From Informatics Education to Use in Practice: The Coupler Continuum

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In 1992, the University of Vermont implemented the Vertical Curriculum in Applied Medical Informatics to insure that undergraduate medical students develop the knowledge, skills and attitudes of information literacy necessary for future practice. The Vertical Curriculum, an essential part of the basic sciences and core clerkships and spanning the first five semesters of the undergraduate medical school curriculum, utilizes an integrated approach to informatics education with curricular correlations designed to develop information-seeking habits.[1]

The final three semesters of the undergraduate medical school curriculum do not allow for integrated medical informatics teaching across the curriculum. They are allocated to acting internships and senior selectives which enable students to explore particular topics or areas of medicine in depth for periods of one to two months. However, based on medical student exit interviews, a need was identified for advanced applied medical informatics and information literacy training. In order to allow medical students the opportunity to develop interest and expertise in an informatics tool which would be of use following graduation, a senior selective was developed around the building and evaluation of a Problem Knowledge Coupler (PKC).

Problem Knowledge Couplers,[2] created by Dr. Larry Weed, are tools which enable the structured collection of patient data, which is then analyzed by combinatorial logic using an extensive knowledge net, to suggest diagnostic or management options predicated on the unique patient. Each coupler focuses on a specific medical problem, and the process of coupler building requires extensive analysis of pertinent medical literature, including monographs, journal articles, and other relevant sources, followed by formulation of structured questions, knowledge net enhancement, and appropriate linkages.

The PKC senior selective has two primary goals. First, the medical student is able to explore a single medical problem in detail and develop an understanding of how the individual patient, rather than the disease itself, is the determinant of the complexity of the problem. Secondly, the medical student gains a familiarity with the structure of the tool development and the way computers can be used to facilitate medical practice.

The process of coupler building involves the best precepts of critical analysis of the literature as well an understanding of the disease process and the human elements which interrelate to produce the clinical findings and frame the management options. At the end of the process, the student develops an expertise in the unique problem but is able to extrapolate the relationship of the particular disease to the whole patient in a way which enables the student to gain a much broader concept of the continuum of medical practice.

Allowing the student to find, analyze, synthesize, and parse medical knowledge into the knowledge net, which then serves as a medical knowledge foundation for the building of the structured question set, enables the student to develop a variety of informatics knowledge and skills. These skills can then be applied to both use of the tools as well as future modification.

A third goal is that the medical student will take the coupler into residency following graduation and evaluate it in a practice setting. In this way, there is a continuum of learning and input garnered from the evaluation process will lead to modification and improvement of the individual coupler.

This poster details the steps followed in building the Management of Unstable Angina Coupler and describes its subsequent use in a family practice residency program.

References

1. McGowan JJ. A vertical curriculum in applied medical informatics in support of rural primary care education. Acad Med. 1994; 69:430-431.

2. Weed L. Knowledge Coupling: New Premises and New Tools for Medical Care and Education. New York: Springer-Verlag, Inc. 1991.

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