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# Glasgow's Health Data: A cohort of 1.2 million

Professor Colin McCowan

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GLASGOW CLINICAL TRIALS UNIT





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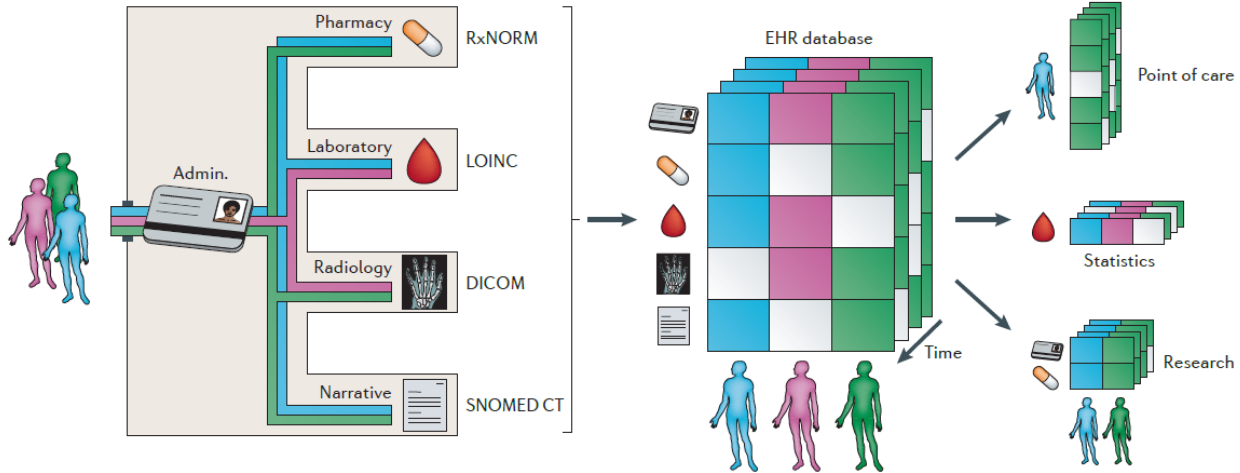
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# The Glasgow Effect



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- Routine Data
  - ““routine data” is data collected as byproducts of clinical care by the clinician and as an integral part of the process of care.”  
Williams JG, BMJ 1995;310;665-666
- Data Linkage
  - The process where two or more pieces of information from different sources can be linked together to produce new insights



Jensen PB, Jensen LJ, Brunak S. Mining electronic health records: towards better research applications and clinical care. Nat Rev Genet. 2012 2;13(6):395-405.





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The Farr Institute  
of Health Informatics  
Research

## Collect Data Once, Use It Often



### Uses

Gathering evidence to inform and evaluate health and social care policy, practice and guidelines

Discovering causes of diseases

Studying the effectiveness of drugs in real-world populations

### Benefits

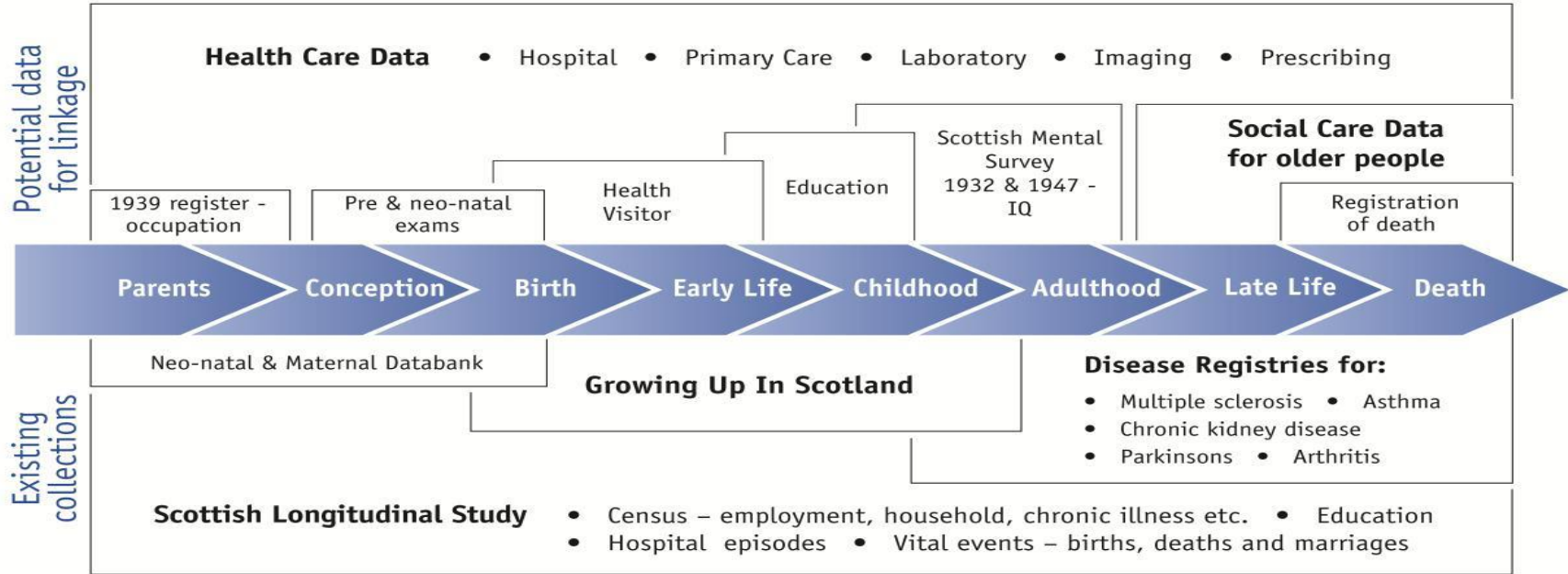
Improving public health

**Precision Medicine:**  
The right treatment, the right person, the right time

Facilitating the development of new drugs, devices and technologies



# From birth to death...





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# Electronic Data Research and Innovation Service (eDRIS)



## Glasgow Safe Haven



University of Aberdeen - NHS Grampian



## Lothian Safe Haven



Joined up data for better decisions: Guiding Principles for Data Linkage

<http://www.scotland.gov.uk/Publications/2012/11/9015>

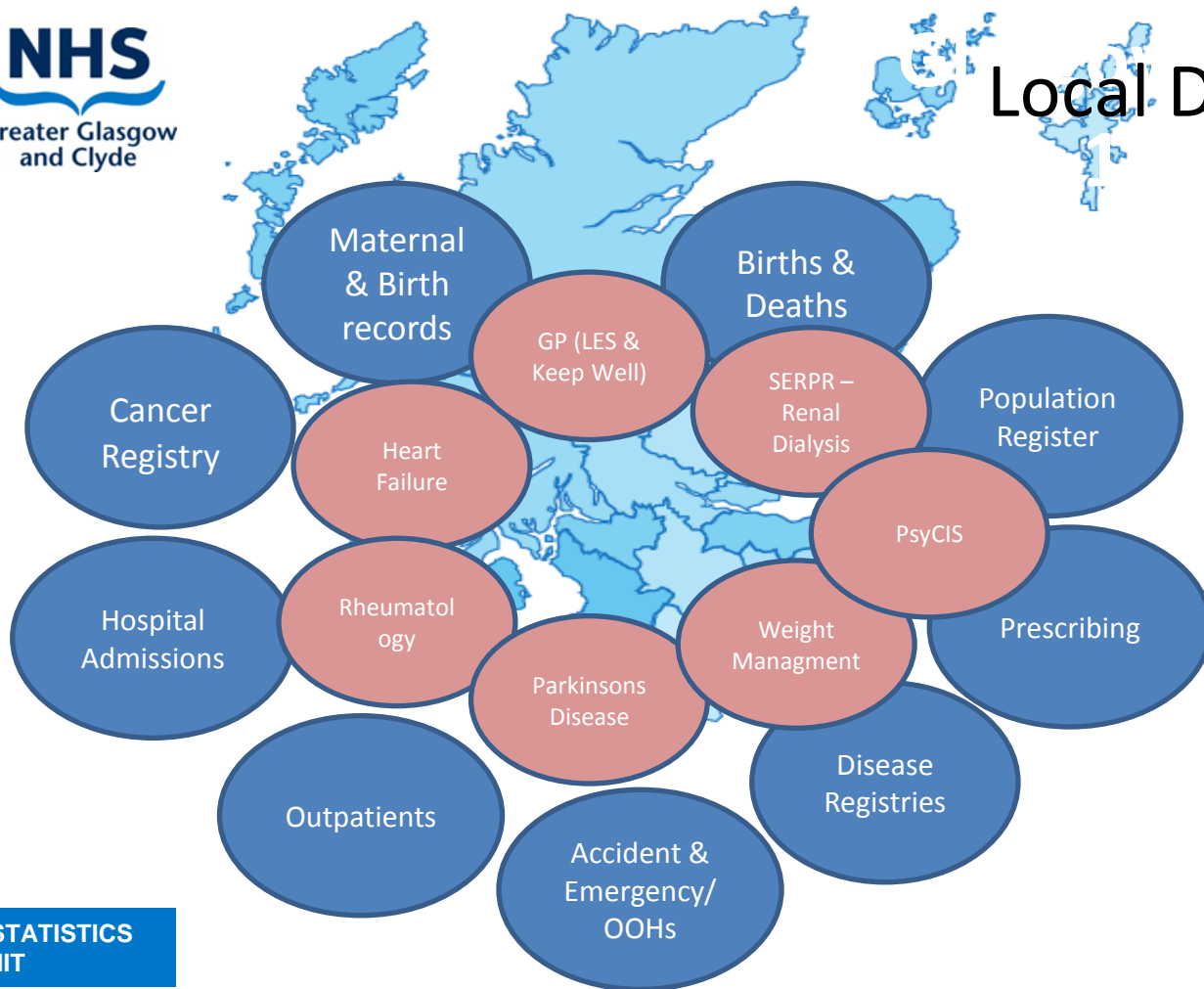
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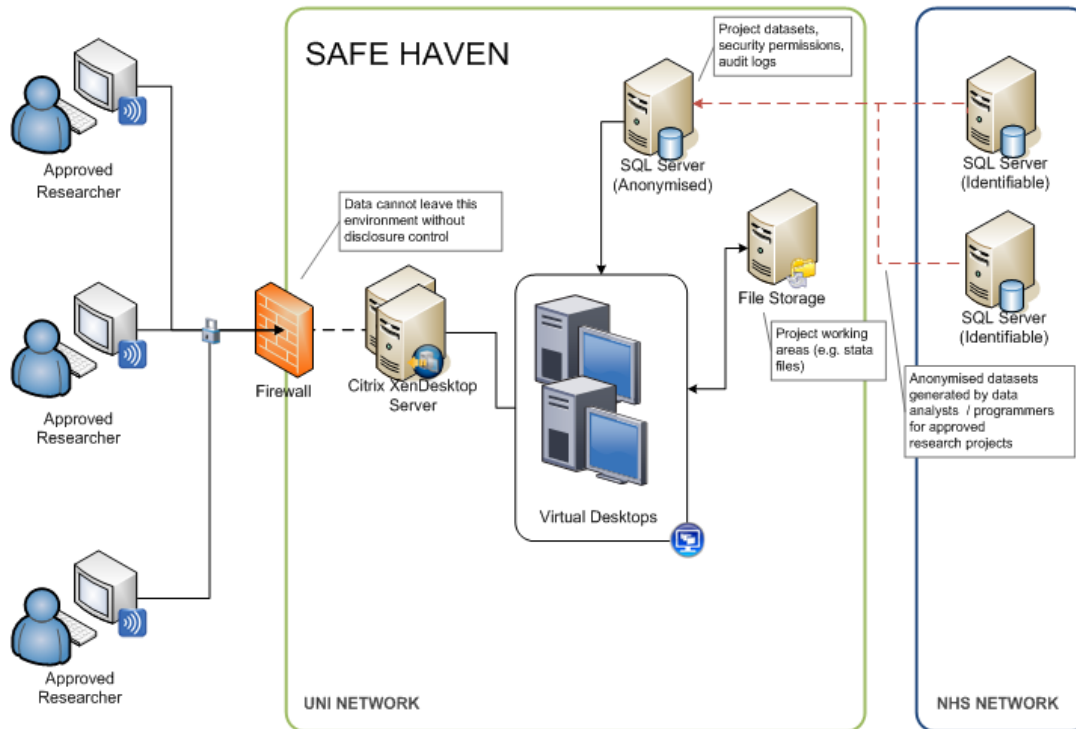
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# Local Datasets



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# Cancer Screening in Women in Glasgow

- Lower uptake of bowel screening in women than for breast or cervical screening
- Study: Link screening records and examine difference in characteristics for uptake. *Invite women for interview to explain why they use other cancer screening services but not bowel*

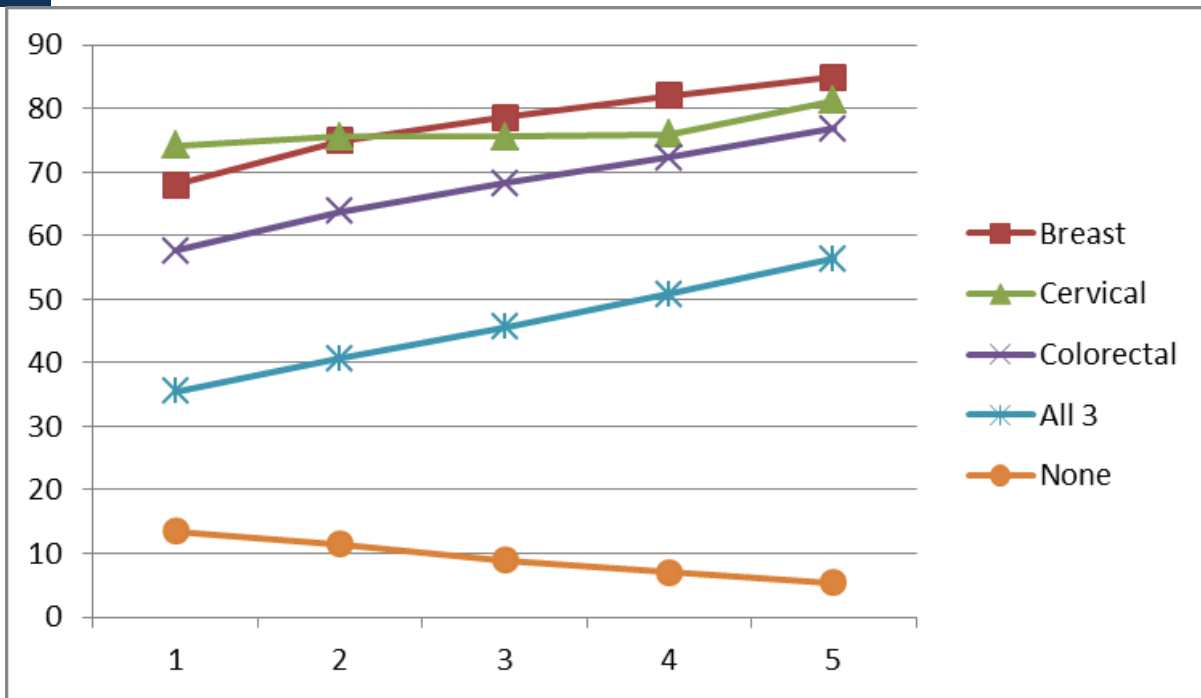
## National Awareness and Early Diagnosis Initiative (NAEDI)

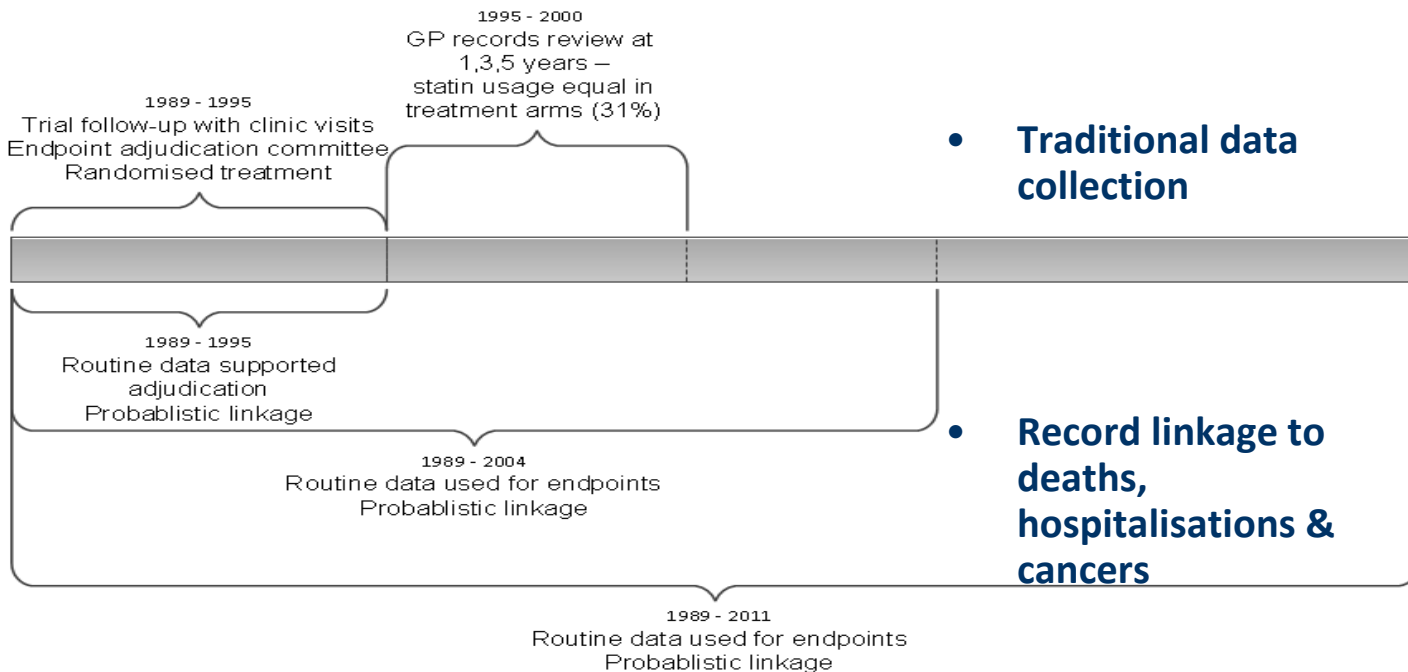


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# Cancer Screening in Women in Glasgow





- Traditional data collection

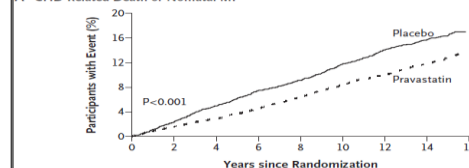
- Record linkage to deaths, hospitalisations & cancers



### Long-Term Follow-up of the West of Scotland Coronary Prevention Study

Ian Ford, Ph.D., Heather Murray, M.Sc., Chris J. Packard, D.Sc., James Shepherd, M.D., Peter W. Macfarlane, D.Sc., and Stuart M. Cobbe, M.D., for the West of Scotland Coronary Prevention Study Group

A CHD-Related Death or Nonfatal MI



No. at Risk	Placebo	Pravastatin
0	3293	3302
2	3199	3237
4	3071	3157
6	2953	3065
8	2841	2943
10	2691	2819
12	2549	2675
14	1903	2026
16		



# Cross-sectoral Linkage

Number of days absent each year

Number of exclusions each year

Final attainment level

1. High
2. Broad/general
3. Basic
4. Low

Employed, in education or training, versus Not

Attendance/Exclusion data 2009, 2010, 2012

SQA Exam results for pupils in S4-S6

Leaver destination data at 6 months



**ScotXed Pupil Census Data 2009-2013**

All pupils attending primary and secondary school in Scotland

Info on any record of SEN including type

SEN versus no SEN



Hosp admissions (SMR1/SMR4) and deaths 2009 onwards

National Prescribing Data (PIS) 2009-2013

Maternity records (SMR2) 1988-2008

Follow up adm/death  
Total admissions  
Total length of stay

Insulin  
Inhalers  
Anti-epileptics  
CNS stimulants  
Anti-depressants

Adjust for birth and obstetric outcomes

- covariates**
- Age category
  - Gender
  - Deprivation
  - Ethnicity
  - Birthweight centile
  - Gestation
  - 5min Apgar score
  - Mode of delivery
  - Maternal parity
  - Maternal age
  - Maternal smoking

Community Health Index (CHI) Database

- Match by Scottish Candidate Number (SCN)
- Probability match using DOB, sex postcode
- Match by CHI number





- Still using same epidemiological techniques that were used with manual data collection
- Safe Haven services are still relatively new and are developing
- Governance approvals for health data are well established but less so for other sectors
- Governance regulations require very secure platforms which preclude use of many HPC solutions



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# Thank You

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<http://glasgowctu.org>

**INSTITUTE OF HEALTH & WELLBEING**  
<http://www.gla.ac.uk/researchinstitutes/healthwellbeing/research/robertsoncentreforbiostatistics>



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