The Global Health Network

Ronald LaPorte Uni of Pgh
Anthony Villasenor. NASA
Carlos Gamboa. PAHO
Eugene Boostrom. World Bank
Eric Marler
Francois Sauer, AT&T
Shunichi Akazawa, WHO
Caryle Glosser
Ingrid Libman, Uni of Pgh

Abstract

National and Global Health have dramatically improved since the end of WWII. This has been primarily the result of public health actions. Public health is information transfer. The information superhighway can markedly improve public health, but public health and prevention have been neglected. Tele medicine to this point has not included tele-preventive medicine, but it should.

We have outlined a global health network to address this. The global health network consists of 1) connectivity of all people in public health worldwide. 2) tele-monitoring of diseases, the use telecommunication for disease monitoring. 3) establishment of a global health network university. a health network through the internet. 4) connecting health related non-government organizations. 5) establishment of a global health network research server designed to replace biomedical journals. 6) the training of cyberdocs. individuals trained in public health and networking.

As part of our efforts. we have established a global health network home page. helped to get the third largest medical journal (the British Medical Journal) on line. developed Internet based courses and are working towards global connectivity.

It is our belief that there should be a national and global commitment to tele-preventive medicine as the integration of telecommunication systems with public health has the greatest promise for improvement of health of our children. and ourselves.

During the last 100 years, especially since the end of World War II there has been a remarkable change in the health of the United States and the World. In the United States life expectancy has risen from only 40 years of age in the early 1900s to 60 right after WWII to now over 76 years. This change in life expectancy in the US and globally is the greatest seen in human kinds history.

What has caused this improvement? Many attribute the changes to improvements in health care, better medicines, better surgery, better treatment. However this is not the cases. Improved treatment is important, however. it contributed very little to the remarkable increase in life expectancy. The primary reason for the increase in health in the United States has been the result of public health-prevention actions. Life expectancy has improved because we have been very successful in preventing—scourges of man kind. We see very little TB. polio, rheumatic fever, or example. Prevention has been the key to improved health. Integrating prevention with telecommunications can also be the key to the next renaissance of health.

The backbone of preventive medicine and public health is information and data collection concerning diseases in populations. and translation of these data into public health actions to prevent disease The approaches towards information flow. however, are based upon technologies that have developed in the early 1900s. We are now in an information revolution. and it is time that the field of epidemiology comes on to the information superhighway. This is essential for the life of our field, and for health at the local to global level.

During the past year there has been a grass-roots effort by people in and outside of public health to begin to integrate epidemiology and public health with the latest information technologies. Scientists from the health field have begun to look into new technologies that are now common practice in advanced organizations such as NASA. IBM, Digital and AT&T to find answers for health in the 21st Century. There has begun a grass-roots efforts by people from Academia (e.g. University of Pittsburgh, Harvard), federal agencies (NASA. US AID), interna-

tional agencies (PAHO, WHO), financial agencies (World Bank), and industry (IBM, AT&T) to establish the architecture of a modern networking system for health.

From the effort the concept of a global health network was born, and this is outlined in a series of papers as will be reference below. The approach that we are taking will transform health in American and the world.

The concept of the global health network is that the new networking technologies improve information transfer 1000000 fold. We need to harness this technology to improve information and data transfer, in doing this, we can gain much more timely information concerning communicable and non-communicable diseases in population, we can more effectively educate people, and we can produce much more rapid and accurate information to the people trying to prevent disease. The primary technology that form the underpinnings of the system is the Internet. The Internet represents a meta network, a system that linking host computers around the world During the past year much has been written on the Internet, with now over 10,000,000 people world wide having access to the system, and with a growth rate of over 12% per month.

The Internet is very well suited for the establishment of a global health network. It reaches a large number of people, it is spreading rapidly, and it is reaching many of the people in public health world wide.

The global health network consists of 6 primary components.

1. Connectivity of public health people world wide: One cannot telephone unless one has connections to telephone. One cannot join the telecommunication revolution unless one is connected to the Internet. There has been a rapid increase in the number of public health people who are on the net, but still it is a very small proportion in comparison with other fields

2. Telemonitoring of disease: Our monitoring systems for communicable and non-communicable diseases alike are very inaccurate, and very slow in detecting trends in the incidence of disease. For communicable diseases although the coverage across the United States is broad, the incidence data are grossly inaccurate with 10–90% of the cases being missed, and the information technology being used is based on 1980 approaches. For chronic disease we know the incidence of diabetes, coronary heart disease, cancer, etc. in less that 1% of the US We have argued that we should be able to monitor and forecast diseases as well as we monitor the weather if we take on new technologies. Having an Internet backbone to national and global disease monitoring can yield accurate and timely information concerning disease conditions.

3. Global Health Network University: Training is an essential component to public health. It is, however, very expensive to train people, and time consuming. We can reduce this problem by starting a global health university whereby a person from SUNY Buffalo can teach students in Miami, California, or Moscow. Why can't the best teachers teach students remotely? This would not compete with schools of public health, but would enhance them, giving our students in Pittsburgh the opportunity to learn about disaster relief from faculty members in Armenia, for example. Just in the past few years training programs outside of health have sprung up through the Internet We are actively recruiting faculty, and retired faculty in epidemiology and public health to teach on the Internet. Currently there are 55 schools of public health world wide who are interested in 60 faculty

4 Interconnectivity of Health Related non-government organizations: Health related non-government organizations provide a considerable amount of health care, information, and prevention world wide. Groups such as the American Red Cross, the American Diabetes Association and the British Medical Journal need to establish standardized data systems so that information is compatible across health.

5. Development of a Global Health Information Server: Paper journals will die in the next few years. Paper journals are extremely expensive, the information in the journals are 3 years old, there is little interaction concerning the information in the journals, and the paper clutters our offices!!! Recently we have argued that if we listen closely we here the death knoll of biomedical journals. We have sketched the architecture of a new research communication system that has it origins in physics, where research communications are posted to an information server, daily the titles of the new posting are sent world wide, and people request the communications to be sent

to them...eliminating the paper system. We have enhanced the system through discussions with people in NASA and IBM.

6. Cyberdocs

   At the time of a disaster one of the, if not the most critical needs is that of communication In the most recent disaster of Kobe one of the primary means of communication was through the Internet. We propose to train people who are skilled in both public health and telecommunications so that before emergencies they can set up the telecommunications back bone, and during the emergency they can interconnect all "stake" holders in the emergency. We would hope to establish a core of these individual world wide and transport them into emergency situations.

These 6 components form the core of the global health network now. There has been several exciting advances with the global health network. We have worked with the British Medical Journal, which is the third largest medical journal in the world reaching 110.000 They have agreed to make their journal available electronically at the end of this year through the Internet. This coupled with the networking of Africa brought about by Tony Villasenor and others will yield medical literature into Africa which for many countries, they have not received in 10 years.

We have established a global health network home page which includes the plan for the global health network, as well as information sources. We are running a class on the internet now, and have second hypertext course available.

Conclusions

Prevention is the easiest way to save money in health. It is much cheaper than clinical medicine, and more effective. Prevention is for the most part information transfer

The United States government and industry have been pouring considerable amount of resources into Tele-Medicine in order to improve health and to reduce the cost of medicine. There has been a neglect of the most productive arm of medicine, that of tele- preventive medicine. It is now time to consider the application of telecommunication to preventive medicine/public health.