CLINICAL INNOVATION: Fair & Effective Incentives for New Uses of Established Drugs

The Physician & Pharmacist

Moderator: **Simon Spinks** *Bristows LLP*

Presenters and Panellists:

- **Dr Amitava Banerjee** *UCL Farr Institute of Health Informatics*
- **Prof. Janis Shute** *Professor of Pharmacology, University of Portsmouth*
- **Prof. Graham Russell** *Emeritus Professor of Musculoskeletal Pharmacology, NDORMS, University of Oxford*
- **Prof. Jayne Lawrence** *Head of the Division of Pharmacy and Optometry at Manchester University*

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What the data tells us about missed opportunities- a physician's perspective

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Missed opportunities

1. Poor prediction from preclinical studies
2. Definitive evidence not available until phase 3 RCT
3. Not enough (primary or secondary) use of existing drugs
4. Too much focus on drugs alone or in isolation
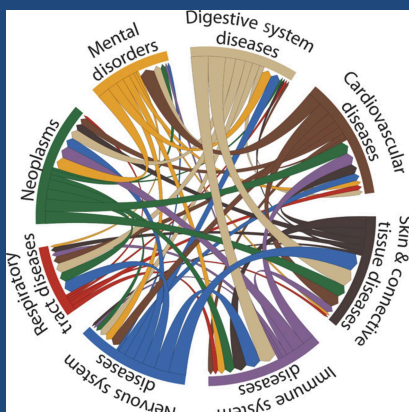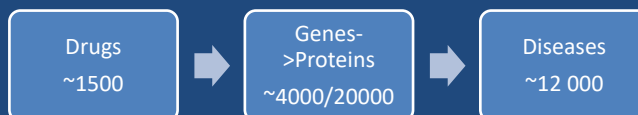5. The way we gather and use data

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Druggable genome

| Drugs ~1500 | ⇒ | Genes->Proteins ~4000/20000 | ⇒ | Diseases ~12 000 |

Finan et al. Sci Trans Med. 2017

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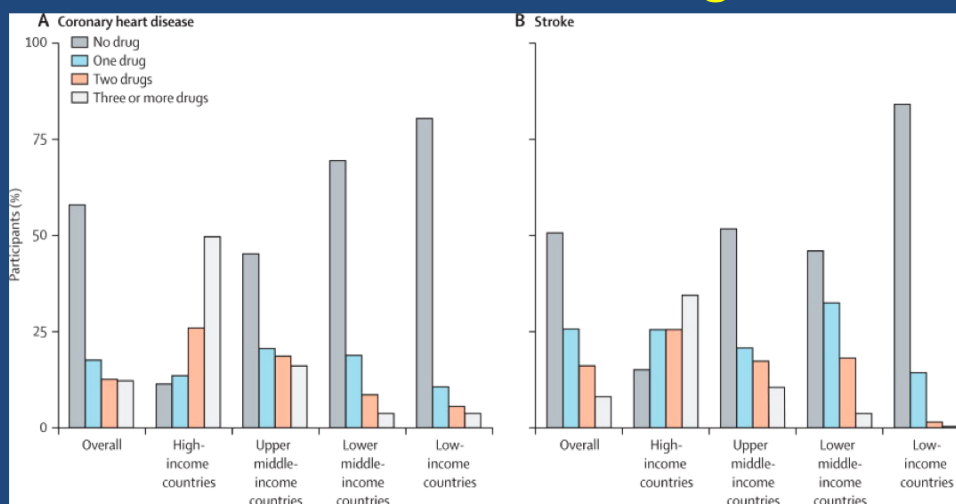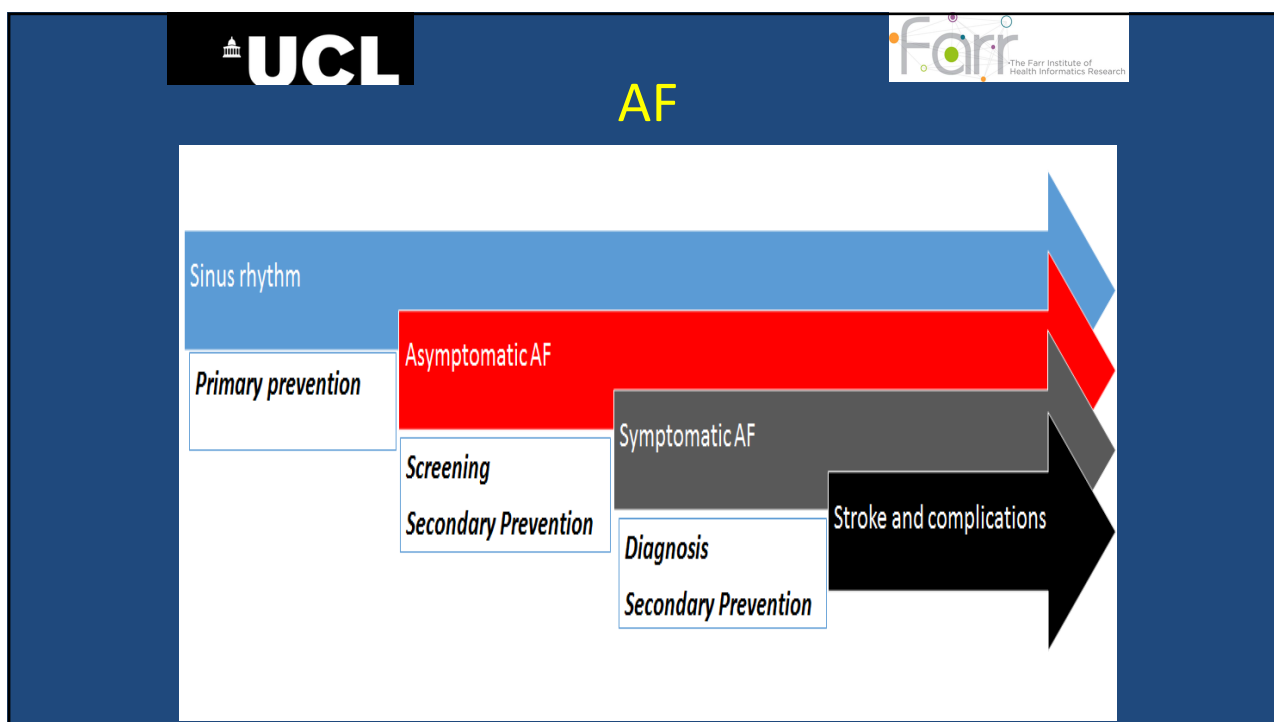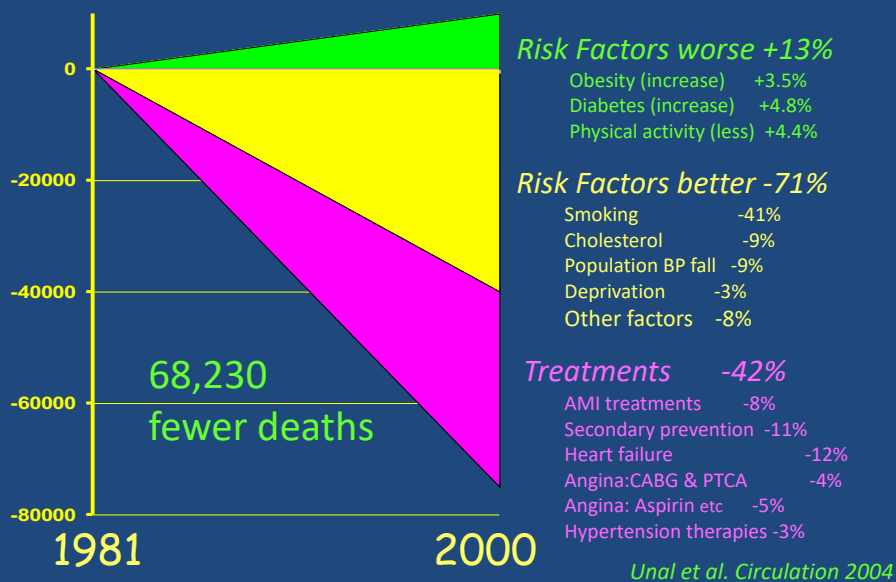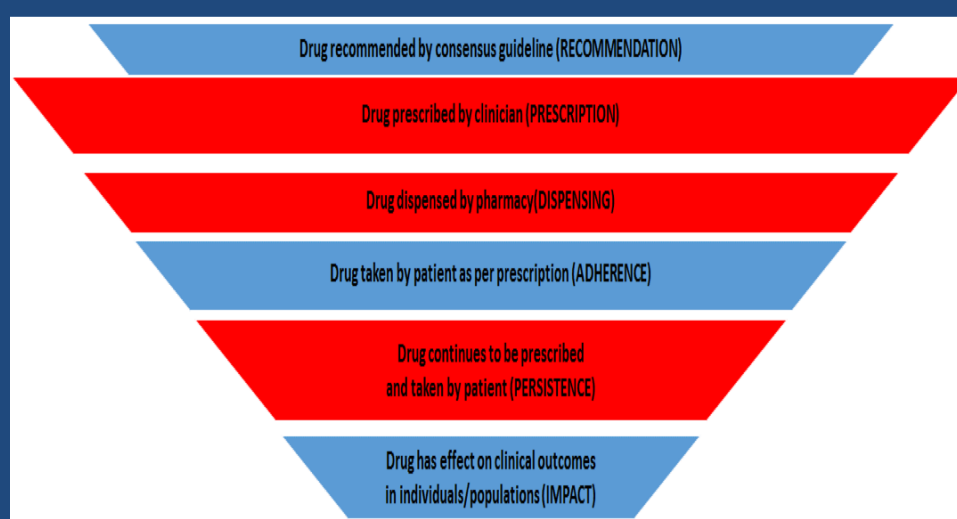
CHD and stroke: drugs

Yusuf et al. Lancet 2013.

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Explaining the fall in coronary heart disease deaths in England & Wales 1981-2000

68,230 fewer deaths

1981   2000

Risk Factors worse +13%
Obesity (increase)   +3.5%
Diabetes (increase)   +4.8%
Physical activity (less)   +4.4%

Risk Factors better -71%
Smoking   -41%
Cholesterol   -9%
Population BP fall   -9%
Deprivation   -3%
Other factors   -8%

Treatments   -42%
AMI treatments   -8%
Secondary prevention -11%
Heart failure   -12%
Angina:CABG & PTCA   -4%
Angina: Aspirin etc   -5%
Hypertension therapies -3%

Unal et al. Circulation 2004

AF

UCL   Farr   The Farr Institute of Health Informatics Research

Sinus rhythm

Primary prevention

Asymptomatic AF

Screening

Secondary Prevention

Symptomatic AF

Diagnosis

Secondary Prevention

Stroke and complications

DOAC trials

| Drug	Dabigatran (Pradaxa BI)	Rivaroxaban (Xarelto Bayer)	Apixaban (Eliquis BMS Pfizer)	Edoxaban (Lixiana Daiichi Sankyo)
Clinical trial	RE-LY	ROCKET-AF	ARISTOTLE	ENGAGE AF
Year of publication	2009	2011	2011	2013
Year of NICE approval	15/3/2012	23/5/2012	27/2/2013	23/9/2015

DVT/PE → AF/stroke → ACS → Valves

Drug surveillance

Drug recommended by consensus guideline (RECOMMENDATION)

Drug prescribed by clinician (PRESCRIPTION)

Drug dispensed by pharmacy (DISPENSING)

Drug taken by patient as per prescription (ADHERENCE)

Drug continues to be prescribed and taken by patient (PERSISTENCE)

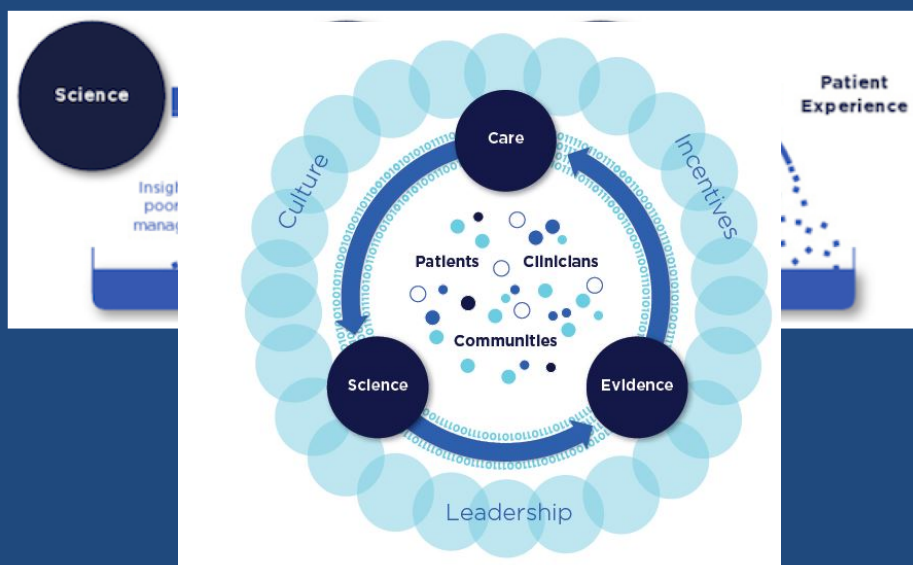Drug has effect on clinical outcomes in individuals/populations (IMPACT)

The prescription-persistence cascade

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Velocity

Volume

Veracity

Variety

Variability

Visualization

Value
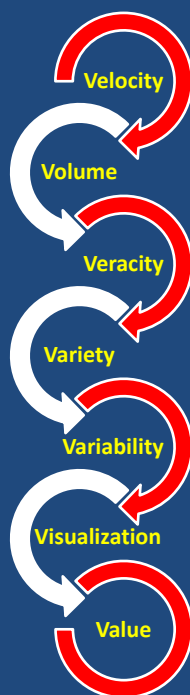
Cascade of waste

IT and learning health systems