

## Searching EMBASE: do the results justify the cost?

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*The cost of the Excerpta Medica abstracting journals was giving cause for concern and it was decided to cancel the subscription and to evaluate the online database as an alternative source of information. This paper describes the background to the decision to cancel and the evaluation that was carried out at the University of Leeds Medical and Dental Library.*

### **Excerpta Medica abstracting journals**

The *Excerpta Medica* series of abstracting journals began publication in 1946 with the aim of covering specialized subjects within the biomedical and related fields. There were some 15 separate sections at the beginning, which has increased to 44. The number of abstracts has grown from 10 000 in 1947 to 250 000 currently.

These abstracting journals appear 10, 12, 20, or 30 times a year in one to three volumes, each volume with cumulated indexes and each issue containing approximately 150-400 references.

The Medical Library at Leeds has had a full set of these journals since they began publication. In 1977 a survey was carried out in the Medical Library to assess the amount of use made of the series. Although use was not great it was decided at that time that there was sufficient use to warrant continuing the subscription.

There has been concern among librarians about the escalating costs of the publication and some doubts expressed about its effectiveness as an information-retrieval tool. In 1977<sup>1</sup> a cost comparison study showed that on average *Excerpta Medica* sections were 138% more costly than comparable abstracting journals. The same survey found that the practice of title-splitting increased the price of a total subscription and made comprehensive information-retrieval more difficult.

A study conducted at the University of Virginia Medical Center in 1981<sup>2</sup> involved use surveys, interviews, a study of local availability, input from professional staff, and shelving statistics over a three-month period. As a result, it was decided to cancel some sections but retain others, based on demonstrated needs. The authors of this paper surveyed, by questionnaire, 55 other health sciences libraries in the United States. There were 39 replies, a response rate of 71%. We conducted our own postal survey of Medical School libraries in the United Kingdom and where appropriate have recorded the US results alongside the UK results for comparison (Table 1).

\*This work was carried out at the Medical and Dental Library, University of Leeds while Steven Gass was on a job exchange from the Baker Engineering Library, Massachusetts Institute of Technology. His present address is Engineering Library, Stanford University, Stanford CA 94305, USA.

**Table 1.** Responses to postal questionnaire

	UK Libraries	US Libraries
No. of questionnaires sent	31	55
Response	28 (90%)	39 (71%)
No. of libraries that had ever had a full set of <i>Excerpta Medica</i>	14 (50%)	N/A
No. of libraries still subscribing to a full set	3 (10.7%)	11 (28%)
No. of libraries with a subscription to any sections	9 (32.1%)	25 (64%)
Reasons for cancellation		
Financial	16 (57.1%)	Reason 'most often cited'
Lack of use	14 (50%)	Cited as a reason
Online availability	4 (14.3%)	—
Number of libraries with online access	22 (78.6%)	34 (87%)
Charging policy		
Charge	15 (53.6%)	
No charge	5 (17.9%)	

### Survey of UK university medical school libraries

Thirty-one questionnaires were sent out and replies were received from 28 librarians (90% response). Of the libraries, 14 (50%) had had a full set of *Excerpta Medica* at some time and of these three (10.7%) (28% in US survey) still had a full subscription. Of the three, only one library had no plans to cancel. Nine libraries (32.1%) (64% in US survey) subscribe to some sections, ranging from one to eight in number. Of the nine, seven were libraries that had previously had a full set.

Librarians were asked the reasons why they had cancelled. Sixteen (57.1%) gave financial reasons for the decision, 14 (50%) indicated lack of use (in one case this was the major reason), four (14.3%) said that online availability was sufficient for their needs, one, that coverage was too selective and one that readers did not want abstracts.

Fourteen librarians answered the question about the reaction of the readers to the cancellation. Eleven said that no one had missed it, three had 'accepted it' but in one case four sections were reinstated and in another it had been accepted as preferable to the alternative which was the cancellation of other journals.

A similar question was asked about the reaction of library staff and 13 librarians replied. Of these, six said there was no interest expressed, two used online searching instead, and in two cases the interlibrary loans department was unhappy because they expected it to cause more interlibrary loan requests. In one case they were indifferent except for four sections which were subsequently reinstated. One reply said the staff 'no longer missed it' and one librarian said the staff were 'glad' while another said the staff had agreed with the decision to cancel.

Librarians were asked whether they had carried out any sort of investigation before they took the decision to cancel their subscriptions. Only 11 (39.2%) had carried out any sort of survey. All of them had conducted use surveys and six had also sent questionnaires to departments. In most cases the decision to cancel had been taken by

the Library Committee, usually in preference to cancelling a number of primary journals.

It was found that 22 libraries (78.6%) (87% in US survey) had online access to *Excerpta Medica*. Among these the amount of use varied from less than five searches per year to over 200 (see Table 2). The US survey found that only three libraries (9%) used it regularly. The UK librarians were asked about their charging policy for online searches and it was found that 15 libraries charge readers for the service. The practice elsewhere varied, five not charging anyone, and the others having differing arrangements depending on the reader.

The cost in 1984 of an annual subscription to *Excerpta Medica* (with 15% discount for the full set) was £6055 p.a. (9.1% of the total periodicals bill for the Medical and Dental Library in Leeds). Binding cost a further £650 p.a.

At the University of Leeds Medical and Dental Library it was therefore decided to cancel the whole subscription to *Excerpta Medica* from 1985. The library provides an online literature retrieval service on a cost recovery basis but it was decided that, following the cancellation of the subscription to *Excerpta Medica* a sum of up to £2000 should be allocated to be used at the Sub-Librarian's discretion to evaluate EMBASE, the *Excerpta Medica* database.

The database most frequently used to satisfy requests for online literature searches was MEDLINE (the *Index Medicus* database) and it was decided to make a qualitative and quantitative comparison between MEDLINE and EMBASE for a period of six months.

## Method

To compare EMBASE and MEDLINE both quantitatively (total number of citations retrieved) and qualitatively (value of citations retrieved) we began offering free searches on EMBASE to two categories of users:

- 1 Those who had been maintaining SDIs (Selective Dissemination of Information – monthly updates) on MEDLINE through the Medical and Dental Library.

**Table 2.** Frequency of use of *Excerpta Medica* online database

No. of searches p.a.	No. of UK libraries	No. of US libraries
0	6	5
1–5	5	
6–10	5	
11–15	2	'Occasionally'
16–20	1	25
21–30	1	
31–40	1	
41–50	2	'Regularly'
200+	1	3
No record kept	3	

- 2 Those who were asking for one-off searches on MEDLINE when the searcher (i.e. member of library staff) was one who was familiar with EMBASE and the topic was appropriate to EMBASE (e.g. non-dental material).

In both cases searches, matched as closely as possible for details of indexing and time span, were run on the two databases.

The library searcher recorded the number of references that were common to both databases and the number that appeared in only one. The user was asked to make a qualitative analysis of the results by responding to a questionnaire. They were asked which references, appearing in only one of the databases, were most useful. They were also asked about the effect of the cost difference between the two databases on their future choice of database.

### **Costs**

All EMBASE searches were offered free of charge in return for the answers to our questionnaire. The total cost of searching EMBASE, exclusive of staff time and telecommunications, was £809.78. The larger part of this expenditure was on the SDIs (£420.33) while £297.30 was spent on one-off searches. An additional £86.42 was spent on the use of a sub-set of EMBASE known as EVOC. It was necessary to log on to this database for a total of 2.03 hours over the entire period of the investigation (February–June 1985) in order to identify the correct indexing terms to be used in searches. This is the direct result of the lack of a useful printed guide to the indexing.

### **Results**

The results of the 16 searches are summarized in Table 3. The most striking feature is the small amount of overlap in the citations retrieved. This is unexpected when we consider that both databases are compiled from the major journals in the fields of medicine, surgery, psychology and the basic medical sciences. MEDLINE is based on the comprehensive indexing of some 2700 journals, published proceedings of congresses and symposia and selected multi-authored monographs while EMBASE is based on 3500 journals. The number of articles indexed annually is, however, approximately equal (about 250 000) owing to the comprehensive indexing policy of MEDLINE.

### **Conclusions**

#### *The searcher's point of view*

The general consensus seems to be that MEDLINE is easier to use. The extensive hierarchical structure in MeSH makes it possible to pin-point with greater specificity the concept being sought (e.g. cocaine as a type of tropane or cocaine as a type of local anaesthetic). It is this same complex hierarchical structure which allows searches to explode so many more MeSH headings than is possible using EMBASE and thus makes

**Table 3.** Results of evaluation of EMBASE. Response to questionnaires*(a) One-off searches**Quantitative*

No. of refs on EMBASE	95	2	14	69	50	5	12	7
No. of refs on MEDLINE	106	11	9	58	86	31	3	28
Overlap (i.e. no. of refs common to both databases)	45	1	0	18	30	0	0	1

*Qualitative* (Value judgements were on a sliding scale 0–5 where 0=least useful, 5=most useful.)

Value of EMBASE refs	4	2	4	3	3	0	1	2
Value of MEDLINE refs	3	4	2	4	5	3	4	4
Value of refs in EMBASE alone	3	2	4	1	1	0	1	0
Value of refs in MEDLINE alone	3	4	2	4	4	3	4	3
Database giving best results (M=MEDLINE, E=EMBASE)	M	M	E	M	M	M	M	M
Willing to pay for EMBASE searches	No	No	Yes	No	No	No	No	No

*(b) SDIs**Quantitative*

% verified overlap	5	29	8	9	10	0	.5	0
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*Qualitative* (Value judgements were on a sliding scale 0–5 where 0=least useful, 5=most useful.)

Value of EMBASE refs	2	4	3	3	4	2	3	3
Value of MEDLINE refs	4	4	2	4	4	4	3	3
Value of refs in EMBASE alone	2	2	3	3	N/A	N/A	2	2
Value of refs in MEDLINE alone	4	3	3	3	N/A	4	2	2
Database giving best results (M=MEDLINE, E=EMBASE)	M	M	E	M	M	M	M	M
Willing to pay for EMBASE searches	No	No	Yes	No	No	No	No	No
Would use EMBASE if same price as MEDLINE	No	Yes	Yes	Yes	No	No	Yes	Yes

search statements shorter and simpler using MEDLINE. EMBASE's lack of detailed hierarchy means that in many cases, if the general term required is not part of the hierarchy, one must attempt to identify every term that might conceivably be considered a type of the more general term. This requires time spent searching EVOC and generally leads to longer search statements.

The general preference for MEDLINE can be summarized as follows:

- 1 The indexing system makes it easier to select appropriate subject descriptors.
- 2 For the same reason, the search statements are generally simpler and shorter.
- 3 There are better printed aids for using MEDLINE (Medical Subject Headings (MeSH), Annotated MeSH, Permuted MeSH, and Supplementary Chemical Records). EMBASE has only Malimet, Emclas, and Emtags on microfiche and the

Guide to the Classification and Indexing System which does not provide detailed information.

Also, MEDLINE is more up to date, as can be seen from the following considerations:

- 1 An examination of the monthly update printouts (SDIs) showed that the same issue of a journal was, without exception, indexed and available on MEDLINE several months before it was available on EMBASE.
- 2 The producers of EMBASE claim that, within five to six weeks of receipt, bibliographic citations of articles are on EMBASE (with author's abstract). The trouble is that the corresponding indexing does not appear until several months later. Thus, a search using descriptors (indexing terms) would exclude any of the most recent material. Free-text searching (the use of words occurring in the title or the text) must then be considered, and this inevitably increases the amount of irrelevant material retrieved.

From the librarian's point of view, a further powerful consideration is that the costs of MEDLINE are, on average, only  $\frac{1}{3}$  to  $\frac{1}{4}$  those of EMBASE.

Against the foregoing must be set some advantages of EMBASE, which may be listed as follows:

- 1 It scans approximately 3500 journal titles, compared with about 2700 for MEDLINE, although the numbers of articles input annually are roughly equal.
- 2 Abstracts are available on EMBASE. There are some abstracts on MEDLINE but coverage is not comprehensive.
- 3 In some cases subject descriptors are more specific (about 200 000 subject descriptors for Malimet (EMBASE) as compared with 14 500 for Mesh (MEDLINE)).

### **The user's point of view**

In response to the direct question to the SDI users: 'Which database provided you with the more useful results?' seven said MEDLINE and one said EMBASE. The one-off users also split seven to one in favour of MEDLINE.

The relative costs of the two databases were also critical points for users. With only one exception, SDI respondents said that they would not pay the higher cost of an EMBASE search. Two of the one-off enquirers said that they would be prepared to pay the higher cost of an EMBASE search if it was the only way to achieve a comprehensive result.

The fact that MEDLINE references are more up to date was of particular relevance to the SDI users. It was found that references appeared in EMBASE anywhere from one to six months behind MEDLINE (and in one case 15 months behind).

One respondent said that the references retrieved from EMBASE had proved more difficult to obtain and also that the layout of MEDLINE references in the off-line print out was preferred.

Our study has shown therefore that, from the point of view of both the librarians and the users, MEDLINE is the preferred database. However, there may be occasions when EMBASE is the more appropriate source of information so that it should not be excluded.

As a result of the investigation it has been decided that the subscription to *Excerpta Medica* should not be reinstated. A small amount of money (c.£500) has been allocated to be used at the librarian's discretion, to cover the cost of quick reference enquiries and searches that could have been answered if *Excerpta Medica* in hard copy had been available. In practice the latter are most frequently requests for English abstracts of foreign-language papers where a quick search is considerably cheaper than an interlibrary loan. The inclusion of author abstracts on MEDLINE does, however, mean that EMBASE is not used, even for that information, whereas the hard copy could have provided the information.

## References

- 1 La Rocco, A. & Feng, C. 1977, *Excerpta Medica* abstracting journals: a case study of costs to medical school libraries. *Bulletin of the Medical Library Association*, **65**, 255-260.
- 2 Alligood, E.C. *et al.* 1983. Use study of *Excerpta Medica* abstract journals: to drop or not to drop? *Bulletin of the Medical Library Association*, **71**, 251-258.

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