Personalised medicine: a view from drug discovery

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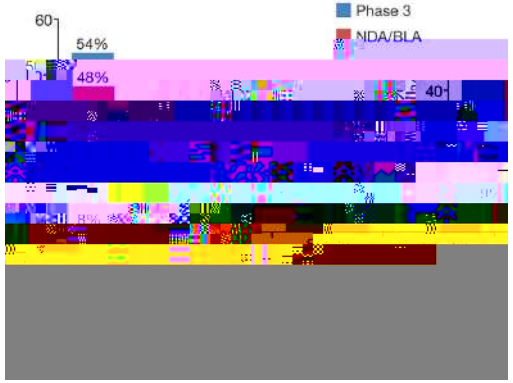
- Often equated with diagnostic biomarker eg academy of medical sciences 2013 report, MRC 2016 framework paper

Context

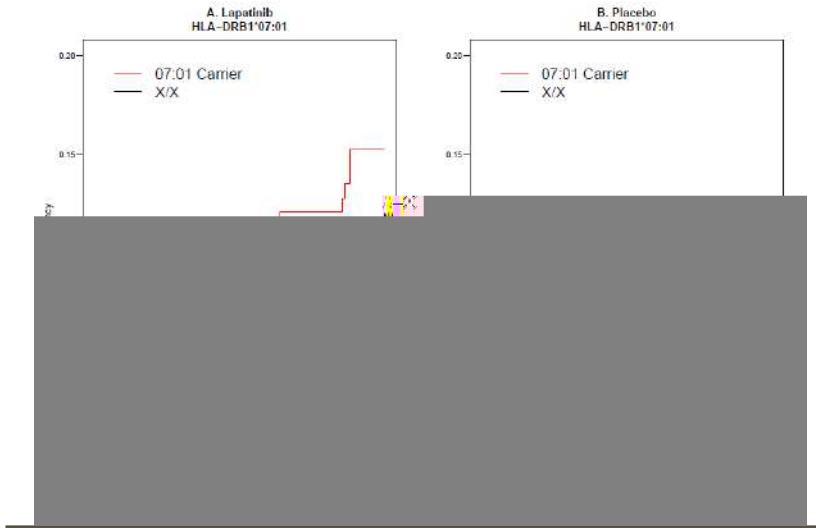
Eroom’s Law

Probability of success at target selection 3%



Stratifying during development is hard

Germline only



Pros:

- Genetic variants affecting safety/efficacy exist
- We expect 10% of drugs to have ‘detectable’ genetic predictors of efficacy
- We do PGx routinely in development

Cons

- Trial programs are underpowered for PGx
- Very unlikely that genetics/genomics will rescue failed trials

Future

- EHR/registries + biobanks
  - Polygenic scores?
- Likely best to stratify disease before medicines: *start in the right place*
- *Oncology???*

- Precise therapeutic hypothesis
- Eg

Enablers

- Increased causal understanding of etiology
  - Genetics
  - Refined phenotypes
- Ability to recruit stratified populations into trials
  - Biobanks with appropriate consent for recontact?
    - And prospective biomarker measurement?
  - Embedding of trials into healthcare systems?
  - Platform trials with ability to build in stratification?
- Discoveries during development
  - Trials need to collect appropriate data
- Trials that allow expansion of study population?