# Imperial College Health Partners

# Lunch & Learn
# 13th December 2018

# What's our story?

- Rooted in a strategic and partnership approach to system transformation;
- Underpinned by systems thinking and system dynamics modelling;
- A relational paradigm runs through our work and has stimulated the development of new tools;
- Strong population health component to conceptualising and understanding system transformation;
- Committed to forging new ways to work across the horizontal thread between population health needs, service transformation and workforce transformation.
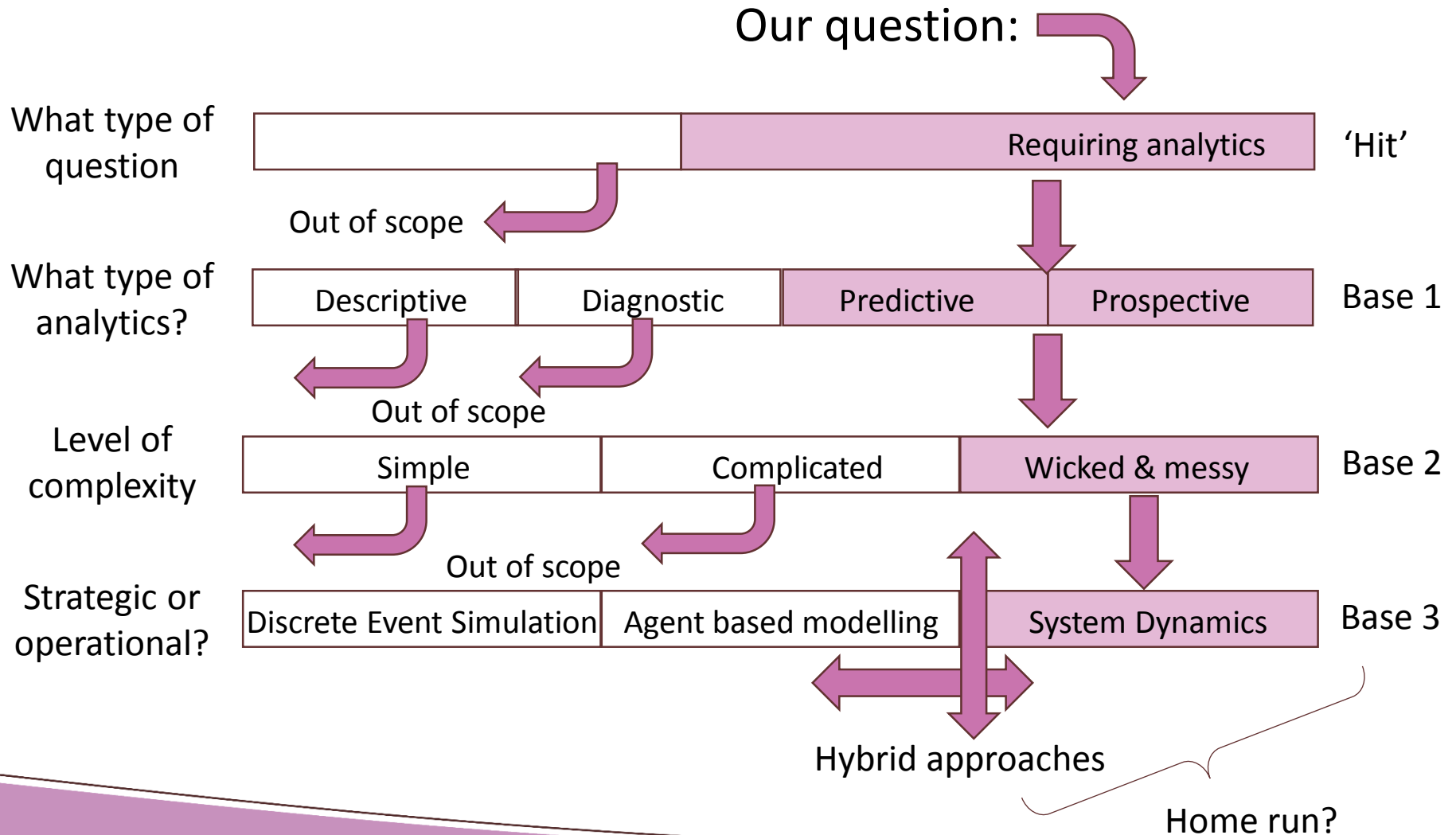
# Examples of our working partnerships…

- Kent County Council to use their linked data to inform strategic population health and service transformation modelling projects;
- Health Education England funded programmes to develop an integrated approach to strategic workforce planning at STP/ICS level;
- NAPC (Primary Care Home) programme to support workforce transformation;
- CQC and LGA in exploring the contribution and relational pre-conditions for effective partnership work and system transformation.

# How does this work itself out…

- We're going to skim the surface…

# The modelling bit

# Understanding the nature of the questions we ask



Our question:

| | | | |
|---|---|---|---|
| **What type of question** | Requiring analytics | | 'Hit' |

Out of scope

| **What type of analytics?** | Descriptive | Diagnostic | Predictive | Prospective | Base 1 |
|---|---|---|---|---|---|

Out of scope

| **Level of complexity** | Simple | Complicated | Wicked & messy | Base 2 |
|---|---|---|---|---|

Out of scope

| **Strategic or operational?** | Discrete Event Simulation | Agent based modelling | System Dynamics | Base 3 |
|---|---|---|---|---|

Hybrid approaches

Home run?

# Suitability of SD

- System Dynamics modelling is the 'tool of choice' when:
  - ✓ The scope of an issue is '***strategic***' rather than operational or tactical;
  - ✓ The importance of variability or tracking individuals within a system is low;
  - ✓ The number of entities is ***large***;
  - ✓ When control over the system is exerted through ***rates*** rather than queues;
  - ✓ When timescales are ***relatively long***;
  - ✓ When the purpose is ***to inform policy making*** and to gain understanding about a system.

Ref: Brailsford et al, *Discrete-Event Simulation and System Dynamics for Management Decision making,* (2014), Wiley

# What does successful look like?

Evidence about what makes a successful simulation project (including but not exclusively System Dynamics) has identified the following 5 elements:

1. High levels of communication and interaction between the client and the modeler throughout the project.
2. Modeler skills, competence and understanding of the client context.
3. Responsiveness and flexibility in delivering on the project.
4. Involvement and engagement with the client and relevant stakeholders.
5. The customer of client organisation should be committed, supportive and engaged in the modelling work throughout.

Ref: Key Performance indicators fir successful simulation projects. JOR (2017) 68, 747-765
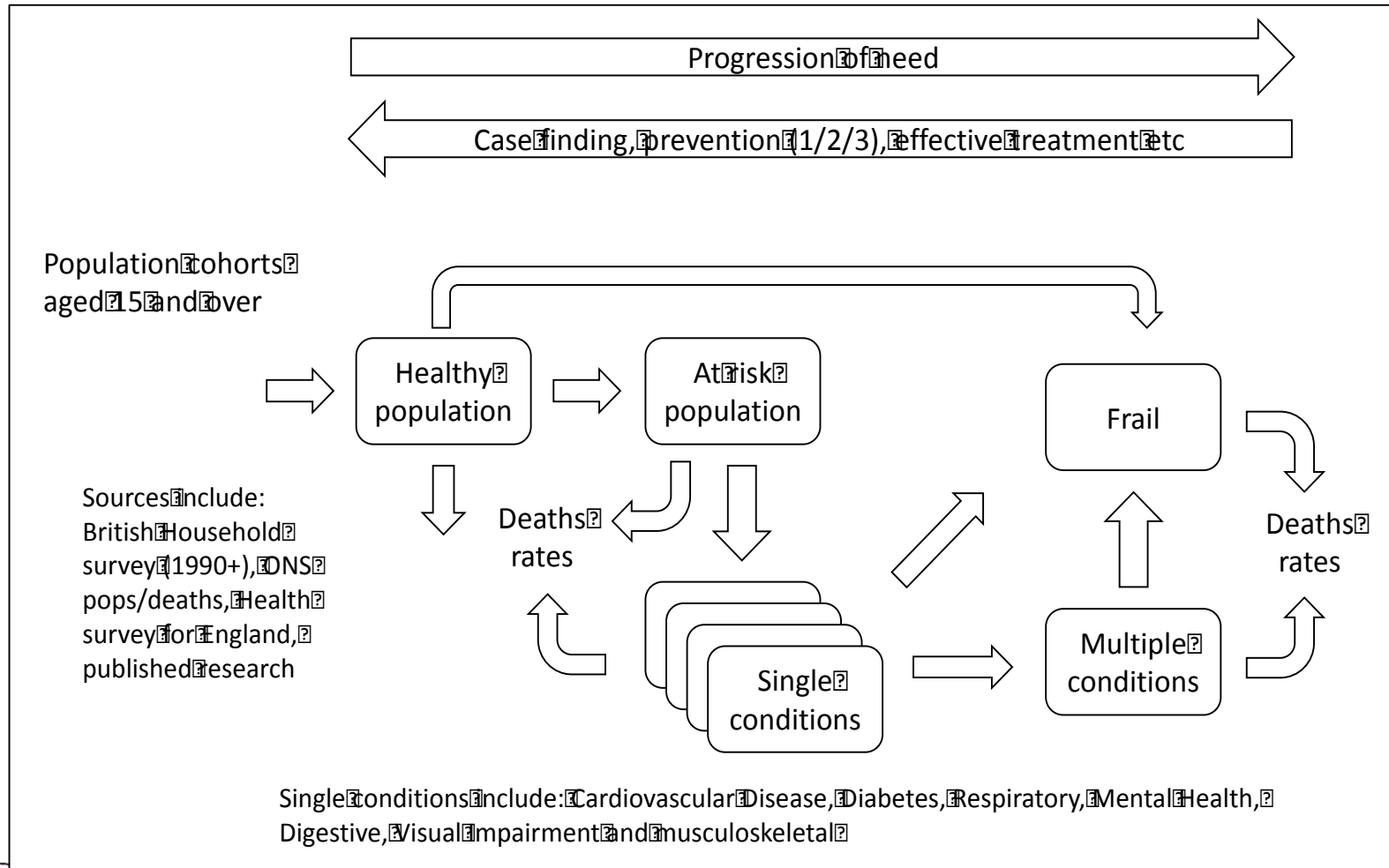
# Population health modelling

# An approach that is reflected in the care function cube
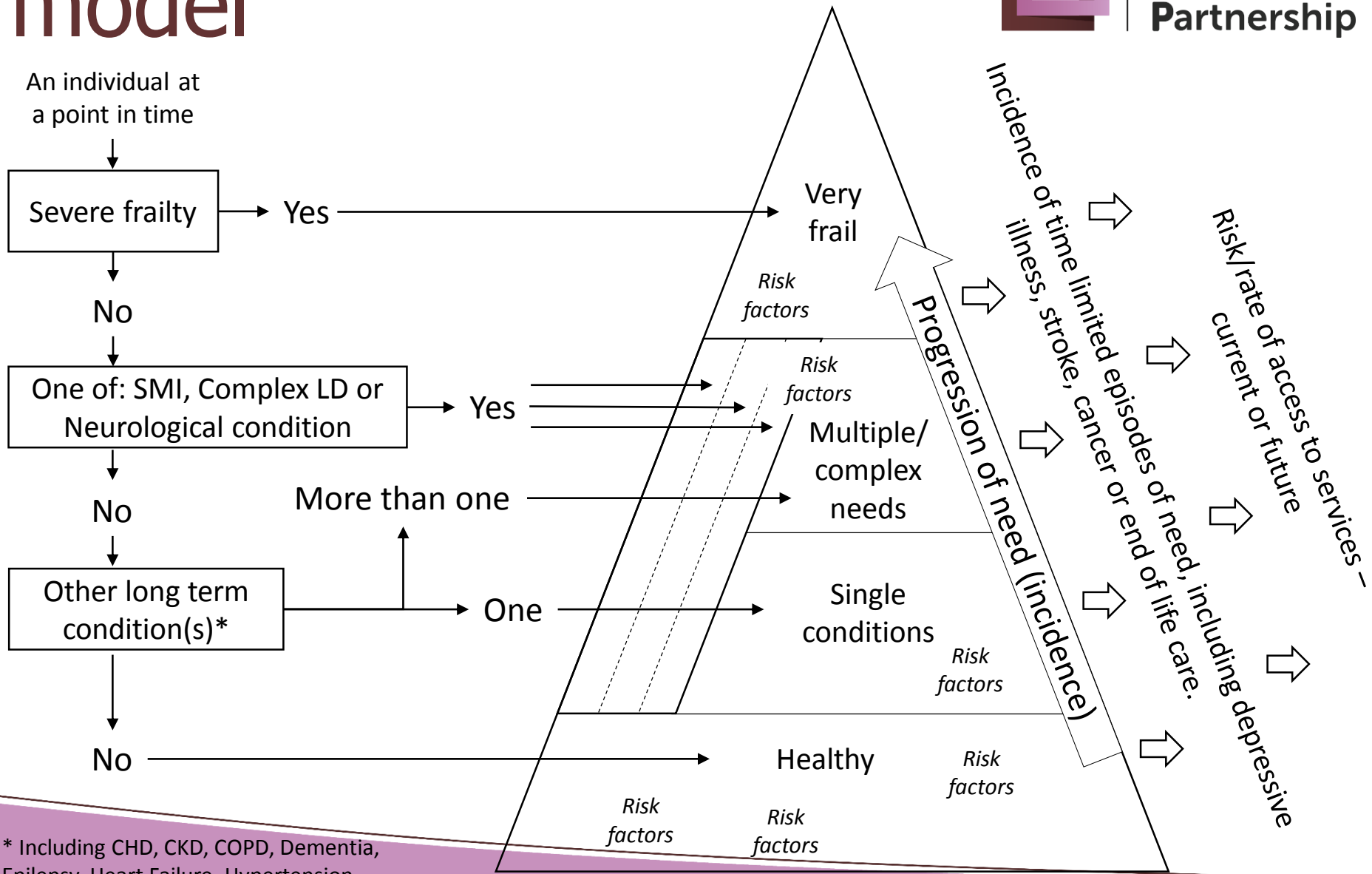
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Each segment of the cube requires a workforce that is molded to cohort needs, care functions being delivered and the setting, whilst at the same time:

- Population health needs are changing;
- Services are being re-modeled;
- The settings where care is delivered are evolving.
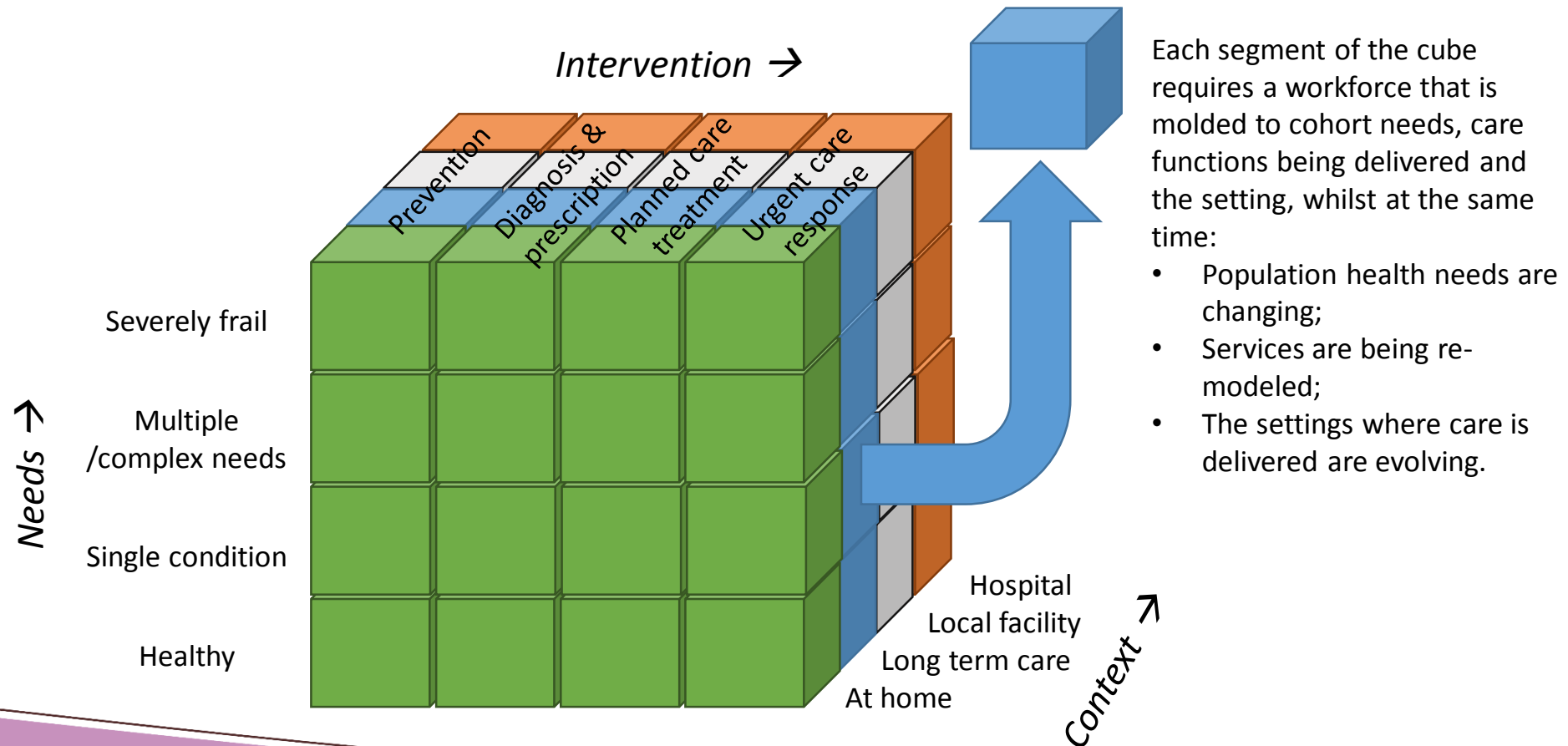
# Population health needs as a system

Progression of need

Case finding, prevention (1/2/3), effective treatment etc

Population cohorts aged 15 and over

Sources include: British Household survey (1990+), ONS pops/deaths, Health survey for England, published research

Healthy population

At risk population

Frail

Deaths rates

Deaths rates

Single conditions

Multiple conditions

Single conditions include: Cardiovascular Disease, Diabetes, Respiratory, Mental Health, Digestive, Visual Impairment and musculoskeletal

# Initialising the cohort model

An individual at a point in time

Severe frailty → Yes → Very frail

No ↓

One of: SMI, Complex LD or Neurological condition → Yes

No ↓

Other long term condition(s)* → More than one → Multiple/ complex needs

Other long term condition(s)* → One → Single conditions

No → Healthy

*Risk factors*

Progression of need (incidence)

Incidence of time limited episodes of need, including depressive illness, stroke, cancer or end of life care.

Risk/rate of access to services – current or future

\* Including CHD, CKD, COPD, Dementia, Epilepsy, Heart Failure, Hypertension.

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# Example – progression to frailty…

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MDT case management

Case finding

Risk…

At risk of progression

c.32,800

Progression
*c.680pa*

High or very high frailty

c.6,800

Deaths

*c.970pa*

Deaths

*c.570pa*

Multiple & complex needs

c.8,500

*c.310pa*

Deaths

*c.310pa*
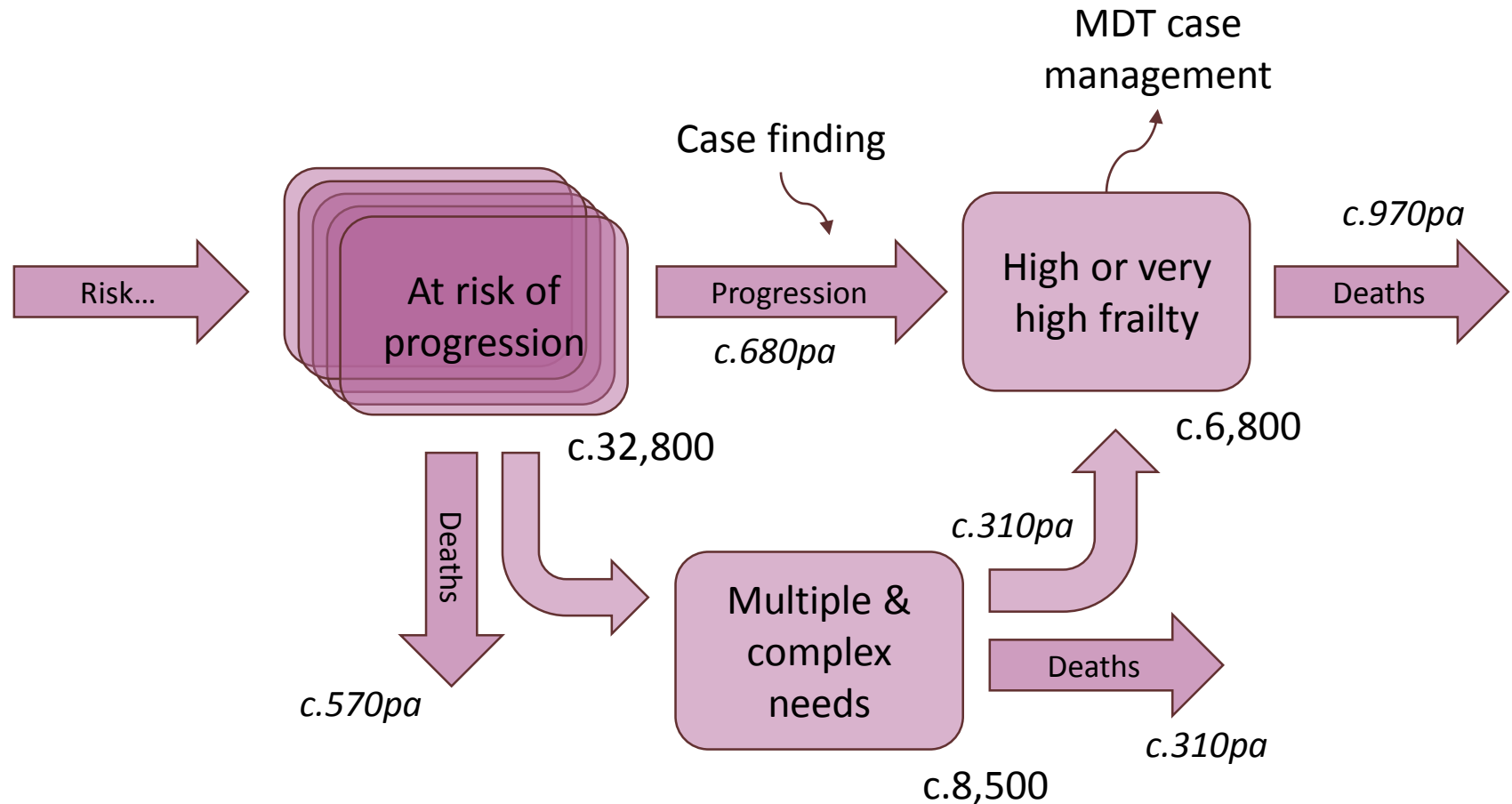
Note: figures for 2018, source: Surrey Downs whole population cohort model

# Insights – cohorts at risk of progression

## Cohorts at risk of progression (2018)



- Moderate frailty — 2753.74
- Respiratory conditions — 16404.49
- Cardiovascular disease — 5717.19
- Diabetes — 5993.04
- Serious & enduring MH needs — 896.01
- Neurological conditions — 390.09
- Dementia — 670.39
- Multiple conditions — 8550.02
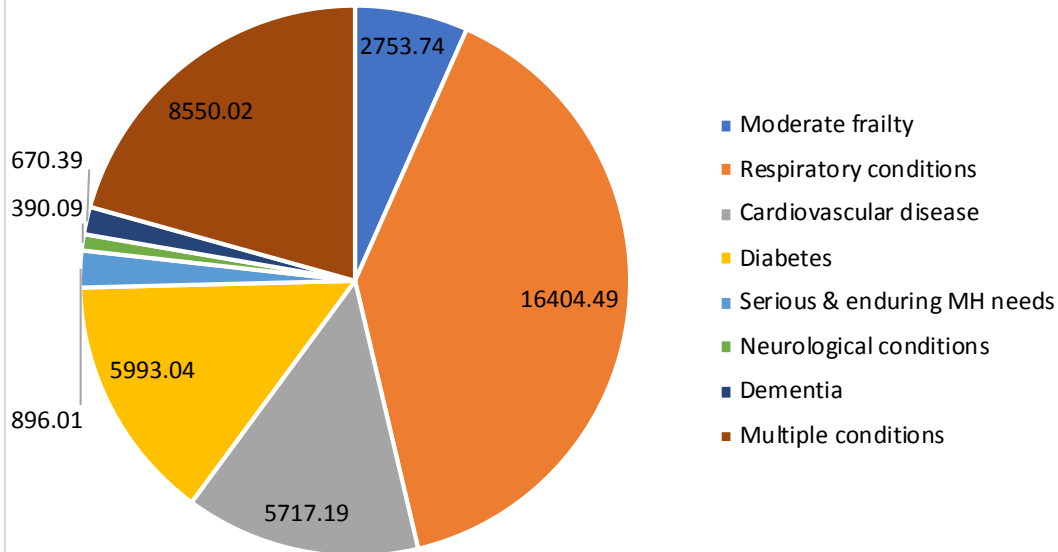
Highest impact will come from focusing on cohorts with high numbers and high rates of progression, i.e. moderate frailty & complex/multiple needs….

## Numbers progressing to high & very high frailty pa (2018)



140.4, 67.6, 62.4, 57.2, 10.4, 20.8, 46.8, 306.8
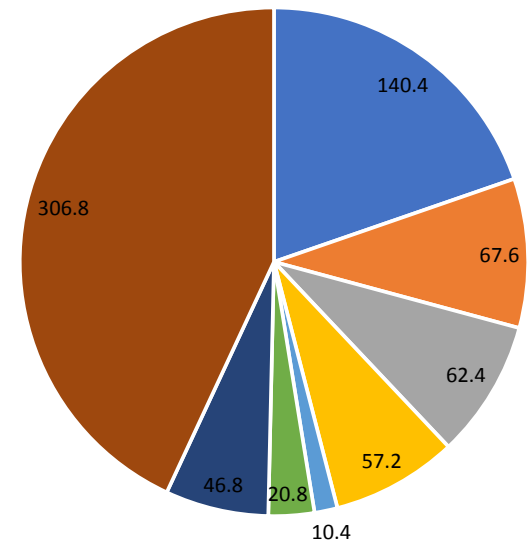
# Workforce transformation

# The workforce transformation story

- *SWiPe* is a framework for strategic workforce planning that relies on a population health led approach and a strong alignment to service transformation;
- Developed over the past 4-5 years and applied at all levels of system planning from STP/ICS to Primary Care Networks and across workstreams.

*10. Monitor & evaluate*

*1. Population health driver*

*4. Service transformation goals*

*8. Workforce training and development*

*5. Workforce Futures (the 'B')*

*2. Care function delivery*

*3. Skill mix requirements*

*6. The 'as-is' workforce (the 'A')*

*7. The workforce plan (the 'A' to 'B')*

*9. Leadership & engagement*
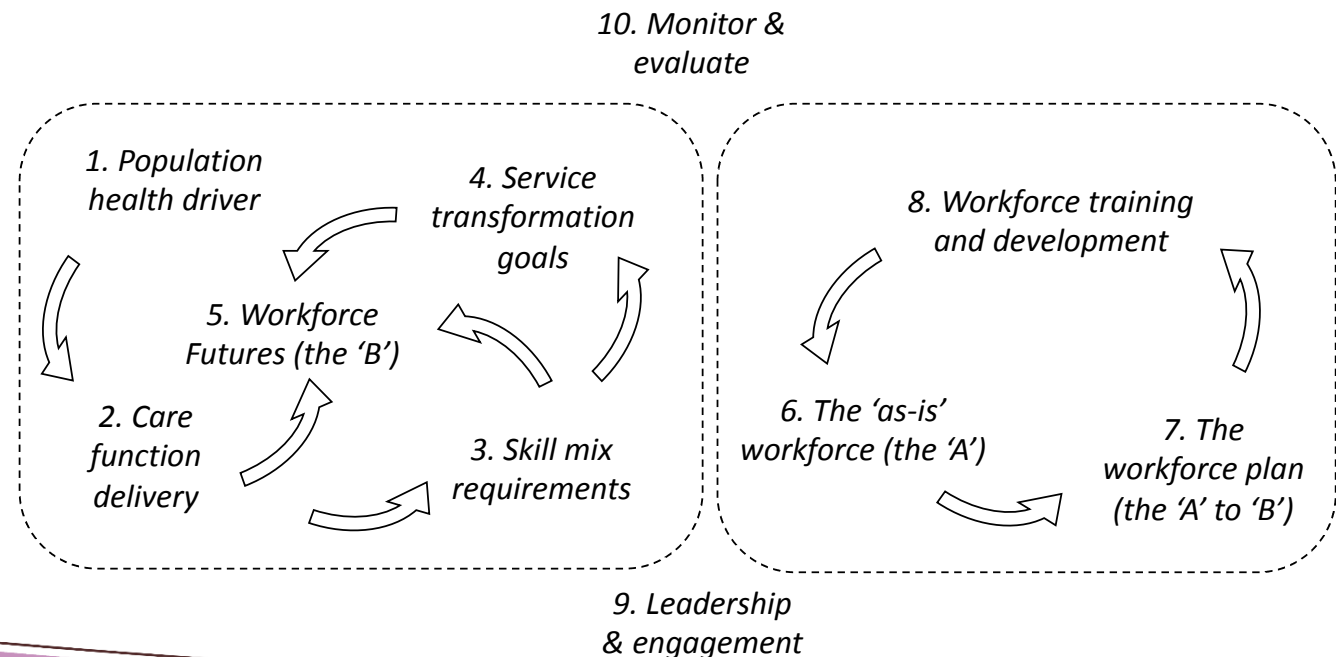
# Application – the General Practice workforce simulator

*What strategies should we employ to achieve the requisite workforce for General Practice in the future and how does that translate into recruitment, retention and workforce development plans?*

It answers this question using a whole-practice, skill-level perspective, whilst also retaining the ability to monitor progress toward specific targets for wte GP capacity.

# What does the simulator do?

- It uses wte workforce data from NHS Digital (adjusted for missing practices) for September 2017 for a specific CCG;
- It 'shapes' that data into skill levels and 5yr age bands to initialise a system dynamics model;
- It requires a user input that describes the wte requirements at each skill level at a specified date in the future;
- It simulates the required replacement or additional workforce at each skill level and in each year to 2031, including the requirements set in the previous step;
- It enables the end user to explore the impact of different policies on achieving the future wte requirements including, for example, the balance between recruitment and upskilling, the recruitment of GPs from overseas and retention strategies.

# Model interface pages



**1. Home:** set your wte targets by skill level (and the split between GPs v's ANP/ACP) & view high level outputs for wte capacity changes…
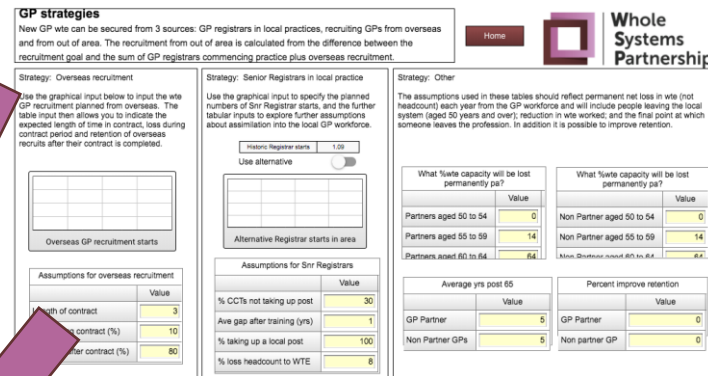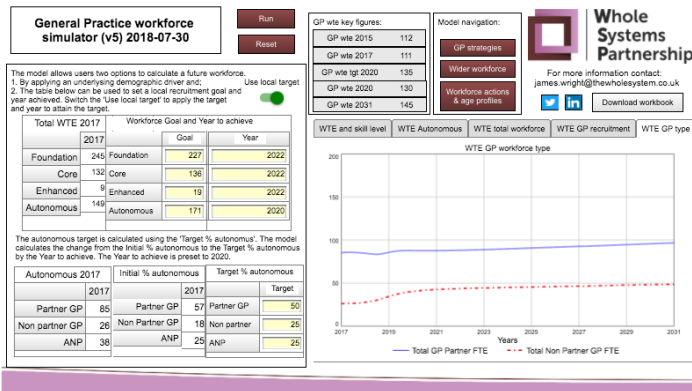
**2. GP strategies:** explore the impact of different ways to achieve the required change in GP wte…

**3. Wider workforce:** decide on any improvements in the retention of the wider workforce and on preferences toward upskilling…
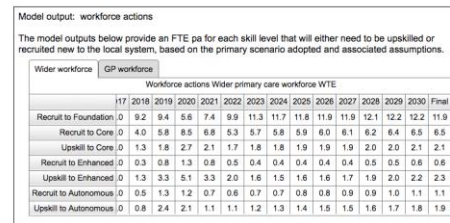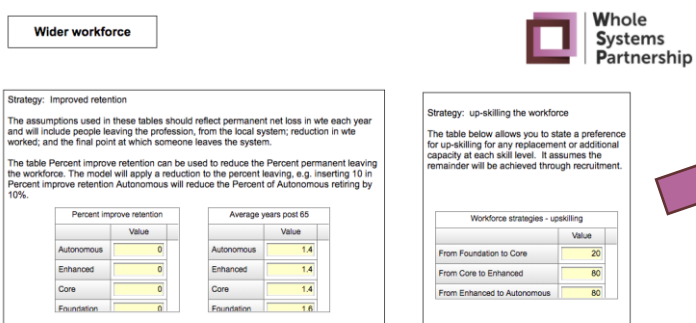
**4. Annual outputs:** view and extract annual wte targets to achieve the model outputs for each skill level and for recruitment v's upskilling…

# An example (step 1)

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The model allows users two options to calculate a future workforce.
1. By applying an underlysing demographic driver and;
2. The table below can be used to set a local recruitment goal and year achieved. Switch the 'Use local target' to apply the target and year to attain the target.

Use local target

| Total WTE 2017 | | Workforce Goal and Year to achieve | | |
|---|---|---|---|---|
| | 2017 | | Goal | Year |
| Foundation | 245 | Foundation | 227 | 2022 |
| Core | 132 | Core | 136 | 2022 |
| Enhanced | 9 | Enhanced | 19 | 2022 |
| Autonomous | 149 | Autonomous | 171 | 2020 |

The autonomous target is calculated using the 'Target % autonomus'. The model calculates the change from the Initial % autonomous to the Target % autonomous by the Year to achieve. The Year to achieve is preset to 2020.

| Autonomous 2017 | | Initial % autonomous | | Target % autonomous | |
|---|---|---|---|---|---|
| | 2017 | | 2017 | | Target |
| Partner GP | 85 | Partner GP | 57 | Partner GP | 50 |
| Non partner GP | 26 | Non Partner GP | 18 | Non partner | 20 |
| ANP | 38 | ANP | 25 | ANP | 30 |

This CCG has set a goal for the wte workforce by skill level, as shown in the middle column opposite, with the target year for achieving this set for 2022 except for the Autonomous skill level, where the target is 2020;

From an initial 57/18/25 split for GP partners, salaried and ANP contributions to the Autonomous skill level workforce, the CCG has set a future spilt at 50/20/30.

The model simulates the outputs for GP wte opposite:

| GP wte key figures: | |
|---|---|
| GP wte 2015 | 112 |
| GP wte 2017 | 111 |
| GP wte tgt 2020 | 135 |
| GP wte 2020 | 122 |
| GP wte 2031 | 135 |

# Step 2 – GP strategies

The CCG then decides on three strategies to increase the GP workforce:

1. That 5 GPs from overseas will be recruited in three consecutive years from 2018 to 2020.

2. That there will be a gradual increase in the number of Registrars being trained and retained locally, rising gradually from 1 or 2 new Registrars a year initially up to 5 in the medium term.

3. That there will be a 10% improvement in retention.

# Step 3 – model outputs


Whole Systems Partnership

What will progress in growing our GP wte look like?

GP wte key figures:

| | |
|---|---|
| GP wte 2015 | 112 |
| GP wte 2017 | 111 |
| GP wte tgt 2020 | 135 |
| GP wte 2020 | 128 |
| GP wte 2031 | 136 |

Where will new GPs from from (local, out of CCG or international)?



| WTE and skill level | WTE Autonomous | WTE total workforce | WTE GP recruitment | WTE GP type |

GP recruitment strategy WTE per year

— GP recruitment[Registrar]    - - GP recruitment[Out of area]
······ GP recruitment[Overseas]
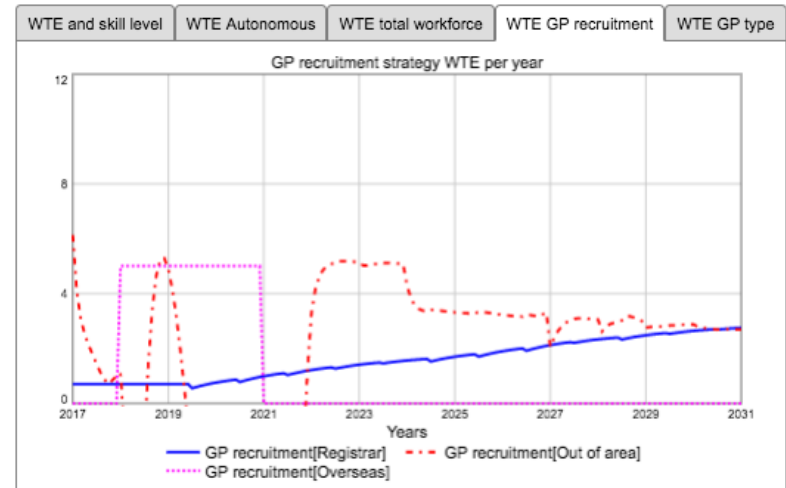
What does our recruitment and workforce development requirements look like each year?

Model output: workforce actions

The model outputs below provide an FTE pa for each skill level that will either need to be upskilled or recruited new to the local system, based on the primary scenario adopted and associated assumptions.

Wider workforce    GP workforce

Workforce actions Wider primary care workforce WTE

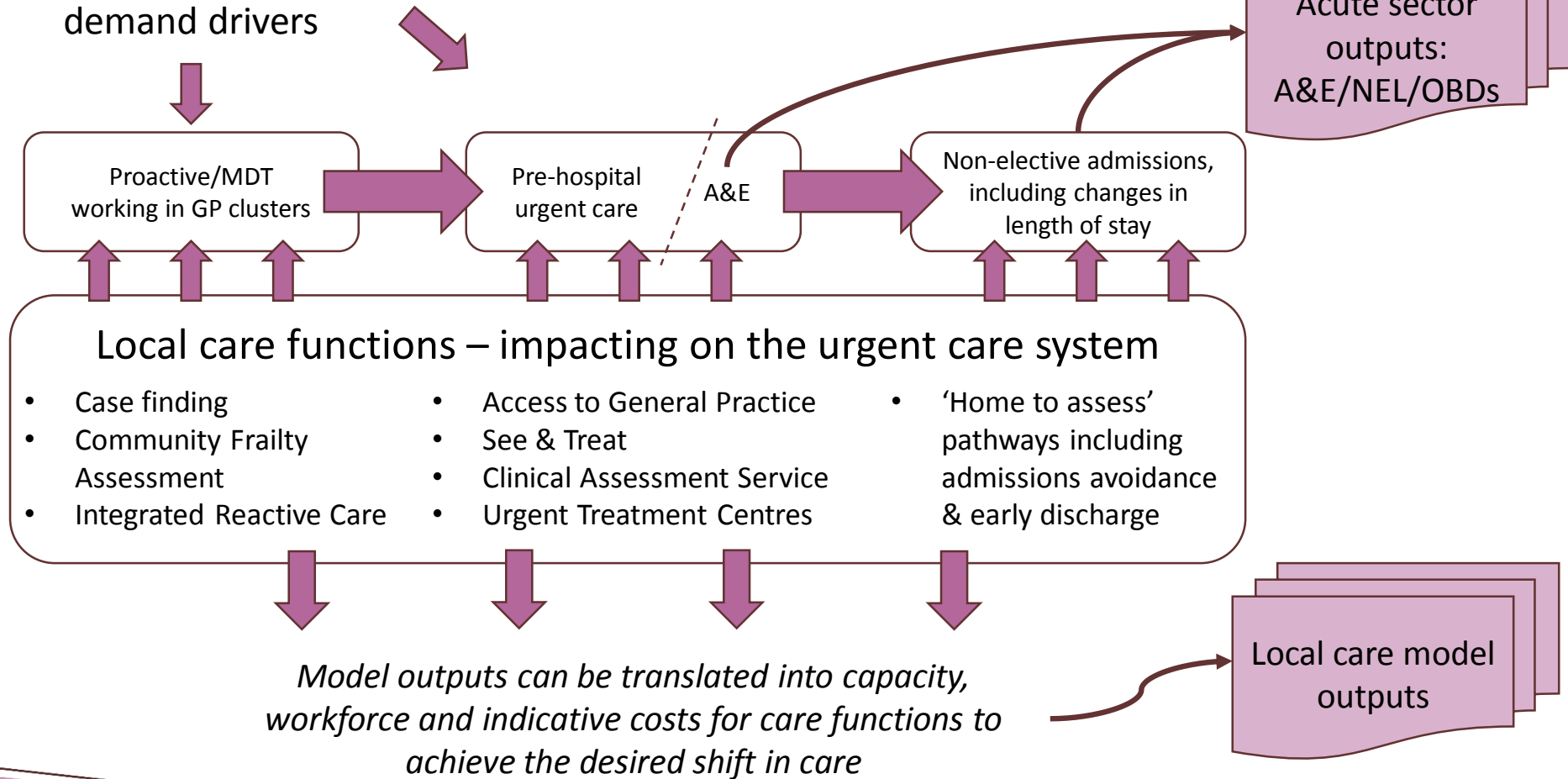| | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | Final |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Recruit to Foundation | 0.0 | 9.3 | 9.8 | 5.9 | 7.5 | 9.9 | 11.3 | 11.7 | 11.9 | 11.9 | 11.9 | 12.1 | 12.2 | 12.2 | 11.9 |
| Recruit to Core | 0.0 | 4.4 | 7.1 | 9.5 | 7.2 | 5.5 | 5.8 | 5.9 | 5.9 | 6.0 | 6.1 | 6.3 | 6.5 | 6.6 | 6.6 |
| Upskill to Core | 0.0 | 1.4 | 2.3 | 3.0 | 2.3 | 1.7 | 1.8 | 1.9 | 1.9 | 1.9 | 1.9 | 2.0 | 2.0 | 2.1 | 2.1 |
| Recruit to Enhanced | 0.0 | 0.5 | 1.3 | 1.6 | 1.0 | 0.6 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 |
| Upskill to Enhanced | 0.0 | 1.8 | 5.0 | 6.4 | 3.9 | 2.3 | 1.7 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.2 | 2.4 | 2.6 |
| Recruit to Autonomous | 0.0 | 0.9 | 2.6 | 2.2 | 1.1 | 0.8 | 0.8 | 0.8 | 0.9 | 0.9 | 1.0 | 1.0 | 1.1 | 1.2 | 1.3 |
| Upskill to Autonomous | 0.0 | 1.5 | 4.5 | 3.8 | 1.9 | 1.4 | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.1 | 2.2 |

# System transformation

# Local Care system dynamic model

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Population health and demand drivers

Acute sector outputs: A&E/NEL/OBDs

| Proactive/MDT working in GP clusters | → | Pre-hospital urgent care | A&E | → | Non-elective admissions, including changes in length of stay |

**Local care functions – impacting on the urgent care system**

- Case finding
- Community Frailty Assessment
- Integrated Reactive Care

- Access to General Practice
- See & Treat
- Clinical Assessment Service
- Urgent Treatment Centres

- 'Home to assess' pathways including admissions avoidance & early discharge

*Model outputs can be translated into capacity, workforce and indicative costs for care functions to achieve the desired shift in care*

Local care model outputs

# Local Care system dynamic model

- Local analysis plus input from an initial group of stakeholders to:
  - Arrive at a consensus about the **demand drivers** for the four PODs;
  - Develop a range of **implementation profiles** for each of the different care functions or service transformation plans grouped to map onto one or more of proactive case finding; integrated reactive care; pre-hospital urgent care; integrated discharge; or planned care solutions;
  - Agree assumptions about **impact**, with scope for testing and scenario building.
- These are captured in a separate document that can be updated as new intelligence of evidence emerges.

# It's not all about the wiring…

The model interface provides the environment in which to explore the requirements in local care (the example below covers the pre-hospital urgent care pathway) & the impact on POD activity (e.g. A&E)…



*The impact of local care, were the 'opportunity fully realised, on POD activity…*
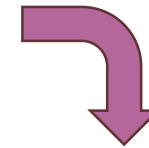
# Benefits
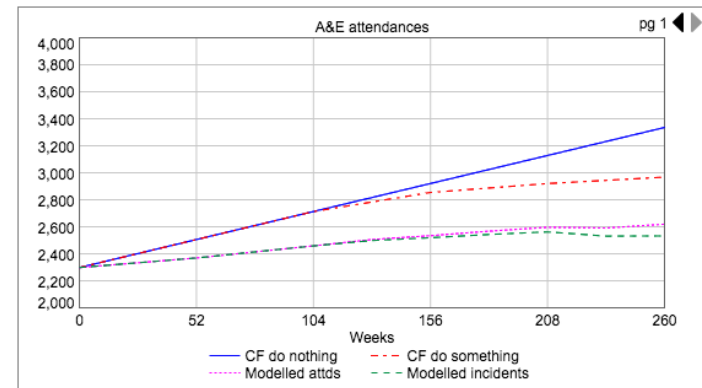
- The local care system dynamics modelling project led to:
  - An improved understanding of underlying population health needs as a driver for increased demand;
  - The development of a consistent language and set of assumptions about the potential impact from developing local care; and
  - The implications for the acute care system from the development of local care.

- Its limitations included:
  - Whilst the model addressed whole-population health needs the key care functions included were focussed on the needs of those with high or very high frailty;
  - A relatively short timescale for impact, i.e. constrained to the timescales for the STP to 2021;
  - Limited attention to the preventative and wider factors influencing health and having a potential contribution to make.

# Recognising the importance of relationships

# Relational value

Relational value ($R^v$) is something that:

1.  Exists **<u>between</u>** individuals, groups or organisation – it is distinct from, though dependant on the parties to the relationship, and is therefore a feature of the system as a whole, not the constituent parts.
2.  Supports or hinders the achievement of the **<u>purpose</u>** for which the relationship has come into existence.
3.  Is evidenced through a set of *behaviours* that are consistent with the suggested **<u>attributes</u>** of relational value…..
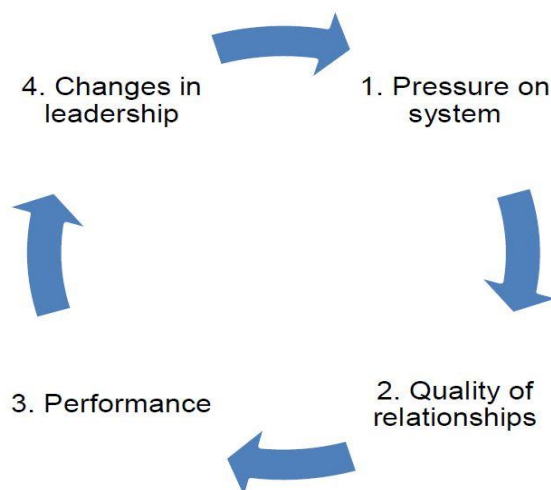
# CQC Local System reviews

- Co-creation of a bespoke audit or 'scorecard';
- 35 statements, to be rated on a 6 point scale;
- Anonymous;
- Some demographic intelligence;
- Opportunity for free text comments;
- Completed using an online tool disseminated locally by stakeholders;
- Analysed by CQC.

# Outputs

- More than 2500 responses across 20 systems;
- Findings suggested some key lines of enquiry for site visits;
- 'Rang true' with what was found on the ground;
- Gave a language and a legitimacy to conversations that may otherwise have been seen as 'soft' impressions.



4. Changes in leadership → 1. Pressure on system → 2. Quality of relationships → 3. Performance → (back to 4. Changes in leadership)

1. When pressure on the system increases, the quality of relationships often suffers.
2. When the quality of relationships declines, this can result in poorer performance and outcomes.
3. When performance declines, leadership changes tend to happen more often.
4. When leadership changes regularly, the pressure on the system can increase.
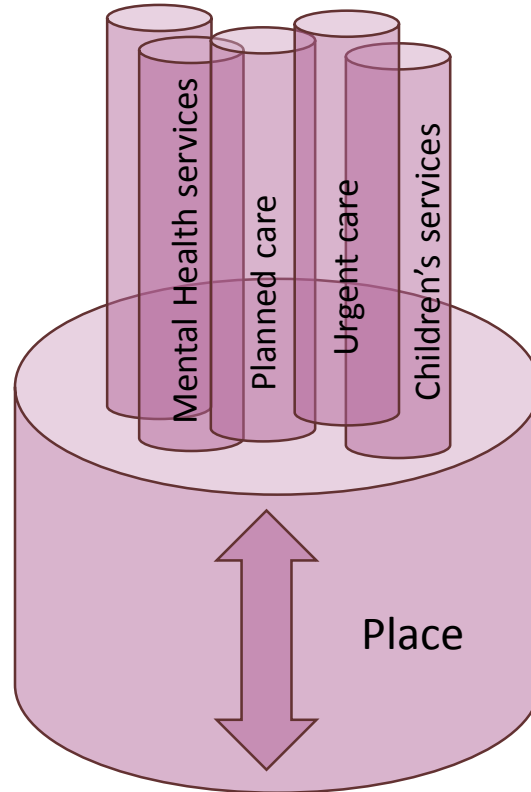
# The contribution of place-based thinking
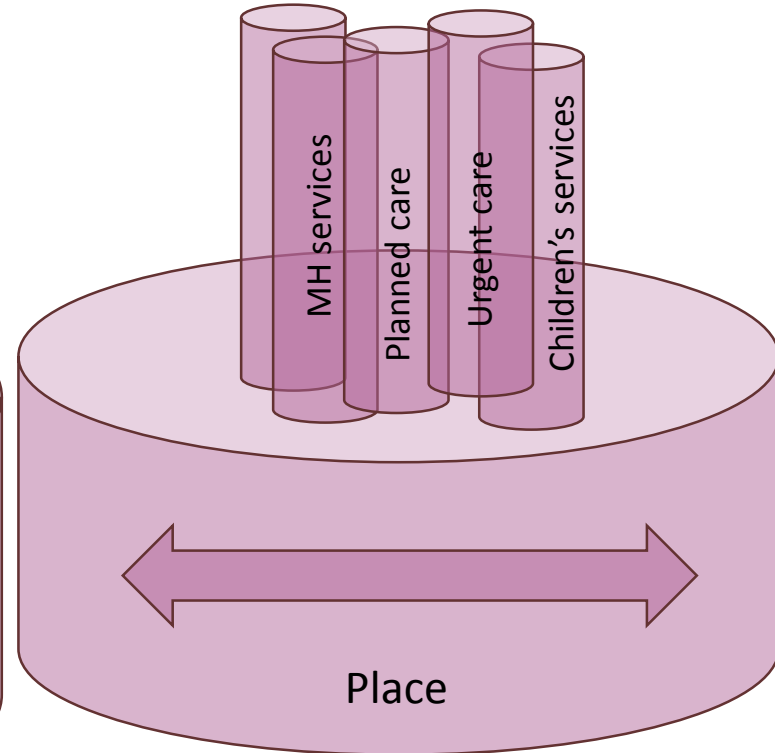
# Thinking about place – the thick and the wide!

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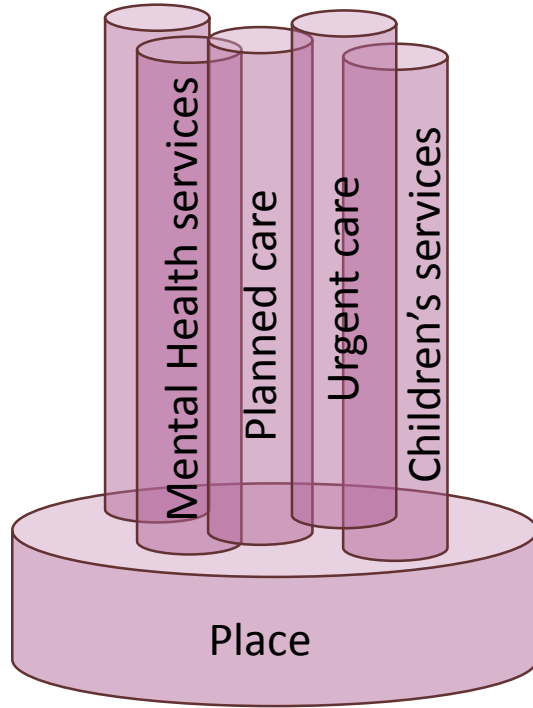


**Thin** = Neighbourhood or locality teams…..

**Thick** = General Practice + in-reach/out-reach teams, specialists supporting people at home etc…..

**Wide** = + independent and voluntary sector, charities etc

# The nature of place

- Each place will have:
  - ✓ A level of **health and wellbeing** that can be expressed in absolute and aspirational terms using the outputs from the cohort analysis (retrospective) and modelling tools (prospective), described using high level population cohorts;
  - ✓ A 'natural' resource often described as '**community assets**' that strengthen individual and community resilience and therefore reduce the risk of poor health as well as providing a buffer against inappropriate use of statutory sector services,
  - ✓ Rates of **access to services** such as primary care, social care, hospital or specialist services identified in local data and/or estimated from national survey data modified for local socio-demographic profiles.

# The Place cylinder….



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What makes a place for a particular population group?

Some of the workforce, or other resource, may be physically located or organised at a 'higher' geographical level, but remain 'place-oriented'

Family and carers

General Practice, Community Health & Social Care workforce

Independent, voluntary and charitable sector workforce

Socio-demographic factors defining the type of place, e.g. using Mosaic descriptors

Employment or other activities

Environment

Rurality

Complemented by an understanding of community asset base

# 'Measuring' place resources

We envisage the development of a dynamic set of measurement and causal links for population health and wellbeing at a place level that reflects, and integrates:

1. Current and future needs – population health.
2. The context from which these needs are expressed – community assets.
3. The workforce resource that seeks to prevent, co-ordinate and respond to needs within the statutory sector.
4. The use of area or system-wide or specialist health and care services when the above are not sufficient.

# Contact details

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