because I believe this is X linked and won't have manifestations clinically, and it's so rare for females to be homozygous.

Turning to the future, John, what can you tell us about extracorporeal drug therapy?

DR. MORRISON: Well, as you'll remember, Hank, they have had an interest in treating these patients with certain agents that either disrupt hydrophobic

bonding or decrease the percentages of deoxygenated S hemoglobin. Unfortunately, most of the agents that will do both of those things, the desickling agents, if you will, as well as the oxygenating agents are toxic, in concentrations that one needs to use them in and so extracorporeal methodology is going to have to be the way we do it if we use those particular compounds.

Now, there is some work with peptides being done now, particularly tryptophan and some of the other high-phenylalanine-containing peptides that do appear to be effective in the test tube. If one can get them to a high enough concentration to be effective clinically, because they don't appear to be toxic. So I think if we're looking at desickling agents or agents that would affect the percentage of deoxygenated S hemoglobin, we are going to be talking about extracorporeal drug therapy which is probably a few years away yet.

DR. FOSTER: Is it correct that urea is the only substance that will truly reverse sickling, that all of the others simply make cells resistant to sickling or is that incorrect? John.

DR. MORRISON: Well, it's my opinion, Hank, that there are a few compounds, some of the detergents and some of the peptides, that will actually reverse it, but certainly urea is the most common one everyone thinks about when we talk about reversing the sickling, so clinically we've had much more experience with that than we have any of the other compounds.

DR. FOSTER: David, have you had any experience with any of these compounds—carbamyl phosphate or urea—for anti-sickling medications?

DR. KITAY: No, I haven't. We wouldn't use urea or cyanate or things like this because of the possibility, of course, that it may affect the fetus in some adverse fashion and, as John mentioned, it is toxic. I think the future of this disease lies in a couple of areas. One is the drugs that John mentioned that tends to alter the erythrocyte membrane to prevent sickling. Another is a drug surprisingly which we already have on the market, and all of us have had a great deal of experience with, and that's Apresoline which tends to dilate precapillary arterioles and might prevent the so-called log jam effect.

DR. FOSTER: David, you certainly have had a lot of experience dealing with the

thalassemias and I'm somewhat aware of a new experimental medication called 5-azacytidine. Would you care to comment theoretically what's happening or any experiences you may have had yourself.

DR. KITAY: I haven't had any experiences with that particular medication. I'm not sure it has a great future. I think that the future for both the thalassemias and for sickle cell disease lies in turning on the synthesis of hemoglobin F genetically, because, although people will disagree with you and perhaps even those who sit here will disagree with me, my experience has been the minute you get about 10% hemoglobin F in the red cell, that the number of crises in the clinical disease drops sharply, so that the patients with the best outcome are the patients with SF disease, if you will, with hereditary persistence. As far as the thalassemias, our experience has been with beta thalassemia minor and that has been totally benign.

DR. FOSTER: John, do you have any comments regarding 5-azacytidine.

DR. MORRISON: Well, we certainly haven't used it clinically either. We have a fairly large population of the S beta-thal, particularly beta O thal, which do have morbidity associated with them. The S beta plus thal we don't have as large a population of, or maybe we're missing the diagnosis, perhaps, in some of them because they are so mild.

DR. FOSTER: As far as the drug itself, I would agree with David, that I believe our best hope for not only thalassemia but also for the sickle hemoglobinopathies and other hemoglobinopathies lies in the induction of hemoglobin A and hemoglobin F, and the studies in Philadelphia and Chicago are extremely promising. Of course, the problem is making that genome that you inject into the bone marrow last a long period of time and get established there, and if we solve that problem or the hematologists solve that problem, then I think we will finally have a cure to this, before, incurable disease.

DR. FOSTER: That's very good. The familiarity that I have with 5-azacytidine is that it has been able to raise the level of F hemoglobin in some patients with thalassemia, perhaps by allowing the gene that codes for F hemoglobin to become unmethylated again. Blocking DNA methyl transferase, I believe that's what it is and

are you aware—either of you aware—of any NIH protocols that are allowing for phase II or any human testing of this drug?

DR. MORRISON: No, I'm not, Hank.

DR. FOSTER: Are there any other areas regarding this update that you would like to raise at this point?

DR. MORRISON: Well, just a couple.

DR. FOSTER: John.

DR. MORRISON: I think Hank, one, we mentioned anesthesia and the way we use anesthesia in sickle cell patients. One of the important things as far as anesthesia is concerned is the choice of the agent. Sickle cell doesn't rule out, in my opinion, a conduction anesthesia and that's a very controversial area, but I think if the anesthesia is done appropriately, that continuous lumbar epidural anesthesia is good for and can be used in patients with sickle hemoglobinopathies during labor. Also, I think that we all have been afraid to some extent of general anesthesia because of the patient's going to sleep when, in actual point of fact, they're better oxygenated under anesthesia with PO_2 's in the 150 and 160 range than they are when they wake up. The big danger is postoperative atelectasis in these patients and one must have expert nursing care and meticulous intensive search for infections postoperatively if general anesthesia is used which again, I think, strengthens the argument for careful conduction anesthesia, during labor and delivery. David, how do you handle anesthesia?

DR. KITAY: I don't disagree with that at all and I agree with the general anesthetic approach very well. I'd like to make a comment in wrapping up this discussion, which is a little bit philosophical but a little bit practical. Number one, this disease should be solved on a molecular level because it was born on a molecular level. It was the first molecular disease described. Lastly, a point was made by John which I don't think we've emphasized enough. That is, there are patients in this world who have sickle cell disease and walk around with perfectly normal lives and never know it. However, those are the ones who migrated to this country at some point through various markets, if you will, and, therefore, the population of patients with SS and SC disease is heterogeneous, so that the three of us could not possibly sit down and approach this disease with one

therapeutic modality or approach and be correct and I think those who are listening need to understand that.

DR. FOSTER: I could not agree more and that's one of the reasons the whole question of subgroupings has come up because that's really wherein the answer lies because of the complexity. Maybe inappropriately and maybe I'm using the wrong word, but I was virtually—I was intrepid. I have never feared using conduction anesthesia in these patients on balance, all other things being in balance, and, in fact, since I'm one of those doctors, David, who is promoting breastfeeding because I think—and all things equal breastfeeding probably holds a lot of advantages in the long run that I think are going to become more apparent over time. There is some evidence to indicate that mothers have less difficulty nursing when they have had conduction anesthesia as opposed to general anesthesia in terms of milk letdown. John, would you make one brief comment about that.

DR. MORRISON: Yes, I think that I have had some experience in that area as well as I would support those views and the more conduction anesthesia that's used, the better off our breastfeeding percentage will be.

DR. FOSTER: Are there any other topics that you think that would be appropriate for this update that we perhaps may not have covered yet or any other philosophical attitudes. What does the funding picture look like in the future, John, for sickle cell research and therapy? You know, we went through the '70s where there was a large upsurge, and as you know, you and I co-chaired a National Consensus Development Conference. What seems to be the future for funding?

DR. MORRISON: Well, I think the future for funding in this area and in many other areas is fairly bleak, unfortunately. One of the things that makes it a little more sour in my opinion is the emergence of AIDS on the scene. When we talk about anything to do with blood and testing blood and administration of blood, I think that it's going to have a lot harder go in the Congress, if you will, as far as getting money to study that's concerned.

DR. FOSTER: David, sometimes some of your patients will come to you who might have sickle cell disease and ask about

taking air trips—flying commercial airliners. What advice do you give these patients?

DR. KITAY: Commercial airliners are generally pressurized to between 8000 and 10000 feet. Once again, if I have an adult, and I won't talk about a child, an adult with homozygous SS or S thal, I might have a lot of trouble advising them in terms of commercial jet aircraft because of that pressurization. There are ways to get around it, however. I have had some people who have had very mild disease, who have taken oxygen with them without any difficulty, just like the patients with cardiac disease, and have done fine.

DR. FOSTER: John, what are your experiences in this regard?

DR. MORRISON: Well, I must say that my experiences are different. I don't ever recall having a patient whom I have restricted from commercial air travel. Nor do I ever remember a patient whom I have had advised to do so or let do so who has had problems, and maybe this is just a skewed population. Now I do tell them that they shouldn't go skiing at 10,000 feet. Exercise, I think, at high altitudes has been proven to be detrimental to patients with homozygous or severe disease, and then likewise, I think scuba diving can promote problems with desaturation. But as far as commercial travel, I usually tell them that I would expect them to be fine and not to have a crisis as long as that cabin doesn't become depressurized. David, are you aware of specific patients who have had problems, other than just what we see in the Journal, which is an occasional report.

DR. KITAY: No, I'm not aware of specific patients whom I've taken care of, but I am aware of the fact that during the Korean war, of course, a lot of this came out with trait patients who flew at 15,000 feet for any length of time without pressurized cabins, and I agree with your recommendation. Theoretically, a patient with SS disease who is otherwise well should not suffer on a 33,000-foot flight, provided the flight doesn't depressurize, and then, of course, if it depressurizes she gets the oxygen like anybody else.

DR. FOSTER: Yes, that is a good point and we are talking about general recommendations. Anecdotal things can be misleading, but I have a personal physician friend who has a trait who had a crisis at

30,000 feet over the Atlantic with trait rather than the disease.

DR. MORRISON: David made an excellent point, and that is, it also varies with the length of time.

DR. FOSTER: Of the flight.

DR. MORRISON:...of the flight. That you're exposed obviously to the high altitudes. So if we're talking a trans-Atlantic flight versus just a 30-minute hop, that would make a difference as well.

DR. KITAY: Are you certain it was trait?

DR. FOSTER: Positive it was trait.

DR. KITAY: And not SA.

DR. FOSTER: No.

DR. KITAY: Rather than AS.

DR. FOSTER: Right, not SA rather than AS and that's a good point to make and that should always be made, but the predominant hemoglobin should be listed first and should be mentioned, but in this person is AS.

DR. MORRISON: There are two other thoughts that have come up. John, has it been your experience that the seasons affect the incidence of crisis?

DR. MORRISON: I have read a lot about that and really have not appreciated it. We looked very diligently at our statistics in Memphis when we wrote the initial paper looking for a seasonal change and quite frankly we didn't see it. What's been your experience, Hank?

DR. FOSTER: The same as yours. I have been led to believe that the incidence of crises is greater in the winter, but I really can't document this. David?

DR. KITAY: This has been documented in children, mainly, not in adults who have made the childbearing age which again is milder. I've not seen it in Atlanta where the seasons are worse than Mobile. In the week of freezing that we have every year, I don't see the emergency room being battered down by patients with SS disease.

DR. FOSTER: You mentioned children. There's one other thing, the different forms of crises that we see. One of the forms that we who take care of adult patients don't often see is the acute sequestration crisis where the spleen particularly, and to a lesser degree the liver, traps an inordinate amount of red blood cells, putting patients into shock. We see this occa-

sionally in children brought to emergency rooms. Have either of you seen sequestration crises in adult patients, perhaps SC patients, or S thal.

DR. MORRISON: No, we really haven't. I can't say that I've personally ever seen one, and I think that we find it that most of the time, as David mentioned, the ones who are severe, who do make it through to adulthood, have already infarcted the spleen through several or multiple episodes of splenic sequestration that may have even been relatively mild, and, therefore, you don't have the spleen involved. So we have not seen it.

DR. FOSTER: On behalf of the American College and its educational program ACOG Update, I want to thank you both, David Kitay and John Morrison. Thank you very much.

List of Supplementary Reading Materials

To help you obtain more details regarding this program's subject, the following supplemental reading materials are recommended:

1. Cunningham, F., and Pritchard, J. Prophylactic transfusion of normal red blood cells during pregnancies complicated by sickle cell hemoglobinopathies. *Am. J. Obstet. Gynecol.* 135:994 (1977).
2. Curtis, R. Pregnancy in sickle cell anemia: Sickle cell hemoglobin C disease and variants. *Am. J. Obstet. Gynecol.* 77:1912 (1979).
3. Foster, H. Contraceptives in sickle cell disease. *South. Med. J.* 74:543 (1981).
4. Foster, H. Sickle cell disease in pregnancy: An update. In "Obstetrics and Gynecology Annual" (R.M. Wynn, ed.), pp. 147-163. Appleton-Century-Croft, New York, 1982.
5. Herrick, J. Peculiar elongated and sickle-shaped red blood corpuscles in a case of severe anemia. *Arch. Intern. Med.* 6:517 (1910).
6. Morrison, J., and Foster, H. Transfusion therapy in pregnant patients with sickle cell disease: A National Institute of Health Consensus Development Conference. *Ann. Intern. Med.* 91:112 (1979).
7. Morrison, J., and Wynn, W. The effect of maternal partial exchange transfusion on the infants of patients with sickle cell anemia. *Pediatrics* 59:285 (1976).
8. Perkins, R. Partial exchange transfusion in a pregnant patient with sickle cell anemia. *Obstet. Gynecol.* 48 (Suppl.):225 (1976).

Answers to Pretest Questions

- | | | |
|----------|----------|----------|
| 1. False | 3. False | 5. False |
| 2. False | 4. True | 6. True |

"RESIDENT WORKING HOURS"

Henry W. Foster, Jr., M.D.

In 1988, New York became the first state to implement regulatory measures limiting house staff working hours. Listed are the salient issues contained in the New York regulations:

- 1) Maximum 80 hour week (averaged over 4 weeks including any moonlighting).
- 2) Twenty-four hour maximum duty assignment.
- 3) Mandatory eight hours off (following maximum assignment).
- 4) Twelve hour maximum daily emergency room coverage.

Other states have begun to implement similar regulations. Because restrictions on resident working hours will have such profound and far reaching implications as to how we can conduct our residency programs, I was asked by CREOG to solicit information from program directors, who had begun to actually alter their schedules to accommodate these restrictions. A national survey was conducted, and this information was shared

at our annual CREOG meeting held earlier this year in New Orleans. In our Park City, Utah workshops, these findings will be reviewed and expanded. As program directors, we will address the challenge to meet these constraints (restricted resident working hours), but avoiding:

- (1) decreasing educational standards,
- (2) decreasing patient services,
- (3) increasing the number of residents,
- (4) increasing the length of training, and
- (5) increasing costs.

Obviously because of numerous local imperatives and variations, there is no single schedule or solution that will be applicable to all programs; however, there are nonetheless three basic components that must be a part of any non-traditional call schedule irrespective of its location. These components are:

- (1) day coverage,

NOTES:

- (2) night coverage (float), and
- (3) week-end coverage.

During our breakout session prototypic schedules providing guidance as to how these non-traditional schedules can be structured will be presented and discussed in detail.

In structuring a non-traditional call schedule, an awareness of compounding factors must be kept in mind, e.g.

- (1) small complement of residents,
- (2) multiple service sites,
- (3) distant proximity of service sites,
- (4) reduced attending staff, and
- (5) inadequate commitment by program directors and hospital administration.

We will conclude our workshop by addressing some of the methods to help offset some of these compounding factors.

The following bibliography should be useful in addressing the issue of reduced resident working hours.

AAMC Weekly Report, Vol. 2, No. 29, June 18, 1988.

NOTES:

Executive Council of the AAMC, *Resident Supervision and Hours*. J of Med Ed, 63:421-246, 1988.

Dilts P, Dilts S: *Stress in residency: Proposals for solution*. Am J Obstet Gynecol 157:1093-1096, 1987.

McCall T: *The impact of long working hours on resident physicians*. N Engl J Med, 318 (12): 775-8, 1988.

Gerber ER: *Residents' hours* (Editorial). Nbr Med J, 73 (3), 61, 1988.

Sandrick K: *Proposals regulating resident work hours stall*. Hospitals, 62 (7) 66-68, 1988.

Zacks JB: *New York State regulations governing the work of residents* (Letter). NY State J Med, 88 (4) 202-203, 1988.

Fitkin RM: *Response on the need for flexibility in academic obstetric-gynecologic residencies*. Am J Obstet Gynecol, 154 (4) 788-790, 1986.

CONFERENCE 20/20 II

UPDATE

VOLUME 1, Number 2

Health Professionals

Morehouse College

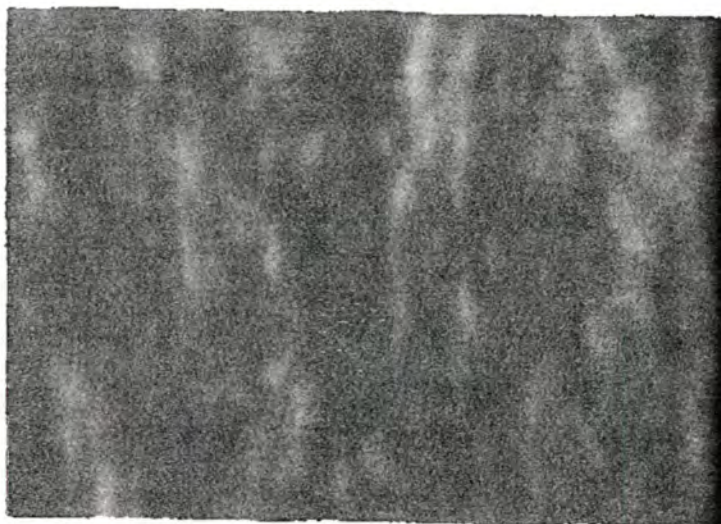
Paving The Way To Increased Minority Participation In Medicine and Public Health

PRESIDENT OF MEHARRY
MEDICAL COLLEGE
ADDRESSES OPENING SYMPOSIUM

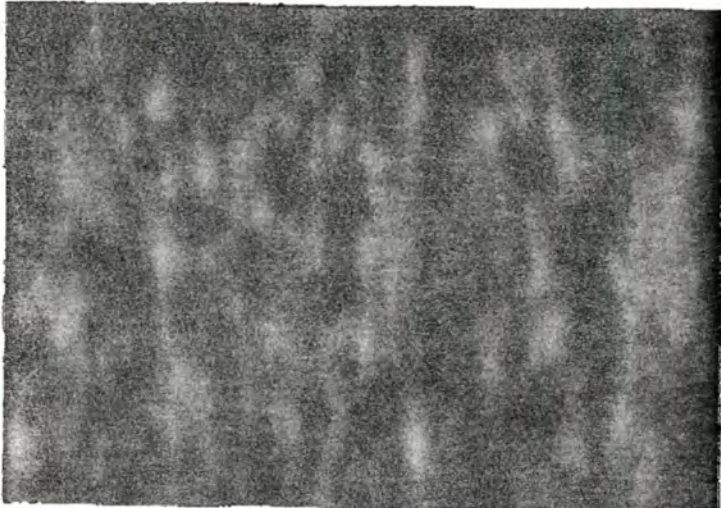


Dr. Henry Foster Jr., Acting President of
Meharry Medical College

Dr. Henry Foster Jr., Acting President of Meharry Medical College, presented an invigorating opening symposium address to over one hundred and twenty premedical students, premedical advisors and medical school recruiters at Conference 20/20 II held on the campus of Morehouse College and Westin Peachtree Plaza Hotel. Dr. Foster, a board certified obstetrician and gynecologist, challenged the pre-medical students to develop a successful game plan which should include purpose, ability, confidence



Local Physicians who attended Public Health Breakfast Seminar



Premedical Advisors at Breakfast Seminar



Dr. Gary Hodges, TAP Biomedical Lecturer



Premedical Advisors discuss undergraduate curricula



Conference Delegates at National Health Service Corp. Workshop

and process. Dr. Foster reviewed his life experiences as a premedical student and as a medical student. He emphasized to the students three points that would increase their likelihood for success when they arrived at medical school. The points were to arrive with an unencumbered mind, select a holistic approach to living and learn to appreciate time management.

Dr. Foster is certified by the American Board of Obstetrics and Gynecology. His research activities include such areas as electron microscopic findings in placentas of sickle cell anemia patients. He is widely published in medical and scientific journals, has contributed to major medical textbooks, and has presented papers regionally, nationally and internationally. The opening symposium dinner was sponsored by New York University Medical Center and the National Health Service Corps.

TWO NATIONAL EXPERTS ON PREMEDICAL ADVISING FACILITATE PREMEDICAL ADVISORS WORKSHOP

Twenty premedical advisors from Historically Black Colleges & Universities (HBCU) in Georgia, Alabama, South Carolina and Florida took part in the Premedical Advisors Workshop which was facilitated by Dr. T.G. Jackson, President of the National Association of Advisors for the Health Professions, and Dr. James Story, former president of the National Association of Medical Minority Educators. Dr. Jackson and Dr. Story discussed the role of the premedical advisor and the changing nature of medical education. Two major references formed the basis of the discussion: Minority Students in Medical Education: Facts and Figures VII by the Association of American Medical Colleges (August 1993) and Assessment of Historically Black Colleges' Undergraduate Curricula For Medical School Preparation by Dr. Donna Ashington for the Division of Disadvantaged Assistance, Bureau of Health Professions.

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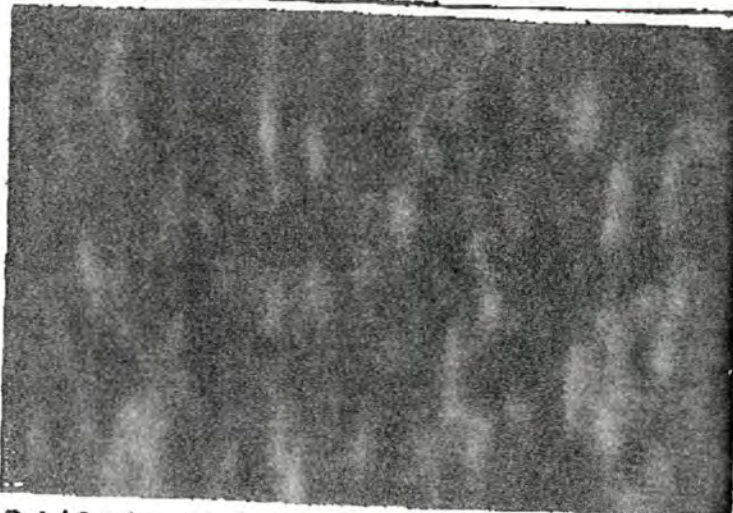
Dr. John K. Haynes, Packard Professor of Science and Chairperson of the Department of Biology at Morehouse College served as facilitator. After the workshop the advisors joined their students at the recruitment fair which consisted of 26 top ranked medical schools and schools of public health.

SNMA NATIONAL PRESIDENT GIVES SYMPOSIUM KEYNOTE LUNCHEON

Alexander Johnson, President of the Student National Medical Association (SNMA) and a third year medical student at the Medical University of South Carolina invigorated the audience with two cases that represented the practice of medicine in the 90's. He discussed facets of treatment of a patient who enters the emergency room compared to a routine primary care patient who fails to take his medication consistently. Mr. Johnson emphasized to the students to stay focused and challenged them to consider seriously why they want to be physicians. Students were encouraged to share the information obtained at the symposium with fellow students at their home institutions. Mr. Johnson assured the students that a career in medicine is rewarding and said he hoped the Clinton Health Care Plan would mandate health care for all. He closed his remarks by inviting students to dialogue with him during the remainder of the symposium. The symposium keynote luncheon was sponsored by the Robert Wood Johnson Foundation.

REPRODUCTIVE MEDICAL EXPERT GIVES BIOMEDICAL LECTURE

Dr. Gary Hodgins, the Howard and Georgiana Jones Professor of Reproductive Medicine at Eastern Virginia Medical School gave the



Dr. Joel Oppenheim of New York School of Medicine interacts with students



Dr. Leroy Keith, President of Morehouse College, and Alexander Johnson, President of Student National Medical Association (SNMA), at Keynote Luncheon



Conference Delegates enjoy dinner reception

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Morehouse Student attending MCAT workshop



Medical students share experiences during panel discussion



Dr. Diane Rowley addresses conference delegates during the Physicians' Breakfast

first TAP Pharmaceuticals Biomedical Lecture at Conference 20/20 II on the Morehouse Campus. The biomedical lecture on the pathophysiology of OnRH agonists proved to be a rich fulcrum of knowledge and information for the pre-medical students, premedical advisors, and for the biology department faculty and students. This trailblazing seminar added a unique feature to the symposium by insuring that the premedical student delegates experienced a medical school type lecture from a nationally known expert. Dr. Hodgins exemplified the concern, dedication, and support that will be part of students' medical school experience if they select the right schools and take full advantage of resources available at that school.

PREMEDICAL STUDENTS, PREMEDICAL ADVISORS AND MEDICAL SCHOOL RECRUITERS DIALOGUE AT DINNER RECEPTION

The dinner reception provided an invaluable opportunity for Conference 20/20 II delegates to interact in informal sessions with admissions officers from some of the most prestigious medical schools in the country. The wisdom and expertise gained from this informal networking experience will prove to be invaluable in the premedical students' desire to be admitted to medical or public health graduate school. This capstone event was sponsored by the Josiah Macy, Jr. Foundation and the McDonald's Corporation. Many of the medical school recruiters used this opportunity to network with premedical advisors in a social setting. If the number of African American students accepted to medical school is to increase, then the medical school recruiters must know and appreciate the concerns of the premedical advisors and the rich pool of premedical students they represent.

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DR. ROWLEY STRESSES PREVENTIVE HEALTH CARE AT PHYSICIANS' BREAKFAST FOR STUDENTS AND ADVISORS

Dr. Diane L. Rowley, a noted physician, administrator, author and medical epidemiologist at the Centers for Disease Control (CDC) gave an incisive, astute, and reflective lecture about her life experiences at the Physicians' Breakfast for the conference delegates. Dr. Rowley challenged the students to consider epidemic intelligence and epidemiology as a possible career to help people through the practice of preventive medicine. She stressed that far more people can be helped through prevention than through patient by patient contact in a physician's office. Her sensitive, perceptive and benevolent comments stirred the students to give her a standing ovation. There is little doubt that this was a major highlight of the symposium. The Physicians' Breakfast for the student delegates was sponsored by Kaiser Permanente.

Dr. Rowley holds medical licensure in Georgia and Virginia and is a Diplomate of the National Board of Medical Examiners, the National Board of Pediatrics, and the American Board of Preventive Medicine. She holds membership in numerous professional associations, is the recipient of a host of honors and awards, and has published extensively in scholarly journals.

MEDICAL STUDENTS' PANEL INVIGORATES PREMEDICAL STUDENTS

Medical students from Emory, Morehouse, Duke, Syracuse, Meharry, and the University of Pennsylvania shared their experiences and expertise with premedical students and premedical advisors in a two hour panel session which proved to be probing, incisive, and engaging. It is hoped that as a result of this dia-

logue and networking experience, the premedical students will gain increased understanding of how to get into medical school, stay in medical school, and graduate from medical school. It is noted that these types of events, "student to student," represent a model for educating behaviors that decrease exclusivity of African American students to medical school. This forum was sponsored by Abbott Laboratories.

THIRTY MEDICAL SCHOOLS, SCHOLARSHIP AGENCIES AND PUBLIC HEALTH SCHOOLS ENGAGE STUDENTS DURING RECRUITMENT FAIR

Two hundred Morehouse Atlanta Premedical Students joined over one hundred premedical students from twenty HBCU's at Conference 20/20 II's information and recruitment fair which was held in the Oloster Hall Conference Center on the Morehouse College campus. Medical school recruiters captivated the students with information on premedical planning, chances of acceptance, the application process, financial aid, and medical school curricula. Several of the participating medical schools conducted individual interviews for seniors who had applied to their school, thus saving students the time and expense of travel to their campuses. The medical school recruiters were joined by recruiters from five public health schools in keeping with the conference theme, "Paving the way to Increased Minority Participation in Medicine and Public Health." In addition, the National Health Service Corps and the Air Force Armed Forces Health Professions Scholarship Program participated in the fair. By design the recruitment fair was one of several opportunities for networking and linkage formation between premedical students, their advisors and medical school recruiters. Students left the recruitment fair with a clear understanding of the variety of factors included in the decision making process of selecting medical students.

STANLEY H. KAPLAN CENTER SPONSORS MCAT WORKSHOP FOR CONFERENCE DELEGATES

Richard Berlin, director of the Atlanta Kaplan Center conducted a two hour workshop for conference premedical students. He provided information on the Medical College Admission Test and what medical schools are looking for in an applicant. Sample questions and answers were reviewed, along with nuances of standardized test taking. The detailed information on the MCAT was a first for many of the delegates. The premedical student felt this workshop was a very important part of the conference even though the MCAT exam is not scheduled until April 1994.

NATIONAL HEALTH SERVICE CORPS SCHOLARSHIP AWARDING WORKSHOP

Captain Barbara Ferguson conducted a three hour workshop on the scholarship opportunities with the National Health Service Corps. Captain Ferguson started the workshop with an informational video on the National Health Service Corps, its purpose and scholarship requirements. Captain Ferguson emphasized to the Conference 20/20 II delegates that the National Health Service Corps Scholarship is for medical students who choose primary care specialties and how, when, and where to obtain an application. After a question and answer session, Captain Ferguson dialogued with the delegates informally. A National Health Service Corps Scholarship information table was also a part of the recruitment fair held on Friday November 12, 1993, from 9 a.m. to 4 p.m. in the Oloster Hall Conference Center on the Morehouse College campus.

**SECOND GENERAL SESSION
DR. ROY HUNTER, JR., PRESIDING**

Roy Hunter, Jr. I have known Dr. Foster since he was a student at Morehouse College and I have followed his career. He finished Morehouse and went on to the University of Arkansas and received the degree in Medicine. He did an internship with the hospital associated with Wayne State University School of Medicine. He left Detroit and went to Massachusetts where he spent a year in surgery at the Moldin Hospital. Following that there was a two year stint with the U.S. Air Force in the medical corps. After leaving that he went to Meharry and completed a residency in Obstetrics and Gynecology.

That in itself would be sufficient to recommend him to you as a role model and there are a lot of people who have done the same thing. He has been Chairman of the Department of OB/GYN at Meharry. He still holds a professorship in that department and also a clinical professorship in OB/GYN at Vanderbilt School of Medicine. We are pleased to present him to you. Dr. Henry W. Foster, Interim President of Meharry Medical College. Dr. Foster.

Dr. Henry W. Foster, Interim President, Meharry Medical College. Thank you. I am so exhilarated when I see this beautiful group of young people. You are our future. You are as bright as any group that exists anywhere on the planet Earth.

Teaching remains one of the most noble of all professions. Let me share with you one of my favorite passages written by Joseph Addison in 1711. It reads as follows: "Education is a companion which no misfortune can depress. No crime can destroy, no enemy can alienate, no despotism can enslave; at home a friend, abroad an introduction; in solitude a solace and in society an ornament. It chastens vice, it guides virtue at once. What is man without this? A splendid slave, a reasoning savage." That was written 250 years ago and in society today it remains applicable. Constructive knowledge is a win win scenario, especially in a democratic, free enterprise society such as ours. The extent of your acquisition of knowledge translates into the service that you will be able to provide to your consumer and in our society you will be rewarded spiritually and materially as a consequence of the caliber of your data base.

Some of you have heard of the AAMC. There are several major efforts in this country to help increase the number of minorities in health care. As you know, there is a project called 3000 by 2000 that's sponsored by the AAMC which regulates all medical education in this country. The thrust of that effort is to have 3000 underrepresented minorities in the entering 1st year medical class by the year 2000. This would mirror the percentage of underrepresented minorities in our population which is about 20% and that's about 15,000 students who will be entering the medical class that year. We also have support of our minority educational efforts at the federal level. This past November I had the honor of being invited along with about 100 other individuals, by President Clinton, to participate in his signing of an executive order on Historically Black Colleges and Universities. This was a most impressive setting with strong words of encouragement coming not only from President Clinton, but from Vice President Gore and others.

In my judgement the formula for success requires four basic components. They are purpose, ability, confidence and process, with the latter being called your game plan. Each of the entities is a requisite. Although distinct, they are interdependent. The absence of one without the other does not hold well for achieving the desired results. Purpose and ability are self evident. As for purpose -- the nobleness of a health care profession -- as a U.S. minority student interested in careers in biomedical and public health sciences, your purpose is even clearer. You are aware that access to health care for minority populations in this country remains significantly limited. As a race African-Americans comprise about 11% of this nation's population, yet we only comprise just over 2% of its physicians. Individuals most likely to go back into underserved or inner-city rural areas are those individuals who are products of those areas. Therefore, it is most important that we continue to choose students who will go back into the areas where the need is greatest. Hence, a career to heal the sick is an excellent choice. In order to fulfill your purpose, ability is required. All of you have excellent talent. Your approach to the study of biomedical and public health sciences should be characterized by the following: an unencumbered mind, a wholistic approach to living and the full appreciation of time management. I draw upon my experience as a premedical student in sharing these judgements with you. The first issue has to do with an unencumbered mind. On the day of my departure to medical school my mother gave to me what has proven to be some very sage advice. As a lone black student in a class of 96 in a deeply segregated southern state, she cautioned me on that day to remember, everything bad that happens to you there won't occur necessarily because you are black. Every African American has felt that pain of injustice. This you cannot nor should you forget, but you can't allow this position to occupy a disproportionate amount of your images. Your images at this point in your life must be directed fully in the most constructive manner possible. Educational: You are going to have to function in an integrated society. The study of a biomedical or public health science in my judgement is too demanding and you simply cannot let racial issues render you nonfunctional. Clearly the best way you can impact injustice in this country is to become well educated, highly productive members of the biomedical and public health sciences field. This is a sound game plan.

Perhaps I cannot expect others to embrace the philosophy that I followed, but I honestly felt that quite possibly had I been born white and a southerner, my attitudes and values may have been similar to those of my classmates. Hence, I felt the best way to modify their attitudes was from my own actions. I quickly learned that almost everyone respects quality. Discrimination can be combatted in many ways. For example, I now sit on many boards and one of my major conditions for participation in any of these organizations is that they must utilize black businesses, particularly banking and finance. I would be untrue to the people that I represent if I don't demand this.

In your educational game plan, let your approach be wholistic. Seek balance in your activities. You do not have to neglect your spiritual, social or cultural development at the expense of your educational development. In fact, it has been my experience both as a student and teacher that your education is better fulfilled with a balanced approach. The key to effecting a wholistic approach is discipline and the best way to maintain discipline is to keep your purpose and goal clearly in focus. The last and most important operational topic is that of time and time management. Time is the essence of life. Learn to manage time; this is the real secret to success. Organization is built around time management. For me the most difficult interface I had to

reconcile is time versus quality. On the one hand we seek quality but on the other hand we have to deal with the harsh reality of time. Eventually one acquires the skill of evaluating the time task ratio.

Most of the things I have said to you are common sense approaches. I have tried to put them in an organizational format that you can call upon in the future. In closing, I hope sharing these brief insights from both ends of an educational spectrum gleaned from a generation of health care and medical education will aid in your professional growth and development. You are bright, courageous and willing to work harder than those who may be temporarily ahead of you. This is the best combination of qualities to draw upon, to mold your futures on. Thank you.