

Survey of Changes in Food Habits During Pregnancy

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DO WE through our teaching of nutrition to pregnant women effect change toward a more adequate diet? This question is often asked but no current literature sheds light on the answer.

A pregnant woman is often told she must change her eating patterns. We were interested in learning the result of such advice. Do these changes improve her diet? And what reason does she give for her change? We sought the answers to these questions in this study.

Situation

Patients attending two prenatal clinics in Contra Costa County, Calif., were used for this study. These clinics serve patients from similar socioeconomic levels. The racial composition differs between the two clinics because clinic A, located approximately 6 miles from Berkeley, serves a population which had 21 percent non-white live births, and clinic B, located approximately 30 miles from Berkeley, had 11 percent nonwhite live births, according to the 1965 figures of the county health department (1). We noted that there were more Mexican-Americans using clinic B than clinic A.

Instruction about diet varies between these two clinics. Clinic A uses what we have termed the lecture-discussion-consultation method. All

pregnant women on their initial visit to the clinic listen to a 20-minute presentation by the physician who discusses an adequate diet during pregnancy. During this time the essentials of a good diet high in protein (1 quart of milk per day, eggs, and meat), and adequate in fruits, vegetables, and bread are emphasized. Use of soda pop, salt pork, and laundry starch are discouraged.

The physician tells the women that poor diets result in premature and stillborn infants. The atmosphere is relaxed and discussion is encouraged. Following the discussion and on subsequent visits to the clinic, the women are counseled either by the same physician or by another physician who seems to share the same philosophy and counsels patients in a similar manner.

Physicians at clinic B, however, offer little dietary instruction. Each of the two physicians varies his method of teaching according to the situation. One physician discusses weight control as necessary while the other physician stresses high protein, low cost foods depending on the patients' needs. Patients may see either physician on any one visit. At clinic A the investigators observed the lecture and the patients' subsequent clinic visits with the physician. At clinic B dietary instruction was described to us by the physicians.

Methodology

We interviewed a total of 50 patients during a 4-week period. Of these interviews, information from 46 was considered valid, 23 from

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clinic A and 23 from clinic B. During each of the four consecutive visits to clinics A and B, each interviewer saw from two to four women.

The interviewers used a form in the interview that contained spaces for recording a 24-hour recall of food eaten. Intake before and during pregnancy was recorded according to the following categories: bread, beverages, milk, soda, meat, eggs, cheese, fruits, vegetables, fats, bacon, fatback, sugars and desserts, candy, and potato chips. The form also had space to record the patient's reason for change after pregnancy, impression of the physician's diet recommendations, and for other comments by patient or interviewer. Questions were asked about consumption of salt and vitamin pills, and the patient was asked to summarize her changes in diet during pregnancy. She was also asked if she thought she was eating the right food and how she would improve her diet if not.

We used the following procedure during each interview. Initially, we attempted to put the patient at ease by introducing ourselves as students, stating the purpose of the study, emphasizing the confidentiality of the material, and requesting her aid in conducting the study. The patient was then asked to recall what she had eaten or drunk from the time she arose in the morning until she had retired for the night.

The purpose of the 24-hour recall was to put the patient into a frame of thinking so that she would respond with greater ease and accuracy to the questions which followed. It also served as a cross-check to determine whether the information which followed was accurate. Next, the patient was asked how much bread she ate daily and how much of other foods which might be categorized in the bread group, such as rice, potatoes, and macaroni. The type and amount eaten, that is, her present diet and the type of food and amount consumed before her pregnancy was recorded. If changes were noted, she was questioned as to the reasons for these changes.

The same procedure was repeated for other food groups, such as beverages, meat, fruits, vegetables, fats, and sweets. The patient was also asked if she used salt and vitamin pills during pregnancy. Finally, the patient was asked to summarize what changes in diet she had made during this pregnancy.

Following the interview, the investigator recorded her impressions of the patient, that is, whether she was receptive to the interview or not, and whether the answers to questions posed seemed valid on the basis of the cross-check. Data from four of the original 50 interviews were eliminated from the sample because the women gave conflicting information which we felt made their answers invalid.

Analysis

A qualitative and quantitative analysis of dietary intake was made of each of the 46 records. A scoring procedure for each intake sheet was devised based on the work of Burke (2) and Beal (3). We calculated the intake of the following nutrients: protein, calcium, iron, vitamin A, thiamin, riboflavin, and ascorbic acid using the "Rough" Food Value Table for Crude Assessment of Nutritive Value of Diets (4).

A total daily intake of these seven nutrients was compared with the figures listed in the National Academy of Science-National Research Council's "Recommended Dietary Allowances" (5). The recommended dietary allowances (RDA) for pregnant women in age groups 16-18 years and in age groups 19-35 years are as follows:

<i>Adequacy and age</i>		<i>Intake</i>
	PROTEIN	
100 percent adequacy :		
16-18 years-----	gm--	65
19-35 years-----	gm--	65
66 percent adequacy :		
16-18 years-----	gm--	44
19-35 years-----	gm--	44
	CALCIUM	
100 percent adequacy :		
16-18 years-----	gm--	1.7
19-35 years-----	gm--	1.2
66 percent adequacy :		
16-18 years-----	gm--	1.1
19-35 years-----	gm--	.8
	IRON	
100 percent adequacy :		
16-18 years-----	mg--	18
19-35 years-----	mg--	18
66 percent adequacy :		
16-18 years-----	mg--	12
19-35 years-----	mg--	12

<i>Adequacy and age</i>	<i>Intake</i>
VITAMIN A	
100 percent adequacy:	
16-18 years.....IU--	6,000
19-35 years.....IU--	6,000
66 percent adequacy:	
16-18 years.....IU--	4,000
19-35 years.....IU--	4,000
THIAMIN	
100 percent adequacy:	
16-18 years.....mg--	1.3
19-35 years.....mg--	1.1
66 percent adequacy:	
16-18 years.....mg--	.9
19-35 years.....mg--	.7
RIBOFLAVIN	
100 percent adequacy:	
16-18 years.....mg--	1.8
19-35 years.....mg--	1.8
66 percent adequacy:	
16-18 years.....mg--	1.2
19-35 years.....mg--	1.2
ASCORBIC ACID	
100 percent adequacy:	
16-18 years.....mg--	60
19-35 years.....mg--	60
66 percent adequacy:	
16-18 years.....mg--	40
19-35 years.....mg--	40

Each nutrient was rated as 100 percent, between two-thirds and 100 percent, or below two-thirds of the recommended dietary allowances. Those women whose diet included 100 percent of the RDA of a nutrient were assigned a value of 3; between two-thirds and 100 percent, a value of 2; and below two-thirds, a value of 1. These numerical ratings were added for the seven nutrients to obtain a single numerical score for each patient. A score of 21 meant that the patient met the RDA for the seven nutrients listed; a score below 21 indicated that she was lacking in one or more nutrients.

The number of patients, by clinic, whose intake met different levels of dietary adequacy was as follows:

<i>Score</i>	<i>Number</i>
Clinic A:	
21 points.....	1
14-20 points.....	17
13 or less points.....	5

<i>Score</i>	<i>Number</i>
Clinic B:	
21 points.....	1
14-20 points.....	9
13 or less points.....	13

As the table indicates, two patients met the recommendations for the seven nutrients while 26 of the 46 scored between 14 and 20 points (above 66 percent of the recommended amounts). Clinic A had the highest number of women in the two-thirds to adequate category compared with clinic B whose largest number of women were in the below two-thirds category.

When considering foods eaten, the nutrients most commonly adequate in amounts were ascorbic acid, protein, and thiamin, as indicated by table 1. The nutrients which appeared with the greatest frequency in the below two-thirds category were iron and vitamin A. Comparison of the two clinics' patients in terms of the three levels of dietary adequacy in the seven nutrients shows that more women in clinic A had adequate intakes of protein, calcium, vitamin A, thiamin, and riboflavin than did the patients in clinic B. More patients from clinic B fell in the below two-thirds category for all nutrients (except protein) than did patients in clinic A.

Vitamin-mineral supplements (Engran,

Table 1. Patients meeting different levels of dietary adequacy, by clinic

Nutrient	Dietary adequacy		
	Adequate	Two-thirds or more	Below two-thirds
Protein.....	28	16	2
Clinic A.....	18	4	1
Clinic B.....	10	12	1
Calcium.....	26	10	10
Clinic A.....	15	6	2
Clinic B.....	11	4	8
Iron.....	2	9	35
Clinic A.....	1	6	16
Clinic B.....	1	3	19
Vitamin A.....	15	9	22
Clinic A.....	9	4	10
Clinic B.....	6	5	12
Thiamin.....	28	15	3
Clinic A.....	18	4	1
Clinic B.....	10	11	2
Riboflavin.....	21	7	18
Clinic A.....	14	1	8
Clinic B.....	7	6	10
Ascorbic acid.....	31	3	12
Clinic A.....	16	2	5
Clinic B.....	15	1	7

NOTE: Excludes vitamin-mineral supplement.

Squibb vitamin-mineral prenatal supplement) were taken by 21 patients in clinic A and 17 in clinic B. These supplements make the pregnant woman's diet adequate in all the nutrients considered, except protein and calcium. Three patients in clinic A took no vitamin pills, and one took iron pills only. In clinic B five patients took no vitamin pills, and one took vitamin pills occasionally.

Whether the women increased or decreased their food intake after becoming pregnant was evaluated. In clinic B the number of women

who increased their consumption of food from the various food groups was equal to the number of women who decreased their consumption of the same food groups; while in clinic A there were more increases than decreases, particularly of meat, eggs, milk, fruits, and vegetables.

Table 2 refers to the reasons given for increases and decreases in food intake by food groups. Total increases in intake were grouped in seven categories. In order of decreasing frequency, the reasons mentioned were (a) appe-

Table 2. Reasons for increase or decrease of intake, in order of frequency, by food groups and clinic

Reason	Food Groups															Total	
	Bread	Beverages	Milk	Soda	Beer	Meat	Eggs	Cheese	Fruits	Vegetables	Fats	Bacon	Sugars	Desserts	Candy		Potato chips
<i>Increased consumption</i>																	
Clinic A:																	
Appetite.....	21	1	6	2	0	4	0	1	12	5	0	1	3	0	0	0	56
Change in living patterns ¹	6	0	1	0	0	0	3	2	6	0	1	0	2	0	0	0	21
Physician's advice.....	1	0	7	0	0	1	5	0	2	1	0	0	0	0	0	0	17
Family members.....	4	0	1	0	0	2	0	1	2	3	1	0	1	0	0	0	15
For health.....	2	0	3	0	0	4	0	0	1	0	0	0	0	0	0	0	10
Other professionals' advice.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cost.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clinic B:																	
Appetite.....	11	2	8	2	0	4	0	3	11	9	1	0	6	0	3	2	62
Family members.....	4	0	1	2	0	2	1	0	2	0	1	1	1	0	0	0	15
Change in living patterns ¹	1	0	2	2	0	5	0	0	0	0	0	2	0	0	0	1	13
For health.....	2	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	4
Other professionals' advice.....	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
Physician's advice.....	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Cost.....	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Decreased consumption</i>																	
Clinic A:																	
Reduced appetite.....	0	0	0	1	1	3	2	4	0	0	0	4	1	2	3	1	22
Nausea, vomiting, gas, heartburn, tolerance.....	7	0	0	3	0	1	0	0	0	1	1	1	0	0	1	1	16
Mood, likes blander food.....	4	0	0	2	0	0	0	1	0	0	0	0	0	0	1	1	9
Change in living patterns ¹	3	0	0	0	0	0	0	1	1	0	0	0	0	2	1	0	8
For health.....	0	0	0	0	1	0	0	0	1	0	0	1	0	0	1	2	6
Physician's advice.....	0	0	0	2	0	0	0	0	0	0	1	0	0	1	1	0	5
Weight control.....	2	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	4
Family members.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cost.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clinic B:																	
Reduced appetite.....	6	0	1	1	0	4	5	0	3	2	1	1	0	1	2	0	27
Change in living patterns ¹	3	0	1	4	0	0	1	0	1	1	0	0	0	0	1	2	14
Weight control.....	5	0	0	3	0	0	0	0	0	0	1	0	1	1	2	1	14
Nausea, vomiting, gas, heartburn, tolerance.....	2	0	1	1	1	1	1	0	1	0	0	1	0	0	0	0	9
Mood, likes blander food.....	0	0	0	0	0	0	0	0	1	1	0	0	0	2	1	0	5
Physician's advice.....	3	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	5
For health.....	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1	1	4
Family members.....	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	3
Cost.....	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	2

¹ Now eating breakfast, living with husband, not working, or not attending school.

tite, (b) change in living patterns—for example, now eating breakfast, or not working, or not attending school, (c) influence of a family member, either his preference or his recommendation, (d) recommendation of the physician, (e) for health or for the baby, (f) recommendation of other professionals, such as the public health nurse, and (g) cost.

If the same reason was mentioned by a patient for more than one food within a group, it was recorded more than once. For example, if the patient mentioned increased hunger for bread, cereal, and spaghetti, it would be recorded as three statements under appetite for the bread group.

In order of decreasing frequency the reasons mentioned were (a) reduced appetite, (b) nausea or other physiological reaction to a food, (c) change in living patterns, (d) does not want to gain excess weight, (e) mood, likes blander food, (f) on advice of physician, (g) for health, (h) influence of family member (either advice or preference of family member), and (i) cost.

Total changes in food consumption for the women attending clinics A and B by reason most frequently given were as follows:

<i>Reasons</i>	<i>Totals, clinics A and B</i>
Increased consumption :	
Appetite	118
Change in living patterns ¹	34
Family members.....	30
Physician's advice.....	18
For health.....	14
Other professionals' advice.....	2
Cost	1
Decreased consumption :	
Reduced appetite.....	49
Nausea, vomiting, gas, heartburn, or cannot tolerate	25
Change in living patterns ¹	22
Weight control.....	18
Mood, likes blander food.....	14
Physician's advice.....	10
For health.....	10
Family members.....	3
Cost.....	2

¹ Now eating breakfast, living with husband, not working, or not attending school.

Because the diet would be adequate in all nutrients except protein and calcium if the patients were taking the vitamin-mineral supplement, we decided to examine further changes in calcium intake. We selected calcium rather

than protein because it is relatively easy to evaluate. To do this we examined the intake of milk and cheese. Positive and negative changes in calcium intake are shown in table 3. We used a standard of 2 cups of milk for diet before pregnancy and 3 cups for the diet during pregnancy (6) to define adequate. If cheese were included, 1 ounce was considered equivalent to 1 cup of milk. Only six patients in clinic A and four patients in clinic B went from an inadequate intake to an adequate intake. No patients in clinic A and four patients in clinic B went from an adequate intake to an inadequate intake. The other patients remained in the original category of inadequate or adequate. The fact that several patients remained in the same category obscures improvements in nutrient intake which were not great enough to result in a change from one category to another.

We also examined the number of primiparas and multiparas and compared the adequacy of their diets and observed no difference between the two groups.

The three trimesters of pregnancy were also examined. Most of the women seen were in their third trimester, however, so no comparison could be made with the earlier stages. We feel one reason we saw more women late in pregnancy was that visits are scheduled more frequently at that stage.

Discussion

Our data on gross measurement of diet adequacy, changes in dietary intake, and the reasons given for the changes during pregnancy are inadequate for us to make specific statements about individual differences in dietary habits during pregnancy. They do serve to in-

Table 3. Patients making changes in calcium intake and direction of the changes, by clinic

Change in calcium intake	Clinic A	Clinic B	Total
No change.....	4	10	14
Positive change.....	19	10	29
Negative change.....	0	3	3
Remained inadequate.....	10	6	16
Inadequate to adequate....	6	4	10
Remained adequate.....	7	9	16
Adequate to inadequate....	0	4	4

dicating general patterns of diet during pregnancy in these two clinic populations and the differences between them.

By our criteria only two of the 46 patients had intakes which met the RDA. These recommendations, however, are intended for use in establishing amounts of food for groups of people. Application of these criteria does not imply, therefore, that those women whose level of adequacy was below 100 percent of the recommended dietary allowance are not meeting their individual needs. The fact that 18 of the 46 fell below two-thirds of the RDA suggests that 39 percent of the group probably are not meeting their nutritional needs with food.

Vitamin-mineral supplements were taken by 38 of the 46 (83 percent) which provided them with amounts of all nutrients discussed, except protein and calcium, equal to or greater than the RDA in iron, vitamin A, thiamin, riboflavin, and ascorbic acid. These supplements definitely improve the women's diet; however, the women generally did not begin taking vitamins at the onset of pregnancy, and previous dietary intakes of the women were not uniformly adequate. Vitamins were prescribed for all patients, and 21 patients in clinic A and 17 patients in clinic B took vitamin capsules. For the eight women who were not taking vitamins, deficiencies of one to four nutrients were noted.

Only one person in each clinic had an adequate diet. In the category below two-thirds were five patients in clinic A and 13 in clinic B, while in the middle category (two-thirds or more), clinic A had 17 patients and clinic B had only nine. The differences reflected in these figures may have resulted from the emphasis on diet in clinic A. Since the two clinics were similar as to the ratio of primipara, age, and socioeconomic status, we felt these factors did not influence the results of our study. Our figures on amount of education were limited; however, we could observe no difference between the women attending the two clinics. Future investigators might study further the question of the effects of education on diet of pregnant women.

In both clinics 29 patients, 19 in clinic A and 10 in clinic B, increased their intake of calcium through increased consumption of milk and cheese. Only 10 patients of the total, however,

increased their intake sufficiently to change categories from inadequate to adequate. More patients in clinic A increased their calcium intake than in clinic B. We feel this increase may be associated with the increased emphasis on milk consumption in that clinic.

In reviewing reasons stated for increased consumption of food, we find appetite far outranks change in living patterns, family influences, or recommendations of physicians. Health ranks lower. This observation agrees with that of Lewin (7) who indicated that health as a stated reason for changing food habits ranks low among priorities. We feel that the reasons as stated are important to consider in any attempt to change food habits.

In reviewing reasons for decreased consumption, again the woman's appetite was the reason stated most often for a change in her diet. Just as in the reasons for increased consumption, the women were more likely to make a change based on altered living patterns than on the advice of the physician or for health reasons.

To compare adequacy with the stage of pregnancy, we would need a greater distribution of patients over trimesters. The results indicated that most of the subjects seen were in their last trimester of pregnancy. Because the frequency of visits to the clinic increases during the last stages of pregnancy, these women were exposed to selection by the interviewers more frequently.

In comparing the adequacy of diet for primiparous with multiparous women, the observations suggest that there seems to be little difference. This similarity would suggest that instructions about diet during previous pregnancies were either inadequate or did not carry over into subsequent pregnancies. This failure of permanent dietary changes raises the question of whether present methods of teaching nutrition during pregnancy will have long lasting effects. Several of the women had already returned to prepregnancy dietary practices after eating greater amounts of nutritious foods earlier in their pregnancy.

Summary

Forty-six pregnant women attending two prenatal clinics were interviewed via a questionnaire developed for this study to determine the adequacy of diet during the period of preg-

nancy, the changes in dietary habits during this time, and the reasons stated which contributed to these changes. Also explored were other factors associated with changes in food habits.

In the clinic with more consistent dietary advice, the patients' dietary intakes improved. Using milk and cheese consumption as an indicator of change, more women reported greater consumption than before pregnancy in clinic A, where increased consumption was encouraged. Such increases contributed to improvements in dietary intakes; however, changes in the diets were not large enough for many of the women to meet the recommended dietary allowances. Vitamin-mineral supplements, when taken, contributed to improved nutrient intakes.

Increases in consumption were more frequent than decreases. In response to the question of why the consumption of a particular food increased or decreased, it was discovered that the woman's appetite was mentioned with greatest frequency. When advice was given consistently by the physician, the diet improved, but the influence of family members and changes in living patterns were mentioned more often than the advice of physicians as reasons for change. The cost of food was not considered to any

appreciable extent by these pregnant women in relation to the quantity of food they ate.

REFERENCES

- (1) Contra Costa County Health Department: Live births, county census divisions, by sex and race, Contra Costa residents, 1965. Martinez, Calif. Mimeographed.
- (2) Burke, B. S.: The dietary history as a tool in research. *J Amer Diet Assoc* 23: 1041-1046, December 1947.
- (3) Beal, V. A.: The nutritional history in longitudinal research. *J Amer Diet Assoc* 51: 426-432, November 1967.
- (4) Huenemann, R. L.: "Rough" food value table for crude assessment of nutritive value of dietaries. University of California, Berkeley, 1957. Revised February 1963. Mimeographed.
- (5) National Academy of Sciences-National Research Council: Recommended dietary allowances. Publication No. 1694. Ed. 7., Washington, D.C., 1968.
- (6) California State Department of Public Health: Nutrition during pregnancy and lactation. Berkeley. 1945. Revised 1967.
- (7) Lewin, K.: Forces behind food habits and methods of change. Publication No. 108. National Academy of Sciences-National Research Council, Washington, D.C., October 1943.

Tearsheet Requests

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Conference Calendar

January 13-15, 1971. Conference on Boundary Effects on Moving Blood, San Diego, Calif.

February 3-6, 1971. American Group Psychotherapy Association, New Orleans, La., International Hotel.

February 5-7, 1971. The American College of Physicians and American Academy of Pediatrics present Recent Advances in Immunoprophylaxis and Chemotherapy of Infectious Diseases, Tucson, Ariz., Hilton Inn.

February 15-16, 1971. Thirteenth

Water Quality Conference, Urbana, Ill.

March 3-5, 1971. Annual Symposium on Fundamental Cancer Research, Houston, University of Texas.

March 7-11, 1971. Society of Toxicology, Washington, D.C.

March 18-21, 1971. International Association for Dental Research, Chicago, Sheraton Chicago.

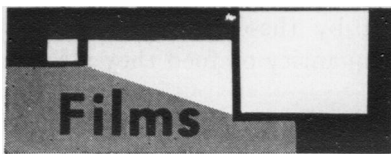
March 21-24, 1971. American Orthopsychiatric Association, Washington, D.C.

March 24-27, 1971. American Fertility Society, New Orleans, La., Roosevelt Hotel.

March 29-April 2, 1971. Third International Congress of Psychosomatic Medicine in Obstetrics and Gynaecology, London.

August 30-September 2, 1971. Tritium Symposium, Las Vegas, Nev., Frontier Hotel.

May 18-21, 1971. American Public Health Association, Southern Branch, and Tennessee Public Health Association, Memphis, Sheraton Peabody Hotel.



A Way Out of the Wilderness. Order No. M-1711-X. Motion picture, 16 mm., black and white, sound, 29 minutes, 1968. Produced by John Sutherland Productions, Inc., Los Angeles, Calif. Cleared for television.

AUDIENCE: Health professionals and voluntary organizations concerned with mental retardation programs.

SUMMARY: Depicts care of retarded children at Plymouth State Home and Training Center, demonstrating the role of small-unit school-housing facilities in helping the children relate to normal life.

The Laboratory Aspect of Disease of the Testicle. Order No. T-1674. Motion picture, 16 mm. (TFR), black and white, sound, 34½ minutes, 1969.

SUMMARY: Mortimer B. Lipsett, M.D., chief, Endocrinology Branch, National Cancer Institute, National Institutes of Health, discusses testicular physiology and biochemistry, pointing out the factors involved in assessment of testicular function, Leydig cell failure, sperm production, testicular biopsy evaluation, karyotyping analysis, and plasmatestosterone levels. He discusses in detail pituitary involvement, Klinefelter's syndrome, urinogonadotropin levels, LSH, FSH, and the use of radioactive isotopes in the determination of malfunctions of the testes.

The following films are restricted to professional audiences: residents, other medical professional personnel, and research and social workers in the medical field.

Introduction to Forensic Medicine. Order No. T-1900. Motion picture, 16 mm. (TFR), black and white, sound, 28 minutes, 1970.

SUMMARY: A basic introduction to the functions of the office of medical examiner, including a discussion of approaches to deductive reason-

ing and examination in this field. Dr. Milton Helpert, chief medical examiner, New York City, discusses the integrity required of this position, its interpretative ambiguity, and its interrelationship with the community, the hospital, the physician, and the law.

Sudden Natural Death. Order No. T-1776. Motion picture, 16 mm. (TFR), black and white, sound, 25 minutes, 1970.

SUMMARY: Dr. Helpert discusses aspects of sudden natural death—the most common cause being occlusive coronary artery disease. This program includes discussion and visual material concerning the evidence of organic disease in the body of the deceased, trauma and sudden natural death, and the relationships and contributing factors inherent in this peculiar problem.

The Concealed Homicide. Order No. T-1896. Motion picture, 16 mm. (TFR), black and white, sound, 28 minutes, 1970.

SUMMARY: Dr. Helpert presents an exercise in observation, through several case histories of persons who were found dead with no obvious cause of death. Autopsy finding—concealed homicide.

Traumatic and Chemical Asphyxiation. Order No. T-1897A—Part 1, 27½ minutes; T-1897B—Part 2, 27 minutes. Motion picture, 16 mm. (TFR), black and white, sound, 1970.

SUMMARY: Dr. Helpert discusses natural and traumatic causes of asphyxiation including strangulation, suffocation, drowning, inhalation of suffocating gases, pressure on the chest, strangulation due to food swallowing, carbon monoxide poisoning, glue sniffing, and anesthetic gases. The presentation is strongly supported by visual aids.

Narcotic Deaths. Order No. T-1898A—Part 1, 28 minutes, T-1898B—Part 2, 28 minutes. Motion picture, 16 mm. (TFR), black and white, sound, 1970.

SUMMARY: Dr. Helpert analyzes the types of narcotic deaths encountered, types of drugs used, and

symptomatic changes found externally as well as internally. He discusses and demonstrates the implements involved in using narcotic drugs and shows slides of victims of narcotic overdosage and the effects of narcotic intravenous injections on veins and subcutaneous tissue.

The Battered Child. Order No. T-1899A—Part 1, 28 minutes, T-1899B—Part 2, 28 minutes. Motion picture, 16 mm. (TFR), black and white, sound, 1970.

Dr. Helpert discusses patterns of injuries common to the battered child syndrome and the interpretation of these patterns. He also discusses the external symptoms or signs and cases with no external symptoms but with extensive internal damage which is obvious at autopsy. Extensive visual material is used throughout this program. Dr. Helpert presents statistics for the New York City area which can be extrapolated for any major city.

Operating Room Deaths. Order No. T-1902. Motion picture, 16 mm. (TFR), black and white, sound, 28 minutes, 1970.

Dr. Helpert discusses not only operating room deaths but also deaths due to diagnostic or therapeutic procedures that have not been properly controlled including perforation of the bowel with a barium enema, perforation of the esophagus during an attempt to remove an obstruction, transfixion of the trachea during an attempt to remove an obstruction, and traumatic death due to explosions of anesthetic gases.

These films are available on free short-term loan from the National Medical Audiovisual Center (Annex), Station K, Atlanta, Ga. 30324. Order films by title and number. Films should be requested at least 2 weeks before the preferred showing date; if possible, two alternate showing dates should be given. For purchase, order films by title and number from General Services Administration, National Archives and Records Service, Washington, D.C. 20209. Attn: Government Film Sales.