A Description of SysteMatic: Prevention, Precision, and Equity by Design for People Living with Multiple Chronic Conditions

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Background

- Multiple chronic conditions (MCCs; multimorbidity) is a global challenge

- People with MCCs often have complex care needs & increased healthcare service use

- Often resulting in reduced quality of life & increased treatment burden, the work people do to manage their health

- Innovative new technologies provide much potential for improving healthcare, but they risk exacerbating health inequalities

- Interdisciplinary teams have the potential to improve care equitably for people with MCCs

Objective

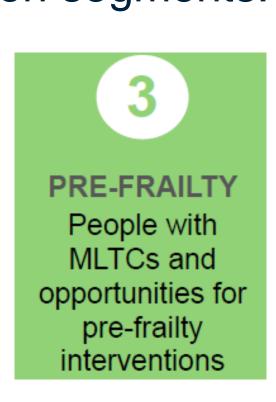- To deliver an equity focused, action-ready plan for transforming MCC prevention & care, co-designed by people with experience of living with MCCs

→ underpinning a 5-year work plan for a full SysteMatic innovation hub

Methods

- People insights and data science work across two cities in the UK, Glasgow (Scotland) & Liverpool (England)

- Working across three population segments:

1 CHILDREN & FAMILIES Psychosocial and environmental challenges with lifetime impacts

2 WORKING LIVES Poorly integrated mental, physical and social care accelerating MLTCs

3 PRE-FRAILTY People with MLTCs and opportunities for pre-frailty interventions
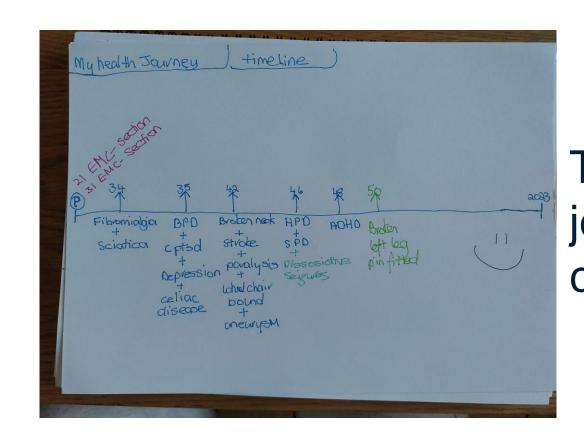
Methods

- **People Insights** – putting patients, practitioners and public partners at the center of healthcare design

Using participatory arts-based methods to explore experiences of living with MCCs, including use of healthcare
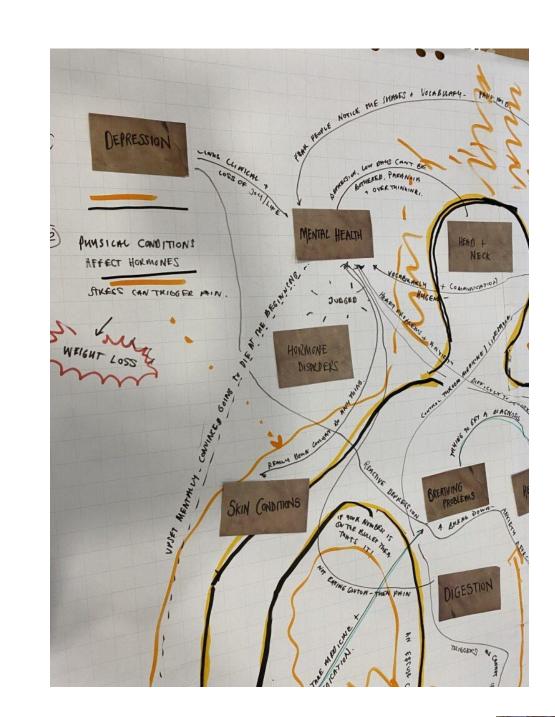
Activity books

Arts-based workshops

In-depth Interviews and Photovoice

- **Health intelligence** – analysis of local data to quantify MLTC patterns & healthcare pressure points

- Using statistical methods to determine patterns of MCCs across emergency department (ED) attendees in NHS Greater Glasgow & Clyde

Findings 1 – People Insights
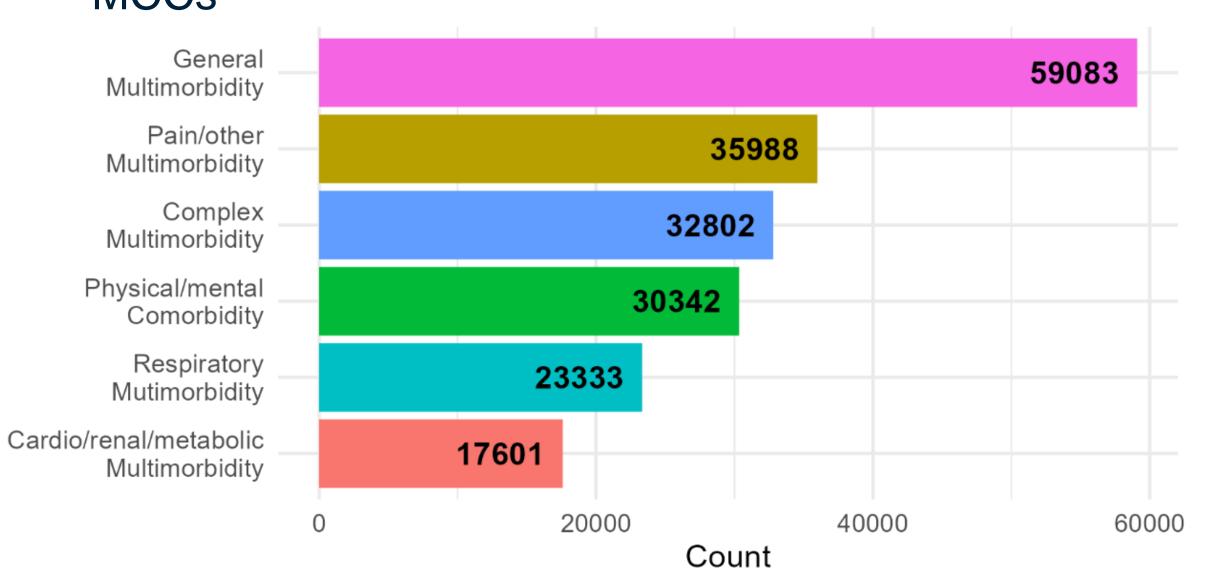
Timeline of health journey – MCCs & challenges

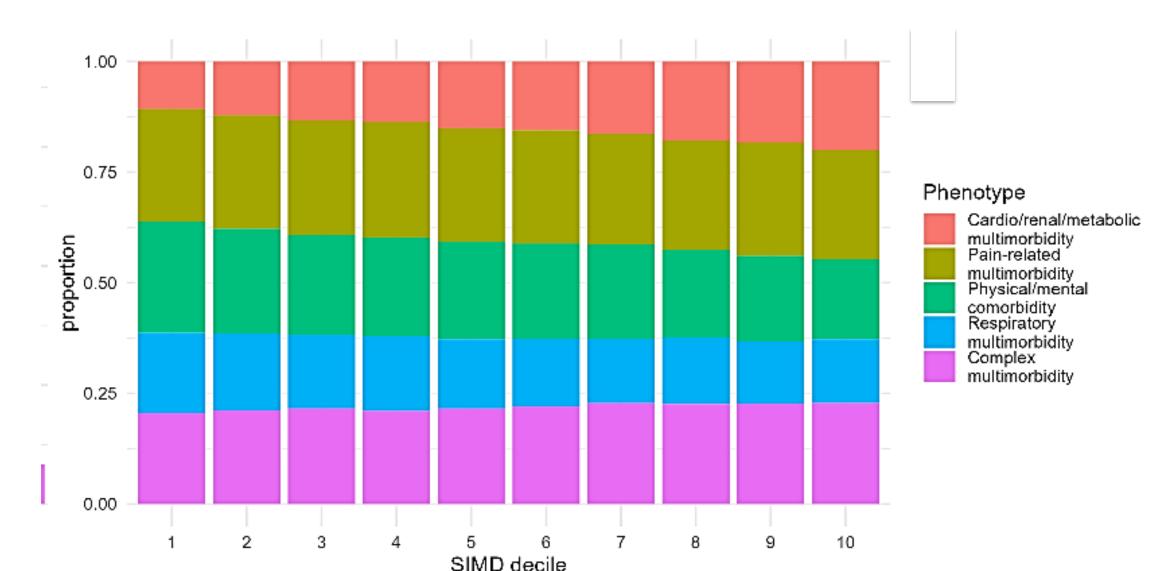Body map activity with "working lives" community group, highlighting impact of mental & physical health

Participant photo of their "coping strategies" for their MCCs & life in general

Findings 2 – Health Intelligence

- ED attendees age ≥21 years in 2021 calendar year

- 133,221 recorded cases of individuals; 54% female, median age 55 years (IQR 38-72)

- Approximate half are from highest two deciles of deprivation

- MCCs present in 44% of attendees

- 1 in 6 attendees had combined mental/physical or pain MCCs

Phenotype	Count
General Multimorbidity	59083
Pain/other Multimorbidity	35988
Complex Multimorbidity	32802
Physical/mental Comorbidity	30342
Respiratory Multimorbidity	23333
Cardio/renal/metabolic Multimorbidity	17601

Most common phenotypes (number of people affected)

Differences in multimorbidity phenotypes by SIMD decile by proportion

Phenotype: Cardio/renal/metabolic multimorbidity; Pain-related multimorbidity; Physical/mental comorbidity; Respiratory multimorbidity; Complex multimorbidity

- All MCC phenotypes associated with risk of reattendance, mortality, and admission.

Key messages

- Mental & physical MCCs are commonly reported from both lived experience and data work

- Failure points across the healthcare system are evident for people with more complex lives

- Potential for technology to play a role to reduce treatment burden, improve quality of life, & improve efficiency of health service

Future Directions

- Develop an equity-focused learning system to test & evaluate innovative technologies through co-production with people with lived experience of MCCs & inequity

- Work with engineering, industry and third sector partners to ensure new innovations fit with brief & can interact with current healthcare systems

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