Response to Inquiry on Prevention in health and social care: Prevention of burdensome multiple long-term conditions among people of working age

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About the MELD-B research collaboration:

Funded by the NIHR Artificial Intelligence (AI) for Multiple Long-Term Conditions call, MELD-B[1] uses AI-enhanced and epidemiological analysis of birth cohort data and electronic health records to quantify the burden of multimorbidity and identify life course time points and targets for the prevention of early-onset, burdensome multiple long-term conditions.

Executive summary:

In response to this call for evidence on prevention in health and social care by The Health and Social Care Committee we provide evidence and recommendations in relation to **the prevention of burdensome multiple long-term conditions among people of working age**. This issue is of great importance because early onset multiple long-term conditions are common, increasing and significantly impact people's quality of life and ability to work. In turn this impacts the economy, placing enormous pressure on health and care systems and impacting unequally across society.

The MELD-B study aims to increase understanding of the most effective ways to prevent burdensome multiple long-term conditions and will support the Select Committee's future inquiries in this area.

Response

1. **Why the Health and Social Care Committee should consider this issue as part of its Prevention inquiry and why the Government needs to take action in this area**

1.1 The unprecedented challenge of increasing costs of health and social care, plus the acute pressures on our care system[2], will be exacerbated as the prevalence of multiple long-term conditions increases.

Currently, one in four of us are living with two or more long-term health conditions like diabetes, heart disease, depression, or dementia,[3] and the numbers are rising. People with multiple long-term conditions are more likely to have a poorer quality of life and a higher risk of dying than those in the general population.[4] Even more concerning is the health inequality of this issue; for instance, having multiple long-term conditions happens 10-15 years earlier in people living in the most deprived areas, compared to those in the least deprived.[5]

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[1] Multidisciplinary Ecosystem to study Life course Determinants and Prevention of Early-onset Burdensome Multimorbidity

[2] Adult social care funding and eligibility | The King's Fund (kingsfund.org.uk)

[3] https://richmondgroupofcharities.org.uk/sites/default/files/the_multiple_conditions_guidebook_-_one_year_on_december_2020_taskforce_2020_report_digital_a4_v2_1.pdf

[4] NIHR Evidence - Multiple long-term conditions (multimorbidity): making sense of the evidence - Informative and accessible health and care research

[5] Epidemiology of multimorbidity and implications for health care, research, and medical education: a cross-sectional study - The Lancet

1.2 Although associated with older age, most people living with multiple long-term conditions are under 65[6], significantly impacting their ability to work, quality of life and, therefore, the economy. Additionally, irrespective of people's age, multiple conditions drive increased health and social care costs including hospital and primary care. A review of studies found that having four or more conditions increases the odds of unplanned, potentially preventable, hospitalisations, by up to 14.[7]

2. **Why the Committee should look at it now: in particular, whether there is an opportunity for it to add value to existing research and evidence, and why this area would benefit from scrutiny**

2.1 The prevalence of multiple long-term conditions is forecast to increase dramatically over the coming years; for example, the proportion with 4+ diseases will almost double by 2035,[8] calling for urgent preventive action earlier in the life course.

2.2 We know that wider societal determinants, such as family circumstances, education, housing, neighbourhood and work, influence physical and mental health through multiple mechanistic pathways across the life course to affect the risk of developing long-term conditions.[9] Despite this, there has been little evidence around the influence of early life determinants on the combinations of long-term conditions, with much of the research on multiple long-term conditions adopting a disease-based focus for treatment and/or management in later stages. Evidence is also lacking on the prevention of burdensome combinations of conditions - those which are more likely to prevent people from doing what they need or want to do in life. This represents a significant public health and societal challenge.

2.3 The importance of environmental, social and economic factors means that effective prevention is likely to require population-based strategies.[10] Many public health interventions focusing on wider determinants are highly cost-effective,[11] averaging a fivefold return on investment.[12]

3. **Our recommendations**

We recommend that the Committee focus its attention on finding public health approaches to prevent burdensome multiple long-term conditions. This should involve the following aspects:

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[6] Barnett K, Mercer SW, Norbury M, Watt G, Wyke S, Guthrie B. Epidemiology of multimorbidity and implications for health care, research, and medical education: a cross-sectional study. Lancet 2012; 380(9836):37-43

[7] Soley-Bori M, Ashworth M, Bisquera A, Dodhia H, Lynch R, Wang Y, Fox-Rushby J. Impact of multimorbidity on healthcare costs and utilisation: a systematic review of the UK literature. Br J Gen Pract. 2020 Dec 28;71(702):e39-e46.

[8] Projections of multi-morbidity in the older population in England to 2035: estimates from the Population Ageing and Care Simulation (PACSim) model | Age and Ageing | Oxford Academic (oup.com)

[9] Marmot M, Allen J, Boyce T, Goldblatt P, Morrison J. Health equity in England: The Marmot Review 10 years on. London: Institute of Health Equity, 2020.

[10] Making sense of the evidence: Multiple long-term conditions (multimorbidity) - NIHR Evidence

[11] Lesley Owen, Becky Pennington, Alastair Fischer, Kim Jeong, The cost-effectiveness of public health interventions examined by NICE from 2011 to 2016, *Journal of Public Health*, Volume 40, Issue 3, September 2018, Pages 557–566

[12] Masters R, Anwar E, Collins B, Cookson R, Capewell S. Return on investment of public health interventions: a systematic review. J Epidemiol Community Health 2017;71:827-834

- focusing on the concept of preventing burden which involves understanding what burdensomeness and complexity mean to people living with multiple long-term conditions

- investing in early life, public health interventions to prevent or delay the onset of burdensome multiple long-term conditions

- taking a population-level approach to prevention by developing policies on the wider determinants of health (such as education, employment, housing and social support) in addition to more individual-based health promotion campaigns

- selecting evidence-based interventions that will reduce the population disparities in the early onset of multiple long-term conditions using innovative methodologies

Evidence for this requires a whole life course approach, which our study, MELD-B, does by using AI to handle the complex analyses required to learn and infer across the different types of datasets that capture early life determinants and health outcomes later in life. Additionally, the MELD-B study offers the opportunity to model targeted public health interventions and prevention scenarios. We can, therefore, support the Committee's understanding of the most effective ways to prevent burdensome multiple long-term conditions through our emerging findings and would be happy to work with the Committee on scenario testing.