Waste: from bench to bedside
Clinical Senate
James Williamson
Clinical Excellence Division, Department of Health
Sustainable Health Review

WA public health system has grown (last 10 years)

- Population ↑ 29%
- ED attendances ↑ 49%
- Hospital admissions ↑ 39%
- Births (public) ↑ 36%
- $7 billion infrastructure investment

Health costs continue to rise

- Health costs tripled in 10 years
- $3B ↑ $9B

WA State debt

The system is under pressure

- Growing population (3.2M in 10 years)
- Ageing population (50% more people over 65 in 10 years)
- Chronic disease cost ($1B in 10 years)
- Fewest GPs per capita of all States

Key to a sustainable future for health

- Patient first
- Value for money
- Healthy lifestyles
- Partnerships across sectors
- Technology and innovation
Sustainable Health Review

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Health costs continue to rise
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  - $3B $9B
- WA public hospitals cost 20% more than national average

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IS THERE A REPRODUCIBILITY CRISIS?

- 7% Don’t know
- 52% Yes, a significant crisis
- 38% Yes, a slight crisis
- 3% No, there is no crisis

1,576 researchers surveyed
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HOW MUCH PUBLISHED WORK IN YOUR FIELD IS REPRODUCIBLE?

Physicists and chemists were most confident in the literature.

Number of respondents from each discipline:
- Biology 703
- Chemistry 106
- Earth and environmental 95
- Medicine 203
- Physics and engineering 236
- Other 233
Bayer: 53 of 67 did not replicate
Amgen: 47 of 53 did not replicate
Cancer Biology: 3 of 5 did not replicate
Psychology:
  • positive findings in 97% of original studies, 36% of replications
  • mean effect size fell from 0.403 to 0.197
Fraud is rare

False positive studies +/- dubious research practices
Perverse incentives and publication bias
True biological heterogeneity of observed effects

The most common mistakes are simple

Confounding in the experimental design
Mixing up the sample/gene/group labels
(Most mix-ups involve simple switches or offsets)

This simplicity is often hidden

Incomplete documentation
Augustine et al., 2009, Clin Can Res, 15:502-10, Fig 4A. Temozolomide, NCI-60.

Hsu et al., 2007, J Clin Oncol, 25:4350-7, Fig 1A. Cisplatin, Gyorffy cell lines.
Duke In Process To Restart Three Trials Using Microarray Analysis Of Tumors

By Paul Goldberg

Duke University said it is in the process of restarting three clinical trials using microarray analysis of patient tumors to predict their response to chemotherapy.
Prominent Duke Scientist Claimed Prizes He Didn't Win, Including Rhodes Scholarship

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Incomplete documentation
Research ethics

- Measured Data
- Analytic Data
- Computational Results
- Figueres
- Tables
- Numerical Summaries
- Article

Research governance

- Processing code
- Analytic code
- Presentation code
- Text

Reproducible research

Open data
Let’s move beyond the rhetoric: it’s time to change how we judge research

Five years ago, the Declaration on Research Assessment was a rallying point. It must now become a tool for fair evaluation, urges Stephen Curry.
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Overview of data linkage process

1. APPLICATION
   - DLB, Researcher and Data Custodian/s work together to develop the draft application
   - Data Custodian/s provide in-principle support

2. APPROVALS
   - DoH HREC approval
   - Data Custodian/s approval

3. Part 1 LINKAGE
   - DLB gathers raw data from Data Custodian/s, creates linkage keys then sends to Data Custodian/s

4. EXTRACTION
   - Data Custodian/s attach content data to linkage keys and sends to DLB

5. Part 2 LINKAGE & QA
   - DLB merges linkage keys to create the linked data set, quality assures and encrypts
   - DLB provides fully linked data set/s to Researcher

DE-IDENTIFICATION

DLB ADMINISTRATION OF THE DATA LINKAGE PROCESS

RESEARCHER APPROACHES THE DLB TO REQUEST LINKED DATA

LINKED DATA PROVIDED TO RESEARCHER
RESEARCH -> CLINICAL TRIALS -> PATIENT CARE
Closed petition

Stop NHS England from removing herbal and homeopathic medicines

NHS England is consulting on recommendations to remove herbal and homeopathic medicines from GP prescribing. The medicines cost very little and have no suitable alternatives for many patients. Therefore we call on NHS England to continue to allow doctors to prescribe homeopathy and herbal medicine.

More details

This petition is closed
All petitions run for 6 months

34,668 signatures
Using expected frequencies to communicate the chances of different events subsequent to a mammogram – from the NHS Breast Screening leaflet.

- 100 women have breast screening
- 96 women have a normal result
- 3 women have no cancer found
- 1 woman is diagnosed with cancer
- 4 women need more tests

These women will receive further invitations for breast screening every 3 years.
SEPSIS KILLS MORE PEOPLE IN SCOTLAND THAN BREAST AND PROSTATE CANCER COMBINED
REALISTIC MEDICINE
CAN WE:

BUILD A PERSONALISED APPROACH TO CARE?

CHANGE OUR STYLE TO SHARED DECISION-MAKING?

REDUCE HARM AND WASTE?

REDUCE UNNECESSARY VARIATION IN PRACTICE AND OUTCOMES?

MANAGE RISK BETTER?

BECOME IMPROVERS AND INNOVATORS?
Choosing Wisely
Australia
An initiative of NPS MedicineWise
MORE IS NOT ALWAYS BETTER
A Unified Modeling Approach to Data-Intensive Healthcare

- Expertise
- Electronic Health Records (EHRs)
- Data
- Unified Graphical Model
- Large-Scale Inference
- Multi-Scale and Multi-System Health: Research, Policy, Care
- Model Refinement
What can we do?
What can you do?