Summer Training Report

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IIHMR UNIVERSITY

Part I

Literature review

A Review of India's Disease Surveillance Program for Management of Infectious Disease Outbreaks

Rationale

The purpose behind conducting this review is to identify the reasons for recurring outbreaks of infectious diseases in the recent years in India and steps that can be taken for better management of infectious disease outbreaks.

Objectives

- To Identify the gaps in Integrated Disease Surveillance Program through review of literature; and
- To review the strategies for improving disease surveillance for better management of Infectious disease outbreaks.

Introduction

- Recent bouts of epidemics like SARS(2003), Avian Influenza(2005), H1N1 Pandemic(2009), Ebola Viral Disease(2014) and COVID-19(2019).
- Bioterrorism incidents cause equal human suffering if not more.
- Detection system for both intentional and natural infectious disease outbreaks have similar features i.e.
  - relies on multiple data sources like clinical health services, laboratory diagnosis, sale of drugs, emergency medical services, cause of death and school absenteeism data.
  - requires timely reporting of data via secure channels, routine analysis of data, high sensitivity and specificity and rapid response

Integrated Disease Surveillance Program

- Introduced in November 2004 with the assistance of World Bank
- Objectives:
  - Strengthening of public health laboratories
  - Human resource development
  - Using technology for collection, compilation, analysis and dissemination of data related to listed communicable and non-communicable diseases

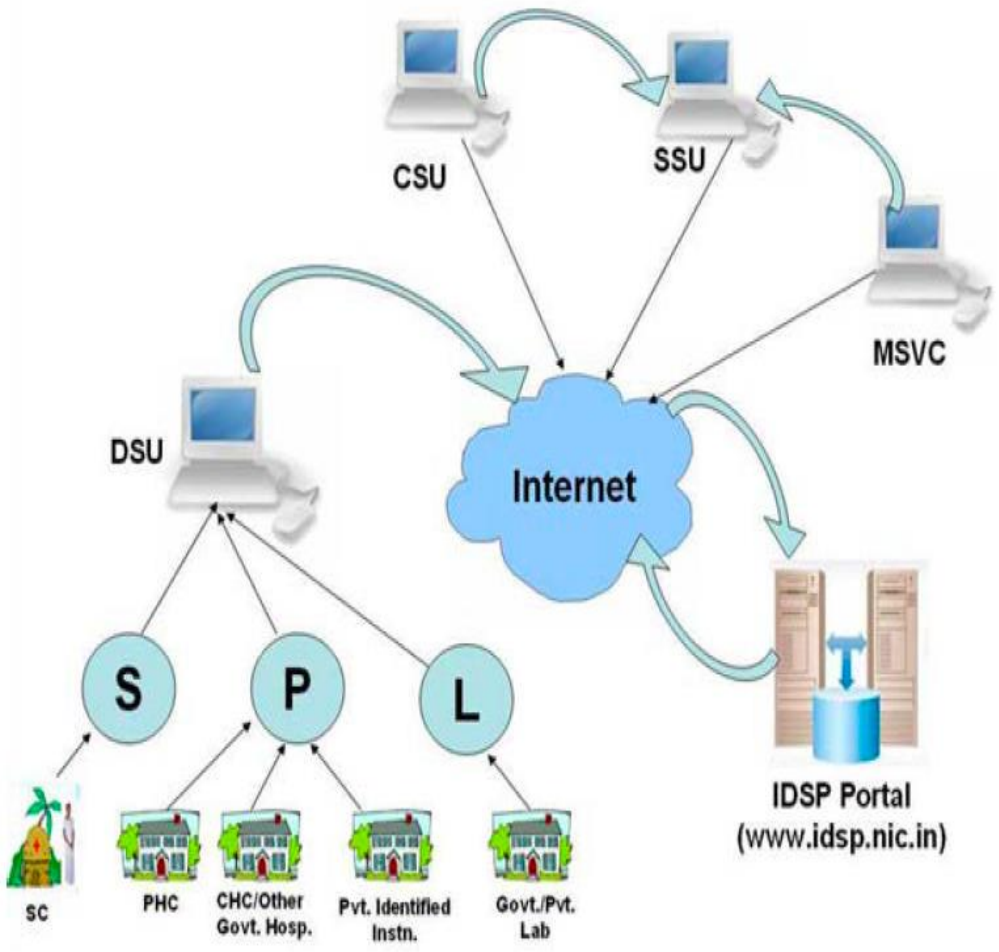

Figure: Organizational structure of Integrated Disease Surveillance System

Methodology

- Sources:
  - Research Gate, PubMed, Google Scholar, Science Direct and PubMed
  - Official website of IDSP (www.idsp.nic.in)

- Inclusion criteria:
  - English language
  - Articles published on IDSP from Year 2004 to 2020

- The aforementioned period was chosen in order to study disease surveillance since the inception of IDSP and understanding the advancements taking place around the world during this period.

Gaps in IDSP

- Inadequate training of staff
- Weak data management and lack of analytical skills
- Late reporting and incomplete reporting
- Lack of nil reporting
- Prioritizing case management over next level reporting
- Lack of feedback system
- Use of paper based methods of data collection
- Incomplete coverage of private health sector under IDSP
- Lack of functional equipment at facilities and laboratories
- Pharmaceutical sales data not reported
- Internet connectivity issues

Proposed Strategies to Reduce Gaps in Disease Surveillance System

- Training of staff
- Use of cellphones in case of internet connectivity issues
- Guidelines for data management
- Proper feedback system
- Stringent implementation of mandatory disease reporting act for all PMPs
- Adequate functional equipment at facilities and laboratories with proper maintenance
- Internet connectivity at facility level
- Ensure compilation and reporting of drug sales data by the pharmacists at district level
- Syndromic surveillance for early detection of disease outbreaks in places which lack well equipped laboratories
- Emergency medical services data can be used for disease surveillance

Discussion

- GROAN - connects public health professionals around the world electronically to share information on infectious disease spread and its containment.
- Health Metrics Network (HMN) launched in 58th session of World Health Assembly in 2005 - global partnership for better health information and includes development of new methodologies, instruments and standards for data collection, analysis, reporting and dissemination.
- Sierra Leone - development of enhanced surveillance system in which technology played a crucial role in containment of EVD.

Discussion contd…

- Taiwan's strategy to fight COVID 19 – use of NHI database linked to health facility data.
- Machine learning - models based on laboratory surveillance, syndromic surveillance, event-based surveillance and emergency visits in hospitals and sales of pharmaceuticals data for investigation of potential outbreaks.
- SEED in India- dengue outbreak in Andhra Pradesh (2010).
- HIT used in Pune (Maharashtra) in 2009 during H1N1 outbreak.
- Technology and improved laboratory support - improved disease surveillance in Kashmir under IDSP

Conclusion

- Integrated Disease Surveillance Program has successfully helped the authorities to identify and manage several outbreaks.
- But the changes brought about in the program for improvement have not been uniformly incorporated nationwide and many gaps exist in implementation of IDSP.
- There is a need to fill the existing gaps and integrate new technologies for a more efficient disease surveillance system.

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Part II

Using Clinical Data For Better Healthcare

Course Objectives

- To know about various digital health technologies, their benefits, their impact on healthcare.
- To understand changing healthcare environment and associated challenges.
- To know about health data: uses, various stakeholders, benefits, data quality, data governance and its challenges
- To describe data analytics: classification, processes, tools, uses and benefits and sources of health data.
- To discuss importance of meaningful data, data literacy, data linkage and data sharing.

Course Contents

Module 1

- 5 ways digital data is changing healthcare
- How data is changing healthcare
- Data driven care: turning data from a personal health journey into actionable information
- Data driven care – infographic
- Do healthcare professionals really need to know data analytics?
- Vision for digital health and data analytics
- The potential of health data to drive healthcare transformations: Digital health CRC

Module 2

- An introduction to health data classification
- Overview of data lifecycle
- Quality health data: what is it and why is it important?
- The impact of poor data quality
- Data governance and privileges
- Terminology and key statistical concepts for interpreting data

Course contents contd…

Module 3

- Overview of analytics impacting healthcare
- Key steps in analysis of health data
- Data tools
- Make sense of a data report
- Everyday data queries common to decision making in healthcare
- Carry out simple health data analysis
- Top tips for analytics journey

Module 4

- Best practice for communicating health data.
- Use of data visualizations for collaborative
- decision making
- Collaborating around data for healthcare
- improvement
- Data visualization- making data meaningful
- Sharing data for research purposes
- Case example of sharing health data
- Case study: Real time data use-Pascal Metrics Project, NSW Health

Learning Methodology

Videos

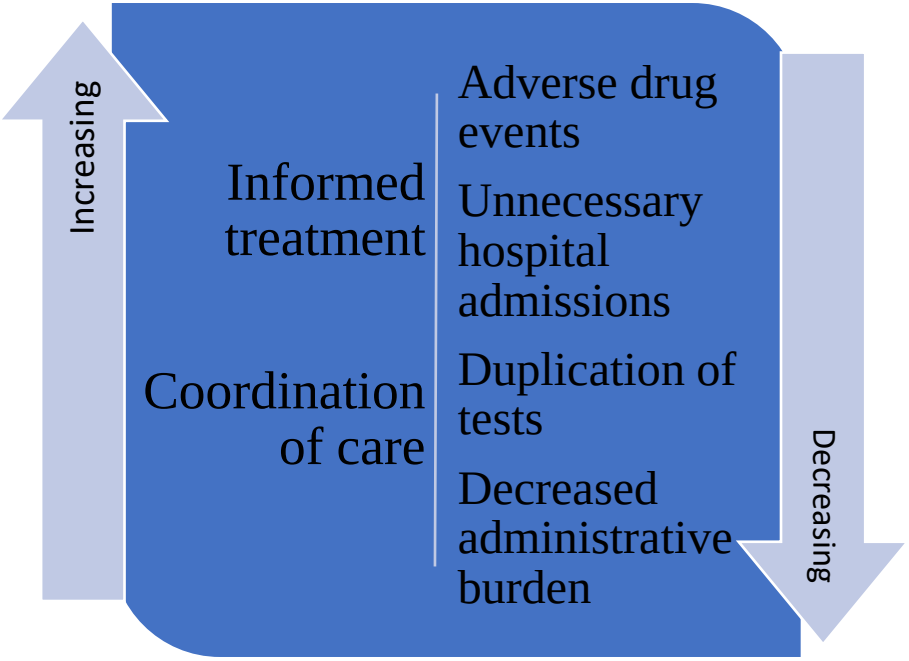
- Presentations
- Interviews

Reading

Key Learnings from the Course

How digital data is changing healthcare

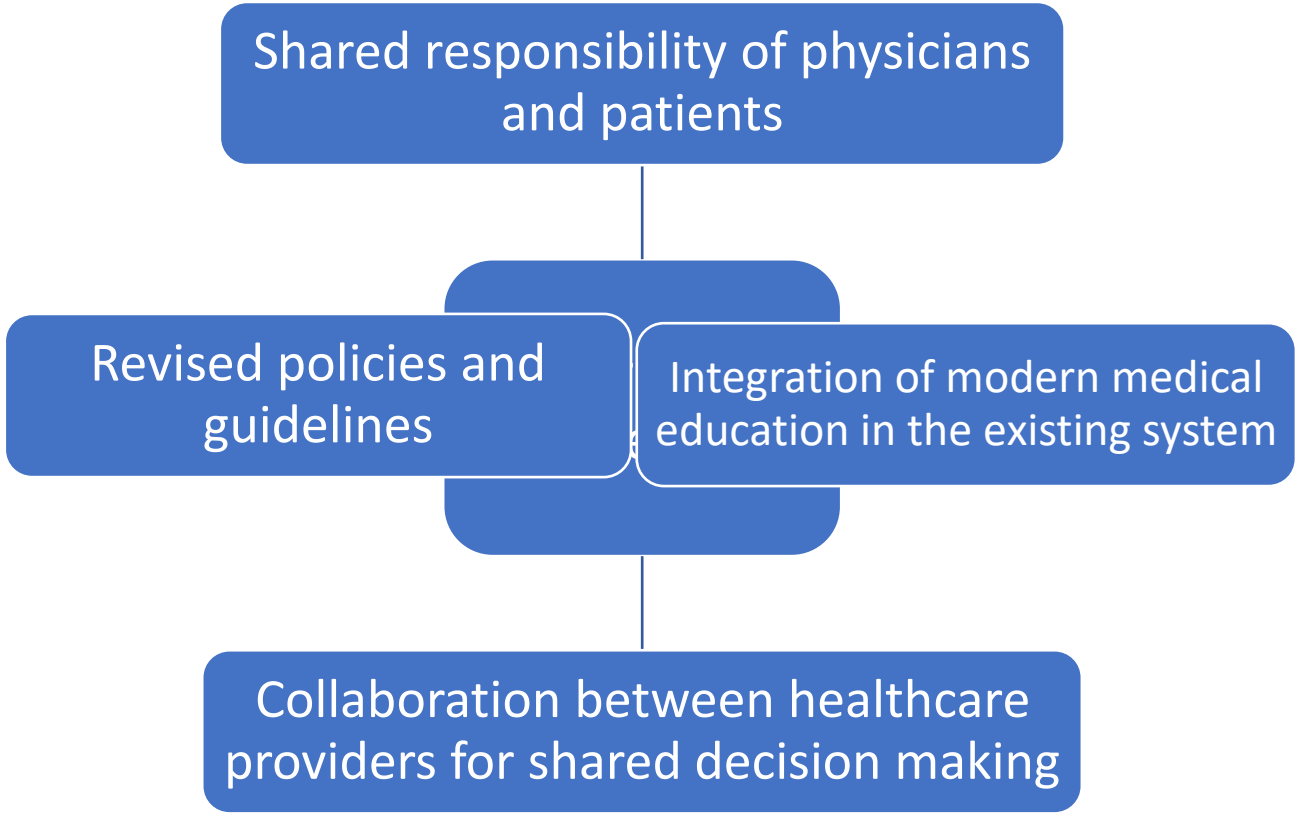
- Benefits of digital health data
- Telehealth services
- Active role of patients in healthcare
- Changing workforce requirements



Challenges of digital healthcare system

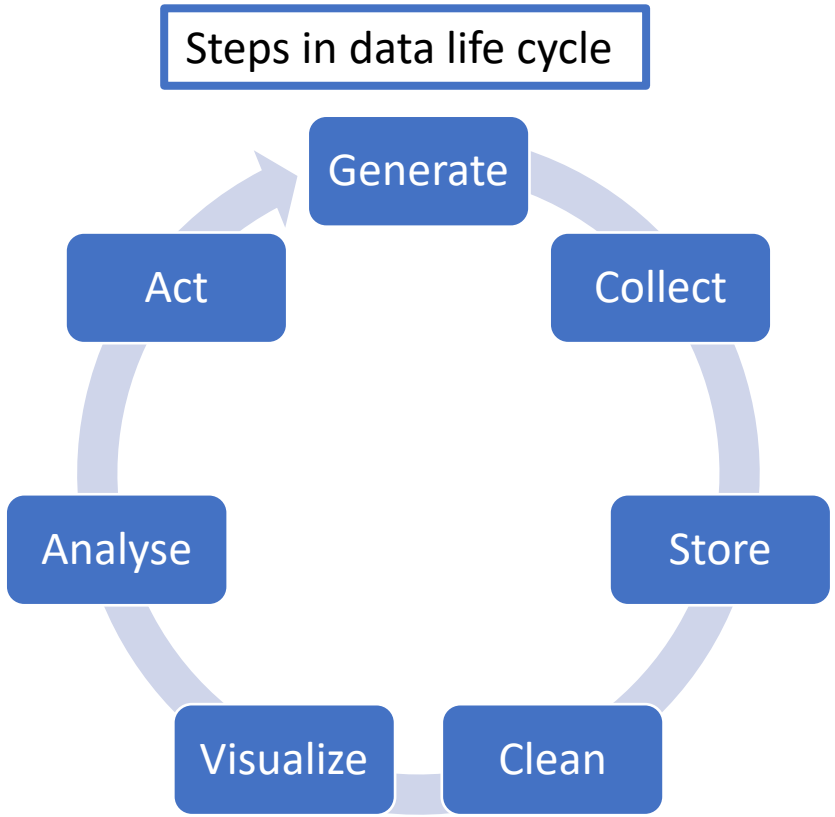
- Unregulated information that can lead to wrong decisions and endanger lives of patients(online medical quackery)
- Unauthorized third parties that might acquire sensitive information about patients' health
- Reluctance of physicians to go through change
- Requirement of health and technical literacy.

Current requirements to fill the gaps in proper functioning of digital healthcare

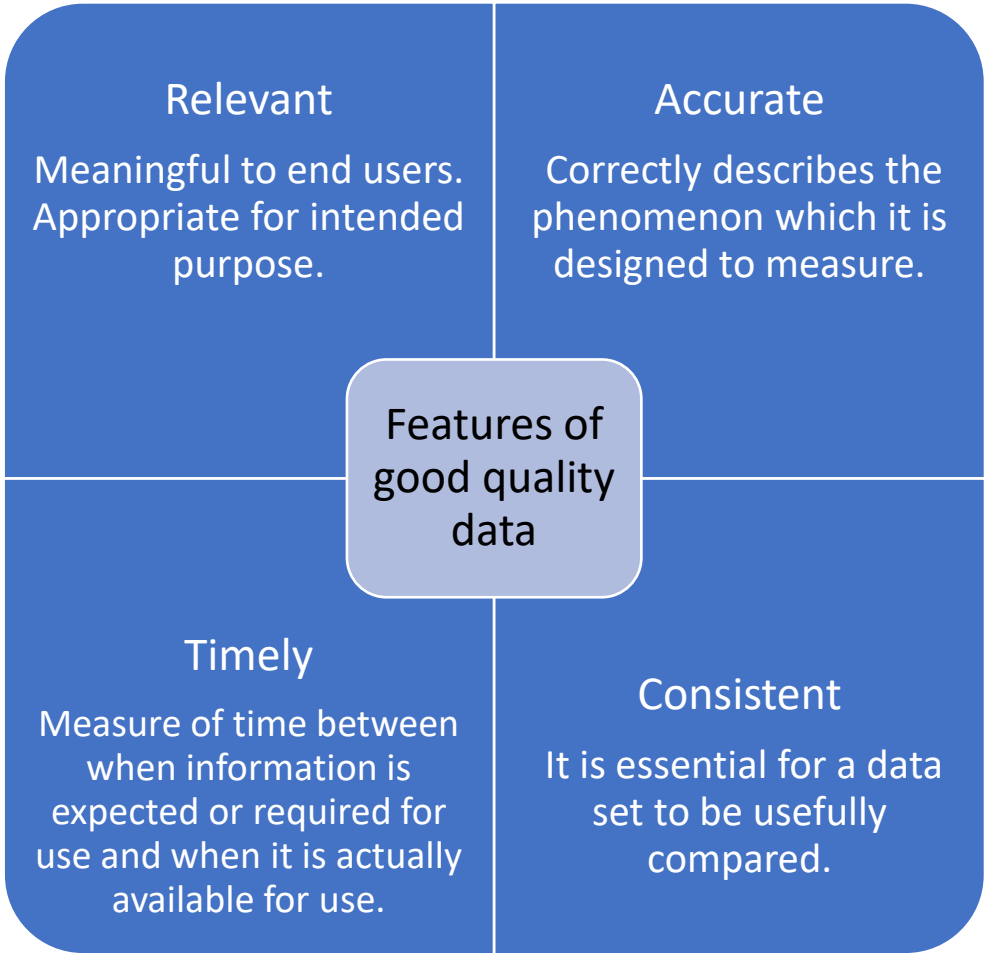


Health Data

- Defined as “information relating to health conditions and wellness for an individual or a population.”
- Includes clinical metrics, environmental, socioeconomic, and behavioural information. May be in form of text, graphics etc.



Quality of health data is important



Using Health Data

Admitted patient hospital data is grouped into diagnosis-related groups (DRG classes)

DRG classes enable healthcare performances to be measured and compared

Government provides funding according to the number, mix, and complexity of patients

improves the value of public investment and ensures sustainable and efficient health services

Data Governance

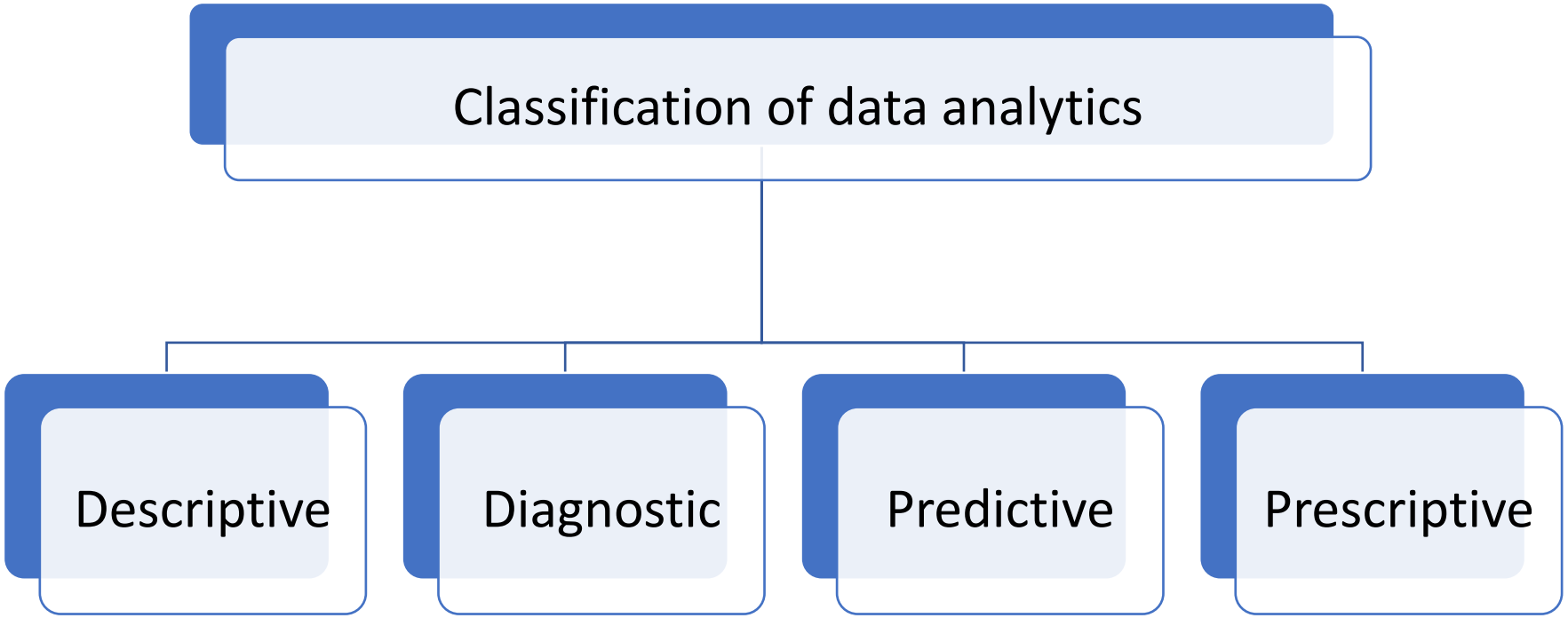
- Provides clear authority and lines of responsibility to stakeholders
- Creates standards for gaining access to data
- Ensures compliance with legislation, policies and standards, including privacy, security, and confidentiality of information

Tips to ensure privacy, security, and confidentiality of information

- Only access personal information that is directly related to and necessary for your work.
- Only use data for the primary purpose for which it was intended, unless otherwise permitted.
- Know who to contact if you have questions or concerns about data access, security or use.

Data Analytics

- Analytics as a discipline and technology-driven process is made up of several related activities, including data mining, online analytical processing, querying, and reporting.



Uses of data analytics

- Predicting epidemics
- Avoiding preventable disease
- Cutting down on waste,
- Improving efficiency
- Improving quality of life

Health Data Sources

- Electronic records
- Patient and clinical registries
- Research databases
- Genetic databases
- Payment and other administrative databases.

Benefits of data analytics

- Attractive data visualization options
- Interactive and flexible approaches to exploring data
- Real time data loads
- Integration of numerous data sources
- Convenience of users

Making data meaningful

- Importance of data visualization
- Tools for data visualization

Sharing data for research purposes

- Data sharing
- Data linkage

THANK YOU