

REDESIGNING PPE: enhancing the comfort and safety of healthcare workers wearing isolation gowns to treat patients with COVID-19

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This design innovation project responds to the urgent need for research into the redesign of PPE isolation gowns, to be more fit for purpose, bespoke and reusable to enhance the experiences of healthcare workers (HCWs) treating COVID 19 patients. The proposal addresses the Engineering based UKRI question: “What new materials, design and manufacturing approaches should we start to consider in preparation for pandemics e.g. reusable PPE to replace single use?” Since the COVID 19 outbreak there has been adverse publicity about the shortage of appropriately designed PPE and particular dissatisfaction with the performance of disposable, oversized gowns, as highlighted by The Royal College of Nursing who described the generic “one size fits all” approach to PPE as being “problematic” and “restrictive” when worn for up to 12 hours during shifts. The lack of understanding of HCWs roles, practices and specific PPE needs has resulted in health authorities necessarily providing the best fit possible in a crisis situation and the PPE industry adopting a disposable ‘non-circular’ approach to meet demand, leading to human centred and environmental issues. Through collaboration with an established PPE manufacturer and leads in Clinical Procurement and Therapies from two NHS healthcare trusts, the investigators have established a research infrastructure to systematically focus on the design and production of a new ‘reusable PPE isolation gown system’ comprising multiple sizes. By integrating expertise in practise research, clinical production and clinical practice, the investigations will focus on the technical, emotional durability and longevity of the PPE system.

Redesigning PPE:

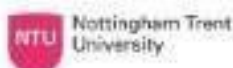
Enhancing the comfort and safety of healthcare workers wearing isolation gowns to treat patients with COVID-19

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This design innovation project responds to the urgent need for research into the redesign of PPE isolation gowns, to increase fit for purpose, durability and reusable to enhance the experience of healthcare workers (HCWs) treating COVID-19 patients. The proposal addresses the Engineering-based UKRI question: "What new materials, design and manufacturing approaches should we start to consider in preparation for pandemics e.g. reusable PPE to replace single use?"

Since the COVID-19 outbreak there has been adverse publicity about the shortage of appropriately designed PPE and particular dissatisfaction with the performance of disposable, one-use gowns as highlighted by The Royal College of Nursing who described the generic 'one-size-fits-all' approach to PPE as being 'problematic' and 'restrictive' when worn for up to 12 hours during shifts. The lack of understanding of HCWs roles, practices and specific PPE needs has resulted in health authorities necessarily providing the best fit possible in a crisis situation and the PPE industry adopting a 'disposable - not durable' approach to meet demand, leading to human carbon and environmental issues.

Through collaboration with an established PPE manufacturer and experts in Clinical Procurement and Therapies from two NHS healthcare trusts, the investigators have established a research infrastructure to systematically focus on the design and production of a new 'reusable' PPE isolation gown system comprising multiple sizes by integrating expertise in product research, clinical production and clinical practice. The investigations will focus on the technical, operational, usability and longevity of the PPE system.



Images by David Beall

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Katherine Townsend (Ph.D)

Katherine Townsend (Ph.D) is Professor of Fashion and Textile Practice and a founder member of the Fashion and Textile Research Centre at Nottingham Trent University. Her current research (and Ph.D. supervision) is focused on the development of emotionally durable, environment-centred design methodologies. Projects include an ongoing ethnographic study into sustaining artisanal textile crafts in Guatemala; supported by the Global Challenges Research Fund (GCRF 2018- 2022) and Designing Reusable PPE Gowns based on wearer experience, in collaboration with the NHS and industry partners (AHRC 2021-2023). Katherine is co-editor of *Crafting Anatomies: Archives, Dialogues, Fabrications* (Bloomsbury 2020) and the journal of *Craft Research (Intellect)*.



Sonja Šterman (Ph.D)

Assoc. prof. dr. Sonja Šterman is a lecturer at the Department of Textile Materials and Design, at the Faculty of Mechanical Engineering, University of Maribor, Slovenia. She has experience in teaching different topics related to fashion, textile and accessories design. Before her academic career she worked as fashion designer for companies Mura, Rasica and Elos Escada. She specialised also in the design of uniforms for companies, societies and ministries.



Eloise Sailer (MA)

Eloise Sailer is a Studio Demonstrator/Researcher within both the: Fashion Design, Textiles and Knitwear Department; and the Fashion and Textile Research Centre based at Nottingham Trent University. She has experience working on human centred design focused projects such as: ATRG funded 'Light my Elbows E-Textile Cycling Jacket' (2019); 'Designing Reusable PPE Gowns based on wearer experience, in collaboration with the NHS and industry partners (AHRC 2021-2023); and 'Garments for Healthy Ageing' (2022). Her Masters was centred around her project: 'Urban Cycling Wear: Clothing that can function on and off a bike through added movement from creative pattern cutting'.



Karen Harrigan

Associate Lecturer/ Researcher in BA (Hons) Fashion Design, Fashion, Textiles and Knitwear Department, Fashion and Textile Research Centre, Nottingham Trent University. She has worked on research projects such as ATRG funded 'Light my Elbows E-Textile Cycling Jacket' (2019) 'Textiles as a Catalyst in the Co-Creative Design Process', (2017) 'Design as a socio-material Practice: Reflections on the Emotional Fit collective fashion enquiry', (2017)) 'Fit for purpose? Pattern cutting and seams in wearables development' (2011)

