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Cost centers elimination in Rural Healthcare Delivery through trained volunteers and mobile phones

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Abstract - *Eighty nine years later, still, we know the problems remain, but what is important is that* ***intersectoral co-ordination*** *has been thought of by our forefathers to serve the rural poor. Eighty nine years later in 2100, our great grand children, should not be taking the same set of problems.*

All the problems have a common denominator: Lack of resources. How to generate more resources?

Peter F. Drucker*,in his "Technology, management and society", explains* ***Total Marketing Approach*** *as increasing the profit by decreasing the cost for the customer. In the same book he asserts, cost can not be reduced, without* ***eliminating*** *the activity, which produces the cost. Hospital and Health center visits are the source of rising health costs. If this has to be reduced,* ***hospital visits have to be eliminated. (12)***

The 1990s is described as the ***lost decade*** *because of liberalization policies, indicating that poverty reduction and increase in percapita income did not go hand in hand. It is the rural poor who have been affected the most for which several indicators are available.****(11)***

1.INTRODUCTION

The National Family Health Survey (NFHS) is a large-scale, multi-round survey conducted in a representative sample of households throughout India.**(1)** The NFHS is a collaborative project of the International Institute for Population Sciences(IIPS),Mumbai, India; Provides estimates of important family welfare and health indicators by background characteristics at the national and state levels; and Measures trends in family welfare and health indicators over time at the national and state levels.**NFHS-3 also provides information on several new and emerging issues including:** Perinatal mortality, male involvement in family welfare, adolescent reproductive health, high-risk sexual behavior, family life education, safe injections, tuberculosis, and malaria; Family welfare and health conditions among slum and non-slum dwellers in eight cities (Chennai, Delhi, Hyderabad, Indore, Kolkata, Meerut, Mumbai and Nagpur); and HIV prevalence for adult women and men at the national level, for Uttar Pradesh, and for five high HIV prevalence states, namely, Andhra Pradesh, Karnataka, Maharashtra, Manipur, and Tamil Nadu.

1.1.Finding of NFHS 3 (1,2,3,4)

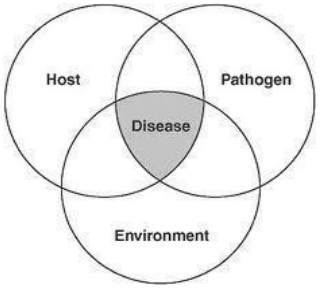
1. **Infant mortality rate.:**This is a sensitive indicator of overall health of people: 57 per 1000, which means one in 18 infants die before they are one year old.
2. **Child Mortality rate: (CMR**) 74 per 1000. This measures the mortality between the ages of 1 to 5 years and 74 means one in 13 child dies. This is equal to the average of all Least Developed Countries, 2.5 times more than China and 10 times more than developed countries.
3. **Immunization programme:** Several illness can be easily prevented through the Universal Immunization Programme and the ideal level should be 100% and optimal level, well over 85%. The current average is only 44%
4. **Pulse polio** takes away 1/3 of the budget for immunization and yet we have a long way to go before eradicating polio
5. India is the **hunger capital of the world** and the method to counteract this Integrated Child Development Scheme (ICDS) reaches only 26%, though this is better in Tamil Nadu. Overall this is double the levels of under nutrition even in sub-saharan Africa.
6. **Under nutrition in adults**: Over half of the women and nearly one fourth of the men are anemic.
7. **Access to health services.** Only 17.3 percent of women have ever received any service from a health care worker. Maternal mortality is around 300 per 100,000 deliveries is a very high number
8. There has been **a resurgence of various communicable diseases** like, tuberculosis, Malaria, chikungunya, Dengue and leptospirosis. India has worlds 1/5 case of Tuberculosis 2 million cases of malaria occur every year and half of them are drug resistant. Six lakh children die of diarrhea and ORS which can save them is available to one third of the urban and one fourth of the rural population. Current estimate of HIV is around 25 to 31 lakhs and the system is not sufficient.
9. **Infrastructure**: Though Tamilnadu fares well, over all there is shortage of over 20000 sub centers and the existing ones do not function.

2.PROBLEMS FACING THE VILLAGERS IN RELATION TO HEALTH IN VELLORE DISTRICT

1. Time bus concept; Distance from the bus stop to home and health care delivery
2. Immunization services problems
3. Antenatal mother problems.
4. Problem is delivery at public health centers
5. Problems in post natal care
6. Care of the elderly
7. Non availability of a trained drug depot holder
8. Anganwadi problems.
9. Problems in Tuberculosis patients
10. Problems in HIV and other sexually transmitted illness

2.1.Why conventional methods of health care delivery are failing? (5,6,7)

Answer can be had if one understands how diseases are caused in the first place. For a plant to develop there should be a seed, mud and someone has to water it.



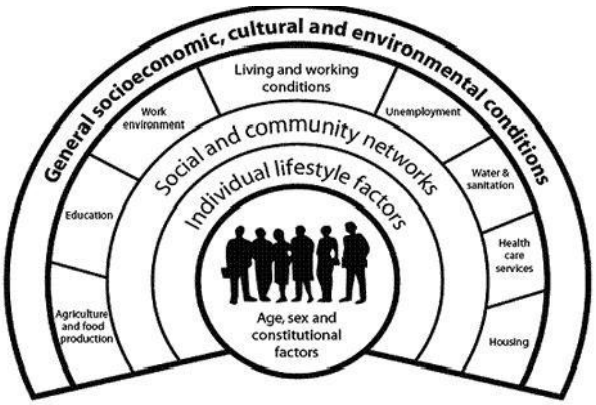
Similarly for a disease to occur there should be a agent, host and environment. Example to develop Tuberculosis not just the bacteria are alone not enough. Overcrowding, unhygienic life style,pollution will contribute to the occurrence of the disease in the individual. If plants are not watered, then the plant will wither away. Similarly if the environmental influences are corrected diseases will fade away. Hospital based treatement concentrates only on the host and the agent leaving the environment factor to control itself. We know environment gets degraded year after year and we can expect more number of diseases to occur. **How to break these circles?**

Innovative disruption is a word coined several years ago is an useful tool **(24)** We have to look for alternatives which are not only cheap, but are affordable. This is exactly what can be said of e revolution in health care.

3.WHY IS THE MEDICAL COST IS SO HIGH..?. (8,9,10)

There is no straightforward answer to this question.

Doctors treat only the host and attack the agent; **they are not doing anything about environment, which can be tackled only through intersect oral coordination.**



(25)

Even if one takes the hospital based health care delivery, the cost is pushed high because of multiple components.

There are several components of health care.

1. Travel to the health center
2. Registration and allied formalities
3. Waiting with at tenders
4. Doctor examination
5. Pharmacy
6. Laboratory
7. Imaging services
8. Non Drug therapy
9. Other treatment modalities including counseling Follow up.

3.1.Travel:

Many times the cost of travel to the hospital costs much more than the actual doctor cost.

Though there are many innovations, still travel cost is high. Some times for the sick to be carried even 4 wheelers have to be hired.

If a child falls sick, to come to a health care center, government or non-government, requires great physical effort. Not all villages are connected by public transport. Even if one is available, it is of fixed frequency. If the mother misses one bus, she has to wait a minimum of three hours. Private vehicles like autos may cost even a day's wages for them. This is for one visit. What if the child requires multiple visits?

3.2.Registration:

As Electronic Medical Records have not been put to proper use, we still follow the paper system and this Filing, storage and retrieval has become labour intensive. It is also not efficient.

3.3.Waiting hall:

Maximum amount of time is wasted because people are forced to wait. As sickness situations are emotionally charged, they cannot focus their minds on anything else and the time is wasted.

4.DOCTOR CONSULTATION Pushes the Cost Upwards….

Why doctors, at many places charge so much….?

COMPONENTS OF A CONSULTATION	RATIONALE
COMPLAINTS	The problem for which child has been brought to-day. Child may have several problems, but parents bring to the hospital for the problem which is distressing to them. Example child may not be eating well, but would have brought to the hospital particularly on that day for diarrhea.
History of present illness	Details of the presenting problem. For example for diarrhea, frequency, fluidity, volume of the motion. Was there fever? Blood/
Past history	In case of diarrhea, history of similar problem in the past would indicate either unfavorable environment or a susceptible body constitution, both of which requires evaluation
history children.	Family history of wheeze, fits diabetes has an important beating in treating **Family** At present if there are any communicable problems in the family,like virus fever is important
Antenatal history	Hypertension, diabetes, low thyroid problems can create havoc in the new born Hypertension, diabetes, low thyroid problems can create havoc in the new born
Birth history	Type of delivery indicates the amount of suffering the child might have had; Usually prolonged labour results in operative deliveries
Neonatal history	Seeds of problems like mental retardation are sown in the neonatal period. Many disorders have their beginning in the neonatal period
Developmental history	Human brain grows only in the first 3 years and if mental delay is not picked up means there is high chance of the child becoming invalid. This is the status of several children
Nutritional history	Food intake is an important component in the development of a child, which has both direct and indirect bearing on health
Immunization history	Important in preventing many communicable illness
Social and economic history	Economic and social circumstances make a child sick
Other relevant issues	1. Separated parents. 2. Transport facilities not available.

A detailed clinical examination involves all these issues and they consume time and doctors claim that they charge fees in proportion to the time they have spent with the patient.

4.1.Pharmacy:

Each Medical consultation ends up in doctor writing a prescription, and it has been shown that drugs are necessary.

4.2.Laboratory

This includes blood tests like blood counts, malaria, typhoid detection and biochemical tests.

4.3.Imaging services:

If sound clinical principles are applied, they may not be required.

4.4.Non Drug therapy

which includes Other treatment modalities including counseling.

4.5.Follow up

and the entire process has to be repeated for the second visit.

Since the health care visits involves so many components the cost of health care is high.

Assessing the medical diagnostic process from the perspective eliminating hospital visit

The above process can be divided into 7 groups.

1. Asking
2. Listening, including stethoscope use.
3. Seeing and
4. Feeling
5. Microscopic examination
6. Blood examinations
7. Imaging modalities

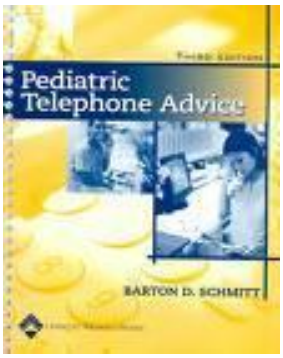
Science has been so advanced and that it is possible to do all these and more from the place of residence,

Existing Solutions Available through Mobile Phones

1. History : This is the first step in a clinical encounter. Here the health care personnel enquires Nature of the problem,
   Its severity
   Duration
   Aggravating factors and reliving factors
   Drugs given
   Response to the drugs

History of similar problems in the family This can be elicited by any one with training.

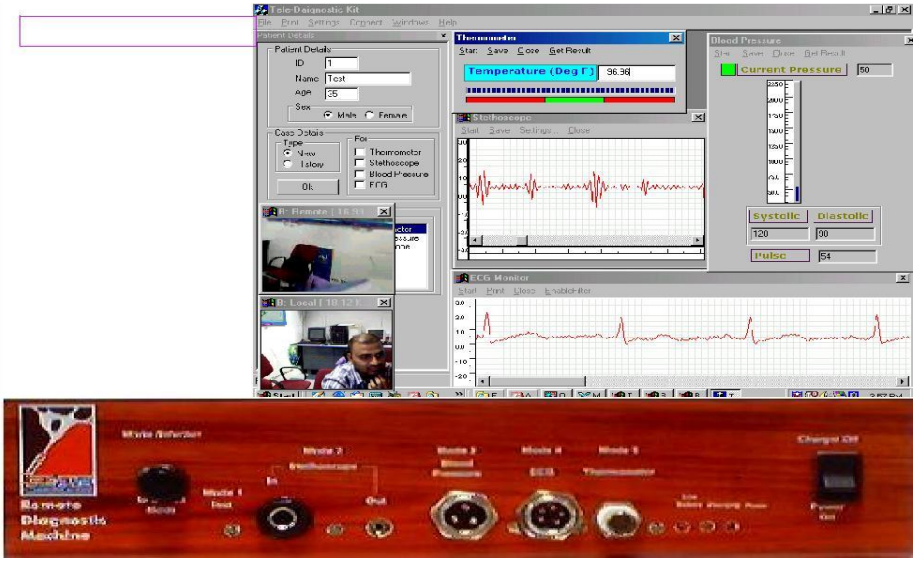
Method adopted by Barton schmiditt.(15)s

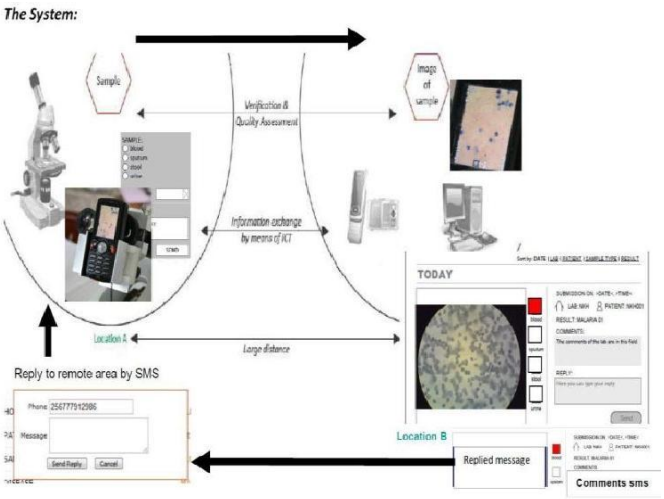


Using Telephone and a registered Nurse Dr. Barton D.Schmiditt gives advice to mothers with sick children. He explains that with scientific proof, all children need to be brought to the hospital. There are several hundreds of children who can be safely managed at home, if proper adivices are given. He also describes when a child has to come to the hospital.

4.6.Physical examination and mobile phone (16,17,18,19,20,21)(22)(23)

This can be done using a web camera. Arvind eye hospital. More advanced version are possible and has been done in Tamil Nadu by Professor. Ashok Junjunwalah at IIT, Madras. This includes stethoscope signals transmission.





Mobile cardiac monitor

4.7.Microscopic examination

A mobile phone with a camera can be attached to a microscope, picture taken and transmitted to any where in the world.

Scan examination: Similarly scanning be done and the pictures can be sent anywhere for second opinion.

The argument that a person has to go physically to a health care center may have been appropriate in the previous centuary, in the present technological revolution not only necessary, but a crime, for time is the greatest resource for the poor **(Alvin Toffler: Powershift)**

We would all be doing great injustice to the rural people if we do not transfer the technological advancements to them. We have a financial reason also to do so. We are getting concessions for gas, petrol and electricity because of government wants to subsidise these to the poor. The poor and rural because of their large numbers contributcte significantly to the growth of the country. Also as C.K.Prahalad has said, it wise to do business with them **(Fortune at the bottom of the pyramid).** From here to take these down stream we have to work on sound principles. That is Principles of Primary health care.

The pillars of Primary health care are

1. Equity
2. Intersectoral co-ordination
3. Community Participation **(5)**

Fortunately Government has implemented in 2005, National Rural Health Mission (13, 14)

5.NRHM MISSION DOCUMENT ON THE PROBLEMS OF HEALTH CARE DELIVERY: STATE OF PUBLIC HEALTH

Public health expenditure in India has declined from 1.3% of GDP in 1990 to 0.9% of GDP in 1999.

Vertical Health and Family Welfare Programmes have limited synergisation at operational levels.

Lack of community ownership of public health programmes impacts levels of efficiency, accountability and effectiveness. Lack of integration of sanitation, hygiene, nutrition and drinking water issues. There are striking regional inequalities. Population Stabilization is still a challenge, especially in States with weak demographic indicators.

Curative services favour the non-poor: for every Re.1 spent on the poorest 20% population, Rs.3 is spent on the richest quintile. Only 10% Indians have some form of health insurance, mostly inadequate Hospitalized Indians spend on an average 58% of their total annual expenditure Over 40% of hospitalized

Indians borrow heavily or sell assets to cover expenses Over 25% of hospitalized **Indians fall below poverty line because of hospital expenses**

5.1.The major pillars of NRHM are

a) Increasing Participation and Ownership by the Community
b) Improved management capacity
c) Flexible financing through untied funds to the panchayaths, Primary health centers and Sub Health centers
d) Innovation in human resource development for the health sector
e) Setting standards and norms with monitoring

How will illiterate villagers, with several problems running in his mind, take part in health care delivery?

What is required for just village health delivery system?

1. Equity: While were doing survey in the villages, people in Arundadiyar colony, told us that we are the first people to start a topic on health
2. Marginalized are also important.
3. Availability
4. Affordability
5. Accessibility
6. For follow up

No hospital can provide such a system. We have to create one: What we did in Vellore district:

To achieve this Government of India decided to conduct a pilot study in community monitoring and Planning under **NRHM.** Launched in 2007 across 9 states in the country. Tamil Nadu was one among them. 5 districts were chosen and Vellore was one among them. In vellore 3 blocks were chosen. In the first phase only 15 villages in a block were chosen. As the study was successful, in 2010 the project was extended to all the panchayaths of the village. NOW WE HAVE OUR NET WORK IN 117 PANCHAYATHS IN 3 BLCOKS OF VELLORE DISTRICT**: Kaniambadi, Kandili and pernambet (CAH= Community Action For Health)**

In India, villages are not a homogenous organization. Each village panchayath has several hamlets, some separated by several hundreds of meters. Then there are colonies based on community. Here the marginalized and underprivileged live under inhumane conditions. Then there are houses in the paddy fields themselves. To meet all their needs we need representation from each of the hamlet. So the government brought out a novel idea called Village Health, water and sanitation committee. This committee will function as a **bridge** between the government and the community. The main job of the committee is

1. Enumerate problems facing the community. Lack of sanitation, lack of water, mosquitoes menace etc.
2. Mobilize village resources to tackle these problems.
3. Take up the issue with appropriate person in the governmental hierarchy. For example health issues to the block medical officer, school problems with the head master, nutrition problems with the ICDS (Integrated Child Development services)
4. Co-ordinate with the government officials for solving the problem. Seeking peoples participation in solving the same.

Each village there are several Self Help Groups of women. Here 10 to 12 women join and form a group. With little savings and load lent by the banks they do enterprising work like handicrafts, preparing pickles, making dolls etc. They form the bulk of the volunteer force..

All these people then form what is called **VHWSC : Village Health Water and Sanitation Committee**.

The president of the committee is the panchayath president and the secretary is Village health Nurse. Health inspector and ICDS worker are default members.

VHWSC training were given: In the training they were described how the health system function; what are functions of Primary health center, Sub-center, Community health center. Duties of health care personnel: Medical Officer, Nurses, Community Health Nurse, Village health Nurse. Patient welfare society, Various Government schemes, Untied funds and their importance. This took about 3 months and slowly improved

Highlights government order with regards VHWSC were explained. 5 Panchayaths are supervised by a trained volunteer called **animator**s. For all the animators there is a **block co-ordinator** to supervise the work. Above the block co-ordinator is the distircit co-ordinator. In Vellore District D.Arul Selvi Community Based Rehabilitation is the nodal NGO and Community Health Cell extension unit at Chennai is the State NGO. Both at State and District level there is guiding Mentoring Committee compromising various segments of the community.

Then the concept of tools were introduced. Tools were based on services which the villages should have received but have not got.

For 3 days the volunteers were given training regarding questions they must ask the various segments of the population

- Immunization services problems
- Antenatal
- mother problems.
- Problem is delivery at public health centers
- Problems in post natal care
- Care of the elderly
- Non availability of a trained drug depot holder
- Anganwadi problems.
- Problems in Tuberculosis patients

Then the villagers themselves with the help of our volunteer did the monitoring.

Now we have one at least two volunteers from each panchayath, who are very much willing to act as health volunteers Indian Medial Association, “Aao gaon Chalen project”: The Goal of the project is to bring about holistic improvement in the village health scenario using existing infrastructure and promoting inter-sectoral coordination & networking through active involvement of IMA, Public Sector health delivery system and others. Vellore branch has more than 300 doctors as members. They have chosen Thuthikadu Village, nearly 20 kilometers from vellore, which also includes a tribal population of Thellai, for this project. The members have decided to visit this village

every month to attend to their needs. Rest of the days in the month, doctors can be contacted through the volunteer stationed in the village. For example Hib vaccine is not given by the government (Brain fever vaccine). This was a felt need and we did immunization for more than 120 children. This month we will be doing a camp for the senior citizens. Several tribal people have not got their certificate and we will be using our good will in the society to fill up the same.

Health cannot be achieved through doctors and their para-medical team. Health is determined by several factors which in turn requires supporting people from every walk of life. Unless health becomes a felt need, unless people take ownership on health schemes, it is difficult to achieve reasonable health for all. People should see health from which wealth can be generated, and not to treat it as an debit account. This is not impossible. We have the technology. We have volunteers to do the work at the grass root level. What we require are sustaining programmes for these volunteers to continue their work. If they don't get sufficient support, they may decide to migrate to the towns or other profession. One solution is converting them from Village Volunteer to a Village entrepreneur, by accumulating the needs of the people like health and education and use these volunteers as channels to deliver services to the poor. As many of the participants of this conference will have contacts for such a change, I am presenting this paper for exploring the opportunities for these volunteers, who have the potential to change the life of the villagers. In short we need programmes like community for action and " Aao Gaon Chalen" (Come, let us go the villages)

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