An evaluation of the TOOL (Toowoomba Online Literature Search) Protocol for improving literature searches in a hospital setting.

Patrick O’Connor, Toowoomba Health Service, Toowoomba, Australia
Daniel McDonald, Toowoomba Health Service, Toowoomba, Australia

Abstract
This paper describes the development, application and assessment of the TOOL Protocol. The protocol was developed for use in non university hospitals with a broad clinical base, undergraduate education programs and limited local research capacity. Protocols used in other comparable health services were adapted to meet local needs by creating versions that incorporated an evidence synopsis and local information sources.

The protocol has facilitated the following activities:
• Documenting the planning, management and execution of comprehensive literature searches
• Benchmarking and audit of librarians’ literature searching skills and knowledge
• Demonstrating good literature searching practice to clinicians
• Educating clinicians about information resources, systems and scholarly publishing
• Supporting evidence-based practice and effective knowledge translation
• Marketing library services

Assessment of the protocol’s impact has been conducted via clinician self report and librarian peer review. This has guided further refinements and modifications to the protocol, including the development of abridged, discipline specific and complete versions. Further assessment of the protocol as a tool for teaching literature searching is required before it can be adopted more widely. In the absence of any previous program for locally assessing literature searching practices and techniques the protocol has been valuable for providing baseline performance data.

An electronic version is under development and it will provide a map for clinicians seeking information beyond their normal scope of practice. The electronic version of the protocol will articulate with electronic databases to improve efficiency.

Introduction

One of the key roles of any health librarian is to search literature and translate resultant knowledge to clinicians. To assume expert searcher status is worthless rhetoric in the absence of any external qualifications or rigorous benchmarks to measure against.

Consequently, structured search protocols have been developed and implemented across a range of clinical contexts to ensure potentially relevant literature is searched systematically, results provided are precise, the search details documented, and the entire process is transparent. Recent examples have been developed by a range of agencies including the NHS
Thames Valley Literature Standards Group, North American Spine Society and health technology assessment agencies in Spain and New Zealand.

Customization for local needs is clearly necessary, however common features include:

- A search plan form that enables the topic or question to be expressed methodically (usually framed in terms of population, intervention, comparison and outcome)
- restrictions or filters on the topic
- a resource checklist including both published and gray literature typically divided into core / recommended / optional resources
- a search strategy checklist recording the range of search terms and techniques
- a documentation checklist to record and convey results

In the absence of other systematic approaches to the task of literature searching, protocols appear to be frequently used for high impact searches such as systematic reviews or health technology assessments and constitute a good attempt to standardize and facilitate the documentation process.

To date, though, no analysis has been published investigating whether protocols for searching achieve these stated aims. That is, do they actually work? Does the use of a search protocol result in information retrieval which is at once comprehensive and relevant, transparent and marketable? Prevalence does not prove proficiency, and there is a lack of evidence to show what proportion of new documents would be discovered in searches undertaken with/out protocols, and how much they add to, or challenge, the information already found in main sources. Consequently, this question of whether search protocols actually work is of major significance.

To answer this question requires moving beyond professional assumptions and employing research to provide some base-level evidence for the efficacy of search protocols. With this in mind the Toowoomba Hospital Library Staff designed a local research project to gauge the effectiveness of TOOL, the Toowoomba Online Literature Search Protocol developed some years prior.

This study was undertaken in the Toowoomba Health Service (THS) of the Darling Downs and West Moreton Health Service District, the main publicly funded health care provider for a population of 150,000 people in the Darling Downs region. The Toowoomba hospital (approximately 280 beds) provides a range of medical, surgical, mental, community and primary health care services and is a teaching hospital affiliated with several universities in southern Queensland. A nearby major tertiary level acute mental health hospital (approximately 120 beds) provides services to the southern half of the state. Libraries are situated at both sites and librarians routinely conduct literature searches for clients from all clinical disciplines across the entire service.
All clinical staff have high speed internet access in the workplace and are provided with access to a centrally managed large suite of online bibliographic and full text resources which are available remotely. Formal training in, and skills and knowledge of, evidence based practice and effective literature searching varies widely among the clinical staff. Many recent entry level clinicians have undertaken instruction in literature searching as part of their formal studies but the transition to the realities of the workplace mean that practice is often simple and hurried. THS librarians’ anecdotal observations of local clinicians’ information seeking behaviours, skills and preferences showed that a few easily accessible comprehensive internet based tools were popular with busy clinicians who were typically unfamiliar with a range of specific resources. This reflects the findings made by other researchers\(^1,2,3\) in comparable healthcare systems. Also reflecting findings elsewhere, in a local training needs analysis clinicians requested formal and convenient training in the effective use of the information resources available to them.

The standard of literature searches conducted in the THS library service, like many other health libraries, was highly variable with results dependent upon the knowledge, skills, resources, time and motivation of the librarians concerned. With searches effectively conducted independently of each other it was difficult to measure performance and to provide transparent consistency of service. Corporate performance measurement of library effectiveness is based on recording activity with limited or poor data analysis and effectively no systematic evaluation of library service outcomes. The THS librarians sought to change this situation. Rather than focus on specific databases or resources the librarians commenced by examining their own search skills, knowledge and practice which have been identified by other researchers\(^4,5\) as areas for improvement.

**Objectives**

Accordingly, the central areas for concern at the heart of this research project is clients’ and librarians’ searching knowledge and skills. The Toowoomba librarians sought to improve these interrelated issues by implementing a search protocol with the following goals:

2. Reduce variations in the performance of individuals by using a common systematic process.
3. Compare clinicians’ and librarians’ current practice using a protocol.
4. Identify skills and practices that may require development.

**Methods**

Ethical approval to undertake the study was granted by the local Human Research Ethics Committee.

The source of participants in this study was all clinicians working in the Toowoomba Health Service. Clinicians were identified as those with a clinical qualification, broadly categorised into medical, nursing or allied health practitioner streams regardless of the type of work they were doing. There was no promotion of the study to actively recruit participants. Instead, during a
three month period all clinicians who approached the library seeking information were invited to participate.

After providing their consent participants were asked to conduct the search themselves using their usual resources and strategy. They were then required to rate their search using a Literature Search Rating Scale developed for the study. Within one working day an experienced health librarian (two years recent full time equivalent experience in a hospital setting) conducted a literature search of no more than two hours duration on the same topic using the TOOL Protocol. The protocol recorded details of the information resources and search strategies used to locate information for clinicians. Upon receipt of the information identified and retrieved by the librarian the participants were required to rate the librarian’s search using the same Literature Search Rating Scale that they had previously used to assess their own search.

The Literature Search Rating Scale is comprised of six Likert scale questions. Participants were asked to rate the following characteristics of the information retrieved in their own and the librarian’s searches:
- Sensitivity
- Specificity
- Quantity of information retrieved
- Level of evidence
- Potential positive impact upon patient care
- Potential positive impact upon participant learning

Results / conclusion

The primary outcomes of this study include:
- Capture of data about clinicians’ self reported literature search techniques
- Capture of data for the benchmarking and audit of librarians’ literature searching
- Evaluation of comparative data between clinician searching and librarian protocol-enabled searching

The secondary outcomes of this study include:
- Demonstrating good literature searching practice to clinicians
- Educating clinicians about information resources, systems and scholarly publishing
- Supporting evidence-based practice and effective knowledge translation
- Marketing library services

The data collected from participants at the time of their enrolment included details of their self-reported use of common electronic resources and preferences for accessing information. This information will be compared to the anecdotal observation of local library staff and results reported by other researchers that convenient resources were used in preference to more reliable, comprehensive or rigorous resources. As such it represents a baseline from which to
measure future changes in clients’ behaviour and preferences. The information gathered will also be used to analyse librarians’ literature search practice and will be used for future audits.

References