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Abstract. This paper tries to synthesize the discussions of a seminar on medical informatics educational tasks held in May 1998 in Sinaia, Romania, within the frame of the Tempus-Phare Project CME-02555-96 entitled "Know How Transfer from University to Industry" and coordinated by the University of Medicine and Pharmacy Timisoara, Romania. Special emphasis was paid to particular features of medical education requirements in East European countries, with particular reference to Romania.

# 1. Introduction

The Tempus-Phare Project CME-02555-96 entitled "Know How (Technology) Transfer from University to Industry" aimed to create a common platform for communication between education and practice and to support the development of interdisciplinary fields in Romania, focusing mainly on medical informatics. The project was intended to support the process of university reform, as well as the healthcare system reform, enabling cooperation between the academic, scientific, research, and practice fields in establishing needs and developing new strategies.

Three seminars were organized as debate forums, each of them dedicated to one of the three main fields: education, research, and production. They were followed by a plenary session for conclusions' presentation and synthesis. Some outstanding scientific personalities and high level governmental representatives attended the seminars.

### 2. Education and Training. Target Groups for Medical Informatics Education

We considered that an important distinction has to be made between two different phases of instruction:

- education the preparation phase for long term knowledge and skill development, which provides the theoretical foundation;
- **training** the practical activity phase, concerning knowledge and skills for near future mainly focused on using some specific products.

Moreover, in order to have a thorough understanding and a complete overview of the large palette of activities covered by "healthcare delivery", we thought a scheme of medical information flow would be useful – figure 1.



Figure 1 - Scheme of medical information flow

As the scheme emphasizes, it is important to be aware that **education** should involve not only the future doctors' education, but also the education of other categories of personnel: nurses, pharmacists, therapists, bioengineers, technicians, healthcare managers, documentarists, software producers, researchers, etc. Moreover, the patient's education should be considered and we have to be aware that the educational objectives are specific for each category.

At the beginning of the new age of communication we enter in, an increasing attention is oriented toward the industrial challenge for a better communication [1]. In addition to this, the more demanding is the work market, the more willing are the healthcare professionals to improve their education and training [2], with all the implied economic benefits. Therefore, the education system has to adapt itself to the market demands. Moreover, new facilities are offered: Internet and the Web sites are already widely seen as ideal platforms for interdisciplinary communication, as well as tools for healthcare professionals' education [3].

The participants in the seminar on education took all the aspects presented above into consideration. The discussion emphasized the importance of building strong connections between education, research, industry, and healthcare. An aspect that was stressed was the value of a Web site built as a virtual dialogue centre.

## 3. Present State of Medical Informatics Education in Romania

The participants in the seminar agreed that for medical students (including dentists and pharmacists) the present education met the basic requirements in most schools [4]. Furthermore, some nursing schools have just started educational programs on medical informatics and this is expected to be generalized in the next years.

However, some improvements have to be made: even if graduate studies in medical informatics and bioengineering have also started, the links with the healthcare communities are still poor, most of the specialists are misused or underused. The common feeling of some participants was that there was a general confusion at high governmental levels, lack of legal basis, as well as some lack of interest for these interdisciplinary aspects.

Another important issue discussed was the healthcare management, where there is still no possibility to specialize.

The doctoral level studies in medical informatics are also an important unsolved problem in Romania: there is a lack of legal frame concerning the relation between the titles awarded and the institutions able to do this. Therefore, in Romania, only the medical doctors may receive the Ph.D. title in medical informatics.

### 4. Conclusions

A successful strategy for the healthcare reform should be based on a realistic estimation of the present state and a thorough analysis of the available resources. As the role of education is to provide future human resources, a long-term strategy should start with a good educational program.

The Recommendation No. R (20) 21 of the Council of Europe, Committee of Ministers [5] was presented and considered to be a good introduction to the proposals to the governmental authorities, concerning the improvement of the present state. Moreover, several proposals for each category of personnel were made and sent to the appropriate institution.

We do hope that the Web site (*http://www.infosan.ro*) we built as an interdisciplinary dialogue platform will be a valuable help for a better communication between universities and practice.

#### References

- [1] De Benedetti C. The industrial challenge. In: Laires M.F. et al. (Eds), *Health in the Communication Age*. Amsterdam: IOS Press, 1995, p. 21-22.
- [2] Vimarlund V. et al. The economic implications of users willingness to increase knowledge capital in health informatics. In: Cesnik B. et al. (Eds.), MEDINFO 98. Amsterdam: IOS Press, 1998, p. 711-715.
- [3] Murphy J. et al. Designing, implementing and evaluating a Web site for health informatics. In: Richards B. (Ed.), *Healthcare computing 1998*. BJHC Ltd. 1998, p. 189-199.
- [4] Mihalas G.I., Lungeanu D. Strategy for medical informatics education at the University of Medicine and Pharmacy in Timisoara. In: van Bemmel J.H., McCray A.T. (Eds), *Yearbook of Medical Informatics* 1997. Stuttgart: Shattauer 1997, p. 113-119.
- [5] Council of Europe. Committee of Ministers. Recommendation No. R (90) 21. In Hasman A. et al (Eds.), Education and training in health informatics in Europe. Amsterdam: IOS Press, 1995, p.3-6.