Evidence-based medicine has been defined as "the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients". Evidence is frequently graded according to the following hierarchy:

- Evidence from: • meta-analysis of randomised controlled trials, or • at least one randomised controlled trial
- Evidence from: • at least one controlled study without randomisation, or • at least one other type of quasi-experimental study
- Evidence from non-experimental descriptive studies
- Evidence from expert committees or opinions and/or clinical experience of respected authorities

Evidence-based Medicine

Integrated care pathways (ICPs), a fine-grained form of medical guideline including the explicit recording of any deviation, or ‘variance’, have been perceived as overly prescriptive, limiting clinical freedom and promoting ‘cookbook medicine’. However, could feeding the results of the analysis of variance back into the development of a pathway be an effective way to capture evidence from practice?

Is there a role for practice-based evidence in Evidence-based medicine?

This poster includes work that arose out of the EuroPGDcode project, which involved a pilot data collection study to gather more information about the efficacy of PGD.

Preimplantation genetic diagnosis (PGD) is a treatment for patients that have or are carriers of an inherited genetic disorder, which might be a chromosomal abnormality or genetic mutation, which could imply a serious health risk for any children that they might have. PGD is conducted alongside assisted reproduction, such as in-vitro fertilisation (IVF).

The greatest god is the meta-analyses [but they are] emphatically flawed. In a sense, if you need a meta-analysis it's telling you the data is ropey.

Even if you find the gold standard study, it's still not your answer because you've got the problem of case selection.

The truth is that a lot of guidelines are based on a lot more opinion, and I suppose that's the biggest drawback.

[Those] training to become an expert [are] in a way being trained to challenge the guidelines.

One of our dictations thinks that some of our patients are being treated too vigorously too early. I think she's wrong [but it's] difficult to be certain what the truth is because we haven't implemented it in a completely formalised way.

Care pathway and drug interaction ontologies

An ontology describing problematic drug interactions could be used in concert with the care pathway ontology to resolve such interactions when a patient is following multiple care pathways in parallel. Using the ontology shown below allows alternative drugs to be selected if an interaction is likely to major, and can include necessary modifications to the pathway for the management of other interactions. The temporal modelling of pathways present in the care pathway ontology can also be exploited to determine the optimum overlap of pathways to minimise interactions, and variance could be used to help rank the efficacy of alternate drugs.

An extended system incorporating the database developed for EuroPGDcode and making use of care pathway records would enable researchers to make key additional queries identified during the project. After using the existing system to formulate their questions and identify patients of interest, the next step is to identify which ICPs have been involved, and contain relevant data. The patient identifiers and ICP identifiers are then sent to the distributed centres, requesting the data for those patients.

Each ICP should be described using a modified form of the generic care pathway ontology created by Hurley and Abd. Where the ICP in use is recognised, data must now be extracted from the ICP record. Using an ontology to aid in this extraction allows for some information between ICPs, rather than a formal model approach which would be less flexible. When extracted, the data is then pseudonymised and returned.

Where the data is held in an EHR rather than a recognised ICP, an attempt must be made to match the record to an ICP. A branching care pathway or guideline for a specific diagnosis condition can be expressed as a series of possible paths, each with anchor points such as referrals or key test results. The EHR could be mined for these anchor points, corresponding to periods where a patient’s care followed a particular guideline or pathway.

The details between the anchor points can then be analysed to determine if any variance was likely; at a basic level, the length of time between anchor points could be a good indication that the course of care may not have been as predicted.

The original pathway would then be augmented with comments to indicate where complications are likely, further branching might be beneficial, etc.

References


Building on EuroPGDcode

Mark Olive, Alison Lashwood and Tony Solomonides

Cover image: EHR - Map to Care Pathway - Look for anchor points

Guy's and St Thomas' NHS Foundation Trust