Information Technology, Primary Health Care and Universal Health Coverage

Quality and timely information from routine data is the key to Primary Health Care (PHC), but it has been ignored. Health information is only collected and collated at health centre and passed on to central offices for analysis and use. Epidemiological information derived from this accumulated data is used for national and international reporting and for evaluation and monitoring purposes. Feedback is rarely provided to the primary health care workers, who are the originators of this information. Many aspects of the science of information and the practice of information processing, the engineering of information systems, has remained detached from PHC model.

Health information technology (HIT), "the application of information processing involving both computer hardware and software that deals with the storage, retrieval, sharing, and use of health care information, health data, and knowledge for communication and decision making" is information technology applied to health and Health care. It supports Health Management Information Systems and the secure exchange of health information between consumers, providers, and quality monitors. According to an article published in the International Journal of Medical Informatics, health information sharing between patients and providers helps to improve diagnosis, promotes self-care, and patients also know more information about their health.

In PHC, maternal and child health data and related services, are the most important area of interventions for improving health of the populations. Unfortunately, these services largely follow the medical consultation model, addressing patient's presenting needs only. Health education, supported by local health information, is not the norm. Services are provided to those who travel to health facilities, but to those who fail to visit the heath facility, miss out on these services for various reasons. Reliance on information technology (IT) can bring about the change.

So how can use of IT in Low and Middle Income Countries (LMICs) enhance Primary Health Care (PHC) enabling sustainable Universal Health Coverage?

1. Denominator: Primary ingredient for this proposition is the population register or Age-sex register of the villages served by the primary health centre. Each health centre needs to establish this register for the villages in the catchment area, before effective PHC can be delivered to all in the village. The population register serves as the denominator, the figure representing the total population in terms of which statistical values (indicators) are expressed. It also provides the total numbers of the sub-groups of the population for various services, e.g. Under-fives or women in reproductive age group.

Most primary health centres do possess this from the national census figures, but it requires annual updating to correct it for births, deaths and migrations. Village health committee and the village health worker (VHW) can be entrusted with this responsibility, along with supervision from the local government authorities. Of course IT today will make the task much easier.

2. Data collection and collation: Some form of Health Information Management Systems already exists in all countries. At health centre level, the information officers are basically

acting as data collators rather than information disseminators. They are tasked with collation of predetermined data collected by service providers and pass it on to the next level; which is usually the district health office, who does the same to collate data from all health centres in the district and pass it on to the central bureau of statistics. Finally, at the central level the data is analysed at country level. Information is then used for developing a number of indicators used for comparisons within and outside the country, and for planning purposes.

Appropriate IT can transform this process by capturing data at the point of service delivery. It will release the information officer from the mundane task of data entry from paper to computer. The process also improves the quality of data by reducing errors. The information officer has more time for other things. Once captured, the data can be transferred at the touch of a button to the forwarding authorities. The information officer can work with health education officer to disseminate analysed data to inform staff and communities about the state of health and the way forward to improvements in health.

3. Birth and death data: Vital stats are by law required to be collected throughout the world at source, however it is not always systematic and accurate. The population register is the starting point where event registration updates the age-sex register as described above, providing total births and deaths by location, age and sex. Starting from births and deaths, all forms of service provision can be captured on tablets at the time of service delivery.

4. Maternal and child health services: Several indicators are used in assessing the health of a population from maternal and child health (MCH) services:

- **Child Health:** Data on live and still births[1]; birth weight[2]; perinatal, neonatal, infant mortality add up to form indicators which need to be assessed over time to improve health status of a population. Primary health care services are measured in view of these indicators for improvements.
- **Growth Monitoring:** Monitoring infant growth all the way to five years is mandatory for child's optimal growth and development. Only those mothers seeking help, the child is monitored under PHC. Every child has a right to receive this service. Under nourished children are prone to higher morbidity and mortality, stunting deprives them of optimal growth, even affecting performance later at school. Over one third of all Under-5s are under nourished in many LMICs[3], hence universal growth monitoring becomes even more important. WHO Antho, a free growth monitoring computerised programme is downloadable from WHO website. Many countries are using it, however, it is not used as a PHC tool.
- **Maternal Health:** Family planning services, breast feeding, antenatal care, supervised delivery and postnatal care are key in improving MCH indicators.[4] Some of this data is best extracted from obstetric registers maintained in most health centres and district hospitals. Data is collected but rarely analysed. A simple spread sheet obstetric data can provide useful information to improve the quality of obstetric and newborn care. A remarkable example of this comes from Papua New Guinea.[5]
- **Immunisation** data for both, mother and child, forms important indicators to be monitored. Sheer numbers of children or mothers immunised, may not provide the real picture where assessing proportion of all children, say under two years and all

pregnant women received their immunisation schedule at the right time. IT is there to make it easy.

- **Morbidity data:** Once HMIS is converted from manual to electronic database, this data comes along easily with other data, providing necessary points of interventions for improvements. Add-ons are also easy once HMIS is electronic.

Capturing MCH data electronically, at the time of service provision and analysed at health centre/district level for feed back to health service providers is essential. This allows the assessment of their hard work to take credit for improvements and continue to make concerted efforts where they have failed. Examples of this type of information gathering and feedback can be found in this website under My Public Health > Power of Information, and Collaboration with Government Health Services.

5. Adolescent Health: Unhealthy and sedentary life style, especially with the the background of stunting in early childhood, makes adolescents more vulnerable to later life chronic conditions. Advice and education in schools is essential to prevent chronic diseases. Technology is there and WHO continues to provide another programme to follow up growth monitoring, the WHO Anthro Plus, which can be easily used in school health programmes. (See My Public Health > School Health Education)

6. Healthy Life Style: Adolescent health monitoring just moves on to adults. There is poor understanding of modern life style and non-communicable diseases (NCDs). High levels of obesity, diabetes, hypertension, high cholesterol and other chronic diseases are on the rise everywhere in the world. PHC cannot ignore it as LMICs are in the grip of duel burden. Whilst infectious diseases and common health problems of poor countries are still with us, the rise in NCDs is a new threat. A regular assessment of weight and height (BMI) and relation to what we eat and exercise through "well people clinics" will become an important service in not too distant future. It already exists in urban areas.

Tablets and smart phones are popular and no areas are considered remote for these gadgets. In the Socio-Economic Baseline Study conducted by LHDA in Lesotho Highlands Water Transfer Project in 2013-14 found that only 21.5% of the population in the project area had no phone.[6] Internet access is also improving and becoming reliable all the time. Health care workers are great users of information technology as they already use smart phones and more. Cost of IT is affordable and PHC can no longer avoid using the technology for improvements in health.

Microsoft Access and Excel database, which are on almost all office computers, allow data analysis and information officers should have capabilities to use it or in the absence of it, they can be trained. Soft wares, as described earlier like WHO Anthro and Anthro Plus and EpiInfo for data analysis, are free packages available from WHO and Center for Disease Control and Prevention respectively.

Information technology is ripe and know-how to address many preventive conditions is known to medical science, so let us use them in enhancing Primary Health Care without delay.

References:

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