

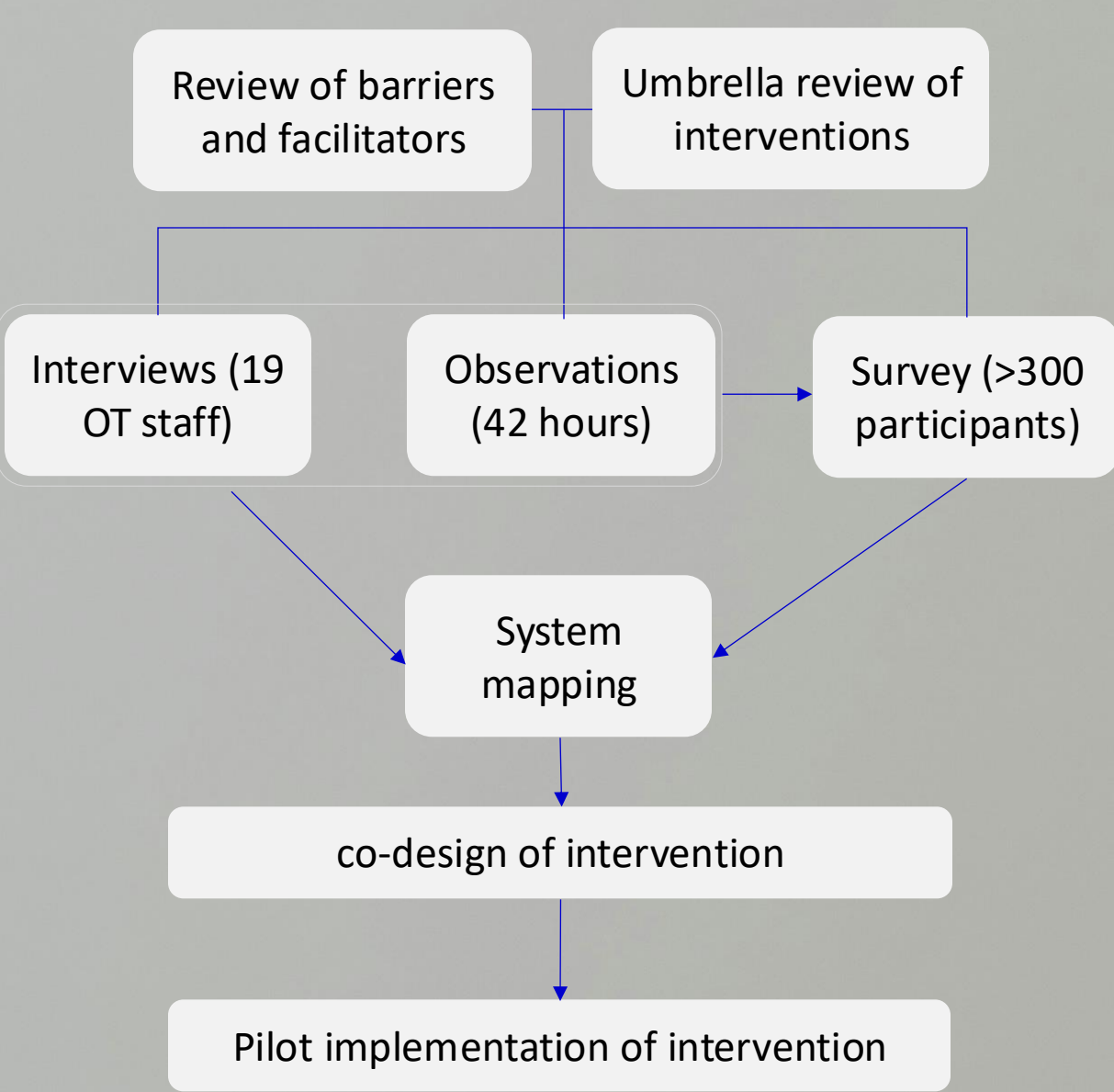
Our Pilot behaviour change intervention reduced unnecessary Non-Sterile Glove use in Operating Theatres

Sadhana Jagannath<sup>1</sup>  
Anouk Zeeuw van der Laan<sup>1</sup>, Abha Joglekar<sup>1,2</sup>, Gaby Judah<sup>3</sup>, Aws Almkhtar<sup>3,4</sup>, Talya Porat<sup>1</sup>, Pelin Demirel<sup>1</sup>  
<sup>1</sup>Dyson School of Design Engineering, Imperial College London, UK  
<sup>2</sup>Centre for Environmental Policy, Imperial College London, London, UK  
<sup>3</sup>Department of Surgery and Cancer, St Mary's Hospital, Imperial College London, UK  
<sup>4</sup>Department of General Surgery, Imperial College Healthcare NHS Trust, St Mary's Hospital, London, UK

1 Background and Study Aim

NHS accounts for 4% of England's total carbon footprint. Operating Theatres are 3-6 times more energy intensive than the rest of the hospital. **30% of waste in hospitals is generated by Operating Theatres.** Carbon footprint of Operating Theatres in 2019 was 5.7 million tonnes CO<sub>2</sub>e (represents 1.25% of the UK's total greenhouse-gas emissions).

**Aim:** To co-design pro-environmental behaviour change intervention in the theatres based on the identified carbon hotspots.



2 Research Activities

3 Non-Sterile Glove use

We found around **8-10** pairs wasted per procedure. Across all NHS theatres in a day, this is equivalent to CO<sub>2</sub> emissions produced from flying London to Seattle every day.

This behaviour is **habitual** and is driven by a **perception of risk** to self and patient safety, social pressures, and lack of availability of alternatives and clear guidelines.

Intervention Design 4



Intervention materials

Intervention options were guided by Behaviour Centred Design framework (Aunger & Curtis, 2015). Intervention Functions derived from Behaviour Change Wheel (Michie et al, 2011) are:

**Education**

- Clear list of unnecessary behaviours
- Acronym
- Animation video

**Environmental Restructuring**

- Laminated A4 Posters by the glove dispensers
- Provide gel

**Training**

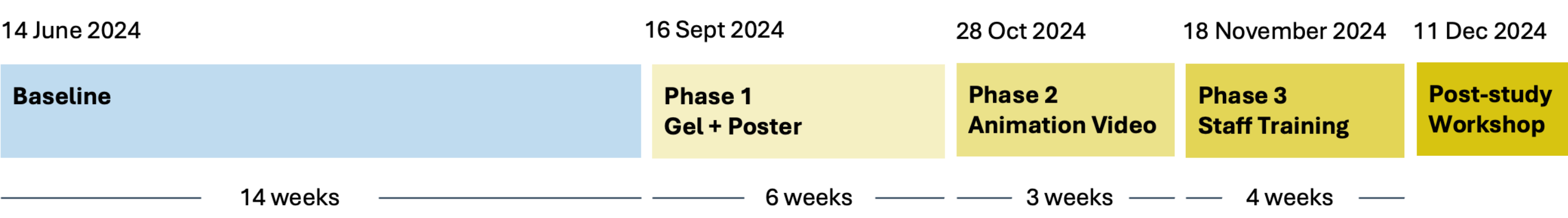
Drop-in 1-1 and small group training sessions for staff

**Modelling**

Message and support from a Champion

5 Study Design

Behavioural observations at 2 theatres, SIC building, St Mary's hospital, London

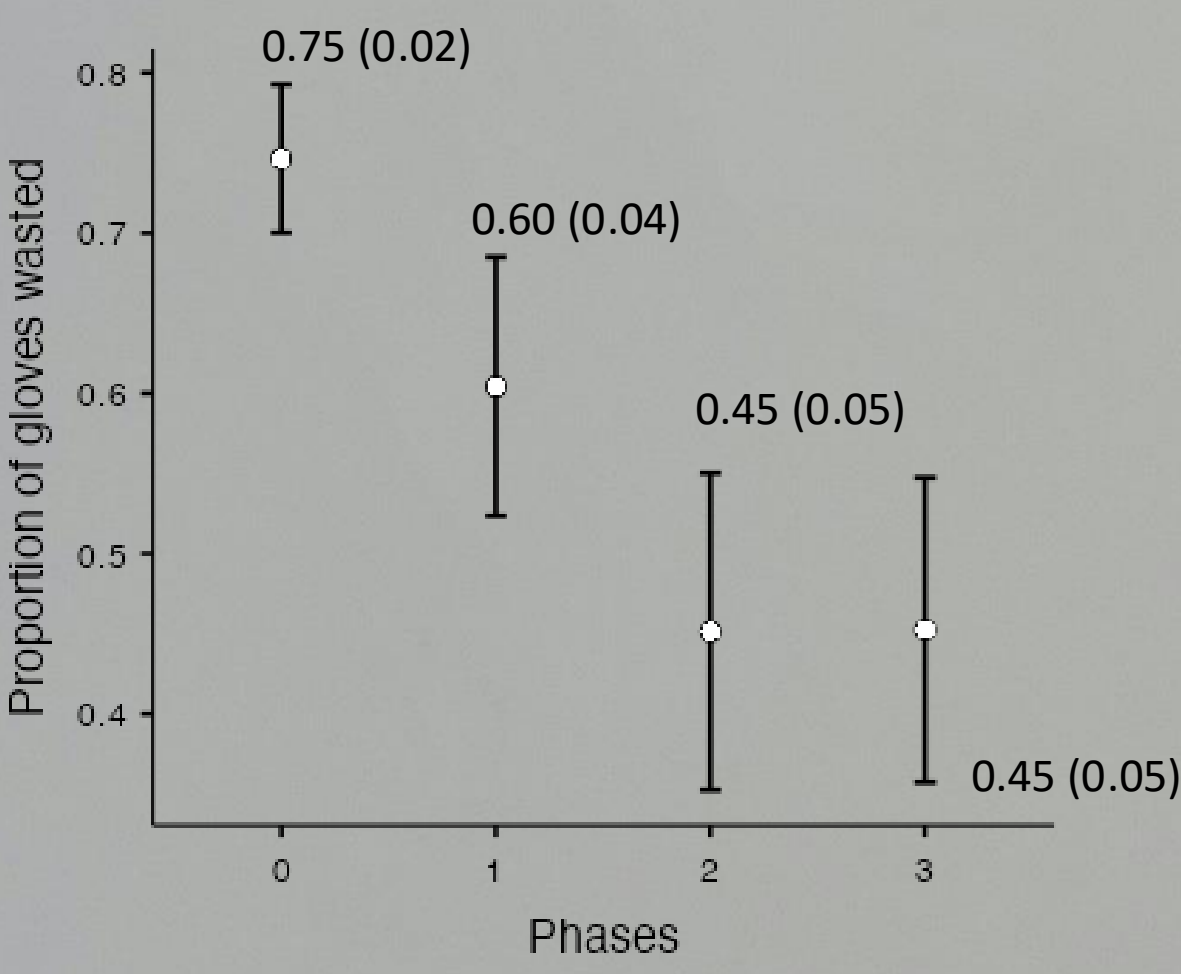


2 random days, 3-4hr observation every week noting:  
Instances of gel use, handwashing, unnecessary glove use, and total glove use per procedure, with the account of the facilities and details of procedure.

6 Findings and Feedback

Proportion of NSGs wasted (Unnecessary NSGs/Total NSGs) **significantly reduced in the intervention phases 1-3** compared to baseline,  $F(3, 94) = 17.1, p < .001, \eta^2 = 0.35$ .

At the post-intervention workshop session, from Staff (N=8) felt that **Training was the most effective**, followed by the Animation video, and then the Poster.



Post Hoc Comparisons - Phases					
Phases Comparison		Mean Difference	SE	p <sub>bonferroni</sub>	Cohen's d
0	- 1	0.14	0.05	<b>0.019</b>	0.82
	- 2	0.30	0.05	<b>&lt;.001</b>	1.71
	- 3	0.29	0.05	<b>&lt;.001</b>	1.70
1	- 2	0.15	0.06	0.116	0.89
	- 3	0.15	0.06	0.105	0.88
2	- 3	-0.00	0.07	1.000	-0.01

Note. Comparisons are based on estimated marginal means