Principles Of Rationalization Of Data Collection &The Process Of Crafting And Validating Indicators

National Health Systems Resource Centre

Situation analysis of RCH- HMIS in January 2008:

Brief summary of Problems:

I. Data related

1. **Very high number of data elements:** In most states ANMs report somewhere between 500 to 1500 data elements monthly. High workload is acknowledged by all.
2. **Indicator to data mismatch:** Indicators without data and data without indicators:
3. **high % of blank or zero values:** Even where formats are coming regularly lot of it is zeros: It could mean not possible to report, not reported or nil value.
4. **Duplications and Gaps –** systemic ambiguities: RIMS-IDSP-DC-HMIS-forms; within forms also;
5. **Lack of uniformity & standards in naming conventions**

High proportion of "0/blank" values(2008)

	Kerala		Jharkhand		Gujarat
Data Elements	1116 +551	1667	165+458	623	1128
Reporting Units captured	482+84	566	2232+102	2334	25
Data values per month	5,257,764		414,996		28200
Data value for 9 months	10,758,240		3,734,964		253,800
Data value reported 9 months	654131		1,494,502		169,392
Data value > zero	310100		735914		86,381
% of entered value with zero	53.61		50.86		50.99
% of Data Filled in	12.44		40.01		66.74
% of data with Non-Zero Values	**5.9**		**19.70**		**34.04**

Duplications and gaps - Systemic design ambiguities

- **Data duplication - a minefield**
  - Field workers report data both on services they provide AND institutional services
- **Fragmentation by programs**
  - parallel collection system for programs
    - RIMS and IDSP repeat same data as form 6
    - RIMS and HMIS report in same form
- **Gaps in data reports**
  - e.g. BEOC, Quality of Care, HIV, Laboratories

Central issue :Little Use of information- and its relationship to design

- Used for reporting to “above” not for programme improvement at each level.
- Information not available in form where its use/meaning is self evident; not in the form of indicators. There is no provision for even calculation of indicators
- Implicitly the system was that data would be collected and sent up and a team of statisticians and demographers would interpret the data- and tell people the meaning of their data. This placed them in a privileged position- they give meaning to numbers and were able to pronounce on programme success and failure. Not very useful for decentralized planning.

Local versus Centralized analysis

- There are no provisions or capacity for analysis and display at point of data entry. The service provider sending the data cannot read its meaning. Its meaning has to be told him.
- Statistical methods prefer trend analysis as extracting meaning from data- but in HMIS context these provide meaning only over large volumes and long periods of time. These are good for policy action
- Indicators are capable of being used at local levels and even a single variation could have meaning for taking local action. They are good for management action.
- Differing denominators would make wide difference in meaning of data elements.

Undue burden on field staff

- Excessive forms and data
- Multiple primary registers (app 20)
- Multiplicity and redundancy – same data in different forms
- ANM expected to report on items for which not equipped
  - eg Diphtheria, Child TB,

What takes a backseat is

- quality of data
- use of HMIS for local action –should be the “raison d’etre” of a HMIS

Weak support for supervision and feedback

- Currently, HMIS primarily used :
  - for reporting up NOT analysis and local use;
  - as a form of control and reprimand
- **Not** used for
  - planning and local action
  - cross checking data of other sources
  - strengthening supervision processes
  - improving quality of care

Overall principles of design..

I. HMIS should be a tool for decentralised planning and action. Should empower local communities and districts to make and implement health plans better.
II. This HMIS should be " local action-led," not "data-reporting- driven"
III. Action led means
    I. careful choice and definition of indicators for each level
    II. emphasis on processes around their analysis, interpretation and action
IV. Focus to shift from FORMATS and DATA ELEMENTS to INDICATORS and their use for action
V. Each data element collected should contribute to at least ONE indicator, preferably MORE

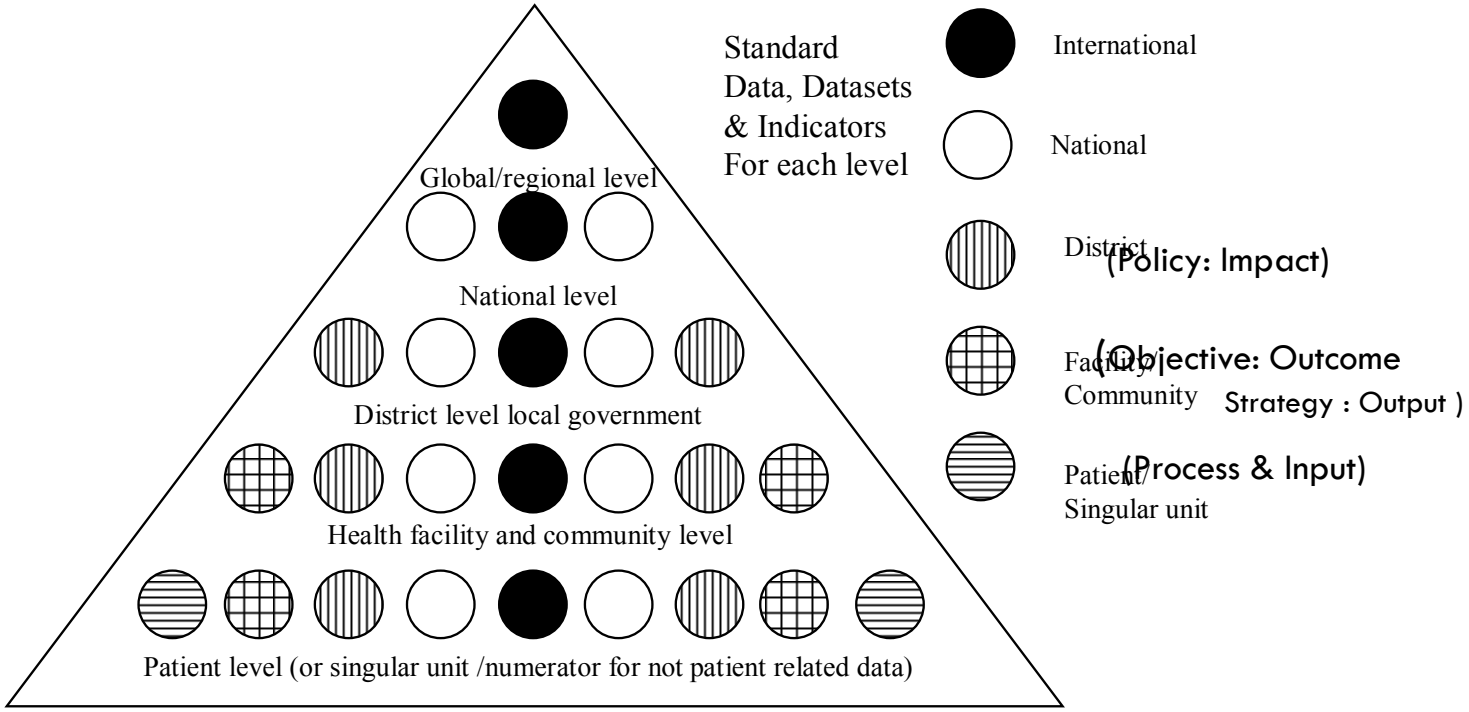
A concrete mechanism to reduce field staff workload

Putting in place HMIS policy

Establishing agreed standards relating to:

- Data
  - Flow and reporting integration
  - creating data dictionary
  - uniformity of formats, periodicities
  - mechanisms for approval of new formats, data etc – M&E division Information Clearing House
  - data authentication, access etc
- Software
  - Use of Free Software
  - Use of open standards to enable integration.
- Hardware: Level of computerization
- Capacity Building Processes & their institutionalization.

Step 1: Formulation of a hierarchy of indicators



Defining indicators at each level

- **Defining set of:**
  - National indicators:
  - State/district indicators:
  - Community plus facility development

Step 2 : Define guiding principles for choice of Data elements.

- **Principle 1** : Data elements will only be reported from the facility where the service will be provided

Eg. Institutional delivery reported only from institutions. Or IUD insertions reported only by facility providing the service. Condom distribution reported only of what sub-center/facility distributed.

Exception: Births and death information(registration) is a service that the ANM provides.

- **Principle 2**: Data will only be entered in one form; and one data element only once in a facility.

Principles of data element choice

- **Principle 3**: No data will be collected which does not contribute to at least one indicator: not contributing to an indicator implies a lack of use for a programme – except in disease surveillance. (*many countries have a data policy that specifies an average ratio should be 1 data element to 1.5 indicators, we have tried for about 1:1 ratio*)

- **Principle 4**: Disaggregated data is best captured through surveys, not routine data : Especially where such data is not part of service provision: e.g. SC/ST data and M/F in some situations. It is almost impossible where aggregation is manual. Even where it is coming it is backward estimation. It is often not put to use example: Male/ female adds 75 data elements for immunization, yet sex difference in immunization coverage not reflected in plans, eg PIPs.

Step 3: Match indicators to data elements

- **Defining set of:**
  - national indicators: 15 (list 1)
  - state/district indicators: 113 (list 2)
  - community plus facility development : 87 (list 3+ list 4)
- **Checking to see what implication it has for data elements needed** - is it possible to collect in conformity with principles established, (or does it require too many data elements to make a numerator or such problem). Those not possible could be sourced from surveys. Other indicators may be dropped.
- **Checking back :With available data elements more indicators:**
- **Check all programme division needs are met.**
- **Decide which data element is sourced from which facility (list 5)**

Step 4: Use multiple data sources

Routine … HMIS	Sentinel Sites	Local Surveys	National Surveys
Core Indicators	In-depth data for Programs	Annual Record Reviews	“Gold” Standard
Infrastructure /Logistics	Action Research	Epidemiological analysis	Population data
Activities	Community Surveys	Quality of care Audits	Impact of NHRM
Human resources / Finance	Hospital & Laboratory	Age, Gender, Social Groups etc ...	Policy Implications

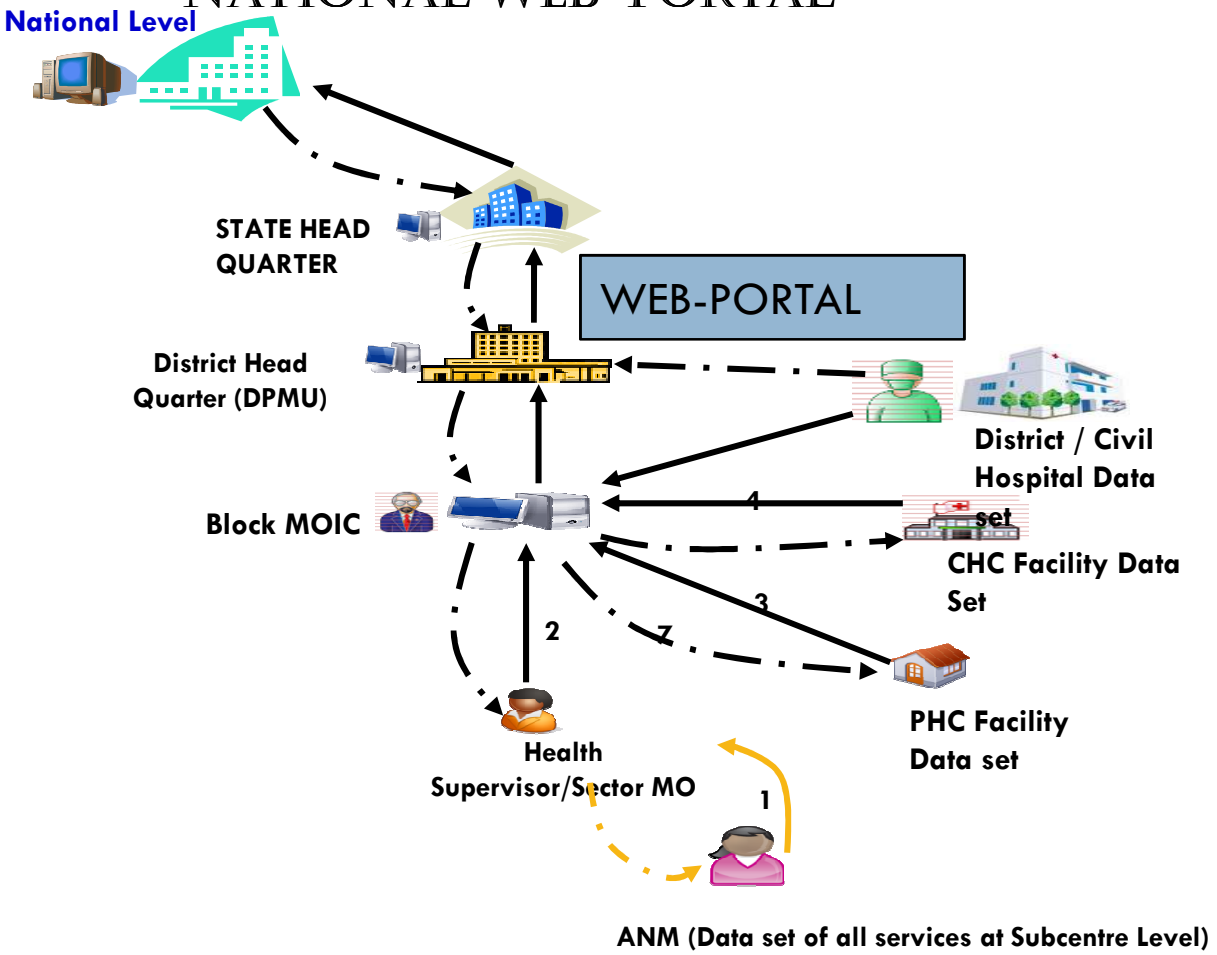
Step 5: Bundle Data elements into data sets- according to data sources:

- **Creation of 6 data sets & then appropriate data collection form.**
  1. SubCentre (routine services – 57 data elements plus line listing) List 6
  2. PHC (routine services – 131 data elements plus line listing) (list 7)
  3. CHC (list 8)(routine services – 140 data elements plus line listing)
  4. Facility development Form (54 data elements)
  5. Community development form (19 data elements)
  6. Programme management data(data on stocks, data on manpower, data on training, data on finances, data on management decisions):

  Note:

  1. **all data formats need extensive field tests:**
  2. **Al data collection forms need to be sourced from appropriate Primary Data Registers.**

STEP 6: DEFINING INFORMATION FLOW AND THE ROLE OF THE NATIONAL WEB-PORTAL



STEP 7: Create reporting formats and feedback forms:

Reporting Formats:

- From peripheral/outreach worker to health facilities
- From health facility to district center
- From district to province.
- From province to state

Feedback Formats:

- From health facility to outreach worker
- From district center to health facility
- From province to district.
- From state to province

Step 8: Creation of the software support: User requirements

- Should be flexible: easy to change: to add or delete elements, indicators, reporting facilities, districts addition.. etc
- Should support multiple language versions.
- Should be able to generate the aggregate reporting forms and the feedback forms for all levels.
- Should be able to display indicators in a ready to use format – at all intermediate levels also.
- Should be possible to fill on line or offline, to update and to lock updating.
- Should have a number of validation rules and cross- verification processes built in

CRAFTING AND VALIDATING INDICATORS

What are indicators ?

- Indicators are **succinct measures** that aim to **describe as much about** a system as possible in as few points as possible.
- Indicators help us **understand a** system**, compare it and improve it.**

The key roles of Indicators

- Indicators, like many other forms of measurement, can be used in three broad ways:
- for **understanding: to know how a** system works and how it might be improved (research role)
- for **performance monitoring: if and** how a system is performing to an agreed standard (performance/ managerial/improvement role)
- for **accountability: allowing us to** hold ourselves up to patients, the government and taxpayers and be openly scrutinized as individuals, teams and organizations (accountability/democratic role).

To know before using indicators

- Indicators only indicate - an indicator must be understood in **context.**
- Indicators encourage **explicitness.**
- Indicators should not just be associated with fault-finding.

Balance scorecard approach of indicators

Try to watch a football match through a very small gap in a fence. It will only give a limited picture of the whole game

Any indicator will give only a **very specific** and **limited perspective** of a wider situation. Different indicators (like different gaps in the fence), give different but complementary 'slices' of the whole situation. They need to be added together to get a picture of the entire picture and an understanding of the whole programme.

Indicators should be used in sets each measuring an important but different aspect the system

One of the most common mistakes in analysing variation (e.g. by using

indicators), is the failure to appreciate that common cause and special cause variation are fundamentally different.

- Measurement with any system will reveal some sort of "variation'. It is us to decide in which category that variation falls:
- the normal, everyday, *inevitable (and* usually unimportant), variation which is intrinsic and natural to any system – **'common cause variation'**
- **Special cause variation -** indicative of something special happening and which calls for a fuller understanding and often action

Differentiate between significant change or a usual/random variation- not requiring any response or action..

Criteria for selecting indicators :

- **Useful** – must be able to act as "marker of progress" either as direct or indirect proxy towards specified goals
- **Scientifically robust :**
- **Representative** - must adequately encompass all the issues or population groups it is expected to cover.
- **Disaggregation Level**_ By gender, social and economic status, location etc.
- **Understandable** - simple to define and its value must be easy to interpret.
- **Accessible/Feasible** – data required are already available or relatively easy to acquire by feasible methods that have been validated in the field trials
- **Ethical** - indicator requires data which are ethical to collect, process and present in terms of the rights of the individual to confidentiality, freedom of choice in supplying data, and informed consent regarding the nature and implications of the data required.

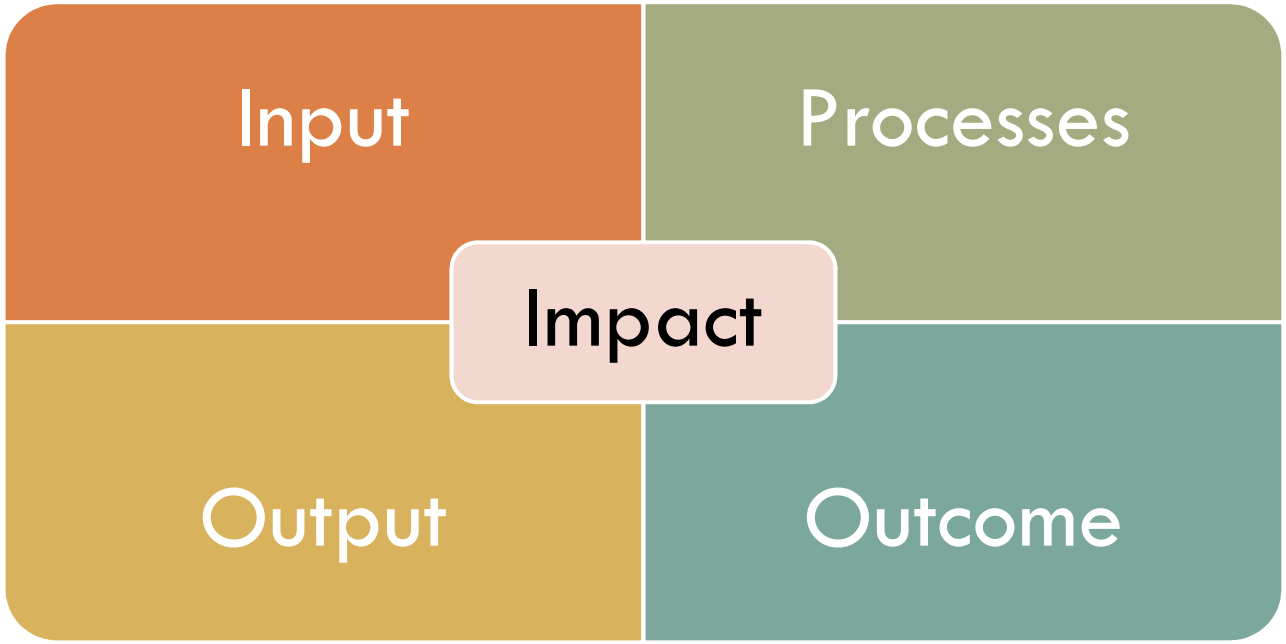
Scientifically Robust

- Refers to the following:
  - **Valid –** should be able to actually measure the issue or factor it is supposed to measure.
  - **Precise-** accuracy in measurement
  - **Specific** - should be able to reflect the changes in the issue or factor under consideration- less false positives
  - **Sensitive** - reveal important changes in the factor of interest- less false negatives
  - **Repeatable/reproducible** - give same value if when measured by different observers, or even by same observer repeating the measurement.

Steps in selection process of an indicator:

1. Identification of existing lists of proposed indicators
2. Defining the hierarchy of the indicator- who needs it – and for what use – at what level- national and state for policy, district and block for planning and management.
3. Defining the indicator in terms of the logic model- inputs – process- outputs- outcomes impact
4. Evaluation of each indicator using objective criteria – on each of the dimensions mentioned earlier.
5. Field testing the indicators.
6. Identification of the '**strong'** indicators – performing more adequately when subjected to scrutiny using the criteria.
7. identification of gaps in the coverage of the strong indicators , identification of the least problematic of the '**weak'** indicators proposed for the programme areas – where strong indicators fails to provide a full picture .
8. Review of short list by expert panel and generation of final selection- Negotiation but based on evidence and criteria. Programmes Managers, M& E managers and health informatics experts.

5 essential components of Logic Model



Indicators are part of an implementation plan

- Indicators are essential part of a planning process- the description of goals- outcomes, outputs- processes- inputs-
- Inputs(or resources)are used in processes (or activities) which produce immediate intermediate results (outputs), ultimately leading to achievement of programme objectives (outcomes) and impacts (goals at societal level).
- Each of these can be tracked by appropriate indicators.

Indicators are part of a monitoring plan

- For each indicator specify Data elements
- For each data element specify
  - Source of data
  - Frequency/periodicity of data collection.
  - Who collects the data
  - What is the flow of data
  - Who verifies the data- where relevant.
  - Where is it aggregated

Activity 1 : SBA training and Quality of Institutional/SBA conducted delivery.

- From existing HMIS. Assess the data elements and indicators in use. Which are strong and which are weak? What could be added, and what could be deleted.

Activity- 2- JSY

- From existing forms. Which are the indicators and data elements in use. What are their properties. Which are weak and which are strong? Many other indicators have been proposed for JSY and were rejected. Any that we would wish to reconsider. What would be the justification for re-consideration.

Activity 3:General Facility Services:

- There is a whole section of the form related to OPD, IPD, deaths, laboratory services etc which never gets analyzed? Is trend analysis of data elements the only way forward? What indicators could help? What would be their strength and weakness? What about deaths?

Activity 4

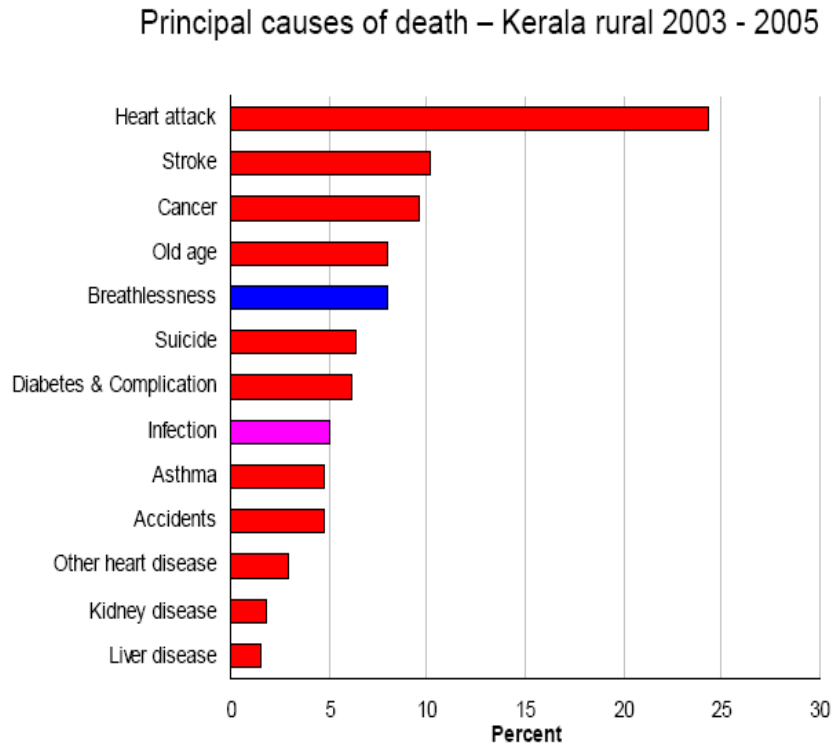
ASHA programme- Examine the list of suggested indicators below: how to choose ?

Indicators:

- Number of ASHAs selected by due process;
- % of institutional deliveries,
- Number of ASHAs trained,
- % of newborn who were weighed and families counseled;
- Child malnutrition rates
- % of ASHAs attending review meetings after one year;
- % of deliveries with skilled assistance;
- % of JSY claims made to ASHA,
- % of fever cases who received chloroquine within first week in malaria Endemic area;
- IMR
- % completely immunized in 12-23 months age group

Activity 5 : Non-communicable disease program

Problem statement- Non communicable diseases are the major causes of morbidity and mortality. A survey was conducted to gauge the magnitude of burden of NCDs in seven States of India including Kerala. The following graph presents the principal causes of death for Kerala.



Craft indicators to assess the NCD programme:

Objectives of the programme are given below:

- To reduce mortality due to diabetes, hypertension and acute cardiovascular/ cerebro-vascular diseases, breathlessness and asthma.
- To reduce hospitalisation/ incidence of myocardial infarction, stroke and diabetic emergencies.
- To reduce out of pocket expenditure- on account of HT, diabetes or its complications.

Strategies of the program are as follows:

- Early detection of diabetes and hypertension in people > 30 years.
- Primary care management/ secondary prevention: maintain adequate control in hypertension & diabetes and reduce eliminate complications & OOPs at this stage.
- Behaviour modification to ensure primary prevention of diabetes and hypertension.
- Early detection, social protection and adequate management of common complications of these diseases

Activity 6

- EMRI- referral transport systems- as reported by EMRI and as seen in an emergency ward.