The PRODIGY Knowledge Architecture Requirements for Chronic Disease Management in Primary Care

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PRODIGY provides decision support to General Practitioners in the UK by presenting clinical advice and therapeutic recommendations. The first two phases of the research led to the development of a system for general release.

Trials to evaluate the system were conducted with the collaboration of five software suppliers and approximately 900 General Practitioners. Although 65% of GP users believed some further work needed to be done on the system, 95% indicated a desire to continue to use PRODIGY.

Despite the success indicated by these results, use of PRODIGY to date suggests that at present the most useful guidance is that for acute prescribing. Constraints of the current software model result in the advice offered being too generalised to be of use to clinicians during consultations.

Detailed analysis of the evaluation results facilitated abstraction of the problems into a set of requirements. These requirements will drive development of a novel PRODIGY architecture and guidance model in the third phase of the research, which will test its ability to provide improved support for chronic disease management.

The requirements derived for chronic disease management are:

1. Chronic disease management guidance should take account of successive consultations, which has implications for both the way knowledge is represented and for the way the Electronic Patient Record (EPR) represents temporal issues.
2. The guidance model should not be totally dependent on data in the EPR since in practice this is often missing or incorrect.
3. It should always be possible to revise the guidance offered in response to changed circumstances, as not all patient events can be anticipated, nor when they occur are they necessarily recorded on the EPR.
4. Standardised coding of drugs and clinical concepts is needed, to facilitate authoring and distribution of a consistent set of guidance.
5. It should be possible to rapidly develop and modify Knowledge Acquisition tools to support the authoring process in line with the developing guidance model. Knowledge authoring is a difficult problem, and the difficulty is compounded when the guidance model is unstable (i.e. under iterative development).

In addition, evaluation results confirmed the set of requirements that had guided development of PRODIGY in earlier phases of research:

6. The basis of the user interaction model should be the successful cognitive model identified in the first phase of the work.
7. The system should minimise user interaction, as consultations are of short duration.
8. Guidance should be structured in such a way that although the system can be used with minimal user interaction, a greater depth of information can be obtained when the user requires it.
9. The system should make suggestions, not demands, and it should be possible to override those suggestions if individual clinical judgement indicates that this is appropriate in specific cases.
10. The guidance offered should as far as possible be tailored to individual patient circumstances.
11. The number of options presented to the user should be five or fewer.
12. Access to the guidance provided by PRODIGY should be available without mandatory entry of patient data into the system.

Acknowledgements

Thanks to: NHS Executive Primary Care for funding; Mike Sowerby for project management; SMI for enabling Samson Tu’s sabbatical; the five software suppliers and the 900 GP’s who evaluated the system.

References