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## Advanced Educational Model: A Innovative Challenge for Health Sciences

### Librarians

By

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### 0. ABSTRACT:

Medical education is rapidly changing, influenced by many factors including the changing health care environment, the changing role of the physician, altered societal expectations, rapidly changing medical science, and the diversity of pedagogical techniques. Today advanced technologies are used in wide range of fields and one of the upcoming fields is of Medical Science, which is known as Health Information Technology (HIT). This study explains the advanced educational model: a innovative challenge for Health Sciences Librarians-introduction, objectives, innovative challenges are electronic, implementation, informational & transformation sciences and conclusion.

**Keywords:** HS Librarian, Sciences, eResearch, Healthcare Professional, Health Information Technology.

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### 1. INTRODUCTION:

Healthcare industry faces lot of challenges pertaining to dynamic nature of health services and systems to provide in high quality and good efficiency around the clock. Over the past decades several new “medicines” have comes to screaming the health care’s industry form various platforms; like narrative, personalized, precision and person-centered medicines and in continuous process health care professionals lot of expectations, medical technological errors,

lack of specific skills and knowledge, recurring costs and pressures from various sectors. The research is demonstrated that health care service can be enhanced through the implementation of new innovations. And also Health Sciences Librarian plays a crucial role in supporting the research and academic programmes of the any Health Sciences Institution and he faces to identify, evaluate, procure, process and make learning resources available to the faculty and students for their teaching, learning and research programmes like to supports biomedicine clinical practice, evidence-based medicine, innovative practices, scholarly research, peer-reviewed literature, evidence-based health care practices and other curriculum related activities.

The new education model blends the old with the new, inheriting many of the advantages and disadvantages of the old model, while creating new problems for medicine. These problems include reductionistic and fractured care, as well as the challenges of generalizing and applying study results arise because of the evidence-based logic of the new medical model, in which physicians make diagnostic, prognostic and therapeutic predictions based on clinical epidemiologic evidence. With all these concerns Medical Librarian's are changing and evolving with support and fulfillment of medical professionals demands and needs by the technological challenges. In the 21<sup>st</sup> century health care profession makes medical librarians and their institutions more important more ever.

## **2. OBJECTIVES OF THE STUDY:**

- To know how new technological challenges are make healthcare librarianship are more important more ever.
- To study how various sciences will develop medical librarianship profession work responsibilities.

## **3. MEDICAL EDUCATION CHALLENGES TODAY:**

- Changing health environment.
- Changing societal expectations.
- Patient safety.
- Ethics – “see one, do one, teach one”.
- Changing curricular emphasis – competencies and milestones.

- Explosion of medical knowledge.
- Need for life-long learning.
- New generation of learners.
- Rapidly changing technology.

### **3a. Innovative Challenges for Health Sciences Librarian;**

The segments of the user research community have been carefully tracking the emergence of sciences and exploring its implications for the future of research libraries. Health sciences librarians are used to respond to the challenges for new educational roles by providing a wide variety of formal and informal instructional programs. Librarians are teaching information management, microcomputer basics, software packages, telecom-communications, database searching, internet access, research methods, and other related topics. Also, library faculties are spending more time one-on-one with library clients who want to use the latest technology to answer their questions. In the 21<sup>st</sup> century, science is completely studying with digital format/world. As like Electronic, Implementation, Informational/Technological & Transformation Sciences.

- 1) Electronic Science.
- 2) Implementation Science.
- 3) Informational/Technological Science.
- 4) Transformation Science.

### **4. ELECTRONIC SCIENCE:**

**E-Science:** It is a computationally intensive science that is carried out in highly distributed network environments, or science that uses immense data sets that require grid computing, the E-Science sometimes includes technologies that enable distributed collaboration. It tends towards inter- and multidisciplinary approaches that depend on computation and computer science. Research libraries have discipline focused and increasingly technologically sophisticated, do not have systems of the scale or complexity of the e-science environment. E-Science is data intensive, but research libraries have not typically been responsible for scientific data. E-Science is frequently conducted in a team context, often distributed across multiple

institutions and on a global scale. E-Science challenges all these traditional paradigms of research library organization and services.

### **Normally what is E-Science?**

1. “Cyberinfrastructure, e-science and e-research are shorthand terms for new forms of data-intensive, information-intensive, collaborative, distributed forms of scholarship” (Borgman, 2008).
2. “The entire e-science infrastructure is intended to empower scientists to do their research in faster, better and different ways” (Hey, 2006).

E-Science is increasingly dependent on a Physician’s request and Librarian’s ability to acquire, curate, integrate, analyze, and share large and diverse collections of data. **E-Science** portal, which health science librarian’s can access resources related to networked science, research data management and biological science subjects, is a huge success and a great collaboration.

Developing the E-Science portal and set series of annual e-science programs; an e-science

Symposium, Science Boot Camp and Professional Development Day. These programs are all part of our overall strategy for providing e-science outreach education to health sciences and other librarian’s working in research institutions.

### **E-Science Life Cycle:**

**USERS** (HS Physicians, Faculty Members, Post Graduate Students & others).

**CONTENT** (Data, Databases, and Digital Databases).

**COMPUTER PERFORMANCE** (Hardware, Software, Networks).

**SERVICES** (Tools, Sharing Standards, Data Preservation- Institutional Repositories).

### **Librarians Role in the developing world of e-science:**

Campus Engagement.

Content/Collection Development and Management.

Teaching and Learning Activities.

Scholarly Communication.

E-Scholarship and Digital Tools.

Reference/Help Services.

Conduct Outreach Programs.

Fund Raising.

Exhibit and Event Planning.

Leadership.

### **Set of Skills for Librarian's:**

Library and Information Science Expertise.

Subject Expertise.

Partnerships and Outreach (both internal and external).

Participating in sponsored research.

Balancing workload.

## **5. IMPLEMENTATION SCIENCE:**

It is the scientific study of methods and strategies that facilitate the uptake of evidence-based practice and research into regular use by practitioners and policy makers. It is creating better innovation practice for the evidence-based medicine science and it searches scholarly, peer-reviewed literature in the biomedical sciences and emerging science with conceptual, methodological and training challenges. Implementation research examines strategies to use this knowledge and scale up innovations into sustainable programs that can solve health problems for more people. Implementation research attempts to take, “**what we know and turn it into what we do**”.

As per **Brain Mittman**, a research scientists at Kaiser Permanente Southern California, is defined implementation science as “the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice and, to improve the quality and effectiveness of health services. The field of implementation science includes the study of influences on health care professional and organizational behavior”.

The field of implementation science seeks to systematically close the gap between what we know and what we do (often referred to as the know-do gap) by identifying and addressing

the barriers that slow or half the uptake of proven health interventions and evidence-based practices.

### Areas for Librarian Involvement

- **Bioinformatics Core:** Supports to use powerful computing resources, advanced analytics tools, and commit as security to transform large amounts of raw data into meaningful results as knowledge base in biomedical research and healthcare.
- **Community Engagement:** He involves to process of working collaboratively with community members be as library customers, residents, faculty, students or partner organizations to address the issues for the betterment of the community.
- **Support of clinical scholars and other communities of practice:**
- **New Blog:** Deliver the Current Information Services (example: [www.uptodate.com](http://www.uptodate.com)) to the users and as well as collaborate and communicate with Researchers, Physicians, Students and other library professionals through the blogs.

Implementation Science provides a unique, multidisciplinary platform for research on Implementation strategies, including their development, outcomes, economics, and process by which effects are achieved, and factors associated with implementation outcomes. **Example;** A journal has a particular interest in rigorous studies and theory-based approaches, and covers implementation science across the full spectrum of healthcare services and settings.

## 6. INFORMATIONAL/ TECHNOLOGICAL SCIENCE:

Medical Librarians, are also known as health information professionals, medical information specialists, or multiple variations thereof, find analyze, provide access to and present critical information that improves patient care and supports health and medical education, research, and publication. Libraries in the health and/or medical sciences and biosciences are works in a variety of settings and support the information needs of many disciplines, like;

- Academic health science centers those are health sciences – Medicine, Dentistry, Physiotherapy, Pharmacy, Nursing, Ayurvedic and Allied Sciences.
- Specialized medical centers such as cancer treatment centers.
- Hospitals, including public and private institutions, rural and large urban facilities and teaching hospitals.

- Private large physician group practices and large community health clinics.
- Corporations including pharmaceutical and device manufacturing companies, insurance companies, and bioengineering firms.
- Community college programs for students pursuing associated health degrees libraries.

Health sciences librarianship is similar to other library career paths in a number of ways, but there are some significant differences. For example, depending on their job responsibilities, medical librarians search for and organize information as do librarians in other settings. Health information professionals may also teach health professionals how to access and evaluate information. They may assist the public in finding value added health information and may conduct community outreach programs on topics such as health information literacy or may found designing and managing health information websites, blogs, and social media channels, and/or creating and maintaining digital libraries.

#### **Core competency and responsibilities of Health Science Librarianship;**

- **Leadership & Management:** manages personnel, time, budget, facilities, and technology and leads others to define and meet institutional goals.
- **Information Management:** curates and makes accessible bioscience, clinical, and health information data, information, and knowledge.
- **Instruction & Instructional Design:** educates others in the skills of bioscience, clinical, and health information literacy.
- **Information Services:** locates, evaluates, synthesizes, and delivers authoritative information in response to biomedical and health inquiries.
- **Evidence-based Practice & Research:** evaluates research studies, uses research to improve practice, conducts research, and communicates research results.
- **Health Information Professionalism:** promotes the development of the health information professions and collaborates with other professionals to improve health care and access to health care information.

### **IT uses in Medical Education;**

With the lot of advanced development in the present era, there are significant changes in Medical Education all over the world. New information's on medical topics is readily accessible via the Internet and handheld such as Palmtops, Personal Digital Assistants (PDA). The technology can assist medical education in various ways such as in campus wide Networks and Internet, Computer-Assisted Learning (CAL), Virtual Reality (VR), ZoomApp's.

Information Technology has been very helpful to the healthcare sector it is convert/recommend medical information/database to access into a single window and reduces the paper costs. And it allows the healthcare providers to access any patient past medical history, medications, insurance information, medical records (MR), etc with just click of the mouse.

### **7. TRANSFORMATION SCIENCE:**

Transformation is profound, fundamental change, altering the very nature of something. Transformational change is both radical and sustainable. Something that is transformed can never go back to exactly what it was before. The new technologies, including telefacsimile, are replacing the transfer of documents through the mail. Multimedia systems are available in libraries and learning resource centers and the electronic journal is finally here with all of its implications. All these technologies, each with new parameters for information management, represent additional teaching opportunities for the health sciences librarian.

Scientific research is the backbone of new knowledge development, and transfer of new knowledge into practice leads to innovation. Medical librarians can support the information needs of hospital/clinical-based researchers as well as those of clinicians and administrators who put that research into practice. A key objective in the National Institutes of Health (NIH) strategic plan is to "Communicate and transfer research results into clinical, public health, and human service practice". Hospitals that can effectively and efficiently identify and adopt best practices achieve better patient outcomes and greater operating efficiencies. Experts in health quality research assert that evidence-based medicine (EBM) must be accompanied by evidence-based management (EBMgt), in other words, organizational strategies and structures that enable clinicians to put new clinical evidence into practice. Health Science librarians are leaders in knowledge management and support EBMgt by providing services that facilitate the adoption of new practices and technologies in the hospital setting. Not only do these valuable services



contribute to making the hospital more effective, they also improve the hospital's internal and external image.

Many hospital librarians provide support for clinical researchers during the initial stages of their research. Searching for collaborative innovation partners and other subject experts, mining data, and filtering information can all contribute to reducing the time researchers spend locating information, providing more time for data analysis. Librarians can also provide information necessary to prevent duplication of research efforts and provide support for writing research proposals. They can access the old literature that may not be available electronically.

Major gains in efficiency in clinical or research settings have also been achieved by making information gathering easier and more straightforward through investing in dynamic, responsive access to online resources. Hospital librarians provide leadership in information management for hospitals. Using their expert searching skills, they assist researchers and clinicians by locating and disseminating information to facilitate the translation of bench and clinical research into clinical practice.

## **8. CONCLUSION:**

Today more than ever, Health Sciences Librarians are involved a new educational model that provides broad-based tools (like; computers, clinical guidelines, clinical care and (bio)medical research, formal medical terminologies, and information and communication systems) to discover new roles and new resources for acquiring individual skills as the need arises. The Healthcare sector has effective interventions and experience with practical ways to adapt the local context. And he provides information to access resources in a variety of formats, ranging from traditional print to electronic sources and data. Design and manage websites, Internet blogs, social media channels, relevant education programs and digital libraries. Work closely with a variety of personnel within the library to accomplish day-to-day tasks and also collaborate with colleagues in a variety of institutional tasks. He recommends Medical education to provide as traditional educational sessions on topics such as library orientation, database use, bibliographic management systems, and the systematic reviews process, but many libraries now offer a variety of technology classes on topics including mobile devices, apps, online survey creation, poster creation, 3D printing, wearable technology, and many more emerging technology topics. Each of these technology-centric classes, taught by librarians, works to

provide class participants with knowledge and skills that fall into the growing realm of digital literacy.

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