INTRODUCTION

Centro Diagnostico Italiano (C.D.I.) is an outpatient clinic operating in the health care field since the beginning of 1975. At C.D.I.'s the flow of medical data is supported by the computer in several departments: Preventive Medicine (Multiphasic Health Check-up), Hormonal Contraception, Radioimmunology, Clinical Lab, Cardiology, and others.

But the activity performed by the computer in the first two of them is of special interest for this paper, as it is based on the use of a special package of programs, which will be dealt with here in detail. This package is called MFS (Medical data Filing System), and has been successfully in operation at C.D.I. since September 1976.

HEALTH CHECK-UP APPLICATION OUTLINE

Fifty out of the ca. 600 patients showing every day at C.D.I. are given a comprehensive multiphasic health check-up.

The patient fills at home a history questionnaire by checking with a pencil the mark-sense cards embedded in the questionnaire booklet. When the patient shows at C.D.I., his history is checked by a professional nurse, who also fills a second level questionnaire, according to the patient's needs; the mark-sense cards are torn-off and sent to the computer department. While the patient is given the tests which will be mentioned later, the computer processes the history information collected, by carrying out a thorough logical evaluation (formal and medical) on it. A summary report is then printed with warnings for data inconsistencies or omissions.

In the meanwhile the patient is driven by the nurse along the check-up circuit, including several steps: blood drawing, x-ray examinations, ECG, tonometry, vision, audiometry, spirometry, blood pressure, etc.

The patient is then given a physical examination by a doctor, who also corrects with him any inconsistency shown on the history print-out.

The computer then loads functional tests results (coded on mark-sense cards by the nurse), x-ray findings (coded by the radiologist
on mark-sense cards), physical examination findings (coded by the
check-up doctor on mark-sense cards) and lab results. When all data are available, the computer goes through them with an
overall logical evaluation and prints a final report.

HORMONAL CONTRACEPTION APPLICATION OUTLINE

In the Hormonal Contraception Department, up to twenty patients per
day are given a sort of screening based on some lab tests, on a very
detailed medical history questionnaire and on a physical examination. The computer processes the information read from mark-sense cards ac-
cording to a very sophisticated medical logic aimed at organizing
and grouping the data collected according to their relevance in six
pathological areas of specific interest. What the gynaecologist re-
ceives from the computer is so a list of warnings for potential or
real risks connected with the use of the "pill", rather than a prin-
tout of raw data. Moreover, for each warning a degree of likelihood is printed, accord-
ing to the significance of the symptoms (or reference data) avail-
able.

DESCRIPTION OF MFS

As said before, the software supporting the applications above is a
generalized system called MFS, designed for collection and reporting
of medical data. One major objective set in the design of this system was to build a
package which could be easily tailored to the requirements of sever-
different applications, and which would allow the user to perform easily frequent revisions on them.

This requires that:

1) exchanges of information between user and computer can be program-
med easily, no matter which is the channel of communication (mark
sense or punched card, keyboard, CRT screen, printed report) and
which is the mode of operation of the computer (batch or inter-
active);

2) the user-programmer must be involved as little as possible in the
details of information recording on mass-storage media (records
layout and physical organization of archives).

It was so decided to implement a package including a certain number
of generalized programs, capable of performing some typical-repeti-
tive tasks, which often require revisions (like history-taking, re-