EDUCATIONAL ASPECTS IN MEDICAL INFORMATICS

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1 INTRODUCTION

Besides much older disciplines like physics, chemistry, biology and statistics, informatics is one of the new sciences recently introduced into medicine. The use of computers and information processing for medical research is quite clear; it is also obvious that computers have a steadily growing impact on routine in medicine and health care, i.e. on clinical management, diagnosis making and so on. The reason why it is necessary to introduce informatics in the medical curriculum is for these same reasons clear as well: no doctor - whether he will practice as General Practitioner, as specialist in advanced medical care or in social medicine - will be able to escape the confrontation with some form of information processing. He will be the supplier or user of computer data: he will use advanced information processing systems for his data handling and interpretation; he will store and retrieve data to or from large medical data bases or he will use the computer as his clinical research tool, etc.

The main objective and final goal of our educational activities is to acquaint the medical student with our discipline at different stages during his education and to show him some theoretical backgrounds, but above all to let him have hands-on experience with some representative small systems for medical information processing. The latter is only possible if we perform the research in our department in such a way that spin-off's can be used for teaching and training.

At present we have set up the following educational activities:

- in the 2nd year of the medical curriculum an appreciation course of 12-24 hrs in medical information processing is given, followed by a mandatory test;
- during the 5th year will be introduced next semester a so-called 'block course' of one week duration after the internship Internal Medicine. During the mornings the student will be taught some aspects of medical information processing, whereas the afternoons will be available for practical exercises;
- since 1974 almost on an annual basis have been given post-graduate courses in medical information processing. These lectures comprise
a total of 12 hrs; also, the above mentioned block course has
incidentally been given for post-graduate training;
• finally, a number of introductory or extensive training courses in
FORTRAN, RSX and graphics are given. These are being extended by a
Standard MUMPS course.

It should be emphasized that we do not have the intention to train the
student in whatever programming language; our aim is to give them some
insight in the (im)possibilities of (medical) information processing,
and to give the students some experience in interactive communication
with a computer.

For our real-time applications a Digital PDP 11/70 is available, whereas
a PDP 11/60 is running under the DSM-11 (Standard MUMPS) operating
system. The former is used mainly for research purposes, whereas the
principal task of the latter computer is training.

In this contribution we will restrict ourselves to the description of
a set of software packages for interactive use by the student, which
have been developed in MUMPS and cover several areas of medical infor-
mation processing and clinical applications. A more extensive review
of our educational activities can be found in material to be published
at the IFIP-TC4 Working Conference on Education in Medical Informatics,
to be held in Munich, November 1978.

2 CLINICALLY ORIENTED PACKAGES

Although we are still in the process of further expanding the set of
training packages for medical informatics, we have already at our
disposal some representative packages which will be briefly discussed.
First of all we will point to the underlying philosophy why such pro-
grams have been developed or are being adapted to the training environ-
ment. The basic idea is that we will show the student some examples of
information processing in those application fields that he will most
probably be confronted with. We have listed these fields of applications
from 'commonly used by ALL' to 'possibly used by SOME' in table 1.
The scheme of table 1 indicates clearly which fields have to be empha-
sized heavily and which fields can just be briefly touched. Table 2,
along the same lines as table 1, gives a non-exhaustive summing-up of
practical examples belonging to these fields of applications, although
at the same time one must be aware that several examples belong to more
than one field. For that reason, the most prominent field has been
indicated by a black dot.