

# LEVERAGING CLINICAL ANALYTICS TO DESIGN PERSONALISED MEDICINE

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# LEVERAGING CLINICAL ANALYTICS TO DESIGN PERSONALISED MEDICINE

- How clinical analytics can be used to design a personalised treatment regimen - medical records, population clinical data, best evidence and outcomes
  - Delivering the best possible care at the most affordable cost and rising awareness amongst the patients
  - Designing a treatment regime just for one person that will ensure the best treatment both in terms of degree and speed of recovery
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# AGENDA

- About me and my professional associations
  - Aims & Objectives
  - Personalized medicine
  - Clinical analytics
  - Methodology
  - Workflow – Clinical practitioner
  - Workflow – Information systems
  - Q & A
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# PERSONALIZED MEDICINE

- Personalized medicine is about making the treatment as individualized as the disease.
  - Personalized medicine takes an integrated, coordinated, evidence-based approach to individualizing patient care across the continuum from health to disease.
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# PERSONALIZED MEDICINE

- Involves identifying **genetic**, **genomic**, and **clinical information** that allows accurate predictions to be made about a person's susceptibility of developing disease, the course of disease, and its response to treatment.
  - In order for personalized medicine to be used effectively by healthcare providers and their patients, these findings must be translated into **precise diagnostic tests** and **targeted therapies**.
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# CLINICAL ANALYTICS

- The use of laboratory data, including blood tests, urinalysis, and microscopic tissue studies, in determining a diagnosis and treatment regimen
  - Aims to provide clinical care providers with sufficient information so that they may
    - Devise and monitor better personalized treatment plans
    - Devise, monitor and refine better treatment protocols
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# METHODOLOGY

- Follow the five (5) steps of clinical analytics
    1. Questionnaire design
    2. Questionnaire development
    3. Data capture
    4. Run analytics
    5. Reports presentation
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# DATA SOURCES

- Data to be culled from
    - Electronic Medical Records (EMR)
    - Departmental Systems (Clinical, Specialty, Nursing, OR, LIS, RIS, Pharmacy, etc.)
    - Resource Acuity
    - Accounts: Receivable & Payable
    - Billing Services
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# ANALYTICS: EBM NUMBERS FOR...

- Investigations
    - Sensitivity,
    - Specificity,
    - Likelihood Ratio
  - Treatment
    - Absolute Risk Reduction (ARR),
    - Relative Risk Reduction (RRR),
    - Odds Ratio,
    - Numbers Needed to Treat (NNT)
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# REPORTS PRESENTATION

- Treatment Plan
- Care Protocol/Pathway
  - Facts & Figures
    - Alphanumeric
    - Graphical

# WORKFLOW – CLINICAL CARE PROVIDER

- Clinically evaluate the patient
  - Enter data into system
  - Receive information back from the system
  - Prepare a case management plan based on the desired outcome
  - Execute the plan
  - Periodically re-evaluate patient
  - Enter data into system
  - Receive fresh information back from the system
  - Fine tune the case management plan
  - Continue process till patient has a satisfactory outcome
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# WORKFLOW – INFORMATION SYSTEM

- Receive data into the system
  - Receive plan request
  - Perform a search for similar case based on clinical observations including diagnosis and patient demographics
  - Find the best-fit match → if found, present it
  - Else, run analytics on individual data points
  - Find that which points to the most likely outcome desired
  - Prepare a case management plan
  - Present the plan as appropriate
  - Repeat the process on-demand
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# ROAD AHEAD

- Unless there is wide-spread use of EMR this is most likely to remain a pipe-dream
  - EMR must capture structured data (as opposed to unstructured, i.e. free text, data)
  - EMR must be able to exchange data with other EMR – requires conformation to health information exchange standards
  - EHR must be a reality, preferably from conception or birth (former preferred)
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