Burden of chronic skin diseases in Singapore: The way forward in the era of Big Data

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Outline

- Big Data Era
- Burden of skin diseases
- Databases
- “Pain points”/needs
- Wishlist
Big Data Revolution

- Medicine
- Financial Sector
- Insurance industries
- Farms
- Retail and fashion
- Customer relationships
- Weather and Energy
Shift in the data era of medicine

Intuition & opinion

Pattern recognition in data & Predictors
Current applications in medicine

Collecting data

Telemedicine

Innovating with data
Burden of skin diseases
National Skin Centre

• Largest tertiary skin institute in Singapore.

• Electronic medical records since 2004.

• Sees about >1,000 patients a day.
NSC Vesalius

- Patient demographics (Age, gender, race, etc)
- Free text consult
- Diagnosis codes
- Laboratory results
- Prescriptions
- Treatment/Procedure records
Databases/Large longitudinal cohorts

- Physician Health Study (PHS)
- Nurses Health Study (NHS I & II)
- National Health and Nutrition Examination Survey (NHANES)
- Vaccine Adverse Event Reporting System (VAERS)
- Kaiser Permanente Database
Utilization of large databases/cohorts

- Identification of novel associations
- Pattern recognition.
- Disease predictors
- Hypotheses generation for further cohort studies and clinical trials.
Painpoints/Needs

• More efficient data mining and better utilization of current data repository in NSC.
• Better quality outcome data at multiple time points.
• Biobanking in terms of skin/blood specimens.
• Disease utilities in the local context
• Models design, decision trees in Dermatology for cost effective analysis
Start of study cohort

Follow-up

Follow-up

Future time point

Outcome measures

Biospecimens

Hypothesis testing in the future
My wishlist

- Create disease databases and long term follow-up cohorts.
- Machine learning to mine free text data from EMR.
- Collaborate with data scientists, epidemiologists, biostatisticians, health economists and basic science researchers on projects in dermatology.
- Dermatology related data collection in national level cohort studies.
Summary

• Big Data era is here.
• Data collection methods.
• Improve quality of data.
• Innovating with the data.
• Translating this data to better outcome and cost effective assessments.
Thank you

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