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Documentary Practices of Hospital Librarians in Evidence-based Medicine: the Example of Health Technology Assessment in Swedish Healthcare

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Introduction

In times of health crises, we rely upon the knowledge and skills of our highly specialized modern healthcare. But what are the tools and principles that healthcare relies on to make informed decisions about courses of treatments, new methods applied in healthcare or new technology? In this paper, we will attend to documentary practices of hospital librarians in Health Technology Assessment (HTA). Hospital librarians often have key roles in the HTA process given the importance of finding and selecting scientific medical literature, and the documentation of these activities.

Since resources for health care are limited, there is widespread political support for making rational choices based on evidence. Use of evidence is today a key element in health care at policy, administrative, and clinical levels (Banta & Jonsson, 2009). HTA is gaining specific interest from policy-makers in healthcare organizations since it is supporting decision-making on several different levels such as acquisition and implementation of technologies and interventions (Gagnon, 2014). The adoption of HTA helps to foster a culture based on scientific evidence where use of evidence is essential in both clinical practices and organizational decision making in healthcare organizations. In this way, HTA is an example of how the evidence-based movement is enacted in modern healthcare.

The evidence-based movement originates from the notion of evidence-based medicine (EBM) but can also be related to the broader movement evidence-based healthcare (Chaturvedi, 2017). The most reliable evidence within EBM is generally considered to be systematic reviews of randomized controlled trials, minimizing the risk of bias and allowing for causal explanations of interventions. In this way, EBM is grounded in a natural science-oriented epistemology directed towards quantitative and predictive studies (cf. Sundin, Limberg & Lundh, 2008). Arguably, (medical) librarianship and EBM share a common goal: the application of the best scientific research in the process of providing efficient and safe medical care to patients (Eldredge, 2000). In line with the development of the EBM paradigm, systematic reviews are also ascribed a high level of evidence within the field of LIS (Eldredge, 2000). Notably, systematic reviews connect to a core skill of librarians and related professions: literature searching. The literature searches within the HTA process are normally carried out by an experienced librarian or information specialist and could preferably also be reviewed by another librarian (Lefebvre & Duffy, 2021). Evidence and information governance are considered as two main competencies in healthcare organizations these days, and these areas also overlap traditional fields of knowledge for librarians (Ibragimova & Korjonen, 2018). Overall, systematic reviews are designed to reduce bias and to synthesize scientific evidence to answer specific research questions (Higgins & Green, 2011). As part of an ongoing research project focusing on information work of hospital

librarians in key practices related to evidence-based practice (see also Hanell & Ahlryd, forthcoming), this paper is guided by the research question: how are documentary practices associated with HTA-reports shaped by, and shaping, the work and roles of hospital librarians?

The Swedish Context

In Sweden most of the healthcare services are run by 21 regional authorities. The regions are responsible for offering a safe and equal healthcare for all inhabitants. The HTA units are often placed at a regional level and each region is responsible for providing their employees with the means to evaluate and analyze a question through HTA. The HTA-units are often placed at some kind of research department within the region, and hospital librarians are either closely connected to the HTA-units or organized within the HTA-unit. The HTA-units contain several people working with HTA including HTA supervisors, medical doctors, project leaders, and librarians. The HTA supervisors have earned a PhD degree and are also involved in different research projects. Everyone employed by a regional authority can nominate a question and the HTA-unit determines whether it should constitute an HTA or not. When a question is accepted, the nominating department is requested to assign at least two clinicians who collaborate with the staff at the HTA-unit during the HTA evaluation (Stadig & Svanberg, 2021). Questions usually relate to some kind of clinical issue, for example if a certain treatment works or if a new method should be implemented considering economical, ethical and clinical reasons. The HTA-units usually work closely together with the hospital library and generally it is hospital librarians who collaborate with the HTA department. Hospital librarians who work with HTA usually have parts of their employment at the HTA department, and the other part at the hospital library. This structure brings the opportunity for librarians to develop a specialist competence in doing searches, making selections and documenting within the HTA-process. An HTA evaluation is often completed within six months, but sometimes the time period is shorter, or it could in challenging cases last up to two years.

Hospital Librarians

Major work tasks for hospital librarians include supporting healthcare staff in their information seeking and providing healthcare staff with relevant information (Lewis et al, 2011). Increasingly, such work is done in collaboration between clinicians, researchers and librarians (Hallam et al, 2010), and HTA-teams with medical doctors, librarians and other specialists can be seen as examples of this trend. In this paper we focus on hospital librarians – a profession often overlooked, but still crucial for many of the documentary practices associated with EBM in

general, and HTA in particular. According to Ibragimova and Korjonen (2018) stakeholders are unaware of how librarians could contribute to health governance since traditional library services have not been visible for long term impact. They also propose that librarians repeatedly need to justify their work in healthcare organizations. This is shown in a study on hospital librarians' information work, that is important for supporting principal activities within the hospital organization but often is invisible to other actors in the organization (Hanell & Ahlyrd, forthcoming).

The scientific literature focusing on hospital librarians involved in HTA activities are limited and do not discuss information retrieval at all, neither hospital librarians nor information specialists (Stadig & Svanberg, 2021). In the literature suggesting hospital librarians as an essential part of the HTA process the collaboration between librarians and the rest of the HTA team is described in different ways. At some HTA-units librarians are involved in the HTA process doing searches, selecting material and writing particular parts of the HTA reports. However, at other HTA-units library services are regarded as a resource for HTA activities but the role of hospital librarians is not specified or highlighted. Instead Stadig and Svanberg (2021) describes an active and including role for hospital librarians, which also is the case of the interviewed hospital librarians in this study. A study by Olry de Labry Lima and colleagues (2016) shows that without librarians involved in the HTA process the literature searches are mostly carried out in just one database. One database is not considered as enough for a proper systematic review; hence authors argue for the need to involve librarians in the HTA process.

The HTA Practice

HTA, a practice centered on synthesizing evidence through systematic reviews, originates from the US Office of Technology Assessment that produced a first report on the matter in the late 1970's. In the late 1980's, HTA spread to Sweden and then to other European, Latin American and Asian countries (Banta & Jonsson, 2009). Several international actors such as The World Bank, WHO, and the EU have been active in the field of HTA, providing funding, coordination and making HTA more visible (Banta & Jonsson, 2009). In Western Europe and North America HTA is integrated in policy documents in healthcare organizations, while countries with limited resources find difficulties implementing HTA in their organizational structures (Olry de Labry Lima et al, 2016). The reasons for not undertaking HTA to the same extent is usually lack of funding or lack of support from the parent organization.

HTA is regarded as a multidisciplinary process which supports decision making in healthcare services (Olry de Labry Lima et al, 2016). The decision making process should include some necessary features combining economical,

ethical, medical, social, legal and cultural criteria. With this in mind, the HTA process involves several different professions and experts to provide objective and reliable evaluations where the results could be implemented in clinical and organizational practices in healthcare.

In Sweden, the independent national authority Swedish Agency for Health Technology Assessment and Assessment of Social Services (SBU) is tasked by the government to provide assessments of health care and social services covering both medical, economical, ethical, and social aspects. SBU, one of the oldest HTA-organizations in the world, produces systematic reviews and has developed a review method outlined in the SBU Handbook (SBU, 2020). The local HTA-units studied in this paper generally follow the procedures and methods described in the SBU Handbook.

The produced HTA-reports contain certain pre-determined sections, stipulated by the SBU handbook as well as other guidelines, like the Cochrane handbook containing international, detailed guidelines for carrying out systematic reviews in healthcare¹. The HTA process follows the steps proposed in the guidelines, but each HTA-unit may set up their own guidelines, although an HTA evaluation needs to include the most important steps such as literature searches, selection of the included material and documenting the whole process. Since healthcare organizations around the world look a little bit different, variations in both structure and ways of performing HTA occur.

One specific device that structures documentary practices in the HTA-process is the PICO-format (Population, Intervention, Control, Outcome), a tool widely used in EBM to negotiate and formulate literature search strategies. Other structuring devices include guidelines for making a selection and for rating the quality of evidence. Our analysis illustrates how hospital librarians enact and negotiate documentary practices located between the instructions provided by the authoritative SBU Handbook and the material outcome of the documentary practices: the HTA-report.

Documentary Practices

In this study we apply the concept of documentary practices, understood as activities shaping and being shaped by various types of documents (Pilerot & Maurin Söderholm, 2019). Our research interest is based on the role and function of documents in practices, and how documents create and construct social practices (Brown & Duguid, 1996). The way we view documentary practices departs both from practice theory (see for example Nicolini, 2013; Reckwitz, 2002), as well as

¹ The Cochrane Handbook for Systematic Reviews of Interventions can be accessed via <https://training.cochrane.org/handbook>

from critical document theory (Lund, 2009). From a practice theoretical approach all human action is regarded as practices which comprise a set of routinized social activities, norms and artefacts as well as a common idea on how the world is constituted (Reckwitz, 2002; Talja & McKenzie, 2007). Lund (2009) with the support of Smith (2005) suggests a critical view on documents and how they provide a pattern for upholding structures of power, where a focus on the content of the documents has transformed into a focus on documents as underpinning social life. Through the support of Smith (2005) Pilerot and Maurin Söderholm (2019) articulate that documents might both regulate and integrate practices, not least because healthcare practices are usually governed by various guidelines and directives.

According to Brown and Duguid (1996), documents structure practices and also contribute to bring together social activities, relations and interactions within practices, in the same way as social practices may influence documents. Documents are resources for negotiating the meaning of practices: the role of documents in practices is captured through the notion of “the social life of documents” (Brown & Duguid, 1996). Related to the social life of documents, documents provide a social site that enables shared practices, knowledge, and activities to be created. In this study our research interest is connected to how documents related to the HTA-process construct social practices of hospital librarians working with HTA. Bridging social practices, documents could also be recognized as a form of boundary objects intertwining different processes, professions, and competencies (Pilerot & Maurin Söderholm, 2019). As stated by Pilerot och Maurin Söderholm, documentary practices are fundamentally interweaved in workplace activities in healthcare organizations, which means that social practices are negotiated through the use of documents. Social practices related to the HTA-process are in effect interwoven with other activities carried out in the healthcare organization.

The Empirical Material and Analysis

The empirical material of the ongoing research project includes nine in-depth interviews with six hospital librarians and three library managers, and five observations of hospital librarians in different work situations, including search instructions and HTA-meetings, at three different hospital libraries in Sweden during January–February 2020. In this paper, we focus on the HTA-process and how documents like the HTA-report and the SBU Handbook interact with documentary practices. To provide additional empirical depth, five supplementary interviews with three hospital librarians and two library managers from two other hospital libraries were conducted during August–September 2021. The interviewed librarians cover librarians working with HTA as the major part of their employments in three different regions in Sweden with three different HTA units.

In total, interviews with nine hospital librarians and five library managers are included in the empirical material of this study together with observations from an HTA-meeting and documents discussed by the informants.

The analysis was conducted through an interaction between the empirical material and the theoretical notion of documentary practices and how they structure and organize social life, in this case activities connected to the HTA process. In an earlier study, key practices where services of the hospital library are employed to support evidence-based practice were identified, including an HTA practice (Hanell & Ahlryd, forthcoming). The HTA practice contains five main types of activities: initial searching, negotiating a search strategy, the main searching, making a selection, and documenting the search process. Guided by the concept of documentary practices, in this study we frame these five main types of activities as documentary practices, that are shaping and being shaped by different documents connected to certain stages of the HTA process. Documents play a distinct role in the identified practices and contribute to how the practices are organized and understood. Analyzing sayings and doings of hospital librarians connected to certain practices we identified documents like HTA-reports and specific guidelines that shape and are shaped by the librarians' practices in the context of HTA.

Findings: The Social Life of the HTA-Report

Our findings show how the HTA-process at three HTA-units entails five main categories of documentary practices: 1) initial searching when a clinical question is submitted; 2) negotiating a literature search strategy in the HTA-team; 3) conducting the main literature searches; 4) making a selection; and 5) documenting the search process. These practices are directly guided by both national and international guidelines, primarily the SBU handbook and the Cochrane handbook. On a general level, the practices are also influenced by the strict and systematic process underpinning the HTA activities: the systematic literature review of EBM.

Initial Searching

The documentary practices of HTA begins with a document: a submitted question. Two regions in this study use a predetermined questionnaire for employees to send in questions. One region (D) instead uses a function mailbox for insert questions. In Region E, colleagues are invited to submit a question that may merit further study and a new HTA-project. After a textbox has been filled out with the question being submitted, the user is asked to specify what category the user belongs to (e.g., the head of a unit, some other leading function, or a regular employee). Then, the user is asked to "clarify the question by thinking PICO" (see figure 1).

Förtydliga din fråga genom att tänka PICO

P = Population/problem - vilka patienter, vuxna, barn etc.

I = Intervention - vilken åtgärd gäller det?

C = Comparison - vad vill du jämföra med? Standardbehandling, ingen behandling etc.

O = Outcome - vilket utfall vill du titta på?

The form consists of four vertically stacked empty rectangular boxes, each preceded by a red dot. The boxes are intended for the user to write their answers for the P, I, C, and O components of the PICO model.

Figure 1. Questionnaire for questions Region E

When a question has been nominated from the clinical practice, the librarians start with an initial searching, or scoping searching, often in the database PUBMED to see if there is any available scientific literature on the subject to be able to answer the nominated question. A good range of scientific literature is required to decide if it is possible to even start working with the project. If the librarians estimate that there is enough literature to carry out an HTA evaluation, an HTA team will be formed with HTA supervisors and experts relevant for the question. This is the very first step in the HTA process where the librarians are involved. It is the HTA-unit who decides whether a question is relevant enough to bring up in the initial stage before the librarians have started the preliminary searches. In some regions HTA is a requirement before decision making about major investments, or the implementation of new methods in the clinical practice. For example, a clinic considering purchasing a new robot to operate prostate cancer needs to nominate the question for an HTA evaluation. In this way, HTA-reports and the guidelines framing the HTA process are documents that explicitly uphold structures of power and shape practices within healthcare (cf. Smith, 2005).

Sometimes the librarians find a recent HTA report written by another HTA-unit, that deals with the same question, and when this is the case the HTA-unit often suggests that the found report could be used to shed light on the question. The librarians also check if there are any ongoing HTA evaluations on an equivalent question to avoid redundant work. Occasionally the librarians find a report written some years ago, and then the HTA-unit has to consider if this report could be used, or if there is a need to look at this question again to scrutinize if there are other contemporary studies available. Since research is increasing rapidly there might be a value in looking at what has happened since the report was published. If the

systematic review is published as a scientific article, the economical perspective, specific to the HTA reports, might be lacking and it is therefore recommended to conduct a new review.

In the initial steps of searching, the librarians usually communicate with the clinician who nominated the question to be clear what the question is about. The librarians always try to figure out what the questioner wants to know more about, and what aspects are necessary to consider. In this step the librarians try to narrow the question a bit, but still are quite broad in their searches. Before the librarians start to work with the question there is an introduction meeting with the HTA-unit to discuss if the question is worth working with. Even on this meeting there is a possibility for the librarians to further negotiate the question before starting the searches. Librarian E2 emphasize that sometimes there is no need for interaction between the librarian and the questioner since the literature related to the topic is comprehensive, and there is enough literature to carry out an HTA. In the HTA-unit D the introduction meeting occurs a bit later, when the question is set and the searches are about to begin. Then the librarian has done more of a preliminary search to be able to present a part of the available literature on the subject. The introduction meeting also has the function of introducing the clinical experts to HTA and what it is all about. At this stage the HTA-team also starts to discuss and set up a PICO, a way of structuring the question. As we will see in the following, the PICO-framework is a highly important tool in the documentary practices of HTA. PICO is in this study regarded as a type of document that forms social practices, and even composes a condition for being able to manage an HTA (Pilerot & Maurin Söderholm, 2019).

This initial step contains some challenges to librarians working with HTA. As an example, the questions tend to be broad, which means that searching and selecting become time-consuming. Broader questions imply several abstracts to scan, which is also part of the librarians' work tasks within the HTA process. The amount of research published also increases rapidly, which means the number of studies to read and scan is growing. This proves the PICO as an essential tool for narrowing down the nominated question.

Further in this step the librarians use their informal contacts among other librarians working with HTA to discuss similar earlier projects. The informal contacts between librarians working with HTA forms an important opportunity to learn more about how other HTA-units have structured their work respecting comparable questions. There is also a formal national network for people working with HTA, not just librarians, where issues are taken up about standardizing and coordination to prevent working on the same questions at the same time. Both these informal contacts and the formal national network are examples of social activities initiated by documentary practices of HTA, illustrating how documents not only

structure practices but also bring together social activities and interactions within practices (Brown & Duguid, 1996).

Negotiating a Search Strategy

When the initial searches are completed and the question is set it is time for librarians to think over a systematic search strategy in joint collaboration with the HTA-unit and the HTA-team. At this stage the PICO is decided by the HTA-team, and a well-prepared PICO is one of the most important conditions for a well-structured search strategy, making the PICO a key device as a document that shape, and is shaped by, activities in the documentary practices of HTA. The librarians need to start from a PICO which tells them about necessary parts of the question. Since the PICO is an essential part of the HTA, it is often preceded by a lot of discussions before the PICO is set. At times the questioner has not yet figured out what is the central aspects of the question, and then the HTA-team helps organising the question into a PICO:

We really want to keep the patient benefit in focus, no so called surrogate variables such as lowered blood pressure or anything, because that is not really of interest – but if the lowered blood pressure leads to [...] fewer heart attacks then it is more interesting (librarian E:1 20210901)

If the question is complex the questioner is often invited to a meeting together with the HTA team to enable an increased understanding of the topic.

The introduction meeting is an essential starting point for the librarians' main searches at one of the HTA-units in this study. In many cases the librarians do not recognise the topic, and therefore use Google search to reach an understanding of the question. At the introduction meeting the librarians listen to the discussion in the project group when deciding about the PICO, and also ask questions before they start to conduct the searches.

It is not only we who need to ask questions either, for we can get answers to questions that we did not even know we were thinking about just by listening to how the clinicians talk (librarian E:2 20210913)

All searches performed by the librarians start from the PICO where the question is structured through group of patients and interventions, as well as surrounded by some other limitations like time, language, and number of patients in the study. Consequently, the PICO provides a framework for the librarians' systematic searches. This shows how the SBU Handbook, and in a wider sense EBM, concretely shapes the activities in, and the meaning of, the practices of HTA (cf. Brown & Duguid, 1996). A clear PICO is crucial as a supportive tool for the

librarians when conducting the searches, although there is sometimes a discussion between the clinical experts about what should be included in the PICO:

It is really important for me that the PICO is good, because it is my tool that I have behind me then when I start setting up my search-strategy and such, and it can be a little difficult sometimes with these experts for they might come from different places and have a little different opinions (librarian D:1 20210917)

In HTA-reports, the PICO may be visualized as seen in Figure 2.

7. Focused question

In ACS patients subjected to DAPT, including those of older age, is clopidogrel combined with ASA similar to ticagrelor combined with ASA, regarding the outcomes mortality, MI, bleeding, stent thrombosis, angina, rehospitalisation, health-related quality of life (HRQL), and dyspnea?

PICO: P= Patients, I= Intervention, C= Comparison, O=Outcome

- P** P1: Adult (>18 years) patients subjected to DAPT in ACS (MI with or without ST elevation, unstable angina)
P2: Older (>65 years) patients subjected to DAPT in ACS (MI with or without ST elevation, unstable angina)
- I** Clopidogrel + ASA
- C** Ticagrelor + ASA
- O** Critical for decision-making
- Mortality (all-cause, cardiovascular)
 - MI
 - Bleeding (clinically significant, major)
 - Stent thrombosis
 - Angina
- Important for decision-making
- Rehospitalisation
 - Health related quality of life (HRQL)
 - Dyspnea

Figure 2. PICO from HTA-report.

Conducting the Main Literature Searches

When the PICO is set, the librarians start searching. The starting points are taken from the librarians' initial searching, and at some points material found in the initial searching are used to continue the searches in this step. For example, the librarian might have found a systematic literature review from Cochrane Reviews on the topic which is then presented to the HTA-team who evaluate the review with the support of evaluation templates from SBU. Then the HTA-team consider if the review could be used for further work, and usually the review is translated into Swedish in order to constitute a basis for the forthcoming searches.

If the librarians have found a systematic review on the topic, they evaluate how the searches were conducted and if they could reuse as much as possible. If the review is published a while ago, the librarians try to re-do the searches to find new publications about the topic. The librarians also check if there are any new

MeSH-terms (Medical Subject Headings²), available. Besides starting from earlier reviews, the librarians often start searching in PUBMED and MEDLINE, where most results are found. Then the librarians move on to other databases like EMBASE, Cochrane library and eventually Web of Science. If the topic is related to caregiving the librarians also include CINAHL and PsycInfo if it is related to psychology:

I usually start with PUBMED and then when I have done that I have to translate this search to the next database because the subject headings may be different (librarian D:1 20210917)

While conducting the searches in different databases, the librarian applies a block searching strategy. The block searches enable the librarian to structure the searches and combine different search terms with the help of Boolean operators and different fields in the questionnaire. The number of databases used for the searches increase if it is required according to the question. This is a time-consuming step in the HTA-process for hospital librarians. The searches could last from one day up to several days, depending on how broad and comprehensive the question is. Normally the librarians try several different search terms to understand what will give them the most relevant results. Though the PICO is decided the librarians generally conduct quite wide searches. “We don’t want to miss anything, it’s better we have a little more to read” (librarian E:2 20210913). As an example (see also Figure 3 below), in one HTA-report 1187 records are identified through several database searches. Duplicate records are then removed (472 records in this example).

Sometimes the librarians collaborate when conducting the searches and interact with each other to reach new search terms. Librarians also search for ongoing studies in a database handled by the WHO and in ClinicalTrials.gov. International HTA reports are available through an international database and some of the librarians also search for international HTA reports in databases in each country.

Sometimes the librarians face feelings of uncertainty when conducting the systematic searches and they need feedback from HTA colleagues. It is for example possible to identify more specific search terms, or a certain device or method with a particular name. Librarians then turn to the HTA-team and ask if these specified terms should be included in the searches. One of the librarians stresses that there is a continuous combination of searching and reading the found abstracts, in order to discover additional search terms. The repeated communication between the librarians and the HTA-team while conducting the searches illustrates how

² The Medical Subject Headings thesaurus is a controlled, hierarchic vocabulary; see <https://www.nlm.nih.gov/mesh/meshhome.html>

searching is a social activity in the documentary practices of HTA. It also shows that the HTA-process is not supposed to be regarded as several isolated activities accomplished by different people. Instead, the HTA-process comprises a collaboration between several people and competencies in the HTA-team. Interaction between people, tools, and documents therefore constitute a crucial part of the documentary practices related to HTA, not only when conducting the searches, but in all the identified practices. It is also clear that the clinical experts as well as the HTA supervisors play critical roles in the process of systematic searching, even though they do not conduct the searches themselves.

The systematic searches are guided by a range of different guidelines, where the SBU handbook is the most frequently used. However, the various guidelines are specialized and adapted to the work procedure applied by the HTA-unit. There is a difference between the national agency SBU and the local HTA-units concerning how much effort they can afford, but the searching is guided by those guidelines. Librarian D:1 (20210917) explains that:

it's good that they are there as a basis, I think, so I can rest on that. But I don't sit, like, I have a way of thinking – it's in the backbone (librarian D:1 20210917)

When reading the SBU guidelines the librarian regard them as describing the search process quite well, and that they form a solid basis for the work they perform. Yet the librarian does not explicitly use the guidelines while conducting the searches, but the guidelines contain tacit and inherited knowledge. The HTA-units in this study usually create their own guidelines based on the SBU handbook and the Cochrane handbook, and they follow the general instructions for systematic reviews. "It is a systematic review that is the product and a systematic review still is a systematic review, you can't do it any which way", librarian E:2 explains. Both the SBU and Cochrane have similar instructions for systematic reviews, but their methodologies are somewhat different.

There is a challenge traditionally related to information seeking in LIS concerning the desire to find all relevant results. In LIS this is discussed in terms of the concepts of recall and precision in different information system, concerning the issue of relevance connected to either topic or the subjective information need decided by the user. When conducting an HTA evaluation it is important to find all relevant studies and the librarians explain that it is extremely difficult. This challenge, inscribed in the SBU Handbook and in the tradition of doing systematic literature reviews within EBM, shapes this part of the documentary practice.

The difficulty is really to grasp the subject and to be absolutely certain that now I have searched enough, this search captures everything relevant that I need to capture without for that matter yield vast amounts to read. It's like, I usually say when I am out teaching, that you can of course bring forward everything that's in

PUBMED for then you're entirely certain that you have captured everything, but it's not possible to review that so it's this constant – precision, and have you captured enough relevant [material] without too much noise (librarian E:1 20210901)

Making a Selection

This practice contains the selection process where librarians at different HTA-units are involved in different degrees. The selection process starts with the librarians screening all relevant abstracts and then selecting the abstracts according to the PICO. This process is the same for all HTA-units in this study. The librarians' most important tool when making a selection and documenting the search process is Endnote. Before making the selection of abstracts the librarians bring all references into Endnote to eliminate duplicates, and to be able to use the search function when screening and evaluating abstracts. This process ends up with a bundle of groups of abstracts in Endnote. Then some of the librarians also read the full articles before making a selection to present to the HTA-team. In HTA-unit E the librarians also sort the full articles into groups in Endnote. The different groups are equivalent to different steps in the flow chart used for documentation later in the process. However, the most common way to work is that the librarians select a number of abstracts and present them to the project group. The project group then discuss either the abstracts or the full articles before deciding if they are relevant for the HTA report. Since the clinical experts have the most specialised knowledge, the librarians always include abstracts or articles where they are a bit uncertain, leaving to the project group to decide about including or excluding:

We are pretty careful, you could say. If we are a little unsure we send the article along because we don't want to risk excluding anything that [...] risking that they miss something (librarian E:2 20210913)

According to Smith (2005), documents structure practices and even upholds power relations between people and practices. To hand over the exclusion of articles to the project group could be regarded as reproducing a hierarchy between medical doctors, clinical experts, and other professions, in this case librarians. Healthcare is traditionally organized by a strong hierarchy which constitutes a quite closed community.

A crucial step in the HTA process is the screening of abstracts performed by librarians. In comprehensive studies the abstract screening could be both time consuming and exhausting scanning between one or two thousand abstracts. In the example of an HTA-report mentioned above, the librarians review 715 records. Of these, 42 records are assessed in full-text by the librarians. The rest, 673 records,

are excluded by the librarians since they do not fulfil the set PICO decided by the project-group.

Sometimes the librarians are forced to hand over the abstract screening to the project group, when it comes to certain elaborated studies. The terminology might be different in different studies and then there is a need for a very specialised knowledge:

It has been so complicated, and the terminology has overlapped so much that it is completely impossible for us to even say whether this was a CT-scan or if it was a PET (librarian E:1 20210901)

There are also meetings with the whole HTA-team to consider the different abstracts or articles. While the exclusion of articles is discussed by the project group the librarians make notes and structure the articles in the correct maps in their Endnote library. Though the PICO is well-defined, sometimes it is not clear what aspects of the PICO should be considered. By discussing different perspectives, the HTA-team forms a conclusion which guides the further selection of studies. In some cases, the intervention in the PICO is unclear, and needs revision. This is not only important for the work of the librarians, but also to design a coherent report understandable to the reader. Sometimes the HTA-team considers the exclusion of a study that the librarians have found something relevant in. Then there is a discussion about that study. The exclusion criteria vary between projects and types of question. According to the PICO there could for example be too few patients in a randomised controlled study. The most common exclusion criteria are that the type of intervention is wrong, or the study examine the wrong patient group according to PICO. When the librarians exclude full articles, they discuss the issue with a librarian colleague and generally they need to agree on this decision, to ensure a high quality on the HTA reports. Occasionally, it is challenging for librarians to decide whether to include a study or not:

It can [...] be that the intervention in some way is not really right but [...] it is not always fully clear in the abstract what it really is (librarian E:2 20210913)

When this occurs the librarians usually send the abstracts to the project group to decide. It takes both time and effort, one of the librarians explain, to decide about certain articles. Considering these activities, one could say that librarians form a supportive role for the HTA-team, and healthcare in general. However, they also function as important members of the HTA-team since their responsibilities include finding and of selecting studies, but the final decision is made by the HTA supervisors and clinical experts. In our example, from the initially identified 1187 records, 13 studies are included in the synthesis of the HTA-report after the selection process is completed.

The search skills performed by librarians are to a large extent sought after by all the HTA-groups and being an active part in the selection process together with medical doctors and clinical experts strengthens the librarians' role and develops their competence:

It has also given us librarians a greater understanding of our regular patrons when are doing literature searches there. The quality of that part of our work has become much higher since we have worked with HTA for so long now, and that we ourselves are screening and reading then you understand that part of the process much better [...] so the things that are difficult in HTA has in some ways become an advantage in other kinds of work (librarians E:1 20210901)

Working with HTA enhance both the librarians' profession on a general level, and the individual in terms of deepening their knowledge related to EBM and healthcare, particularly when it comes to literature searches.

Documenting the Search Process

In the HTA process an essential practice is to document the search process, as well as the selection process. The librarians document the entire process where they are involved, and they are also responsible for the full reference list in the HTA report, with the help of Endnote. To secure a high level of transparency, the details of the search process need to be captured for the report: "it is very carefully documented – it is meant to be transparent, which studies have been included in the report, and which studies have been excluded, and why" (C:2 200212).

When conducting the searches, the librarians work with search tables where they account for the systematic searches, as well as the number of results and the number of relevant results. Since the librarians use block searches, they describe the different blocks they manage and how they are combined, the name of the database and the database host. Limitations, for example language is another essential aspect. Everything needs to be documented because of the need for transparency enabling someone else to repeat or use the searches for similar systematic reviews:

For each search-block, I account for how many hits I have gotten so that everything will be as transparent as possible and I account for like, is it a MeSH-term I have used (librarian D:1 20210917)

In our example, search strings for four different databases (with between 14 and 42 entries) are presented. To ensure transparency and quality of the HTA reports, it is necessary to describe and explain how many studies are excluded from the report,

and why they are excluded. All HTA reports are then reviewed by external reviewers before publishing to further develop their scientific quality. Furthermore, in region E there is a permanent intern group who works with quality review, where librarian E:1 participates. The group discusses the reports before they do the final revisions and then publish it both on SBU:s website, as well as regional departments and the clinic who nominated the question. All published regionally produced HTA reports are available through the SBU database, as well as in an international database. Endnote is an important tool to document both references and the search process. In the first step in the process, it is the librarians who exclude studies but later in the process the project group works with the exclusion together. At times the project group decides to exclude a study, and then the librarians update the reference library in Endnote.

To account for excluded studies, a modified version of the PRISMA flow chart is used by the HTA-units. The PRISMA³ flow chart contains guidelines for the writing and documenting of a systematic review, including documenting the searches. PRISMA also includes guidelines for the documenting of systematic searches in the HTA-reports, in order to achieve a reproduceable and transparent review. With the background of documentary practices, PRISMA is in this study recognized as a document structuring the practice of documenting the search process. With the help of the flow chart the number of excluded abstracts or full articles is documented in each step in the process, from the first searches by the librarians to the last exclusions by the project group. There are ongoing discussions in region E about the development of the flow chart containing the number of search results of current studies. This means the practice of documenting affects the related documents, in this case the PRISMA flow chart. The flow chart stops when the number of included articles is established. In the flow chart, the numbers are central due to the systematic process. Usually, the HTA process contains solely one step where the full articles are being excluded, but at one of the HTA-units they invented two steps. One step where the librarians exclude full articles, and one step where the HTA-team excludes full articles.

In region E there is a specific place in the PRISMA flow chart for librarians to present their number of excluded articles, named “articles excluded by HTA librarians” (see Figure 3). In the HTA report there is usually no information about which articles are excluded by librarians, but this information is available through communication with the librarians.

³ Preferred Reported Items for Systematic Reviews and Meta-analyses (PRISMA) is further explained in the SBU handbook <https://www.sbu.se/sv/metod/sbus-metodbok/?pub=48286>

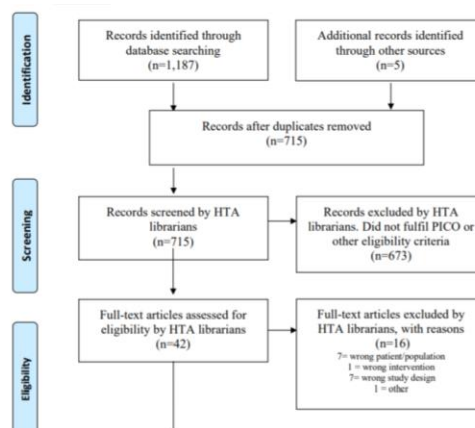


Figure 3. PRISMA flow chart from HTA-report

When librarians exclude full articles, they need to document the reason for exclusion on a general level:

We have put in a stage where librarians read in full-text and exclude, and at that stage we have not on a detailed level specified that this article is removed because of this thing, but we have more summarized there that we have excluded three articles due to wrong population, two articles due to wrong intervention (librarian E:2 20210913)

However, the reasons for exclusion are documented by the librarians, though they are not published in the report. This means there are plenty of internal documentation. If the exclusion is made by the project group instead the reason for exclusion will be officially published in the report. Therefore, librarians at times leave the exclusion for the project group, to make it more transparent for those reading the reports:

Those causes for exclusion [...] are documented in another way and are made public so that even if I can see that “no, this was actually completely wrong outcome” so perhaps it is better that they exclude at [...] their level so that this is done publicly. (librarian E:1 20210901)

This implies that a list of references of all articles excluded by the project group in the last step is published together with the report. To sum up the practice of documenting the search process, it is clear that both the SBU handbook as well as the PRISMA flow chart are central tools for the librarians to support their work.

Discussion

In this study, HTA work carried out by hospital librarians is analyzed applying the concept of documentary practices (Pilerot & Maurin Söderholm, 2019) and five main types of documentary practices in HTA are discussed. Previous studies (e.g., Chaturvedi, 2017; Sollenberger & Holloway, 2013) have discussed how use of evidence-based research results to provide equal and secure health care affects the role and work of hospital librarians. In this study, documentary practices of hospital librarians in the context of HTA are focused as a significant example of how the paradigm of EBM interacts with key practices in Swedish healthcare. The natural science-oriented epistemology of EBM (cf. Sundin, Limberg & Lundh, 2008) is reflected in key documents that shape, and are shaped by, the documentary practices of HTA. The analysis of the five main types of practices connected to the HTA process shows that the practices are constituted in relations between the documents and formal tools guiding the HTA-process, and the more informal interactions between librarians and HTA supervisors, medical doctors, and clinical experts. As seen in our findings, the most significant documents and helpful tools in the librarians' documentary practices are PICO, MeSH-terms, the SBU handbook, the Cochrane handbook, Endnote, and the PRISMA flow chart.

Documents create and construct social practices; they are resources for negotiating the meaning of practices (Brown & Duguid, 1996). As healthcare is an area which is extremely ruled and regulated by different guidelines and instructions, documents create the activities performed in healthcare (Pilerot & Maurin Söderholm, 2019). The documentary practices presented above are constructed around a number of significant documents. Throughout the HTA process different documents play an important role, depending on the activities carried out. At times the documents are negotiated and adapted to practice admitting variations in working routines at the HTA units.

In the initial searching one of the most essential documents is the submitted question from the clinical practices. The nominated question is in the beginning of the HTA process negotiated between the clinical unit submitting the question and the HTA team, including medical experts as well as librarians. At the same time the project group starts to design the PICO in interaction with the submitted question. The PICO is then used as a central document throughout the whole HTA process, as it fulfills an important role in each of the different practices. In the preliminary searches conducted by the librarians previous HTA reports, both international and national, are a fundamental basis in the beginning of the searches.

The next documentary practice is the negotiation of a systematic search strategy, which occurs in collaboration between HTA librarians and the project group. The PICO is now set, but sometimes further developed when librarians find new terminology possibly usable as search terms. The guidelines for conducting

the searches derive from the SBU handbook, which sets the frames for how the librarians may carry out the searches.

The documentary practice framing the main searching is regulated by several different documents, that librarians use as tools to construct their searches. Earlier systematic reviews are employed in the process as a tool to find possible search terms, and as a role-model for combining different search terms in block searches. A controlled vocabulary, MeSH-terms, is a utilized tool for librarians to look after new subject terms. There is also a considerable number of formal guidelines influencing the search process, as for example the SBU handbook, the Cochrane handbook, as well as local guidelines designed to suit the local needs and negotiated process. This means that these documents both shape the documentary practice in question and are shaped by the practice (Pilerot & Maurin Söderholm, 2019). As in the other practices, the PICO play an important role in this practice to manage the searches and find search terms.

When making a selection of abstracts or full articles the librarians create an Endnote Library to organize the abstracts in various groups. The retrieved abstracts also comprise a type of documents shaping the practices in terms of how librarians screen the scientific content presented in this condensed and systematically organized format, search for key words in Endnote and read through the abstracts. The PICO is present also in this practice, but this time for selecting relevant abstracts and articles. In the selection process the interaction between librarians and the project group is a central part where the practice is negotiated through communication and meetings structured around central documents such as the PICO (cf. Pilerot & Maurin Söderholm, 2019).

The last identified documentary practice in the HTA process is documenting the search process, a practice shaped by the demands of presenting a transparent and systematic process in the HTA-report. As a helpful tool, the librarians use the Endnote Library, in particular when composing the full reference list in the HTA-report. Documenting the searches is done by both search tables and the PRISMA flow chart, which is produced in order to present a reproduceable study. Ending the cycle, the written HTA-report is published by the region and SBU and then becomes searchable for other HTA-units. From this point, the published HTA-report may act as an important document during the initial searching of another HTA-project when a similar question is submitted, or as a formal document guiding a political decision with material consequences. In this way, the published HTA-report signifies the end of a cycle for one set of documentary practices, but the report can also be the starting point of another process. In this way, the institutional structures of these documents are highlighted and point to both past and future activities (cf. Østerlund, Snyder, Sawyer, Sharma, & Willis, 2015), providing a deeper understanding of how EBM is enacted in healthcare as documentary practices of hospital librarians in HTA are unfolded.

In the five documentary practices outlined above we have identified several different power relations where the power shifts between the librarians and other members of the HTA-team, including medical doctors and clinical experts. The power relations vary within practices, but also between practices. According to Smith (2005) documents are underpinning social life and uphold power structures. This means that the different central documents interacting with practices are a key to understand the power relations between librarians and the HTA-team. When it comes to the documentary practices associated with searching skills it is clear that the librarians hold significant power and legitimacy in the project group, while the librarians occasionally hand over the power to select to the project group when dealing with the selection of abstracts and full articles. Notably, the negotiated PICO and the legitimacy granted to this document within EBM affords the librarians power and legitimacy in the selection process in a way that is not common in other practices of hospital librarians (see Hanell & Ahlryd, forthcoming). However, the last step in the HTA-process is ultimately governed by other members of the project group and their expertise knowledge in accordance with the SBU handbook. Therefore, documents maintain structural power relations in the context of EBM and in health care.

The shifting of power between the librarians and other members of the project group might also be connected to issues concerning the status of librarians in the healthcare organization. Librarians and clinicians are mutually active during collaboration, for example when negotiating a PICO and making a selection, even though there still is a clear division of labor. It is clear that the librarian is ascribed value in terms of searching expertise, which shapes the relation between librarian and clinician. The librarian is an active participant in the work of the HTA-group and searching and selection is discussed by everyone and considered a vital aspect of the HTA-process. The systematic search and selection processes in the HTA-practice exemplifies how the role of hospital librarians changes into a more active one as librarians are regarded as key actors. Accordingly, within the HTA-process the librarians' search skills are attractive, which makes their role tangible and increases their status. At the same time, the analysis made possible by the work conducted by the librarians (searching, selecting, documenting) is the chief outcome of the HTA-practices. The key aspects of the work done by librarians can be described as secondary and supportive, even though the cycle of searching, selecting, and documenting, as well as providing structure and routines for the HTA-process, also can be said to be necessary and intrinsically important.

To conclude, the five documentary practices analyzed in this study comprise a range of activities associated to documents imbued with norms and ideas of EBM that give structure, value, and meaning to the documentary practices of hospital librarians in HTA that shape their work and roles. Future studies should continue to explore documentary practices of hospital librarians in EBM and how

they interact with changing conditions within healthcare and the work and professional roles of hospital librarians.

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