Advancing the availability of clinical insight to improve patient care

ClinicalKey Elsevier

This paper discusses the role of technology in supporting the NHS, specifically how the digitisation of clinical reference material can support the role of the clinician. It also looks at how the implementation of clinical search technology can support other functions, such as that of the hospital librarian, senior management and medical schools.

For more information and to share your feedback, contact Lisa Oliver at l.oliver@elsevier.com or visit clinicalkey.com
Introduction

On-going changes in the NHS mean that not only are budgets tight, but the quality of care is under ever closer scrutiny. From chief executive to trainee nurse, healthcare professionals have to respond to unprecedented challenges posed by today’s political, social and economic climate.

The NHS must meet growing demands from an ageing population with increasingly complex health and social care needs, whilst satisfying today’s more demanding patients who are better informed about their health. In addition to these challenges, NHS organisations are also being asked to make sizeable cuts in their operating costs without impacting patient care and safety. All of which means they must be quick to react to constant change and be equipped to do so.

This paper discusses the role of technology in supporting the NHS through this challenging time. Solutions have been designed to help healthcare organisations meet their corporate objectives, support clinical decision making and improve the delivery of high quality patient care. The paper specifically focuses on how the digitisation of clinical reference material can support the role of the clinician. It also looks at how the implementation of clinical search technology can support other functions, such as that of the hospital librarian, senior management and medical schools. It includes extensive input from advocates who have already embraced online clinical reference solutions. Plus it explains how these solutions can provide an integrated approach to streamlining processes, allowing healthcare management to achieve greater efficiencies and supporting clinicians, giving them more time to improve patient outcomes.

Healthcare faces unprecedented challenges

There is no doubt that the drive towards electronic healthcare is among the most important advances of our time but with this comes the need for healthcare organisations to meet endless government targets and initiatives aimed at cutting costs and improving care.

The UK is no exception, particularly with the drive for a paperless NHS and the injection from government of £260 million towards the development of technology to support healthcare service delivery.

The pressure on healthcare organisations to invest their budgets wisely, has never been greater.
Current UK Government initiatives

- **The Commissioning for Quality and Innovation (CQUIN) framework** for 2013/14 which links a proportion of providers’ income to the achievement of local quality improvement goals. Its key aim is to secure improvements in quality of services and better outcomes for patients, whilst also maintaining strong financial management.

- **The Quality, Innovation, Productivity and Prevention (QIPP) initiative** aimed at improving patient outcomes, delivering higher quality services and driving down costs. It sets out how the NHS plans to make savings whilst improving the quality of care; for example, by reducing expensive hospital admissions, by getting patients more involved in managing their own conditions, and where possible, by treating more patients closer to home.

- **The Releasing Time to Care agenda**, an NHS programme aimed at improving productivity and helping staff increase the time spent directly with patients by changing their working environment and the way they carry out routine tasks.

- **The Nicholson Challenge**, which requires the NHS to find £20 billion in efficiency savings by 2015, means the onus is on trusts to make huge savings whilst keeping quality as its organising principle. And it will not stop at 2015 – the efficiency saving measures will continue long beyond this, as the pressure to improve outcomes, increase quality and lower costs remain the key drivers for the next generation of our NHS.

- **The ‘Digitising the NHS’ target** of becoming paperless by 2018 with the aim of saving an estimated £4.4 billion.

- **The Francis Report** reinforced the necessity to improve patient outcomes and increase safety, while the **National Patient Safety Agency’s campaign** is to make patient safety a top priority and to create a mind-set of ‘no avoidable death and no avoidable harm’.

- **Continuing Professional Development (CPD)** targets to ensure on-going career development for clinicians and nursing staff. Healthcare employers and those contracting doctors’ services are now responsible for ensuring their workforce is up to date and practising to the appropriate standards. Moreover, educational and clinical professionals have an obligation to meet new revalidation requirements as specified by their respective Royal College or faculty.
Susan Standring, an award-winning educator and member of several prestigious medical societies, believes that, in principle, innovative technology-based solutions have a key role to play in the challenge of delivering the best quality services for patients:

“Technological solutions can help improve quality but only if they provide fully comprehensive content.

Technology is going to have to play a bigger role in supporting clinical practice in the future. The pace of development is so fast, that providing the source of information is trustworthy, technology will help speed up learning and support decision making, becoming part and parcel of everyday practice. For younger clinicians who embrace change, technology provides them with relevant and appropriate information at the click of a button – not just Wikipedia!

There is now so much pressure to fall in line with government targets, that the real emphasis of what is best for the individual clinician and their patient is being lost in a sea of box ticking. Solutions such as Elsevier’s clinical insight engine, ClinicalKey, go some way to steering the priorities back on track by providing access to good quality research, which will ultimately help improve patient outcomes.”

Susan Standring, Emeritus Professor of Anatomy at King’s College London
Editor-in-Chief of Gray’s Anatomy

Knowledge holds the key

World-renowned paediatric neurosurgeon Dr Ben Carson once said: “Knowledge is the key that unlocks all the doors.” However, in most instances, these challenges are made all the more difficult through insufficient access to the right information. Getting to that knowledge - and quickly - can often be challenging for healthcare professionals. For one thing, they simply do not have the time to trawl for the right information.

But without the instant availability of up-to-date, in-depth clinical insight, clinicians in particular will continue to face an uphill struggle to improve patient outcomes and deliver higher quality care.
How healthcare professionals want their information delivered

A survey carried out by Elsevier among thousands of clinicians found three common characteristics:

- They want information that is comprehensive, with clinical resources in one place online, representing every medical and surgical specialty and information at all levels, from expert opinion to primary data.

- They want information that is trusted – providing the latest peer-reviewed and evidence-based information - and fast.

- The survey also found that doctors’ greatest frustrations in searching for information to support clinical decisions stem from the time it takes to identify relevant and up-to-date answers.

Many clinicians search for clinical reference material on search engines, but how reliable are the results and how long does it take to find the right answer? Research has found that 80% of hospital doctors regularly use Google as an information source, second only to journals (86%)*. What would the impact of a dedicated clinical search tool be on increasing time to care?

These findings are supported by Dr Abdul Hameed, Cardiology Registrar and advocate of specialist clinical search tools, such as ClinicalKey:

"It is very beneficial for me to be able to access them online anywhere and particularly when I’m travelling. What's more, I want to be able to identify items for reading later. There are a wide variety of textbooks in cardiology available for my specialty and access to the most authoritative in the field, proves invaluable for my educational development.

I want to be able to schedule my learning through various resources, such as textbooks, journals and guidelines, and online tools such as ClinicalKey have collectively supported my educational development as a trainee."

Dr Abdul Hameed, Cardiology Registrar, Health Education (Yorkshire & the Humber)

In short, whatever their discipline, healthcare professionals need fast and relevant answers to clinical questions. Their preference is to have connections highlighted between medical concepts and suggestions of related content that traditional clinical search engines or Google cannot provide in an appropriate format which supports clinical workflows. The results of multiple searches are often thousands of pages of information which the user then spends time sifting through to find the most relevant answers. After all, it stands to reason that less time spent searching for information means more time with patients and better outcomes.

*Reference: Hospital physician information survey, March 2012, Opinion Health
So, who needs it and why?

Of course, when it comes to accessing reliable and comprehensive information quickly, different groups of healthcare professionals have different requirements. It is therefore worth examining the key information needs of each stakeholder group:

- **For chief executive officers**, the reputation of their organisation is paramount, which means they must maintain the trust of patients and commissioners. To achieve this, they must ensure that the healthcare professionals in their charge have **access to the very latest clinical and medical information**. Remember, too, that patients expect those treating them to have all the very latest clinical and medical information instantly available to them. If not, they may be dissatisfied with the service and go elsewhere.

- **Chief clinical information officers (CCIO) and IT directors** are responsible for planning, developing and implementing clinical tools to **enhance care and reduce risk**. They must ensure that all users have access to the latest and most relevant clinical information to provide better patient outcomes and improve safety. They need to **introduce paperless working**, which includes providing online access to the most comprehensive clinical information available. At the same time, they must clearly demonstrate a return on investment in any search technology they implement.

- **Chief medical officers, medical directors and heads of department** support the CCIOs and IT directors in planning, developing and implementing clinical tools. They understand that technology is going to have to play a bigger role in supporting clinical practice in the future. The burden on their clinicians to **maintain quality and reduce costs whilst ensuring patient outcomes continue to improve**, is significant. An IT system which will speed up learning and support decision making, **streamline clinicians administrative tasks and free up more time for them to devote to patient care**, needs to become part and parcel of everyday practice. They want to be given the opportunity and power to influence decisions made about the systems they use in order to ensure maximum benefits are realised.

> ClinicalKey will have its greatest impact in allowing health practitioners to be maximally efficient when wading into one of the best collections of clinically relevant content.
>
Dr Paul Auerbach, Professor of Surgery, Stanford University School of Medicine

- **Medical Librarians** need to furnish clinicians with the best resources for finding information, when they need it, regardless of their speciality. That information needs to be trusted, giving clinicians confidence in the results provided. NHS Library Services are under increasing pressure to use their budgets wisely. They must try to invest in search technology that yields results fast to **save clinicians time and make a real impact at the point of care**. The speed of use can help **increase efficiencies in patient outcomes and cost**. They must also support the achievement of key national initiatives and government targets and acquire the best training tools to enable clinicians to stay up-to-date with the latest research in their field. Not least, they must demonstrate a return on investment in any technology they introduce.
Clinicians need technology that delivers timely, evidence-based information to complement their actions, situation and workflow. They need accurate clinical information and guidance at the precise moment they make diagnostic and treatment decisions. Clinical error through not having the right information at the point of care is a serious concern for healthcare professionals – let us not forget, there is an increasing demand for those who make mistakes to be held accountable.

Clinicians need clinical information sources that integrate seamlessly into their workflows and provide fast, clinically relevant answers at every stage. Whether they are treating and diagnosing patients, staying current in their field, or sharing information with colleagues, they want rapid access to the content they need most. They want to be able to filter search results by clinically meaningful subcategories and go quickly from topic overview to in-depth specialty information. They want to personalise searches for greater workflow alignment, while ensuring the most relevant results in the shortest possible time.

I need a tool that supports me both as an educator and as a clinician. As an educator, I primarily deal with medical students, but also engage in inter-disciplinary education,” he says. “Having the ability to bridge into other disciplines and ensuring that my lectures and teaching sessions are fully up-to-date is crucial. A solution with the ability to access the key source material allowing for an efficiency that accelerates my updating of prior material - and generation of fresh material, is invaluable.

For medical schools and education professionals in the highly technical and ever-evolving world of healthcare, enhancing patient safety and ensuring compliance through continuing education and professional development is critical. The entire healthcare organisation is dependent on education professionals to leverage tools that provide high-quality, evidence-based education. These tools enable better clinical insight and foster an environment of learning and performance improvement based on innovation and personal development, which contributes to the success of recruitment and retention efforts.
Medical schools must also stay up-to-date with the latest research in their field. They too need comprehensive, trusted and fast clinical answers for their students. By using an online search tool that is intuitive with a simple-to-use interface requiring little training, they can offer their students invaluable access to the latest editions of numerous books and journals as well as other reference material. This supports students limited budgets and helps decrease the time spent finding the relevant information.

Another important factor for healthcare employers and those contracting doctors’ services is that they are now responsible for ensuring employees are up-to-date and practising to appropriate standards. Doctors are clearly better able to maintain these standards in organisations that foster a culture of learning. Educational and clinical professionals therefore have an obligation to meet new revalidation requirements as specified by their respective Royal College or faculty.

Nurses, too, need fast and simple-to-use training tools to help increase their efficiency. Providing safe, quality care for optimal patient outcomes is every nurse’s top priority. Yet, in the ever-changing healthcare environment, it is only one component of their role. To improve clinical, financial and satisfaction outcomes, nurses need evidence-based tools that can improve workflow and coordination of care, reduce patient care errors, and increase their satisfaction. Clinical insight tools that standardise guidelines, protocols and education can fill these needs whilst also meeting regulatory requirements and safety/quality initiatives.

How search technology enables better decision making

With so many different stakeholders to satisfy in a typical healthcare organisation, few would doubt the value of technology in meeting the need for better clinical insight. However, in a sector where every penny spent is now being heavily scrutinised, any investment in search technology must show a quick return.

To date, most search engine solutions simply take users through a set of questions and processes based on particular symptoms. They compromise either on the depth, breadth and reliability, or the speed and ease with which information can be retrieved. What healthcare professionals really need, however, is more freedom of choice in terms of latest research papers, opinions, books and journals which relate to a particular search term. They need a solution that easily aligns with their workflow, providing them with the information they need when they need it.

“Being able to create reading lists in super quick time, for someone in my position, is invaluable. Also the ability to scan a very wide field for your topic and access numerous resources including imaging, videos, as well as research papers and books is a real advantage.”

Susan Standring, Emeritus Professor of Anatomy at King’s College London
Editor-in-Chief of Gray’s Anatomy
In the drive to optimise patient safety and care, they must constantly find answers to clinical questions that enable them to make quicker, more informed decisions. A survey of 2000 clinicians, conducted by Elsevier, shows that a key enabler in meeting today’s healthcare challenges is the timely availability of accurate, comprehensive clinical information leading to better preventative care and shorter care cycles.

“Areas of my decision making that have been facilitated by clinical search technology include patients with chemotherapy that is associated with pulmonary hypertension. Other searches may have yielded abstracts, and an impression of an issue, but my ability to get to the original papers now allows me to evaluate the data in a critical manner and draw my own conclusions.

“I have also been involved in caring for patients on the novel anticoagulants; much of this literature is in journals that are accessible via tools such as ClinicalKey, but to which I would not otherwise have had access.”

David Kerins, professor of therapeutics, University College Cork and consultant cardiologist, Mercy University Hospital, Cork, Ireland

And whether clinicians are treating and diagnosing patients or simply staying current in their field, they are under immense time pressure, so they need immediate access to those answers. This is precisely where ClinicalKey from Elsevier comes into its own by providing smarter, faster searches for better patient care.

“As a result of using these tools regularly, my knowledge and understanding of many topics in cardiovascular medicine has developed. This in general has led to an improvement in my decision making with respect to patients with several cardiovascular disease.”

Abdul Hameed, Cardiology Registrar, Health Education (Yorkshire & the Humber)

Clinical insight that is comprehensive, trusted and fast

ClinicalKey is a web-based resource providing comprehensive, trusted and fast clinical answers using Elsevier’s world leading medical and scientific content. Access to this information ensures clinicians can make quicker, more informed decisions that improve patient safety and care.

The difference between ClinicalKey and standard search engine technology is that it brings all of Elsevier’s peer reviewed clinical content together alongside trusted content from other publishers via PubMed to provide the most comprehensive source of clinical information available. It uses advanced search functionality to ensure that clinicians get the information they require fast - eliminating the need to sift through pages of irrelevant content, allowing them to dedicate more time at the point of care. The sheer breadth and depth of the content provides clinicians with trusted answers which support their existing knowledge to help improve patient outcomes.

ClinicalKey is already being used by some of the most forward-thinking healthcare organisations to help improve patient safety and outcomes and support the on-going development of their clinical staff.
“I find the ease of access to a broad range of resources in a single site that is easily navigable to be very attractive. I can use a single login to gain access to a combination of standard textbooks in a wide range of disciplines and a very comprehensive collection of journals.

The search engine is extremely “intuitive” and yields an extensive collection of ‘hits’ that always seem to be very well sequenced in terms of relevance and priority. The search display also allows me to see whether I am looking at books, journal articles or abstracts. What’s more, there is also a valuable collection of illustrations with a facility to save them as PowerPoint files.

“Some of the resources in ClinicalKey overlap with the library front-end at my University Medical School Library, but some I can only access via ClinicalKey. Even in the case of sources with dual access, ClinicalKey offers a far more user-friendly interface.”

David Kerins, professor of therapeutics, University College Cork and consultant cardiologist, Mercy University Hospital, Cork, Ireland

“Not only does ClinicalKey provide up-to-date expert reviews, it serves up a huge collection of top-notch journal and textbook chapters for physicians who have the time and inclination to dig deeper.”

Paul Cerrato, healthcare editor and writer for InformationWeek Healthcare

Conclusion: Smart content means smarter decisions

ClinicalKey is powered by Elsevier’s Smart Content, tagged with EMMeT (Elsevier Merged Medical Taxonomy), which enables it to understand clinical terms and thus discover medical content that is the most relevant; plus find related content that would be missed by other search engines. Moreover, Elsevier’s Smart Content has been designed to understand the vast number of relationships between clinical concepts. By organising these relationships in a hierarchical manner, ClinicalKey provides specific, targeted results to clinicians’ questions.

The tool allows clinicians to filter search results by clinically meaningful subcategories (content type, specialty, and by relevant clinical categories like treatment and diagnosis). Specialty-specific tools enable them to quickly move from topic overview to in-depth specialty information to meet clinical challenges.
ClinicalKey is an excellent source of clinical reference material and in particular, of books. The advantage of the solution is that it works in harmony with paper based material – not replacing it but giving the material a wider audience.

Susan Standring, Emeritus Professor of Anatomy at King’s College London
Editor-in-Chief of *Gray’s Anatomy*

ClinicalKey is part of Elsevier’s continuing efforts to help clinicians improve quality and efficiency through the smarter use of healthcare information. Along with Pubmed and Elsevier’s many clinical, educational and administrative resources, ClinicalKey enhances workflow without disruption and ultimately helps healthcare professionals deliver better patient outcomes.

I use ClinicalKey when I want to look into something in-depth rather than looking in textbooks. Having too much information can be a problem nowadays - ClinicalKey helps sort it so it’s easier to digest. It organises the information from journals, textbooks and other sources, which means it’s great for preparing lectures and writing articles.

Dr Jasmeet Soar, editor *Resuscitation* and consultant anaesthetist at North Bristol NHS Trust

In addition to developing ClinicalKey’s core function, Elsevier is also working closely with the healthcare community to support better integration and collaboration. ClinicalKey already offers an API interface to EHR systems that can accept queries from HL7 standard Infobutton Managers installed within many institutions. Elsevier are actively working in partnership with institutions to better understand integration needs, with the shared objective of enabling contextually relevant, patient-specific knowledge resources to be integrated into clinical information systems.

As a clinician and a cardiologist, I find that patients regularly present with cardiac manifestations of multi-system disease, especially those with oncological disorders, for example. The ability to rapidly search and update ensures that I am confident in my patient care.

David Kerins, professor of therapeutics, University College Cork and consultant cardiologist, Mercy University Hospital, Cork, Ireland

Knowledge is the key that unlocks all the doors.

Dr Ben Carson, paediatric neurosurgeon, John Hopkins Hospital, Baltimore, US
ClinicalKey is being used by some of the most forward-thinking healthcare organisations across UK and Northern Europe to help improve patient safety and support the on-going development of their clinical staff. ClinicalKey also works with the Royal Society of Medicines Library, providing the RSM’s 21,000 members with digital access to thousands of peer-reviewed medical and surgical journals and reference books.

Current customers in the UK and Ireland:
- Barts Health NHS Trust
- Brighton & Sussex Medical School
- Buckinghamshire Healthcare NHS Trust
- Christie Hospital NHS Trust Manchester
- Consortium Royal Cornwall Library Services CK
- Defence Medical Library Service
- East Dorset NHS Library Service Consortium
- East Kent Hospitals University NHS Foundation Trust
- Heart of England NHS Foundation Trust
- Homerton University Hospital NHS Foundation Trust
- The Ipswich Hospital NHS Trust
- Jersey General Hospital
- Maidstone and Tunbridge Wells NHS Trust
- Norfolk and Norwich University Hospitals NHS Foundation Trust
- Northern Devon Healthcare NHS Trust
- Oxford University Hospitals NHS Trust
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- Portsmouth Hospitals NHS Trust
- Queens University of Belfast Medical and HSC Library
- Queen Victoria Hospital NHS Foundation Trust
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