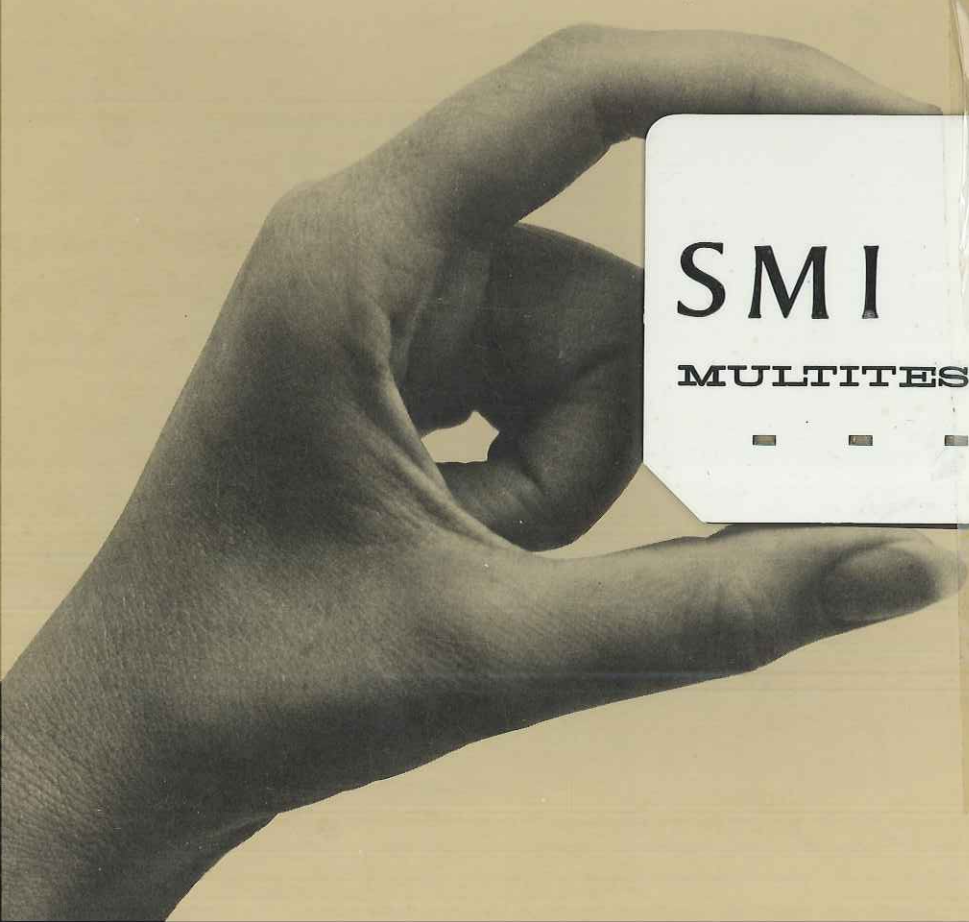


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NUCLEONICS.

Searle Medidata, Inc.

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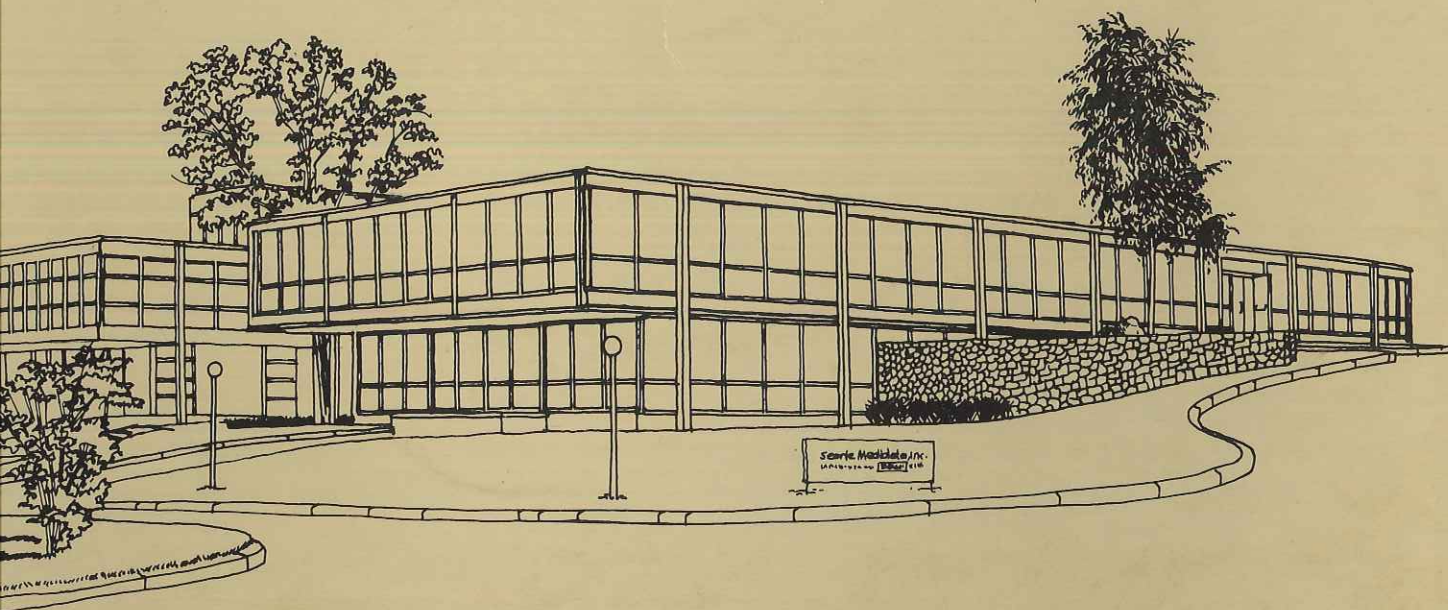


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SMI

MULTITEST SYSTEM

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617-252-6940 • 140 FOURTH AVENUE, WALTHAM, MASSACHUSETTS 02154

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Searle Medidata, Inc.

DAUGHTER COMPANY OF G.D. SEARLE & CO.

Searle Medidata is meeting the health-care crisis with multitest health systems which apply computer technology to clinical procedures. These automated, computer-based systems provide comprehensive data on all aspects of a patient's health, including in-depth, self-administered medical history.

Clinical instruments of your choice interact in real-time with the computer to produce a profile of the patient's health as measured by a battery of clinically proved tests specified by your medical staff. Real-time computer techniques eliminate technician error and ensure reproducible, quality-controlled results.

The physician receives a detailed clinical report emphasizing the patient's chief complaint with abnormal measurements flagged on the printout. A complete work-up, gathered and summarized for interpretation by the physician who can then explore areas of significance with the patient and apply his unique skills of diagnosis and treatment.

Our multitest health systems are in use today throughout the world, proving themselves medically significant and economically feasible.

Staffed by nurses, technicians and other medical-aided personnel, these systems relieve the physician of burdensome, time-consuming tasks and at the same time give him better information, more information, faster information.

Patient load continues to mount. Our computer-based multitest health systems can extend the doctor's reach, multiply his effectiveness, let him do more of what he was really trained for. And help him deliver consistent health care to *more people*.

The associate dean for clinical affairs at a large university medical center already equipped with a Searle Medidata system put it this way:

"Screening will increase the physician's productivity without sacrificing quality. It relieves him from collecting data so that he has more time for creative diagnosis and therapy. We think it is one of the answers to the public's demand for new methods for the delivery of health services, and that it will contribute to better utilization of physician manpower—one of the crucial shortages facing our nation."

Searle Medidata is the only fully integrated company devoted exclusively to the application of the computer and associated biomedical, biochemical, and data communications techniques to produce automated multitest health systems for medical use.

Our staff consists of physicians, pathologists, biochemists, psychologists, engineers, computer scientists, and physical scientists. Experienced system engineers analyze your requirements and work with you in developing a floor plan and patient-flow layout, specifying all elements of the system, and explaining it in technical, medical, and economic terms. Our medical advisory staff is ready to assist you if desired.

Ours is the most advanced organization in the world in terms of combined medical/technical capability in the field of automated health multitesting. We are the first to program, construct and demonstrate a real-time, on-line multitest facility and offer them, complete with software packages, to the medical community.

We are also the first to offer a computer-based, self-administered history-taker console capable of determining and printing out patients' chief and secondary complaints. First to install such a system in a major hospital for routine use. And first to offer them for use on a time-shared basis over telephone lines.

A Searle Medidata multitest system can take the strain off doctors and nurses and make more extensive, more effective use of your medical-allied health-care team. Give you patient work-ups generated and typed automatically. Handle large patient loads at minimum time per patient and at a surprisingly low cost.

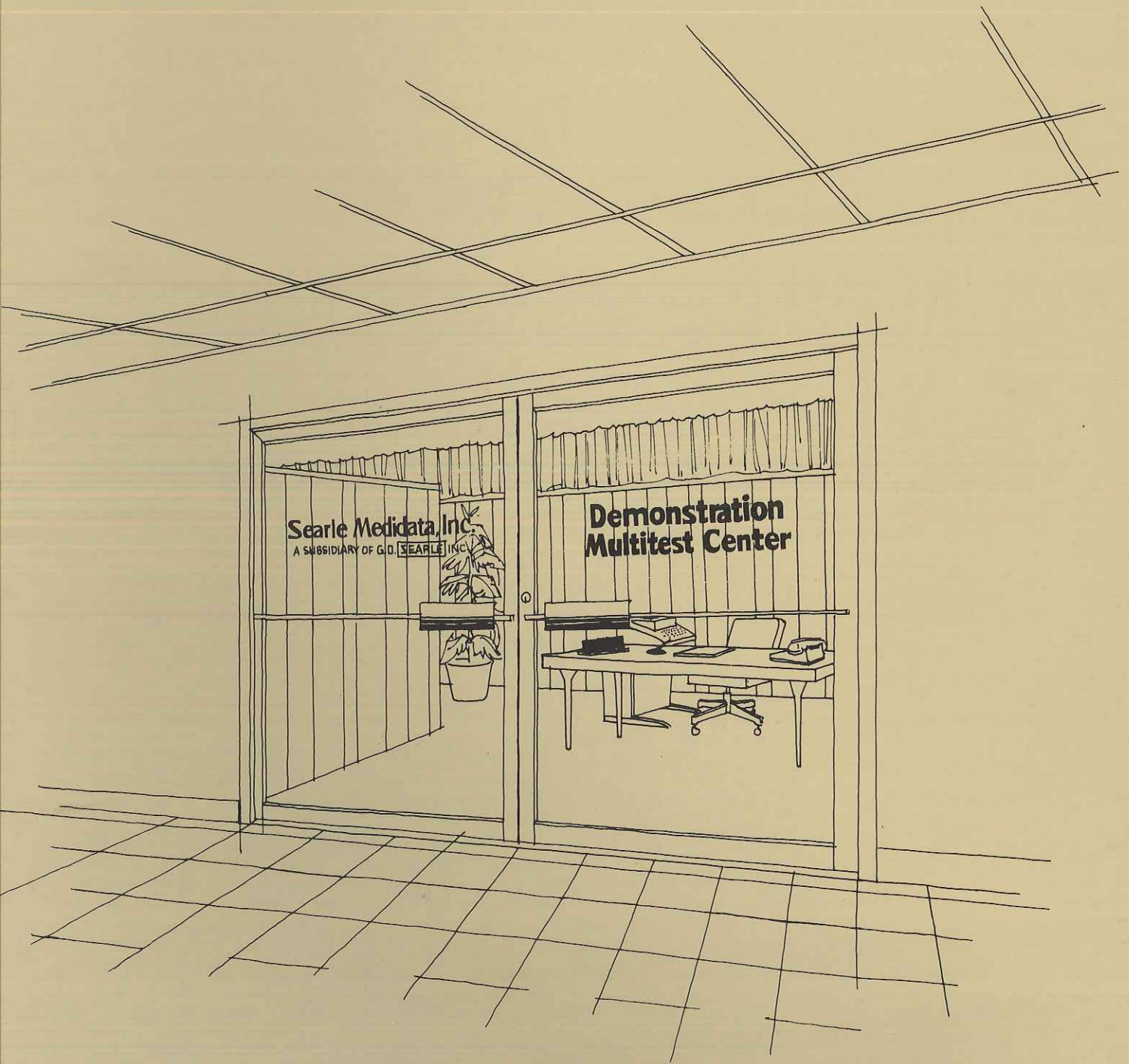
Searle Medidata is the only producer of complete, free-standing health screening systems (with or without laboratories), hospital-based multitest systems and history-taker systems, mini-centers for small clinics, remote history-taker consoles, and even mobile van systems for health screening, heart/stroke screening, and child screening.

These systems are offered to the medical community for outright purchase or through long-term lease contracts which provide for complete maintenance by Searle Medidata plus a continuing service for updating both software and biomedical instrumentation to meet your changing requirements and to eliminate the obsolescence factor.

Our systems go wherever they are needed for improved health-care services. For preventive as well as diagnostic medicine.

To hospitals for improving the test and measurement routine for admitted patients and outpatients. To health-screening clinics as a profit-making service to individual physicians, insurance companies, prepaid health insurance programs, industries, unions, and governmental units and agencies of all kinds. To diagnostic clinics to increase their patient processing, record keeping and economic efficiency. And our history-taking consoles, linked to a time-shared computer by telephone lines, can be leased for group practices and individual physicians.

On the cover: A Patient Identification Card, which is encoded to identify him to the data processor and which can be labeled with his name to identify him to the screening-center attendants.



*Our demonstration center located at
Searle Medidata headquarters, Waltham, Massachusetts.*


Complete Listing of
**GENERAL ADULT
MEDICAL HISTORY
QUESTIONS**

used in
The SMI Profile 320™
Medical History Taker



Searle Medidata, Inc.
A SUBSIDIARY OF G.D. SEARLE & CO.

140 FOURTH AVENUE, WALTHAM, MASSACHUSETTS 02154 (617) 894-6940
Offices: Atlanta/Chicago/Los Angeles/San Francisco/Washington



This automated medical questionnaire will identify your problem areas for your doctor. It will not replace a personal interview with him. The information you give is entirely confidential.

Now press the GREEN Go button.

Please press this WHITE button

Introduction

In this booklet are all of the General Adult Medical History questions presented by the Searle Medidata Profile 320™ History Taker†. In reviewing these questions, bear in mind that they are displayed to the patient in a branching fashion and that virtually no patient actually sees all of the questions. He sees them in a logical, related sequence as may be traced in the sample branching diagram on page 4.

In most cases the format of the history has been arranged so that a "Yes" answer carries the patient down a branch exploring the area where he has indicated that problems exist. A "No" answer skips the patient over this block of exploratory questions and takes him to a new general topic. The skipping, which becomes obvious as you read through this booklet, is not apparent to the patient taking the history. And no noticeable time delay is involved in the skipping procedure.

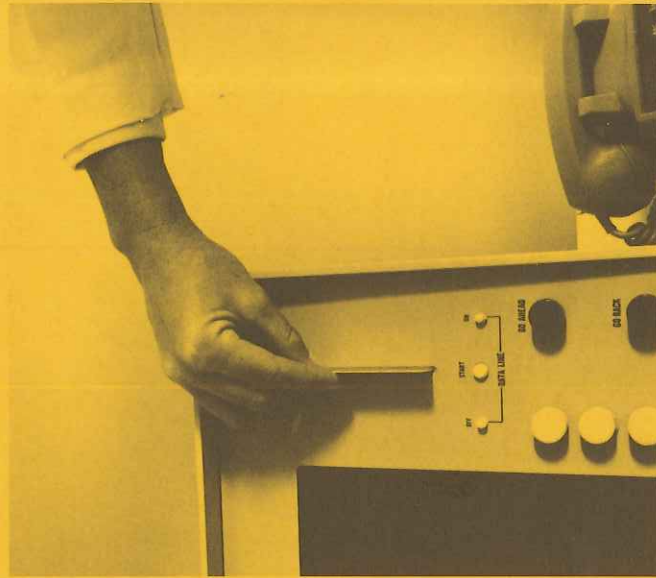
One of the most important features of the Profile 320 History Taker is the facility for multiple-use of a single question. This allows the *dimensional* questions such as "How frequently does this occur?" to be used in many different contexts and expands the total number of questions actually available for use substantially beyond the maximum of 320 displays available in the system. These multiple-use questions are shown at the end of a given series of related questions. They appear and reappear throughout the history in appropriate places. Dimensional questions are programmed for display whenever appropriate in following up a positive response.

In addition to the dimensional questions, there is one multiple-use question, the Total Health Rater, which allows the patient to rate a problem in terms of its importance to him at the time the history is being taken. This is the one which says "In terms of your total health picture, would you say this is: . . ." Each time a patient makes a positive response, he will see this display at some time during the follow-up series of branching questions. The data processor will call out the nearest of four duplicate slide displays which are strategically positioned for rapid access.

At the time of the printout, those problems which the patient has indicated as "The main reason I came to the doctor" will be listed under a category headed PRIMARY PROBLEMS. Those which the patient has indicated as being "important" will be listed under another category entitled IMPORTANT PROBLEMS. And those problems which he has indicated as being of lesser importance, by selecting answers 3 or 4, will be listed under the heading SYSTEMIC REVIEW, POSITIVE RESPONSES. Finally, those problems which the patient has indicated are no longer a problem will be listed under PAST PROBLEMS. In this way, the computer-based history-taking system generates a paragraph calling out the chief complaint with a short history of present illness, a complete systemic review, and a paragraph of past medical history.

The programmed history-taking procedure virtually ensures follow-up of positive responses. The main purpose of this booklet is to let you review the information content of the medical-history program rather than its exact structure. There are 80 display slides, each containing up to four questions. Each individual question display is shown on the following pages exactly as the patient will see it on the Profile 320 screen. (Conversion of these General Adult questions for display in languages other than English is relatively simple and is discussed briefly on page 33.)

Even though this history has been extensively edited on the basis of studies carried out at several medical institutions, we are always interested in further refinements. Please forward any comments you may have about this history to a representative of Searle Medidata in your area or directly to Herbert A. Haessler, M.D., Medical Director, Searle Medidata, Inc., Waltham, Massachusetts 02154.



†Patents Pending

Editor's Notes

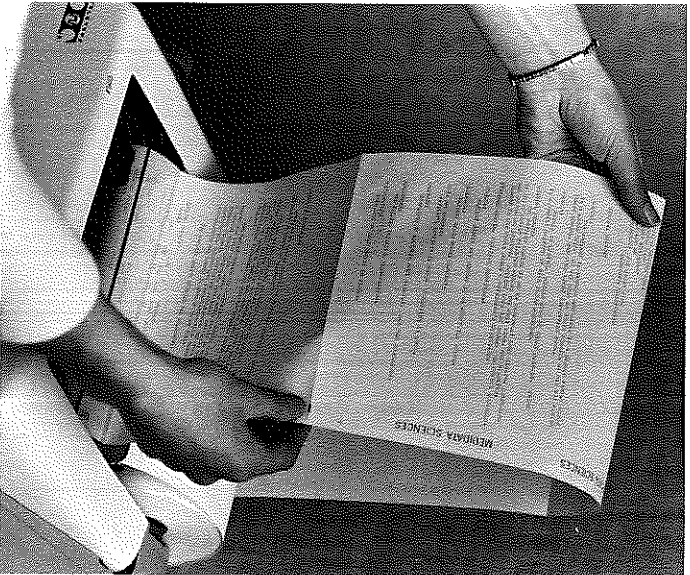
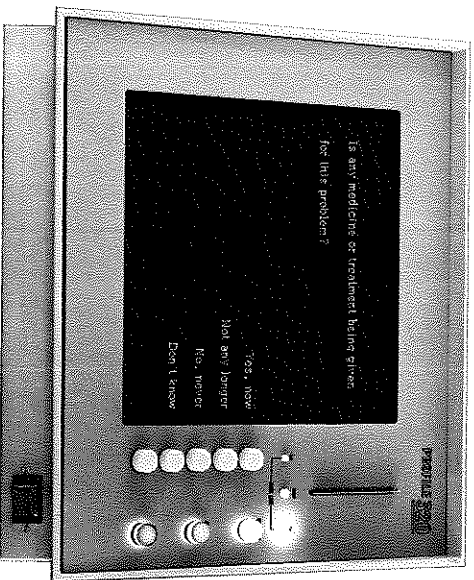
Questions are presented here in the same order in which they are positioned in the Profile 320 slide tray and not in the order the patient will see them. Actual question sequence is determined by the history program and the specific answers given.

Multiple-use questions are enclosed within a double-rule box, as shown here:

Is any medicine or treatment being given for this problem?

Yes, now
Not any longer
No, never
Don't know

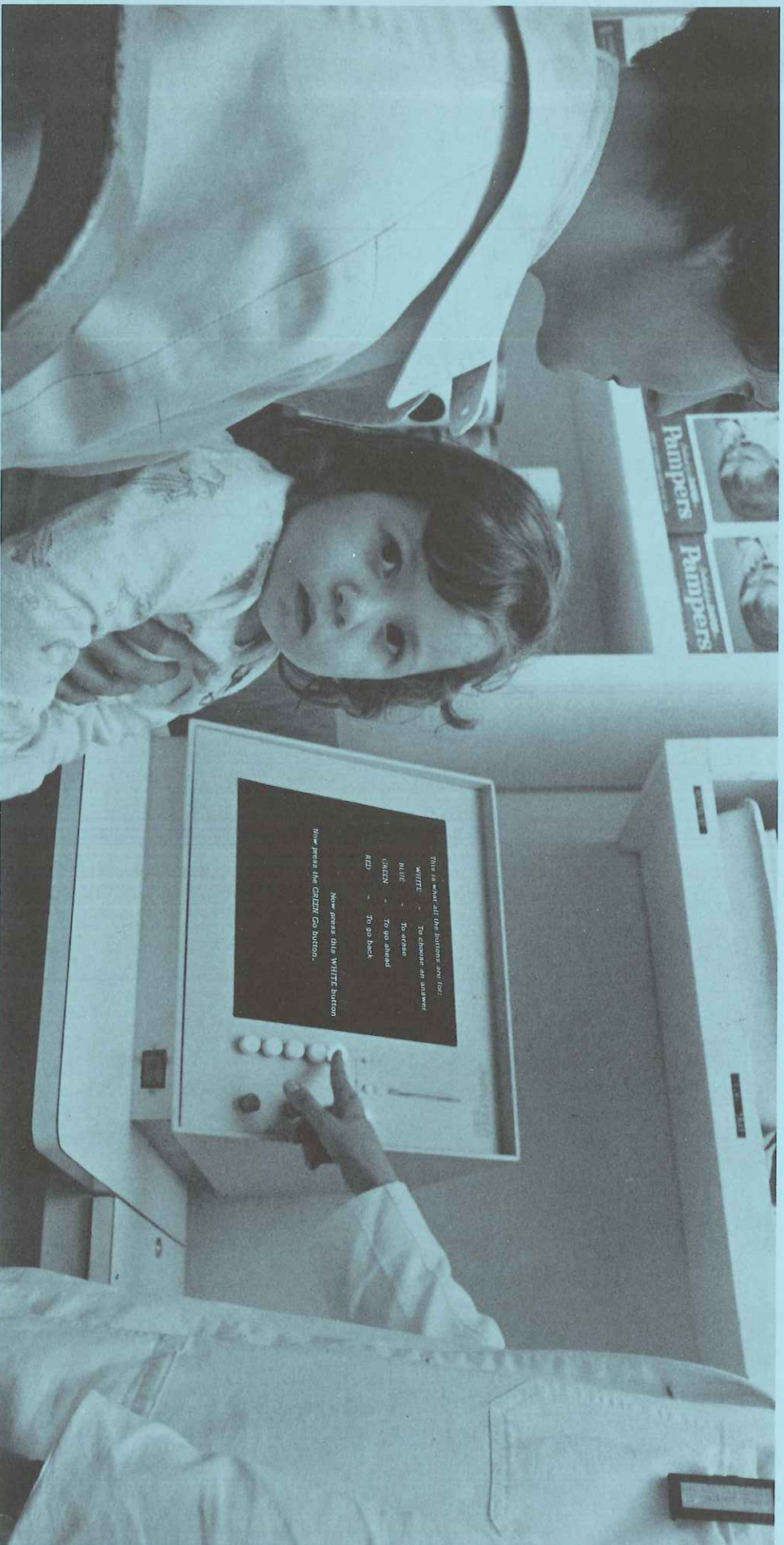
This particular question would appear to the patient like this:



Contents

Subject	Question No.
Instructions	A1-0—A2-0
Social & Family	A2-1—A7-2 and A80-3
General Health	A7-3—A16-0
Central Nervous System	A16-1—A23-2
Skin	A23-3—A24-3
Eyes	A25-0—A26-3
Ears	A27-0—A27-2
Nose	A27-3—A28-3
Throat	A29-0—A31-2
Respiratory	A31-3—A34-3
Heart	A35-0—A39-3
GI and Abdomen	A40-0—A50-0
Urinary	A50-1—A54-0
Genitalia	A54-1—A56-2
Gynecologic	A56-3—A67-0 and A80-2
Blood	A67-1—A68-0
Endocrine	A68-1—A70-3
Extremities	A71-0—A74-2
Psychologic	A74-3—A77-3
Additional Problems	A78-0
Opinion Survey	A78-1—A79-0
Attendant Instruction	A79-1
Error Displays	A79-2—A80-1

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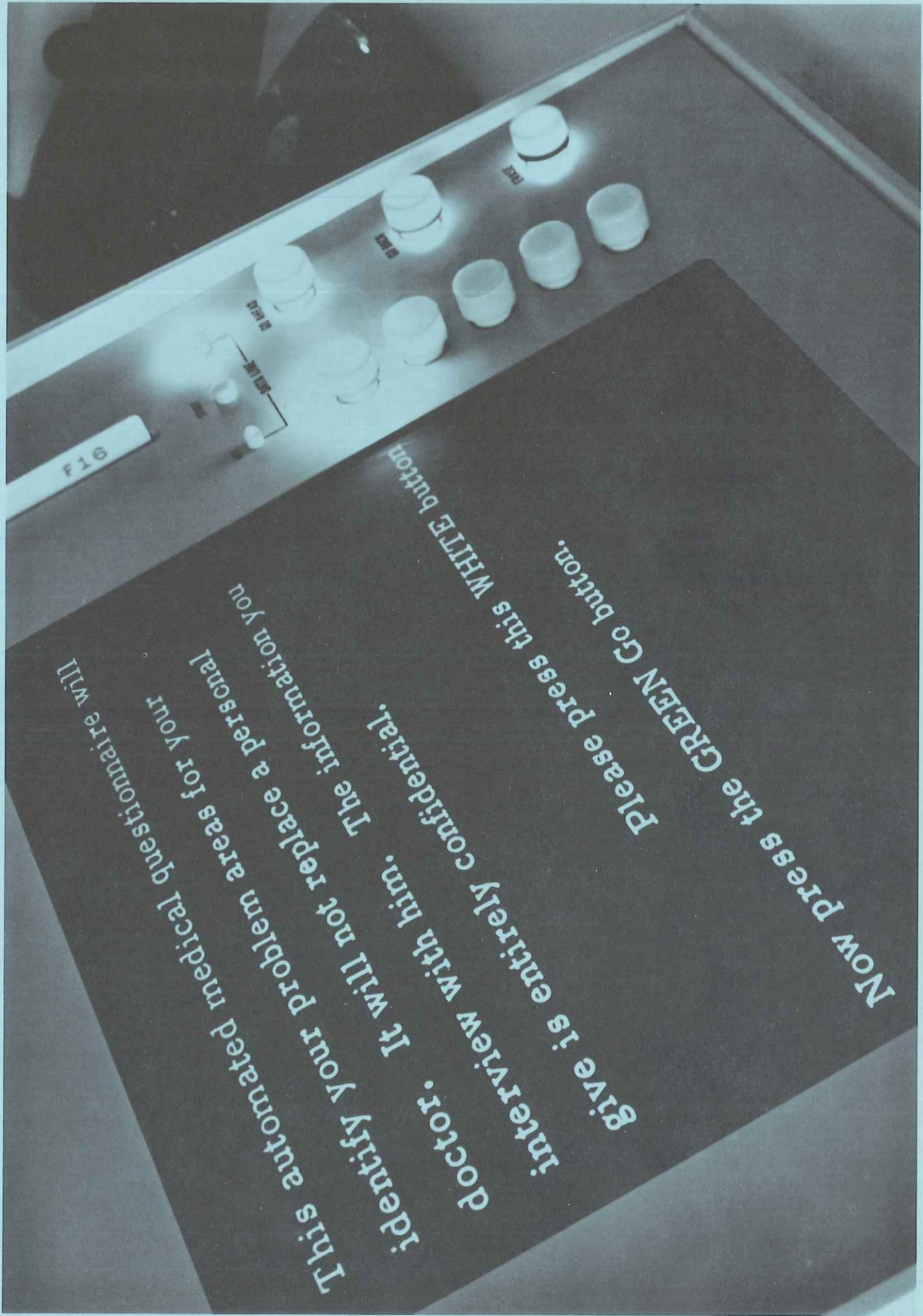
Complete Listing of
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F16

STOP

GO

This automated medical questionnaire will
identify your problem areas for your
doctor. It will not replace a personal
interview with him. The information you
give is entirely confidential.
Please press this WHITE button.
Now press the GREEN Go button.

Introduction

In this booklet are all of the Pediatric Medical History questions presented by the Searle Medidata Profile 320™ History Taker†. In reviewing these questions, bear in mind that they are displayed to the parent in a branching fashion and that virtually no parent actually sees all of the questions. He sees them in a logical, related sequence as may be traced in the sample branching diagram on page 4.

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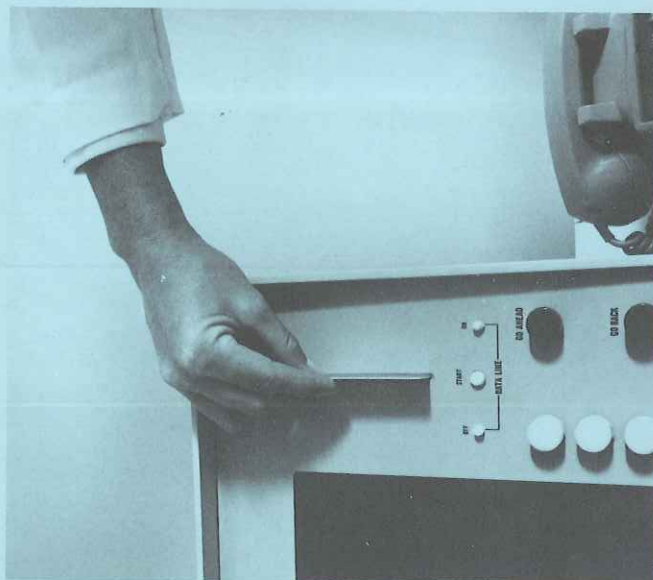
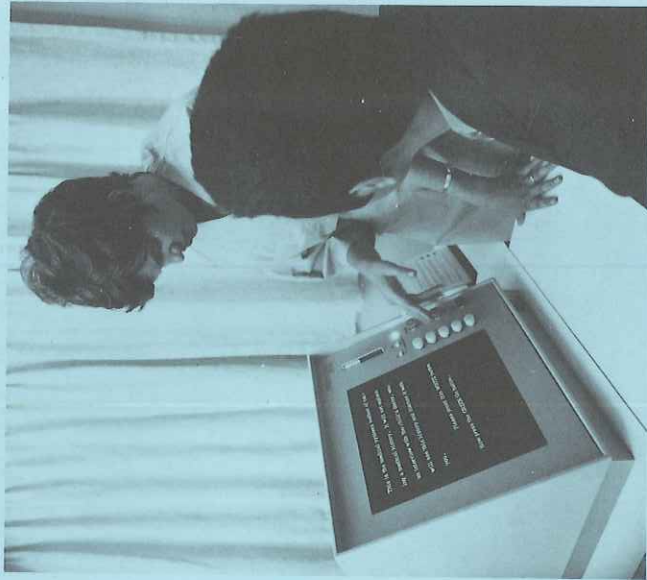
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In addition to the dimensional questions, there is one multiple-use question, the Total Health Rater, which allows the parent to rate a problem in terms of its importance to him at the time the history is being taken. This is the one which says "In terms of the child's total health picture, would you say this is: . . ." Each time a parent makes a positive response, he will see this display at some time during the follow-up series of branching questions. The data processor will call out the nearest of three duplicate slide displays which are strategically positioned for rapid access.

At the time of the printout, those problems which the parent has indicated as "The main reason we came to the doctor" will be listed under a category headed PRIMARY PROBLEMS. Those which the parent has indicated as being "Important" will be listed under another category entitled IMPORTANT PROBLEMS. And those problems which he has indicated as being of lesser importance, by selecting answers 3 or 4, will be listed under the heading SYSTEMIC REVIEW, POSITIVE RESPONSES. Finally, those problems which the parent has indicated are no longer a problem will be listed under PAST PROBLEMS. In this way, the computer-based history-taking system generates a paragraph calling out the chief complaint with a short history of present illness, a complete systemic review, and a paragraph of past medical history.

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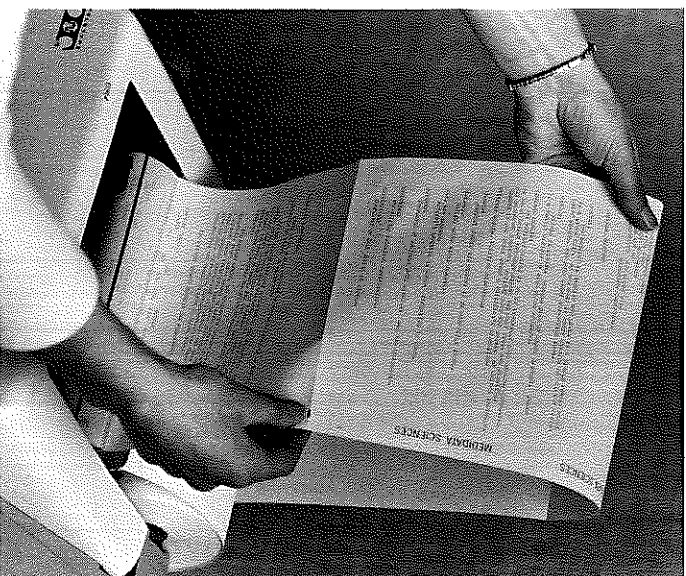
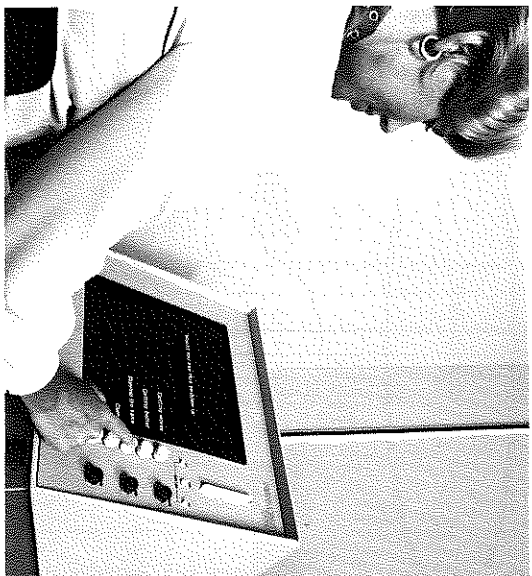
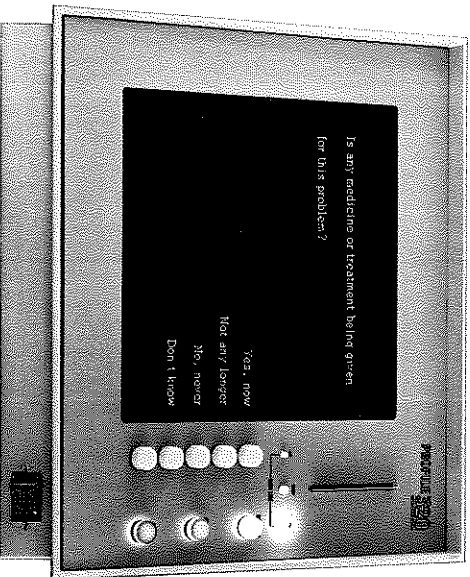
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Social & Family	B3-1—B12-3
Prenatal	B13-0—B15-0
Early Infancy	B15-1—B21-1
Illnesses & Surgery	B21-3—B23-1
General Development	B23-2—B29-2
Central Nervous System	B29-3—B36-0
Skin	B36-1—B37-2
Eyes	B37-3—B38-1
Ears	B38-3—B39-3
Nose	B40-0—B41-2
Throat	B42-0—B43-1
Respiratory	B43-2—B46-0
Heart	B46-2—B48-1
GI	B48-2—B52-2
Urinary	B52-3—B54-2
Male Genitalia	B54-3—B56-1
Female Genitalia	B56-2—B60-1
Blood	B60-2—B62-0
Endocrine	B62-1—B64-1
Bones and Joints	B64-2—B67-0
Nursery/Kindergarten	B67-1—B69-2
School Age 6-12	B69-3—B74-1
Adjustment 6-12	B74-2—B79-0
Opinion Survey	B79-1—B79-3
Error Displays	B80-0—B80-3

**SCIENTIFIC
AMERICAN OFFPRINTS**

The Delivery of Medical Care

by Sidney H. Garfield

**SCIENTIFIC
AMERICAN**

APRIL 1970

VOL. 222, NO. 4 PP. 15-23

SPECIAL ARTICLE

HEALTH-POLICY DIRECTIONS FOR THE 1970'S*

WILLIAM L. KISSICK, M.D.

Abstract The health endeavor in the United States, a \$60,000,000,000 human-services enterprise, is in a state of crisis that challenges the continuation of its pluralistic, independent, voluntary nature. Health care, although still predominantly a private-sector activity, is no longer solely the private concern of the individual. The evolution of the role of the government has proceeded through four phases, beginning with categorical grants-in-aid (1935), investments in the development of health resources

(1946), organization and delivery of health services (1963) and a transition to comprehensive health-care systems (1967). Health-policy deliberations during the 1970's, including the debates over National Health Insurance, must focus on the modification of financing mechanisms and patterns of organization if society is to realize the most effective utilization of its health resources to provide health care for a population projected to reach 250,000,000 by the end of the decade.

ON July 10, 1969, at a press conference held in the East Room of the White House, Robert H. Finch, Secretary of Health, Education, and Welfare, and Dr. Roger O. Egeberg, Assistant Secretary for Health and Scientific Affairs, released their "Report on the Health of the Nation's Health System." The tenor of their findings was suggested by President Nixon in his introductory remarks:

We face a massive crisis in [health care] and unless action is taken, both administratively and legislatively, to meet that crisis within the next two to three years, we will have a breakdown in our medical care system. . . .¹

For months before and since, editorials in newspapers across the country and cover articles in *Time*,² *Business Week*,³ *Fortune*⁴ and like periodicals have been underlining what has become a national preoccupation with the "crisis in health care."

Crises, whether in diseases or during the evolution of social institutions, usually imply turning

points, for better or worse. Sometimes, the alternatives may be extreme: radical improvement or disaster. How the present crisis is resolved will shape the character of the nation's health endeavor for years — probably decades — to come. Clearly, physicians have profound and persuasive reasons, including enlightened self-interest, to see that they participate actively in making the decisions that can lead to the best resolutions of current problems.

What is the nature of the present crisis? This paper will examine factors influencing the organization and delivery of health services, review recent trends in health affairs and suggest future policy directions. The options for physicians are these: to seize the initiative and help shape the future, or to have the future shaped for them. The concluding sentences of the Finch-Egeberg Report forcefully state the challenge to the medical profession in the 1970's:

. . . What is ultimately at stake is the pluralistic, independent, voluntary nature of our health care system. We will lose it to pressures for monolithic government-dominated medical care unless we can make that system work for everyone in this Nation.⁵

THE HEALTH ENDEAVOR CIRCA 1969

The health enterprise in the United States, a vast

*From the Department of Community Medicine, University of Pennsylvania School of Medicine (address reprint requests to Dr. Kissick at the University of Pennsylvania School of Medicine, 36th and Hamilton Walk, Philadelphia, Pa. 19104).

Supported in part by a general-research support grant (GRS NIH 5501 FR-05415-08) from the National Institutes of Health and a public-health training grant (PHT 9-14 Ar-69) from the U.S. Public Health Service.

Automated Multiphasic Health Testing

ANNA C. GELMAN, M.P.H.

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A reprint from June 1, 1969

computers and automation

RECENT DEVELOPMENTS IN

AUTOMATING THE MEDICAL HISTORY

*Herbert A. Haessler, M.D.
Medidata Sciences Inc.
140 Fourth Ave.
Waltham, Mass. 02154*

"Patient response to automated medical history taking has been quite favorable. When patients are asked routinely whether they would prefer to give their history to the machine as they have done; to a physician; to a nurse; or whether they have no preference, over half the patients expressed no preference. And of those who did express a preference, the machine was favored over the physician by a margin of approximately three to one."



Dr. Haessler is the Medical Director of Medidata Sciences. He is a graduate of Marquette University School of Medicine and served as a Resident in Pediatrics and a Post Doctoral Fellow in Internal Medicine at The Massachusetts General Hospital. For the past five years he has been working in the area of computer-based medical data handling. He participated in the design of the Medidata Sciences' Profile 320 Medical History Taking Terminal and wrote the General Medical History discussed in this article.

Until relatively recently, there have been few serious attempts at either investigating the procedure of medical history taking or at automating the process even though it is among the most time-consuming parts of the physician-patient interaction. Not until 1949 did the Cornell Medical Index,¹ the

common ancestor of most of today's automated medical history systems appear. In this fixed format paper and pencil questionnaire the patient is asked to answer every one of approximately 150 questions. It covers a conventional medical systemic review with added emphasis on the psychologic state of the patient. The Index has been widely used and has been automated to the extent that scoring can be done by machines using mark sense techniques.

Since publication of the Cornell Medical Index, many other medical questionnaires have been developed for special purposes. For example, industrial organizations have developed history questionnaires for their own use containing material specially suited to aspects of the patient's health which might affect performance of a specific task. Multiphasic

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