

TTSH Hiding the catheter – adaptive pants

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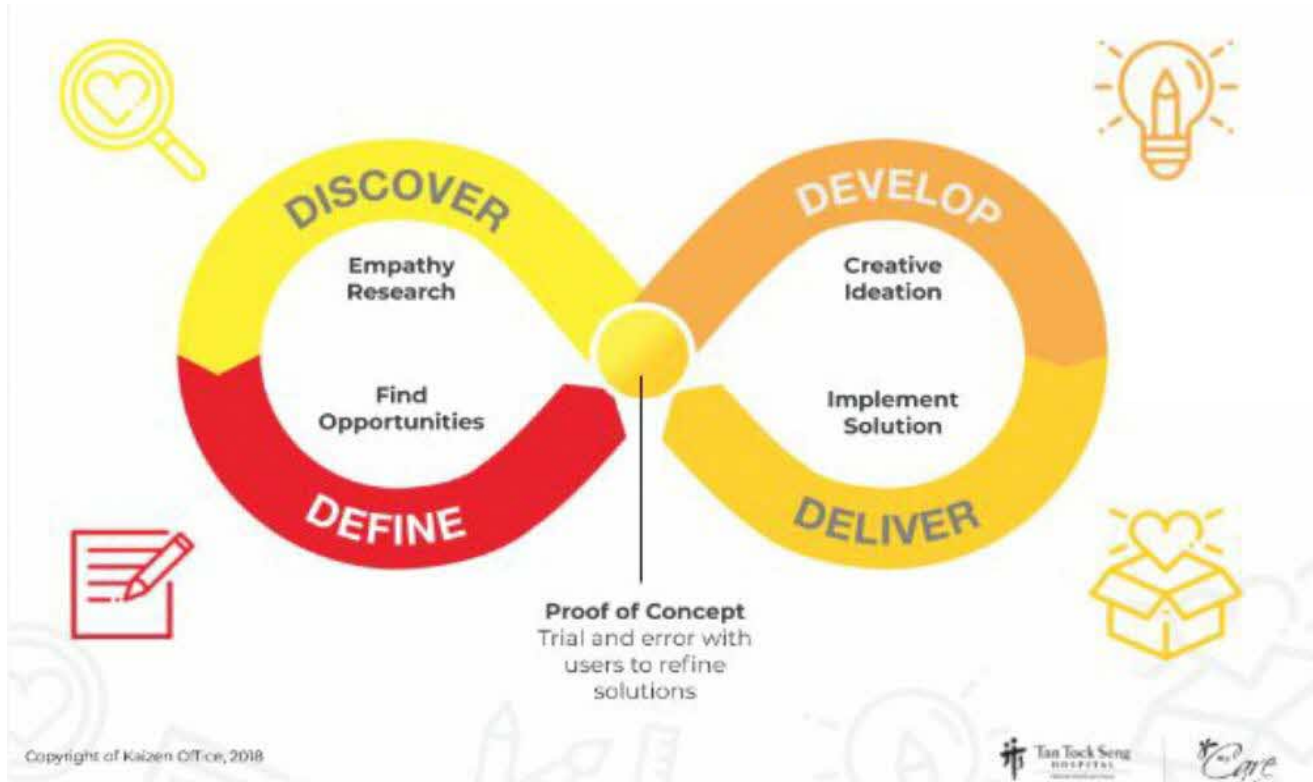
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Introduction and Objectives

- Growing number of patients with indwelling catheters (IDCs) in community
- Need for dignity and self-esteem while managing daily activities
- Utilise **design thinking process** to identify the needs and challenges and develop adaptive pants to support their well-being and community participation.

Methodology

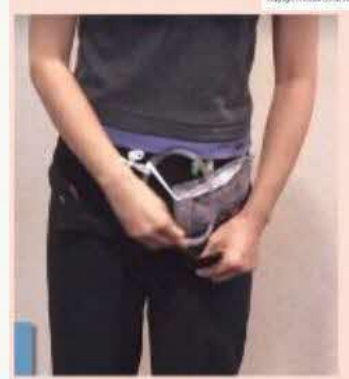
UK Design Council's Double Diamond Framework



Discover: Current stage



Strap the urine bag around & below waist level at all time



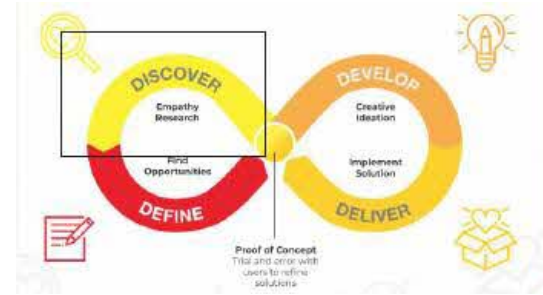
Hang urine bag at belt or waist band



When seated, hang urine bag at side of the waist or side of the chair



Discover: Current stage



Discover: Current stage



Urine Bag Hanger

\$1.30 SGD



ASSURE Urine Bag (120cm...

\$1.10



Conveen Urine Bag
1500ml / Piece

\$7.10



Easy-Tap Leg
Bag Urinary...

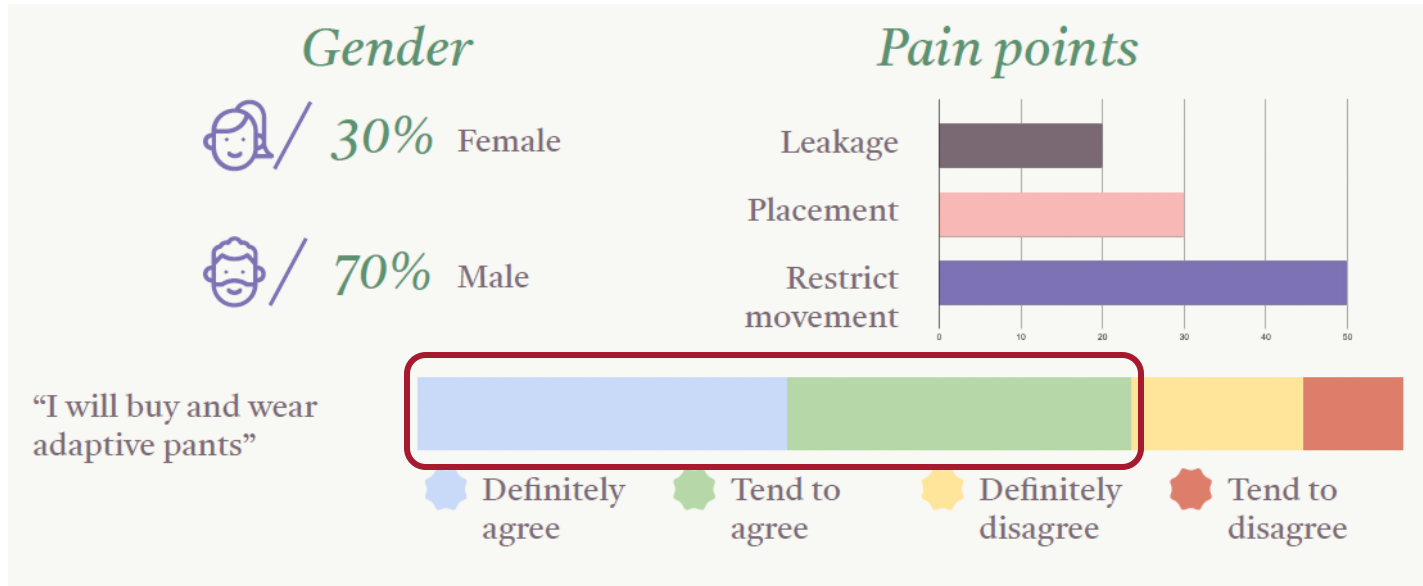
\$73.20



Define: User interview (n=15)



- Median age: 51 years
- Mobility status: 42.9% wheelchair users, 57.1% ambulatory
- Preferences: Equal split between long pants and shorts



Restricted, Sensitive - Normal

Define: Clinicians Needs and gap analysis



Needs analysis

What do patients truly value and need?

| | | |
|---|--|--|
| Activities that patient want to do Walking And swimming | Safe storage to reduce chance of infection (focusing on to the vulnerable parts of the catheter bag) | Reducing hindrance when moving around - walking, sleeping(turning) |
| Anchoring to chair/other as 5/14 | To be part of their daily wear (due to forgetting to take bag along with them) | Reduce kinking due to turning & transferring |

Target Group

Which specific groups are we focusing on?

Short term user those waiting for surgery

WHY?

Questions that helps to understand the situation better

| | |
|---|--------------------------------|
| How do patients usually hang their catheter bag on the bedside? | How does kinking cause leaking |
| Where does the leak occur | |

Gap Analysis

Where are the gaps that need to be met? What/why can't the market products meet these factors?

| | | |
|---|---------------------|------------------------|
| Not used to wearing tight undergarments due to perspiration | 500ml calf 1ltr bag | 90-100cm tubing length |
|---|---------------------|------------------------|

Define: Persona



Sally the teacher

SECONDARY PERSONA

Passionate, loves sharing and exploring new things



Description

Sally is a 40 years old tetraplegic, rides a **PMA** to work, and teaches english in a junior college. Occasional travel overseas. She has been on catheter for **over 3years** and requires her **caregiver** to handle her catheter needs

Assumes

Considers the catheter bag a "fragile" part of their body and requires much **attention and care** when handling it

Daily Activities

What is the user's lifestyle?

- Very Active
- Semi-reliant on caregiver
- Regular activities
- Go out for activities and work
- Swimming

Needs / Pain Points

1. Afraid to turn when sleeping
2. Anxious during wheelchair to bed transfer due to chance of dislodge and entangling of catheter tube

Goals

- Reduce the hindrance in activities of daily living at home movement (e.g. moving from a wheelchair to bed, showering on shower chair)
- Ease of user adjusting catheter when uncomfortable
- Allow caregiver to easily manage and drain catheter bag

Motivations

- Wants to be worry free when moving around in their own home
- Remove odor from urine bag to be less smelly

Opportunity

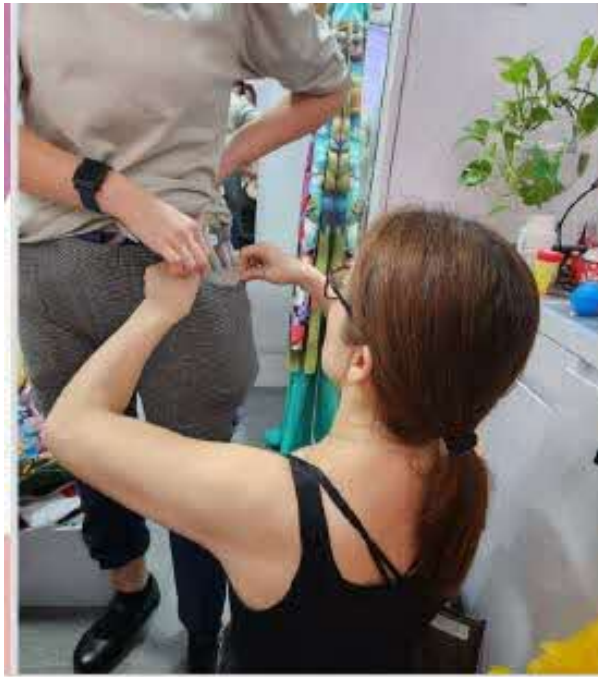
How Might We enable Sally to continue to enjoy her life with less inconvenience and explore the outside world?

Develop: Brainstorm and ideation



Restricted, Sensitive - Normal

Develop: phototyping

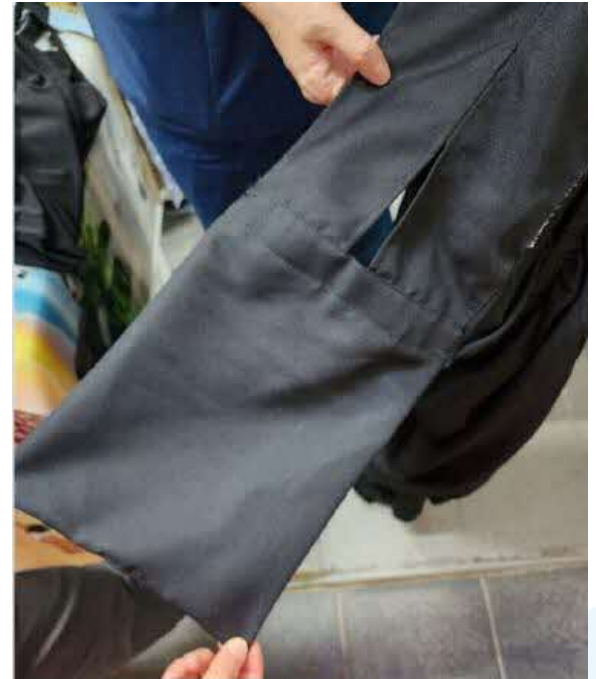


Develop

Long pants key features



RESTRICTED, SENSITIVE - NORMAL



Develop

Short pants key features



Restricted, Sensitive - Normal

Develop

Adaptive Design Principles



FRONTSPLIT

Designed specially to assist caregivers, parallel full-length zippers allow pants to open fully.



FRONTZIP

Say goodbye to unreachable back zip closures.



HANGLOOPS

With this simple addition to your everyday wear, holding up your pants just got a whole lot easier.



MAGSNAP

Neodymium magnetic buttons snap into place with simple movements.



SWIPEFIT

When comfort and simplicity come together, all you have to do is swipe and pull.

(Will & Well, 2020)

Deliver: Piloting

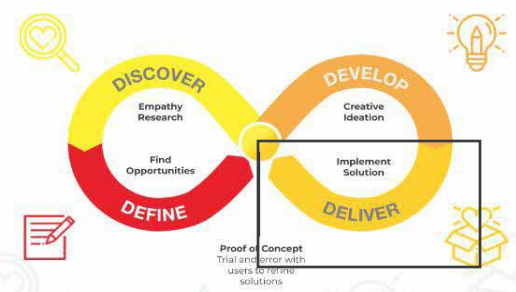
Inclusion Criteria:

- Patients planned for discharge with IDC or patients on long term IDC in the community
- Intact cognition
- Able to communicate (written/verbal)

Exclusion Criteria:

- At risk of pulling IDC
- Dependent/ Unable to dress

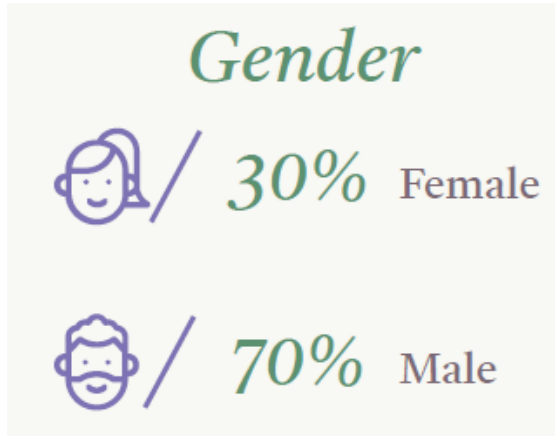
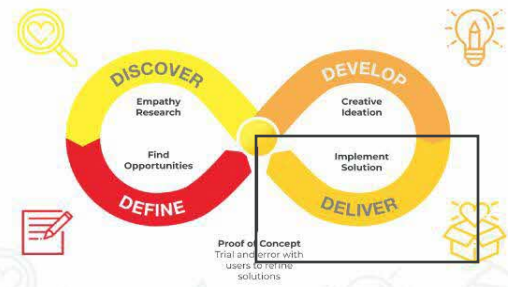
- Trial Period:
Feb 2024- Aug 2024 (6M)
- Follow up interview:
2 weeks- 3 month



Deliver: Piloting

Second phase survey results (n=10)

- Median age: 53.5 years
- 50% wheelchair users
- Type of adaptive clothing prescribed



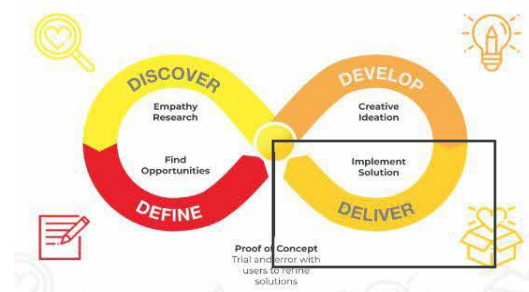
40% Pants



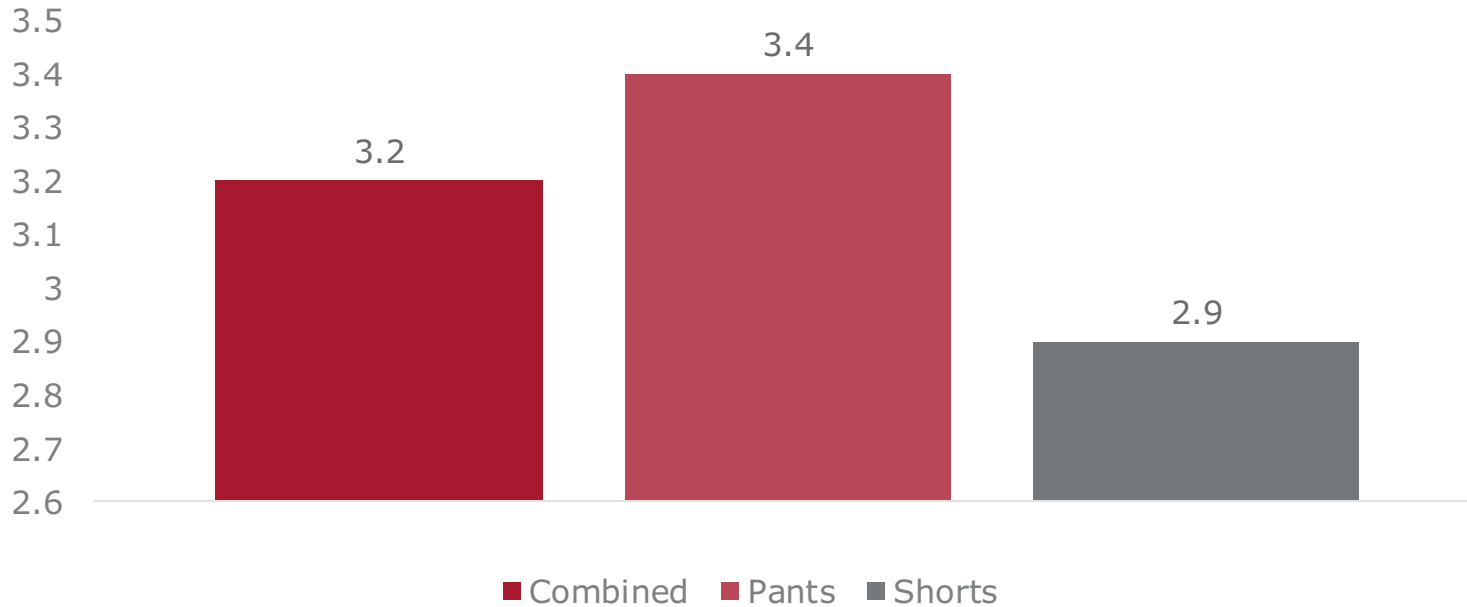
60% Shorts

Deliver: Piloting

User Feedbacks



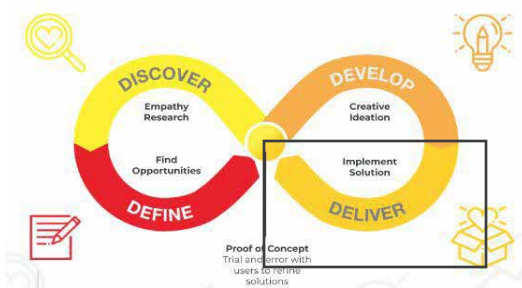
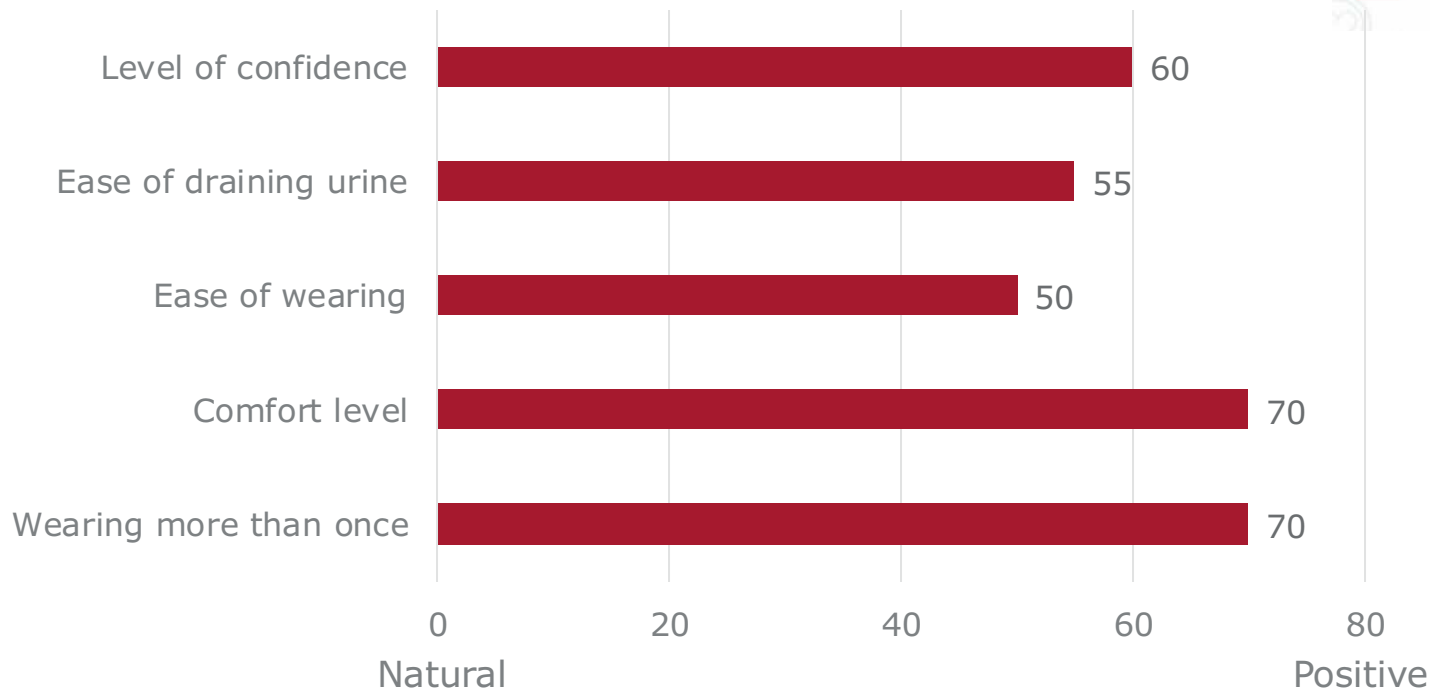
Overall Satisfaction



Restricted, Sensitive - Normal

Deliver: Piloting

User Feedbacks



60% of users will consider to purchase the adaptive pants



Deliver: Piloting

User Feedbacks



- Pocket too **small**; when urine bag is full, feel heavy and pants tends to **pull down**

- The pocket for the urine bag could have **different colour** as the pants. The waist could not be elastic since there is drawstring and can tighten it. The zip could be **extended up the waist band** to put the urine bag back easy.

- With **colour** option

- Add **side pockets** with zip to keep phone



- **Pocket** for urine bag easy manage. **zip with ring**

- **Comfortable and convenient** when walking and draining out urine

- I like that it is **black** so that it is easier to pair with other colour. I like that there is a **Velcro** so that the tape of the bag could be arranged properly

- **Comfort. Appearance**
Can keep the catheter inside
Help with **exercise**. easy **manage the tubing**. no need too long

Deliver: Piloting, long pants





Deliver: Piloting

User Feedbacks



- Troublesome, **difficult to put urine bag** inside the pocket
- Difficult to wear and difficult to put in the urine bag, not comfortable, **too hot**, discomfort with the hook
- Urine bag will **pull the pants down**. feels not necessary to have the shorts.
- Outside wear, **too hot** if inside wear



- Like the **pocket**
- Easy to carry along, especially during transfer; can **hide** when going outdoor as I usually **wear dress**
- Easy to wear, can go out as it is **hidden**

Summary



Improve
self-esteem



Hide the
urine bag



Reduce risk
of infection
by securing
the bag
safely

Learning points

- The design thinking framework provided a structured approach
- Perception of usefulness: user vs clinicians
- Design principle for adaptive pants
- Provide customized options to users with adaptive concepts
- Incomparable price with commercial and available market



Thank You

Tan Tock Seng Hospital • Khoo Teck Puat Hospital • Woodlands Hospital • Yishun Community Hospital • TTSH Integrated Care Hub
Institute of Mental Health • National Skin Centre • National Centre for Infectious Diseases • NHG Cancer Institute • NHG Eye Institute • NHG Heart Institute
Population Health • NHG Polyclinics • Diagnostics • Pharmacy • Community Care • NHG College • Centre for Healthcare Innovation