Glaucoma Pathway Modelling
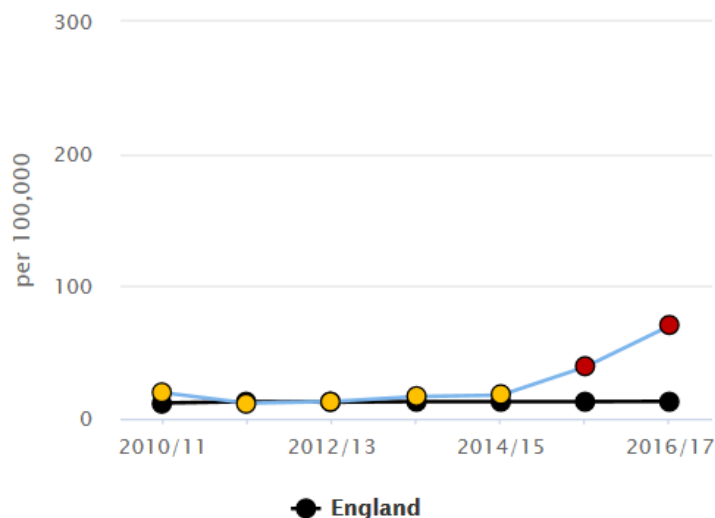
Reducing the delays to glaucoma treatment at Torbay Hospital

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Glaucoma in Torbay – What do we know?

Glaucoma sight loss in Torbay

Recent trend: ↑

Period		Count	Value	Lower CI	Upper CI	South West	England
2010/11	○	15	19.6	11.0	32.4	12.9*	11.8
2011/12	○	9	11.7	5.4	22.2	12.5*	12.8
2012/13	○	10	12.9	6.2	23.8	13.3*	12.5
2013/14	○	13	16.7	8.9	28.5	12.4*	12.9
2014/15	○	14	17.8	9.7	29.8	11.4*	12.8
2015/16	●	31	39.2	26.6	55.6	16.0*	12.8
2016/17	●	56	70.3	53.1	91.3	15.6*	13.1

Source: Calculated by Public Health England Knowledge and Intelligence Service (Epidemiology & Surveillance) from data provided by Moorfields Eye Hospital and Office for National Statistics

- Delays in follow up care with approximately 4,800 on the pending and 280 on booked waiting list (snapshot Dec 2018)

- RTT within 18 weeks is below the national target of 92% for Ophthalmology
    - Waiting time for follow for Glaucoma is longer than clinically recommended (Approximately 1,850 patients waiting longer than their 'to be seen by' date)

Glaucoma in Torbay – What do we know?

Population projected to rise by around **6%** by 2030

Older population (65+) projected to rise by almost **30%** by 2030

Almost **20 years** difference between life expectancy and healthy life expectancy

So what does this mean?

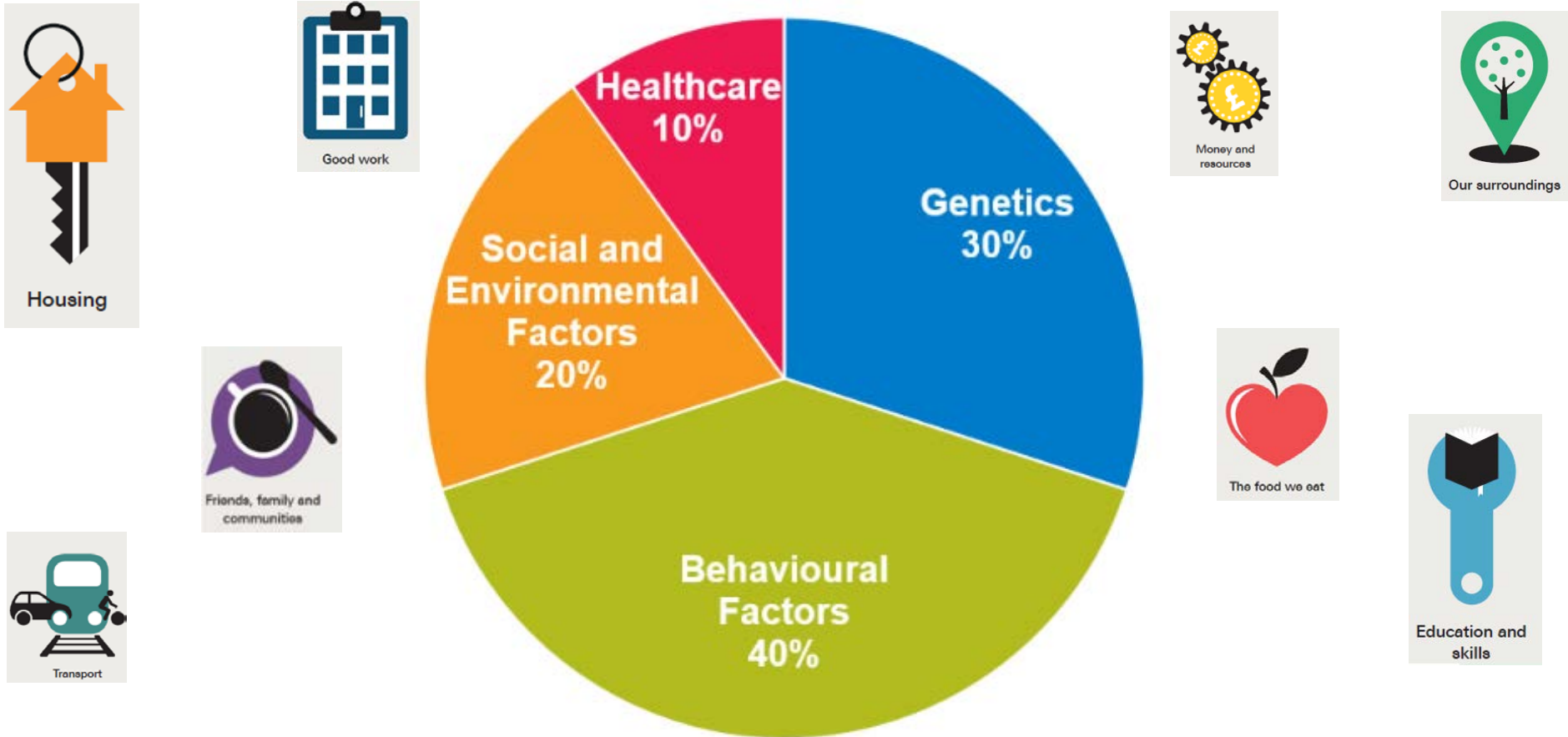**Increased demand** in health and social care services

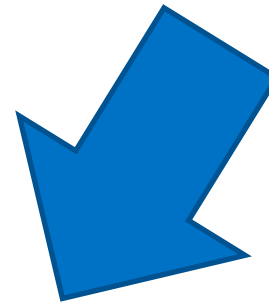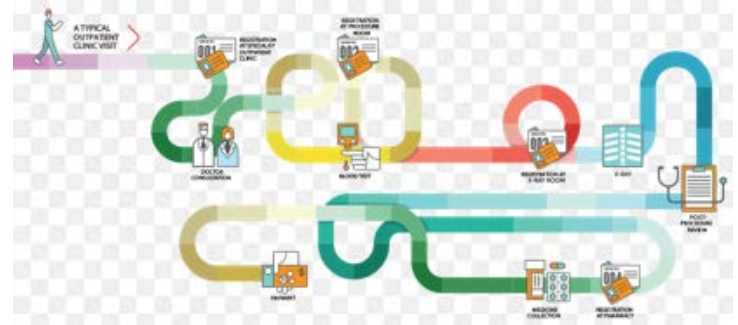Older people tend to require **more care** and **specialist care**

People are living longer but are living almost a **quarter** of their life in poorer health

What factors influence population health and wellbeing?

The aspirational model!

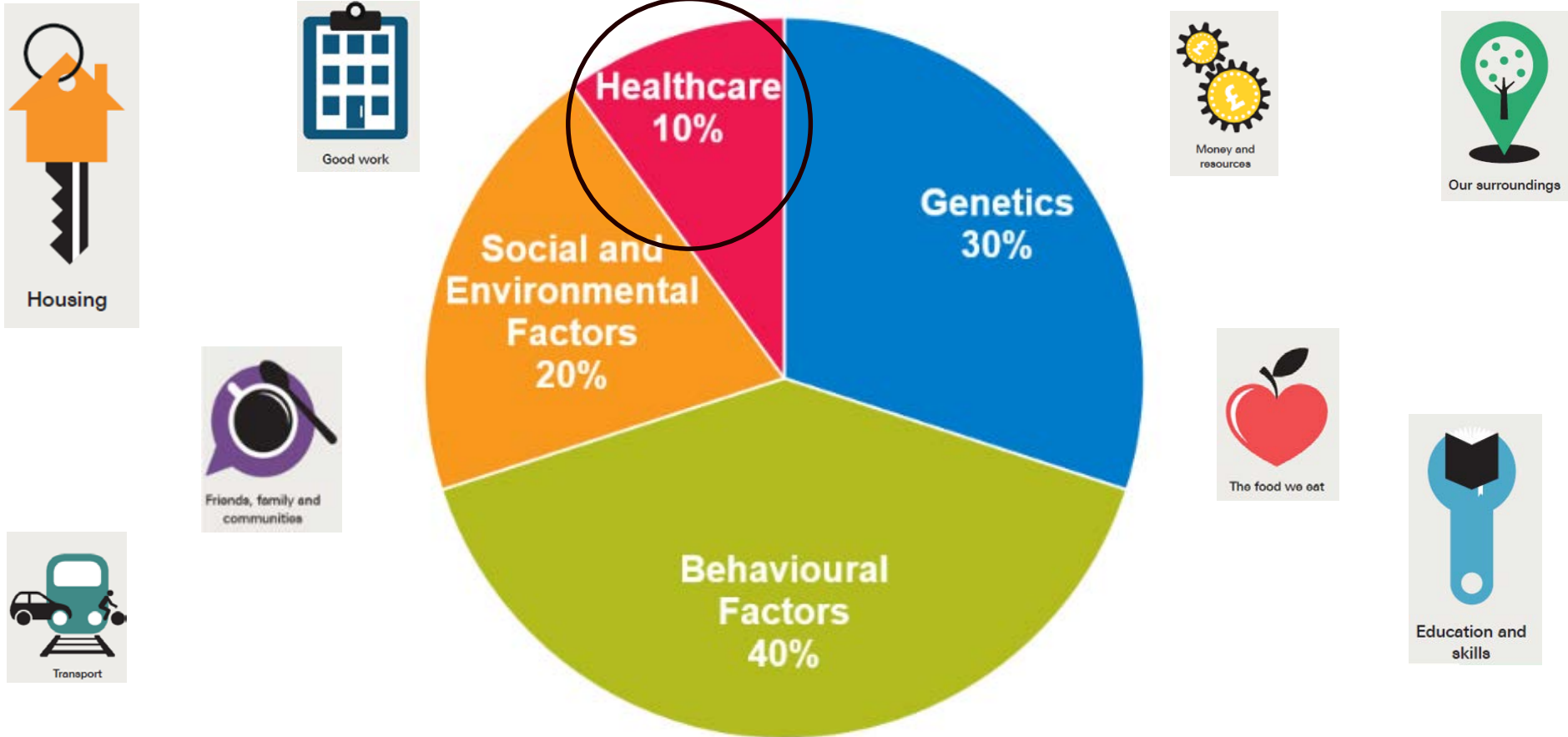**System perspective combined with operational service level perspective**

What factors influence population health and wellbeing?

Pie chart showing: Genetics 30%, Behavioural Factors 40%, Social and Environmental Factors 20%, Healthcare 10%. Surrounding icons: Housing, Good work, Money and resources, Our surroundings, Friends, family and communities, The food we eat, Education and skills, Transport.

The question

Does the current configuration of the Glaucoma pathway in Torbay increase delays in treatment thus increasing risk of blindness?
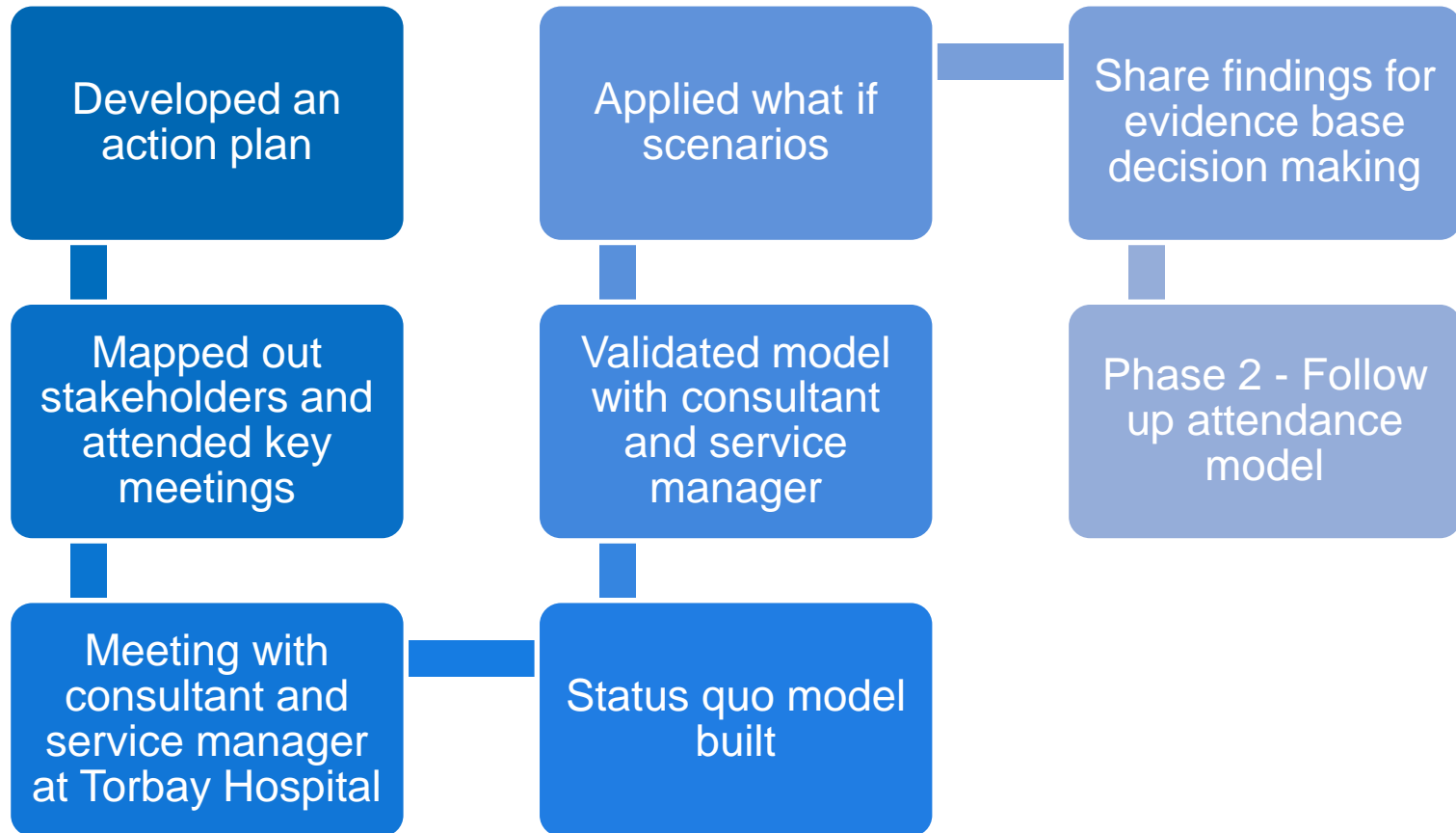
The purpose

To provide evidence to inform the decision making process to reduce delays in treatment which may be increasing patient harm

Why discrete event simulation modelling?

- Provides an understanding of the status quo

- Allows us to test different scenarios

- Provides evidence to support decision making

- Influential visual tool

- Suitable for quantitative and qualitative data

The timeline

Developed an action plan

Mapped out stakeholders and attended key meetings

Meeting with consultant and service manager at Torbay Hospital

Applied what if scenarios

Validated model with consultant and service manager

Status quo model built

Share findings for evidence base decision making

Phase 2 - Follow up attendance model

Glaucoma Pathway Model – Status Quo

Torbay & South Devon NHS Foundation Trust - Glaucoma Outpatient Pathway
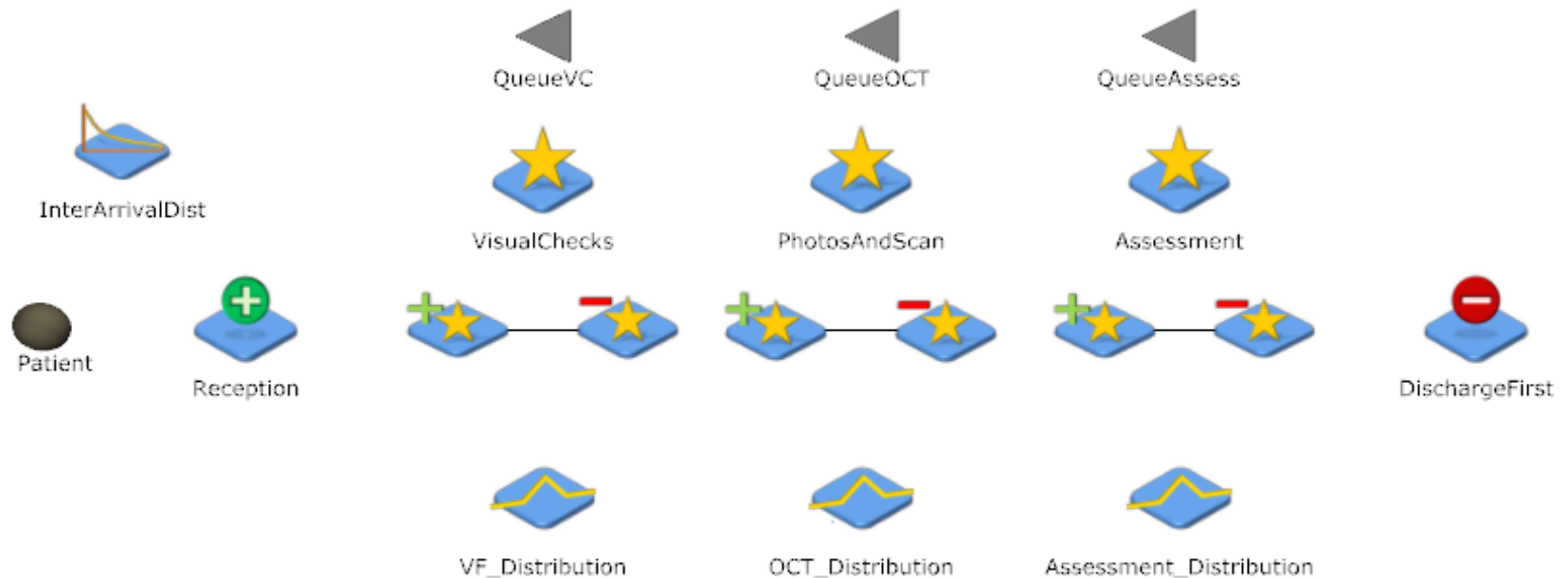
- 2 patients every 20 mins
- 2 visual check rooms (20 mins)   *Frequent IT issues - Consultants perceived bottleneck
- 1 photo and scan (10 mins)
- 2 assessment rooms   *In a typical week

Findings from Status Quo

Perceived bottle necks in the following areas:

- Queue for photo and scan
- Queue for assessment clinics

Findings

- Reducing the amount of time VF checks take had little impact on waiting times
- Further investigation needed into timings around VF
- Limitation around data availability and relied heavily on qualitative information
- Adding a second Photo & Scan machine virtually eliminated queues for this part of the pathway

Next Steps

- Confirm status quo model with consultant and service manager after further investigation

- In contact with consultant and service manager around unpicking each pathway related to the follow up clinics

- Next step is to create simulation pathways for all follow up clinics using the first clinic model as a template

What will this work inform?

Concurrent activity:

- Acute Service Review of Ophthalmology

Contribute to the Joint Strategic Needs Assessment:

- Reduce the incidence of preventable blindness influenced by healthcare factors

Future modelling work across RD&E, North Devon and Derriford hospital:

- Clear and well documented methodology

Learning from this work could inform coding practice in RD&E with the introduction of their new system EPIC

- Meeting with Chief Financial Officer in RD&E

Learning and reflections

Challenges

- Data availability
- No measure of complexity (eye pressure) – difficulty observing disease progression
- Reliant on another organisation for data
- Timescales and pressures of day job

Positives

- Developed skills in discrete event simulation, machine learning and system dynamics
- Networking and project management skills
- Collaborative work between Public Health and NEW Devon CCG
- Evidence to support a case for change around how data is collected and managed in the acutes

More positives!

- Developed skills in Machine Learning and taking this forward with various workstreams in Public Health

  - HES data looking at patients with a self harm cause code and a discharge method of death

- Collaborative project between Public Health and Penchord – Risk Stratification

- CCG analyst role…

Tools/systems	
PowerBI Infographics	**Overarching framework**
	Demand	Use of resources	Supply	Inequity	Sustainability
System dynamic models	**Higher analytical level**
	Join together multiple indicators/ analysis into more complex forms
Statistical analysis – R	**Analytical level**
	Higher level analysis of the indicators ie regression models/ projections
Dr Foster/ HED GIS PowerBI	**Indicator level**
	Single indicators/ measures but can drill down into subgroups/ trends etc
SQL databases Integrated datasets	**Base data**
	Demographics	HES/ SuS	NHSE/ I/ D	QOF	JSNA

Thank You!