

BIG SCIENCE & BIG DATA – IMPACT ASSESSMENT HFMA, SDN & ONF MEETING

Tuesday 27th February 2024 at Wyboston Lakes



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“PEAK DEATH”

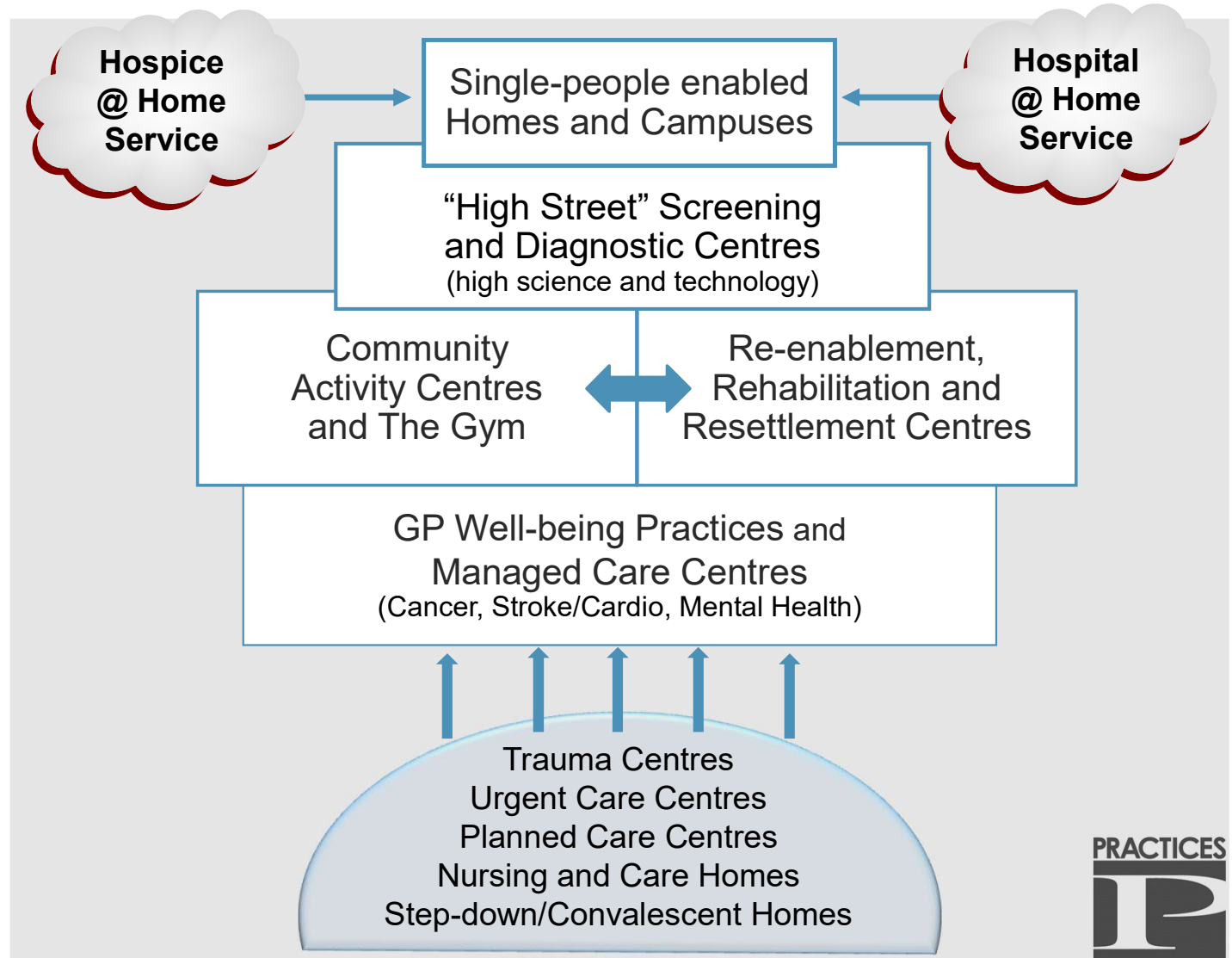
Strategic Problems to Address

- Cancer, Cardiac and Stroke Care.
- Mental Healthcare and Elderly Failing Memory and Fragility Issues.
- Patient Numbers and Capacity Issues.
- Projected Poverty and Inequality Issues.
- Underlying Financial and Debt Management Issues.

UK Political Framework 2024-2034

- General Election; 3-year STP; 10 Year Plan.
- Projected demands and efficiency gains.
- elderly—numbers, dementia, frailty and isolation (housing and pension crisis).
- Rapid diagnostics and personalised care > community and home based.
- Primary and secondary prevention and end stage care.

NEW SERVICE DESIGN PRINCIPLES



Big Science Has Arrived



Genetic Profiling and Therapeutic Targeting



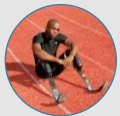
Proton Beam Therapy and Novel Treatments



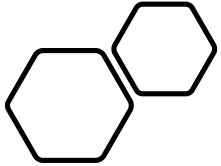
High-speed informatics and cooling technology



Stem-cell based research and new science

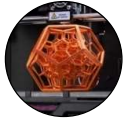


Prosthetics, regeneration & bio-engineering developments



BIG SCIENCE NEXT WAVE

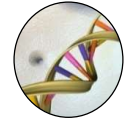
Science and Technology-driven Improvements



Laser 3D-printed porcelain teeth, hearing aid, implants.



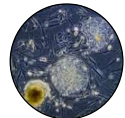
Laser 3D-printed cartilage, valves, prosthetics.



Personalised Medicine based on Genomics & Predictive Analytics



Personalised Poly-Pharmacy Unit Dose Medicines.



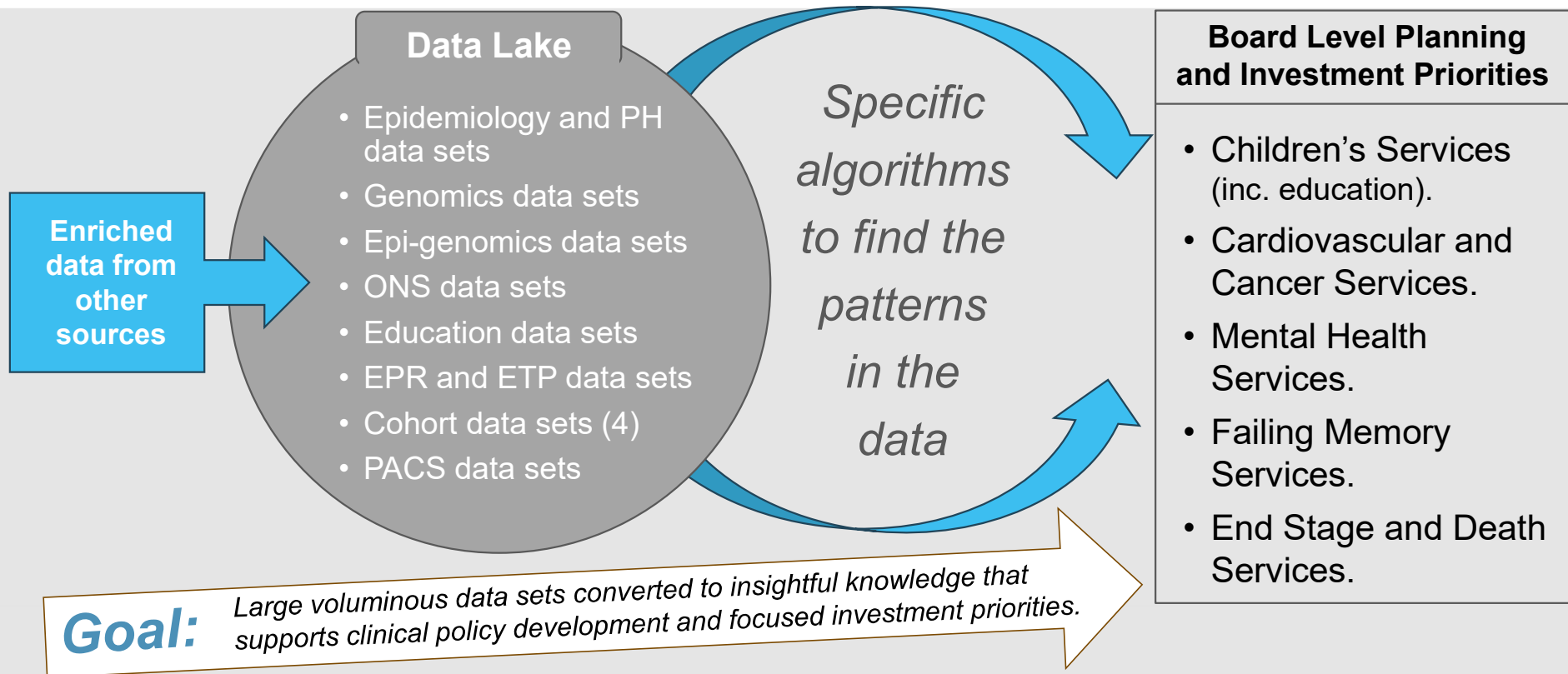
Biosimilars, mABs, stem-cell stimulated Corneas & Intestinal Villae.

Going Digital and Embedding Big Data and Big Science

An Integrated Data Strategy

- Develop Digital Lakes (Amazon – 50 Exabytes).
- Bring data from multiple databases to computers.
- Develop search engines and Analytical Platforms.
- Enrich the data from multiple sources.
- Create a Data Service incorporating machine learning.

Reducing Inequalities and Improving Life Chances



Digital Pathology and Imaging Diagnostics and Predictive Analytics Service

Goal



- Investments in digital tools and imaging equipment to improve diagnostics and imaging.
- Investments in AI Centres of Excellence – 5 so far.
- Investments in digitization of cellular pathology and network of pathology lakes.
- Investments in screening and imaging centres and network of screening and imaging lakes e.g. cardiovascular, respiratory and surgical.
- Investments in tumour biology and visualisation technologies and network of cancer lakes.

Support early diagnostics and predictive analytics, and precision medicine developments.

NHS Digital Transformation Art of the Possible?

- Predictive Analytics Service.
- Personalised Medicine.
- Clinical Information and Informatics Strategy.
- Intensivist and High Dependency Services.
- Risk Stratification and Care Planning.

Organising Work for the Future

- Personalised and risk-managed care.
- Rapid and efficient flows in acute medicine and surgery.
- Reclaiming and redeveloping the “High street”.
- Community Care and Diagnostic Centres.
- Elderly-numbers, frailty, dementia, isolation and crises: housing and pensions.

Organising Staff for the Future

- Nursing care model and skill mix for elderly in the community.
- Future role of GPs and GP practices.
- Future role of specialists and staff grades.
- Where do P.A.s potentially fit?
- What about the ‘ologists and their assistants?

Thank You

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