TECHNICAL BRIEF 10

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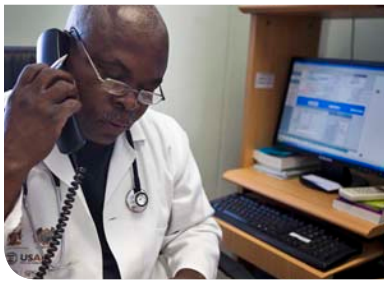

Health Informatics Education and Training Programs: Important Factors to Consider

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Health informatics is of growing importance in efforts to improve health outcomes across the globe, involving many components of health systems. It is primarily concerned with the process of making health-related data accessible and useful for evidence-based decision-making. To take advantage of the potential offered by health informatics, health workers must be able to access relevant data and be comfortable with its application. Therefore, preservice education and in-service training in information technology should be part of the national investment in health systems. Capacity*Plus* can assist countries in successfully meeting that commitment.

This technical brief introduces the concept of health informatics and describes the considerations to be kept in mind when designing education and training programs for health informatics.

Background

Health informatics

Health informatics encompasses several broad domains, of which clinical health informatics and public health informatics are two of the most important. Whereas the former largely pertains to patient data, the latter focuses on broader health systems data such as disease incidence, health worker data, and logistics management. Health informatics also includes health systems management.

Health information technology (or a health information system) is a solution to the need for high-quality information and can include technologies such as databases, mobile phones, Internet-based services, or specialized hardware. Richer and higher-quality data sets can be achieved by ensuring interoperability of health information systems through data standardization and a common mechanism to exchange data.

Reliance on health informatics is growing in both developed and developing countries as availability, access, and basic familiarity with computers, mobile phones, and other electronic information tools becomes commonplace. While the benefits are largely understood and basic knowledge is more widespread, capacity to develop and utilize health informatics has not kept pace.

Responding to demand

National health stakeholders, regional organizations, and international development partners have increasingly looked to health information technology within public health settings to address challenges of efficiency and effectiveness—and this will only expand in the future. This demand is often framed in the context of mHealth, eHealth, telemedicine, electronic medical records, or some kind of information system, such as a training information system, a human resources information system, or a management information system.

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Integrating or scaling up health informatics first requires senior decision-makers to consider their priority needs, in order to understand what health information technology can and cannot provide. They must then commit to oversee the process from selection to design and implementation. National stakeholders must be willing to collaborate, then choose and coordinate those systems likely to maximize the benefits to their country. Part of the strategic decision-making and planning process must include how to put in place or utilize competent staff who will install, operate, and maintain the systems as well as manage the data.

Once there is successful implementation of a broadened health informatics concept, health workers will find that there are significant positive changes in their daily routines at all levels, be they community health workers, nurses, physicians, laboratory technicians, or pharmacists.

The potential synergies are enormous if health workers at all levels of the health system are consulted. A thorough understanding of health informatics will result in concrete health output and outcome benefits. The availability of preservice education programs that produce competent personnel to develop and maintain health information products must be taken into account throughout the adoption, adaptation, and implementation process.

Factors to consider in establishing or expanding education and training programs in health informatics

Policy and administration issues

1. National policy

Is there a national policy catering to the need for and supply of health informatics professionals? Who are the stakeholders necessary for a successful national coalition to develop and implement such a policy? Which ministries have been involved in framing the national policy? How could this coalition be encouraged to further the agenda of professionalization of health informatics specialists?

2. National or regional programs

Based on anticipated demand for graduates, will programs be large enough to justify having programs in each country or is the best economy of scale found in having regional programs that produce health informatics workers for several countries?

3. Program ownership

Keep in mind that education and training programs for health informatics can be placed in schools run by the government, faith-based organizations, nonprofit organizations, or for-profit organizations.

4. Program governance

Consider setting up a board of advisors to provide guidance to program leadership. Such a governance body should include representation from a variety of stakeholder groups including employers, government, accreditation bodies, health informatics professionals, and consumers of data.

5. Program management

How will be the program be managed and administered? Do you need to establish a new management system or can you use existing management structures in the school? Do managers have the proper mix of health informatics knowledge and management expertise? Are there appropriate budgeting, accounting, space management, facilities management, student services, and support staff?

6. Financing

What will be the sources of the funds to establish, expand, and maintain the programs? Will the funds be from the government, and if so, which ministry and office? Will they be from the private sector? Will tuition be charged to students? Will grants be available?

7. Cost

What will be the real cost of starting a program, including investment costs and recurring costs? What will be cost for training each cadre?

Pipeline issues

1. Student recruitment

How will students find out about the programs, apply for them, and be selected? Keep in mind that many low-income countries do not have sufficient high school graduates with science, math, and technology coursework. Consider remedial or bridging courses to allow interested students to enter programs. Consider outreach programs to high schools to interest students in health informatics careers and make them aware of the programs. Consider providing assistance completing applications for students from remote areas. Will students from remote areas get adequate opportunities to enroll in these courses?

2. Admission criteria

Define the prerequisites for entering health informatics training programs. Are these prerequisites realistic given the number of high school graduates and existing health workers with such qualifications?

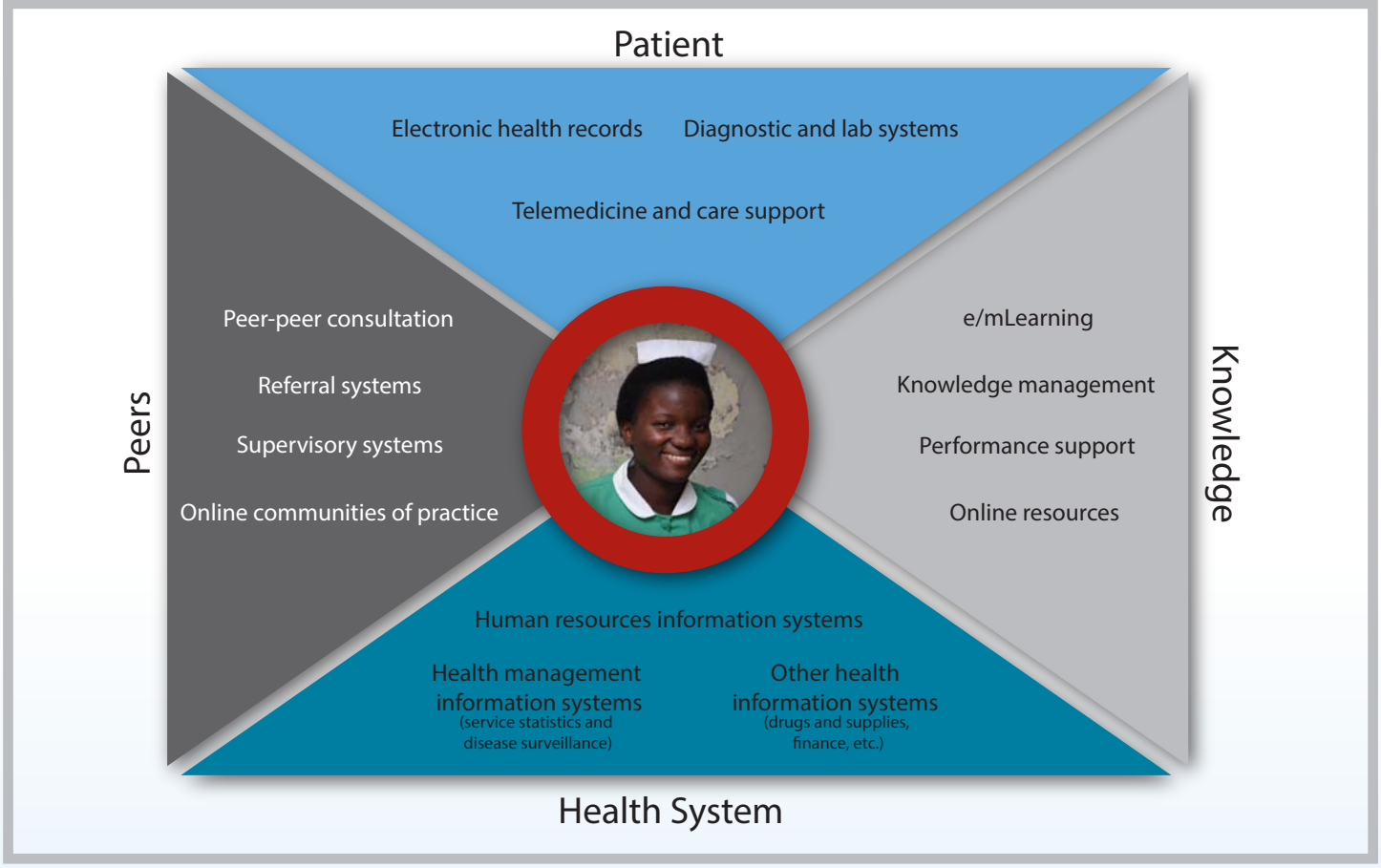
3. Effective demand (how many workers to train?)

How many of each cadre does the government have the budget and plans to hire? What about the private sector? How many of the program's graduates might be hired for jobs other than in health informatics?

4. Accreditation

How will the program be accredited (recognized by the government or other official body)? How long will this process take and how expensive will it be?

Figure 1: Health Informatics from the Perspective of a Health Worker



5. Certification

In addition to receiving certificates or diplomas from the training institution, should graduates receive a national license or certification? What would be the advantages and disadvantages? Do professional bodies exist that could provide this national licensing or certification?

6. Job placement

How will graduates find out about and apply for open jobs? Consider setting up centrally-located physical or electronic bulletin boards for all employers and job seekers to use. Provide students with assistance in creating a CV and developing interview skills.

7. Alumni management

Alumni are a valuable source of feedback on the relevance of your program, general advice, and potential fundraising. Maintain databases of alumni, contact them on a regular basis, and involve them in the life of the training programs.

8. Gender

Track the gender of students who apply to, are admitted to, and graduate from your programs. Ensure that female students have adequate academic support and mentoring. Consider starting pipeline programs to encourage women to enter health informatics programs. Ensure that schools have adequate gender discrimination and harassment policies.

Curriculum issues

1. Program length

How long should each program be? Are the program lengths realistic given country resources and the immediacy of need for graduates? Keep in mind that there is a general expectation that the longer the program the higher the postgraduation wage will be.

2. Cadres or specializations

What cadres or specializations for health informatics personnel are needed (e.g., data entry technicians, database managers, hardware technicians, programmers, statisticians, analysts, managers, policy-makers)? What are their job descriptions? What knowledge, skills, and competencies should each develop? Ensure that there is a common vocabulary and some knowledge overlap so the various cadres can work well together.

3. Pedagogy methods

How will the programs be taught? For example, what will be the mix among lectures, projects, labs, internships/ practicums, or team training with other cadres? Will courses be taught face-to-face, remotely, or in modular form? If internships or practicums are planned, are there a sufficient number of sites and will preceptors need to be trained or compensated?

4. Program curriculum

What does each cadre need to be taught and to what depth? Is the content relevant to country realities?

5. Educational materials

Are there acceptable materials that cover the topics included in the curriculum? The unavailability of relevant textbooks and other learning materials may be a hindrance in establishing a successful program. What are the potential sources of materials, and are they relevant to the context of this particular course?

6. Instructors

What are the qualifications needed for the various instructors? Ensure that qualifications are realistic given country resources. Consider making use of part-time instructors, including health informatics professionals in the private sector. Keep in mind that for some classes expertise in information technology may be more important than health expertise.

Infrastructure issues

1. Facilities

Is additional space needed to hold the program (e.g., administrative, classroom, lab, distance teaching facilities, laboratories, dorms)? Will students need access to the Internet? Can this space be shared with other programs? Can the space be rented rather than purchased or built?

2. Equipment

What equipment is needed? Both administrative and technical equipment may be needed, such as photocopiers, computers, and other equipment students are likely to encounter in their future jobs. How much will this equipment cost and how will it be procured and maintained? Can the equipment be shared with other institutions or programs?

3. Libraries

Is there a need to expand an existing library or establish a new one? Consider the fact that a paper collection may not be needed, but that a digital library will need a physical space as well as librarians and access to the Internet. Most digital libraries can be accessed free via Satellife, eGranary, and other platforms.

Supporting countries to move forward

Capacity*Plus* routinely supports country efforts to build capacity in health informatics. These capacities can include preservice and in-service eHealth literacy programs for health workers and the development of dedicated health informatics personnel as well as national health informatics capacity-building strategies and policies. Our experience with broader health preservice training, health informatics internship programs, national universities, and eHealth innovation hubs supports comprehensive national capacity-building for better health information.

The health informatics tools shown in Figure 1 must be supported by:

- Health workers who are literate in information technologies (e.g., computers, mobile electronic devices)
- Health information technologists
- Information and communications technologies infrastructure
- An eHealth policy and strategy framework
- eHealth stakeholder leadership
- National, regional, and global eHealth partnerships.

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