Digital Communication

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Digital communications is the physical transfer of data (a digital bit stream) over a point-to-point or point-to-multipoint communication channel. Examples of such channels are copper wires, optical fibres, wireless communication channels, and storage media. The data are represented as an electromagnetic signal, such as an electrical voltage, radiowave, microwave, or infrared signal.

Content is the king

- Knowledge is the enemy of disease, the application of what we know will have a bigger impact than any drug or technology likely to be introduced in the next decade.
- In the nineteenth century health was transformed by clear, clean water. In the twenty-first century, health will be transformed by clean clear knowledge.

Sir Muir Gray, Director UK NHS National Knowledge Service & NHS Chief Knowledge Officer
http://www.gurteen.com/gurteen/gurteen.nsf/id/muir-gray
From analogue to digital

- Passive/static
- Active
- Paper-based
- Support education
- Standalone
- Isolated
- Availability focused
- Ownership (my)
- Single format

- Active/dynamic
- Proactive
- Electronic
- Support learning
- Networked
- Connected
- Accessibility focused
- Locator (our)
- Hyper, multimedia
Digital communication: enabler for health

- Information and communication technologies enable users to access, store, transmit, and manipulate information;
- Health is an information-intensive sector that requires extensive data collection, information management and knowledge utilization at all levels and at all times.
- Information is a major resource crucial to the health of individuals, the population in general, and to the success of the organization.
Digital communication: enabler for global health

- Global communications technology today can show us the suffering of human beings a world away. As the world becomes smaller, this technology will make it harder to ignore our neighbors, and harder to ignore the call of conscience to act. Remarks of Mr Bill Gates, co-founder of the Bill and Melinda Gates Foundation, at the World Health Assembly, Fifty-eighth World Health Assembly

- We were fortunate in other ways. This is the first pandemic to occur since the revolution in communications and information technologies. For the first time in history, the international community could watch a pandemic unfold, and chart its evolution, in real time. Dr Margaret Chan, WHO Director General, Address to the Executive Board, January 2010.
eHealth: use of information and communication technology for health

- Health is the cost-effective and secure use of information and communications technologies in support of health and health-related fields, including health-care services, health surveillance, health literature, and health education, knowledge and research. World Health Assembly Resolution on eHealth, (WHA58.28, 2005).
Scope of eHealth applications and services

- Pandemics
- Disasters
- Emergencies
- HIS
- IHR
- e-Surveillance
- e-Care
- Dermatology
- Obstetrics/Gynaecology
- Prevention
- Diagnostics
- Pathology
- Radiology
- Electronic Health Records
- Hospital Information Systems
- Medicines procurement
- CRVS
- Referral Systems
- e-Management
- e-Governance
- e-Leaning
- Journals
- Websites
- Training Course
- Health Professionals
- Nurses
- Doctors
- Patients
- Society
- Research
- World Health Organization
Human communication

- Social media. “Social Media is the democratization of information, transforming people from content readers into publishers. It is the shift from a broadcast mechanism, one-to-many, to a many-to-many model, rooted in conversations between authors, people, and peers”. Brian Solis. Defining social media 2006-2010

- Scientific communication (information exchange) is an integral part of the knowledge cycle: knowable generation, sharing and utilization.
Social media

• The basic premise of social media is that it is user-generated. It is information produced by people for people.

• Concerns include:
  • Making the right choice;
  • Quality of information as it comes from sources that are not being vetted, quality controlled, verified or even referenced;
  • Privacy and confidentiality;
  • Identity (who are you talking to?)
  • Overload (too much information);
  • Hatred, terrorism, racism, etc.
  • Addiction.
Social media

- It has allowed individuals to **directly** share information, ideas, opinions and experience.
- In the health, it has allowed patients to learn about their own health conditions, share lessons learned and seek advice.
- Crowed sourcing. Data collected through the participation of the large community contributed to the reduction of time to detect and respond to outbreaks, better map drug distribution, track crisis and validate stories reported in the media.
Social media choices

- There is 219 social media, apps and services available;
- Number of users range from 300,000 (Voto) users to 1.11 billion users (Facebook);
- 24 sites have 100 million users or more each as ranked here;
- Many users use multiple services for different reasons (social, academic, professional, etc.)
- Multilingualism is supported by many of them;

Social media for the health professionals

- Become part of a professional network (local, national or global) which enables to:
  - Connect with others of the same interest;
  - Discover who is doing what and in what areas;
  - Share ideas and exchange views;
  - Engage and collaborate as much as needed;
- Have fun by just watching;
- The bottom line is that millions of people all over the world are constantly sharing an extremely wide range of fascinating, quirky, funny, irrelevant and important content all at once. Even scientists are no strangers to this trend. Social media has enabled them to communicate their research quickly and efficiently throughout each corner of the world. 77% of life scientists participated in some type of social media. Journal of Translational Medicine http://www.translational-medicine.com/content/9/1/199/
Scientific communication

- **The World Wide Web.** One of many information retrieval systems available via the Internet to communicate (collect, send, receive and publish/share information). Other Internet services include:
  - electronic mail or e-mail,
  - newsgroups,
  - bulletin boards,
  - Telnet (remote login and retrieval of information),
  - FTP (File Transfer Protocol),
  - web-based meetings and teleconferencing,
  - blogging,
  - video and audio broadcasting and
  - browsing.

- Searching "health" on the web retrieved about 2,400,000,000 results (0.26 seconds)
Scientific communication

- Electronic publishing
  - Faster to disseminate information;
  - Encourage instant feedback, real time discussion or electronic conferencing;
  - Allows hypertext links to external sources;
  - Provides full colour, 3D animation, motion picture, multimedia;
  - Provides software applications for data analysis;
  - Multiple access, networked, mobile, portable format, printable, downloadable, etc.
Scientific communication

- Scientific journals. Publishing of the online version on the Internet has revolutionized the production of, and access to, scientific journals, with their contents available online. These can be published by:
  - Professional societies, organizations (members plus subscription);
  - Commercial for profit publishers (subscription based);
  - Open Access, processing fees paid by authors. is digital, online, free of charge, and free of most copyright and licensing restrictions. [Peter Suber. A Very Brief Introduction to Open Access.](http://www.earlham.edu/~peters/fos/brief.htm)
Free access to journals is key to development goals

- The decision by a group of about 90 publishers in July (2012) was intended (through HINARI) to help developing countries move closer to achieving the Millennium Development Goals;
- In 2001 "a major coup for access to information in developing countries, publishers have renewed their commitment to a WHO programme that provides free access to more than 3300 scientific and medical journals". Now the Programme provides access to 11,400 scientific and medical journals (in 30 different languages), to 18,500 e-books and over 70 databases;
- HINARI basic principles:
  - Electronic versions of journals are accessible to institutions in countries;
  - The institution must have an Internet access;
  - A platform for registration and monitoring of the services.

World Health Bulletin: http://www.who.int/bulletin/volumes/84/9/06-040906/en/
WHO and medical literature go digital

• 1963 an assessment of the potential use of modern computer facilities by WHO;
• 1966 the first computer in WHO was installed;
• The first computer use was for biomedical research information services, for processing and analytical studies of health statistics, and other technical fields;
• MEDLINE (Medical Literature Analysis and Retrieval System Online) was established in 1965.

WHO's most active social media tools

- **Facebook** 216,528 likes, 10,384 talking about WHO, 9,329 visited the page
- **YouTube** 821,469 video views
  http://www.youtube.com/who
- **Twitter** 770,770 followers
  http://twitter.com/who
- **WHO Google + Page**
  https://plus.google.com/+who#+who/posts
WHO web presence

- Number of pages: 90,930
- Number of visits: 5,564,080 per month
- Number of page views: 13,888,979 per month
- Number of downloads: 90,445 per month

- Top downloads by subject:
  - Statistics
  - Child Health
  - ICD
  - TB
  - About WHO
  - Patient safety
  - Social Determinants of Health
  - ICF

WHO/HQ publishes around 300 books per annum in addition to the reports, brochures, posters, etc.
All WHO information products are posted on the web and accessed free of charge;
The World Health Bulletin is published in both printed format (5500 copies) and web making in 2012 a total 2,673,823 Visits (average of 7,305 visits per day)
Examples of WHO digital resources

- The WHO Institutional Repository for Information Retrieval provides access from a single location to the complete collection of WHO published materials and technical information produced for over 60 years. Its content is freely accessible and searchable in the Organization’s six official languages;

- The Global Health Observatory theme pages provide data and analyses on global health priorities. Each theme page provides information on global situation and trends highlights, using core indicators, database views, major publications and links to relevant web pages on the theme.

- International Clinical Trials Registry Platform provides a complete view of research and made it accessible to all those involved in health care decision making.
Is it all rosy?

Internet Users in the World
Distribution by World Regions - 2012 Q2

- Asia: 44.8%
- Europe: 21.5%
- North America: 11.4%
- Lat Am / Carrib: 10.4%
- Africa: 7.0%
- Middle East: 3.7%
- Oceania / Australia: 1.0%

Source: Internet World Stats - www.internetworldstats.com/stats.htm
Basis: 2,405,518,376 Internet users on June 30, 2012
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Digital gap leading to knowledge gap

- The increase of information in society is not evenly acquired by every member of society: people with higher socioeconomic status tend to have better ability to acquire information. There is a fear of increasing inequality;
- Lower socio-economic status people, defined partly by educational level, have little or no knowledge about public affairs issues, are disconnected from news events and important new discoveries, and usually aren’t concerned about their lack of knowledge.
Digital gap leading to knowledge gap

- Computer literacy. Lack of necessary competencies and level of expertise of users limit the potential use of digital resources;
- Acceptability of digital health technology. A number of factors contribute to the level of use of digital resources, including technological (ease of use), legal and governance barriers;
- Language, cultural, ethical, legal and political barriers limit the potential of the health information on the Internet. This simply means inability of millions of people to benefit from these digital resources;
My Teenage Son Does Not Know How to Mail A letter. I Blame Technology

The boy has a smartphone, a tablet and a laptop, does some basic coding, is pretty good at CAD and gets excellent grades. [Brian S Hall](http://readwrite.com/2013/05/27/my-teenage-son-does-not-know-how-to-mail-a-letter)
Thank you

Discussion