Introduction
This chapter looks forward and examines the changing context of health care and how this may affect health information professionals. It also reflects how health has changed over the last 15 years and the corresponding changes that health information professionals have made.

THE HEALTH CONTEXT

Introduction – future changes in health care
Trying to predict the future is always difficult. For health care, we have some help from a report produced by the Foresight Panel established to predict health care trends for 2020, and provide recommendations for action by the UK government (Department of Trade and Industry, 2000). By the end of 2010, we should be able to judge how far we have progressed, and whether there have been other changes in science, technology or the socio-economic environment that now need to be considered. Most of the key recommendations would have some implications for the work of health information professionals but some have a direct impact, or might have had, if political and economic events had not overtaken the changes. The panel recommended that independent and publicly accountable bodies be formed to help regulate the privacy, availability, sourcing and accuracy of health information, as well as the access that should be granted to certain users of that information from patient records. These are not problems with easy solutions, as the Health 2.0 Debate (December 2010) in The Economist (online edition) indicates (The Economist Debates, 2010). Nevertheless, there is still strong support for the idea that patients should have more control over the health information that belongs to them. In the UK, the White Paper published in 2010 (Department of Health, 2010a) suggests that patients should have control of their health records, that patients should be able to determine who else can access their records, and should be able to see what changes have been made to their records. Sharing of records with organizations such as support groups should be possible if that enables patients to manage their condition better. Aggregated (and anonymized) patient data should be made available in a standard format to allow accredited
intermediaries to analyse this for research, for presentation of data to patients and patient groups. For this to happen, levels of trust in the systems need to be high and, at the same time, we need to remember how the changes in genomics mean that consumers may be very reluctant to share their genomic information with others – who wants to advertise that their genetic data indicates the possibility of ‘criminal tendencies’, for example? A special report on the human genome (Anon, 2010) points out that the benefits of DNA information being freely available probably outweigh the disadvantages, but certainly the problems of predictive genomics worry a lot of people.

The Foresight Panel also suggested that there would be a sharp increase in the number and range of systems and organizations that supply information to support health care – infomediaries – that would guide both patients and professionals. Members of the public would be able to gather information on any health subject, and information available to professionals would also be available to lay people. The panel suggested that by 2020 patients would be using decision support systems, and that websites would gather information from experienced patients rather than experts.

**Empowering patients and the public**

In 2010, in the UK, patients and the public have the NHS Choices website that contains information on local health services, some comments from users of local hospitals, a link to NHS communities (blogs, forums and advice services), tools that include mole self-assessment and a body mass index (BMI) healthy weight calculator. This suggests some progress towards decision support and information provided by experienced patients. There are other online services (often commercially sponsored), such as BabyCentre, offering expert advice, as well as a large number of support group websites for advice and information sharing. In the USA, the MEDLINEPlus service provides information on health topics, drugs and supplements with a videos and ‘cool tools’ part of the site containing interactive tutorials, calculators and quizzes. Other European countries are providing national health information services, online, for the general public. In Finland, for example, the medical society Duodecim has a portal for professionals and a portal for patients and the public, which contain articles that provide more information on certain conditions, and advice for patients on whether to seek professional advice about a condition. Such changes could be seen to empower patients and the public – or to reduce the amount of face to face contact time required with expensive health professionals. For health care to remain affordable, some type of ‘cyber physician’ care, as the Foresight Panel described it (Department of Trade and Industry, 2000, 18), is probably necessary, but there will be profound changes in the way health care is staffed, and how we view cost-effectiveness options for health care.

Libraries have traditionally championed access to information for all – and putting health services online disadvantages those without easy access to the internet or skills to use the services successfully. A Pew Internet survey (Pew Internet & American Life Project, 2010a) found that between April 2009 and May 2010, social networking use
among American internet users aged 50–64 grew by 88% – from 25% to 47%, and that
during the same period, use among those aged 65 and older grew 100% – from 13%
to 26%. The increase is impressive but from a low base, and another study (Pew Internet
& American Life Project, 2010b) found that 80% of higher income Americans
researched medical information online, whereas only 54% of lower income Americans
search for medical information online. Clearly libraries need to help bridge this gap.
A report by Sally Middleton outlines some of the approaches taken in Gloucestershire
to developing public library services that worked with the health service to tackle some
of the social inclusion problems and promote community networking for older adults
– particularly those that are housebound. Another strand of services targeted those
with mental health problems (in prisons) and people who might benefit from the
Books on Prescription scheme (Middleton, 2005). The social inclusion development
officer responsible for developing these services was not a library or information
professional, but had a background in social and community work. It is hard to know
for sure what the effect of a different skill set was, but it is not just the health
professionals who need to rethink how they react to changing consumer behaviour for
accessing and using health information. Consumers are uncertain what to expect from
public library staff (Harris et al., 2010) when looking for guidance in selecting and
using health information resources. A systematic review of bibliotherapy services for
mental health service users (Fanner and Urquhart, 2008) concluded that basic
bibliotherapy services appeared to be cost-effective in supporting the treatment of a
wide range of mental health conditions, but that evidence to guide development of
more sophisticated bibliotherapy services was very limited. The associated survey of
psychiatric libraries (Fanner and Urquhart, 2009) found that more training and support
for mental health service library service staff would be desirable if innovative services
– and the necessary joint working across a range of professionals and sectors – are to
develop successfully. With pressure on resources even more constrained at present,
some very creative thinking will be required to find solutions. Consumer health is
discussed in more detail in Chapter 4.

The data deluge
Some of the solutions will be assisted through technology, and the world of bio-
informatics includes not just the genome data mentioned earlier but also the
manipulation of large data sets. Medical equipment produces large amounts of data
and, with suitable algorithms, that data can be processed to monitor changes in health
status. The 2010 conference proceedings of the IEEE Engineering and Medicine in
Biology (IEEE, 2010) contains papers on motor function assessment using wearable
sensors, biological network modelling, decision support, analysis of heart rate dynamics
using mathematical models and robotics inside the body, as well as techniques for
smart homes, to help people live independently, but under the watchful eye of monitors
set up to detect harmful changes in condition. Much of this presumes that monitoring,
and feedback to patients (and professionals) on changes in the condition, will actually
contribute to better health outcomes. More knowledge might simply make patients more anxious or turn them into nervous iPhone hypochondriacs.

Integrating health and social care – for better quality care
For health services themselves the ability to analyse patient data to reveal more detail about patient outcomes, and quality of care, has been important – but difficult to achieve. For the English NHS, for example, the Centre for Health Economics at York University estimated that between 2003/4 and 2007/8, productivity has increased (since 2004/5) in the secondary and primary care sector, with increases in the number of patients treated, improvements in the quality of care patients received and less reliance on agency staff (and a slowdown in staff recruitment) (Street and Wood, 2009). In the English NHS, the Quality, Innovation, Productivity and Prevention (QIPP) programme aims to support quality improvements and efficiency savings. One of the workstreams, Technology and Digital Vision, is intended to support the other workstreams, as well as promoting interoperability of IT systems. Other home countries in the UK have taken slightly different approaches to improving health care, but a common theme is the focus on the patient and the public, with greater public involvement a key objective.

For most patients, integration of health and social care seems a sensible objective but separate funding, delivery structures and staffing have complicated many efforts at joint working across health and social services in the UK. Initiatives such as personal budgets for people with social (and health) care needs may help to leverage greater integration, and the vision for social care in England envisages more personalization of services, a greater emphasis on prevention (to keep people independent for longer) and partnership (among various agencies that contribute to social care) (Department of Health, 2010b). In the USA the Kaiser Permanente health maintenance organization has offered a vision of what is possible when health care does not have sharp boundaries between community, primary and secondary care. The report on the NHS Beacon Sites (Ham, 2010) confirmed that partnership working, and the expected benefits (such as reduced use of hospital beds) were easier to implement when the sites had previous experience of joint working across health and social care. That made it easier for sites to establish integrated care organizations and promote intermediate care to pre-empt hospital admissions.

Implications for information providers
The themes of personalization, greater choice and more control are present in a consultation document on the information services and systems to support the proposed changes in health and social care (in England) (Department of Health, 2010c). This echoes the previous policy documents, with emphasis on the need for information that is based around patient needs and service user consultation (rather than administrative needs), with a move ‘away from the Government being the main provider of information about the quality of services to a range of organizations being able to offer service information to a variety of audiences’.
Personalization of health care requires personal health records, owned and controlled by individuals. There are two main competing commercial providers – Google Health and Microsoft HealthVault, and both will pay their way through advertising or by selling data that consumers are prepared to share, or other similar services. The Microsoft product has been adopted for the Mayo Clinic Health Manager (Kolakowski, 2009). What consumers might expect from a personal health record, personally controlled, may include the ability to update it easily, share information with selected health providers and link self-reported data with clinical data (Weitzman, Kaci and Mandl, 2009). Others note that bathroom scales can be Wi-Fi connected to Google Health (Ray, 2010) – good news for the confectionery suppliers or the diet food industry?

All these changes to health care mean that existing staff need to be trained and updated to help change their practice. Unsurprisingly (and as discussed in more detail in Chapter 2) technology is providing part of the solution through e-learning. An evaluation of over 5000 learners using e-learning modules based on National Institute for Health and Clinical Excellence (NICE) guidelines showed that the programme (devised by NICE in collaboration with BMJ Learning) was effective in promoting change in practice (Walsh et al., 2010).

National and international perspectives

The contribution by Suzanne Bakker that follows in this chapter tracks the history of medical librarianship and how organizations such as the European Association of Health Information and Libraries (EAHIL) have helped health librarians to discuss common problems and reach solutions.

In the early days of computing, information systems had to be designed to suit the computer, but with later developments in storage capacity and processing speed it became possible to provide services and systems that met the needs of health staff, health students and – increasingly – patients and the public. Suzanne Bakker provides an overview of the changes that are apparent in health library and information services. The guiding principle has been user orientation, but Suzanne also stresses how health information professionals have developed solutions to information problems. Given a particular ‘problem setting’, the information professionals have framed the problem as one that can be resolved wholly or partly with an information solution. For example, health students needed to learn how to use bibliographic databases successfully – and the teaching role for health librarians was born (discussed in more detail in Chapters 2 and 6). It is much easier to create data now, but much more difficult to manage that data and manage the knowledge created within a health care organization or network. There are new roles in research data management for health information and library professionals and new roles in knowledge management (see also Chapter 7).

In her conclusion Suzanne Bakker reminds us that technological challenges also bring changes in the legislation as policy makers try to control the ramifications of new technology for the mutual benefit of producers and consumers. In Chapter 2,
Jenny Turner and Louise Goswami consider how some of the technological changes can alter service design and delivery, and remind information professionals of the importance of monitoring such changes. We need that evidence, so that the health librarians can advocate successfully for beneficial changes in copyright legislation.

Suzanne Bakker has witnessed how EAHIL has helped health librarians throughout Europe learn from each other, sharing knowledge and transferring lessons learned in one country to another, and making necessary adaptations. One of the recurrent themes in this book is the development of new roles, to meet new changes in the delivery of health and social care. Economic constraints mean that information professionals need to be aware of the ways in which the taxation regime of their country affects information service delivery (e.g. different rates of value added tax (VAT) for electronic and print versions of the same product). Health library and information professionals can learn useful lessons from colleagues in other countries but it is probably wise to be aware of the distortions different regulatory environments may have on information service design and delivery.

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HEALTH LIBRARY AND INFORMATION PROFESSIONALS IN EUROPE
Suzanne Bakker

Introduction
The European Conference of Medical Libraries in Brussels in 1986 was the first of a series of annual meetings of medical librarians in Europe (Forrest et al., 1987). The founding of the EAHIL a year later in Brighton provided the infrastructure and platform for professional development and further co-operation in Europe, in line with the intentions of the founders of EAHIL who had met at first far from home at the International Congress on Medical Librarianship (ICML) in Tokyo in 1985 (Walckiers et al., 1987).

These were the years before fax machines came into use. Online literature searching was introduced in the medical libraries by terminals connected to mainframe computers by modems and dial-up phone lines. Host computers in Stockholm (Medical Information Centre of the Karolinska Institute) and Cologne (Deutsches Institut fuer medizinische Dokumentation und Information – DIMDI) provided access to copies of the Medical Literature Analysing and Retrieval System (MEDLARS) database. The MEDLARS produced by the National Library of Medicine (NLM) in Bethesda, Maryland, USA, was brought online and became known as MEDLINE. The system itself was developed for production of the Index Medicus, the bibliography of articles published in medical journals. The hosted MEDLINE databases were made accessible for online literature search and retrieval by librarians. By introducing computer technology, the work of health library and information professionals changed and
continues to do so, with arrival of the internet, Web 2.0 and other IT developments. The internet and electronic journal publishing in the last decade replaced the tons of paper on miles of shelves and stacks and changed the libraries. Today more and more medical and university libraries are offering mobile access to their digital collection with applications for smartphones and tablets (Obst, 2008). Customized access is offered by smart toolbars for installation in your personal browser (Van den Brekel and Bauer, 2010).

Echoing developments in the health context, library work in the medical field is more than ever user oriented; the main focus has less to do with collection development and cataloguing but the more so with supporting the users: clinicians, medical students, nurses and researchers, to name the major groups. The availability of MEDLINE/PubMed increased the demand for user education by librarians (Colaianni, 1985). Some examples of a user-oriented approach, which describe the changing roles of health librarians and the factors that have affected these changes, are reflected in the following sections.

**Information needs of clinicians leads to librarians in the clinic**

The growth of the literature contributes to the need for summarizing and translating research into practice, which is at the heart of evidence-based medicine (described further in Chapter 4). Making use of the best available evidence for clinical decisions is the day to day challenge for physicians (Giuse et al., 2005). The Cochrane Collaboration is working on systematic reviews and meta-analyses, and medical information professionals are in charge of identifying, selecting and collecting the evidence in a broad variety of bibliographies and databases. Critical appraisal of the literature is part of the job for a growing number of colleagues working in medical librarianship.

In the last decade we have seen a revival of clinical librarianship (CL). Although the concept of CL was introduced in 1975 by Gertrud Lamb, Brian Haynes and David Sackett, it propagated the concept of evidence-based medicine as the method of decision making in the clinic (Sackett et al., 2000). The success of the UK Clinical Librarian Conference, with the 5th International Conference in Birmingham on 13–14 June 2011, illustrates how a close co-operation between librarians and clinicians impacts on health care.

**Information needs of medical students leads to librarians as teachers**

Information literacy is an essential tool for academics and medical professionals. New technologies arising and the many resources published on the internet resulted in the need to include literature retrieval and information management in the curricula (Haines and Horrocks, 2006). Ways in which this has been achieved are discussed in Chapter 6.
Information needs of nurses leads to librarians as consultants
Development of clinical pathways and practice guidelines by nurses and the responsibility for patient control by nurse practitioners brought a stronger emphasis on the use of the medical literature by nurses. In many cases the librarian has a consultant role by retrospective subject searching and providing supporting documentation for critical pathways in the clinic (Middleton and Roberts, 2000). Increasingly there is a need for librarians to be involved in medical and nursing education and professional development programmes for nurses (Dozier and Brown, 2009; Kelly, 2009) such as those described in Chapters 6 and 8.

Information needs of authors leads to librarians as reference managers
The use of personal database management systems for organizing piles of photocopies and reprints or the digital equivalents (portable document formats (PDFs) and Word documents) has increased exponentially. The different styles in referencing and the requirements for publishing and the respective instructions to authors are easy to handle by specific applications. Librarians are involved in introductory training and application support for reference management software, such as EndNote, Reference Manager, ProCite and RefWorks. Librarians are faced with new questions, issues and concerns given the new workflows and pathways that new generations of web-based reference and PDF manager programs require (Mead and Berryman, 2010).

Information needs of researchers leads to librarians in scientometrics
Research funding depends in many areas on the quality and impact of former work by the research group or institute. Scientometric data of citation analysis and impact factors are important in comparing the scientific output of research institutes. Funding bodies require this data from applicants; staff members need this data for tenure. Although these analyses were never designed for evaluating and measuring the performance of individuals or small research groups, funding bodies do request these data and the (medical/science) librarian is in the position to collect and analyse them and to present the appropriate listings and figures. In addition to analysing, an explanation and annotation of these data can be very helpful in developing publication strategies in order to increase the visibility of publications and the overall citation counts. Librarians offer courses in strategic publishing (Gerritsma, 2010a, 2010b). Further descriptions on librarians’ roles in research are covered in Chapter 8.

Information needs of patients leads to identification and provision of patient information material by librarians
Patient education evolves from the receipt of information leaflets towards empowerment and shared decision making. Patient associations are actively involved in organizing relevant resources on their websites and in their publications (e.g.
Patient information centres in hospitals as well as health information sources provided by public libraries are responding to the increasing demand from patients who seek to be well informed (Trzan-Herman and Rozic, 2010), themes that are described in more detail in Chapter 4. Advice and consultation from informationists, such as that described in their case study in Chapter 8 by Rebecca Jerome and colleagues, are an extension of the librarian on rounds as described by Gertrud Lamb (Spatz, 2009).

Conclusion

These are only a few examples of the different roles for medical librarians. Together these illustrate how the health library and information service is user oriented. It is no longer the physical space of the library, nor the digital equivalent, but the value added by the librarians that make the difference.

Nevertheless, some of the traditional roles are still of interest, especially in the European context, such as the maintenance of national bibliographies and indexing systems. Within EAHIL there is a special interest group (www.eahil.net/subgroups.htm) active in exchanging information and experience on MeSH (Medical Subject Headings) translations and subject indexing in the medical field. Keeping up with technological developments found in information and communication technology (ICT) tools, networks, web-based and mobile applications is a challenge; medical librarians are eager enough to implement new features in their services. But the new technologies create other challenges as well: the publishing industry is monitoring the electronic reuse and copying of copyrighted material. Library laws regarding interlibrary loan differ in Europe. Traditionally in several countries (Germany and The Netherlands, at least, but maybe in more) no payment for clearance was involved in cases of personal, non-commercial use for library-provided and delivered documents such as print photocopies. But the European directive on databanks and electronic resources has changed library practice. Publishers no longer sell subscriptions to their journals as they did with printed versions, but instead licensed access to e-journals is mainstream nowadays for medical, health and sciences libraries. Librarians must know about the copyright issues for their resources, regarding the different publishing formats and interlibrary loans. Today it is the agreement with publishers that sets the rule and restricts access and distribution (Subito, 2008).

With open access publishing, the creative commons and intellectual property rights are still applicable, so librarians could advise on publishing issues, fees and management of rights. (See, for example, the Zwolle Principles and University Copyright Policies at http://copyright.surf.nl/.)

After 25 years of EAHIL, medical librarians in Europe have a strong professional network and share job-related knowledge and experiences. The present day European medical library is a library without walls, medical librarianship is a profession without
boundaries. Budget cuts and legal restrictions are a threat, technology a challenge. Service orientation, efficiency, evidence-based medicine and user support are the key factors in the context and practice of medical informationists, in Europe and elsewhere.

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PART 1 CONTEXT