Multiple Long-Term Condition Clustering:

Investigating socioeconomic inequality in the impacts of MLTC clusters on hospital admissions among older adults living in England

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UKRI Economic and Social Research Council

The Health Foundation

Social Inequality and MLTCs

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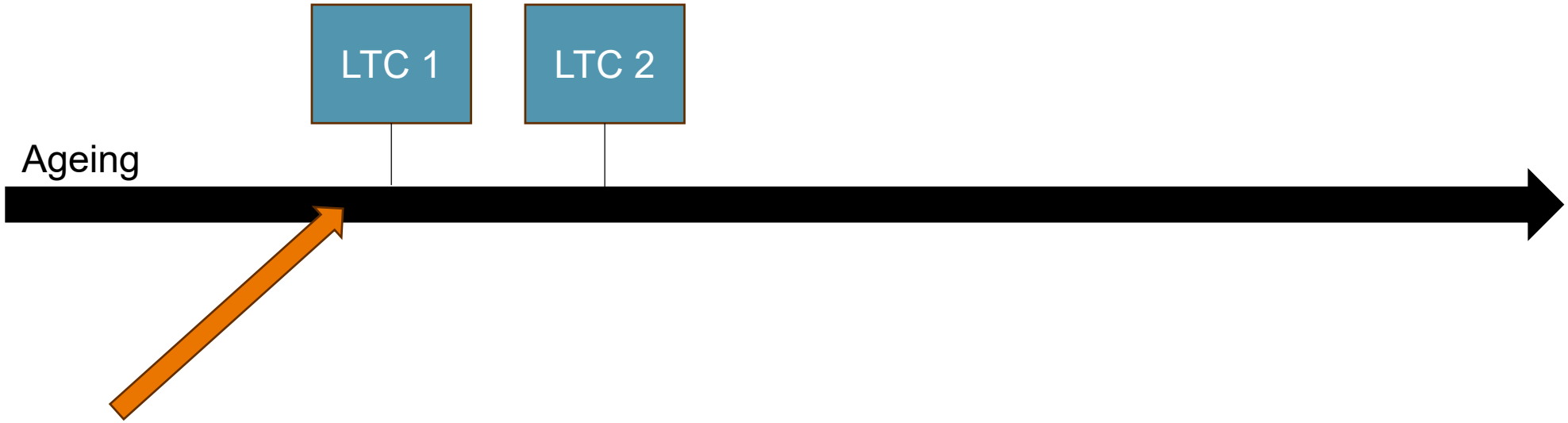
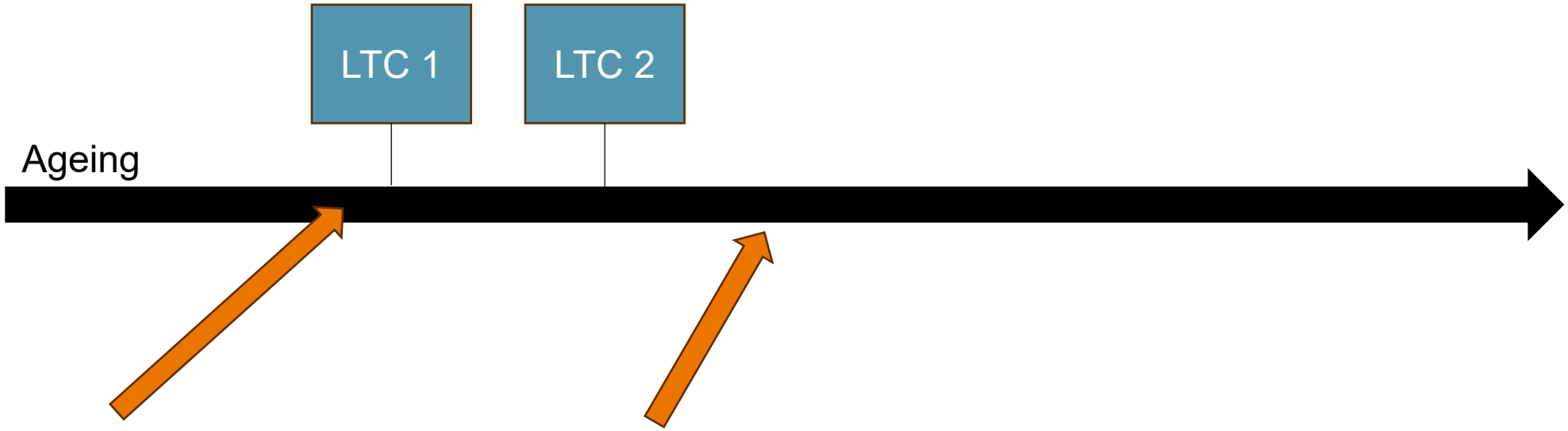


Inequality in **Development**

Prevalence
Age of onset
Types of conditions
Accumulation/Trajectories

Social Inequality and MLTCs



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Biological/Symptom
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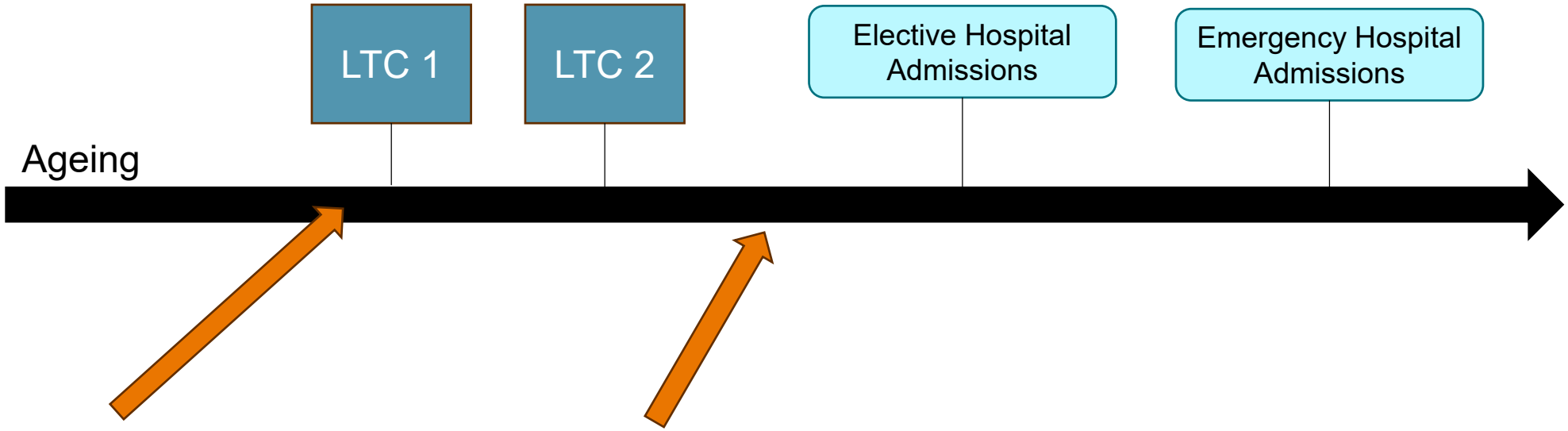
Social Inequality and MLTCs



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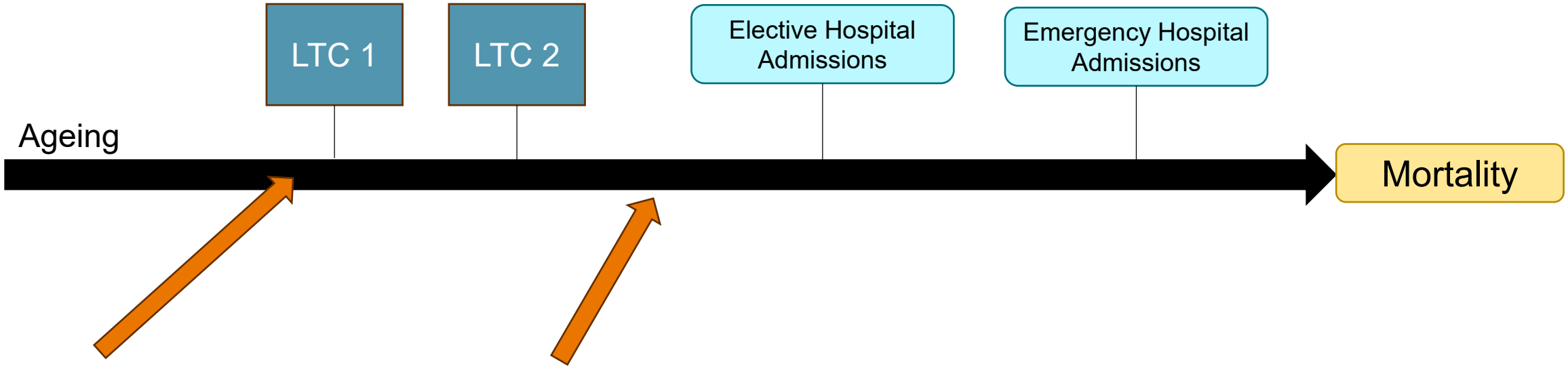

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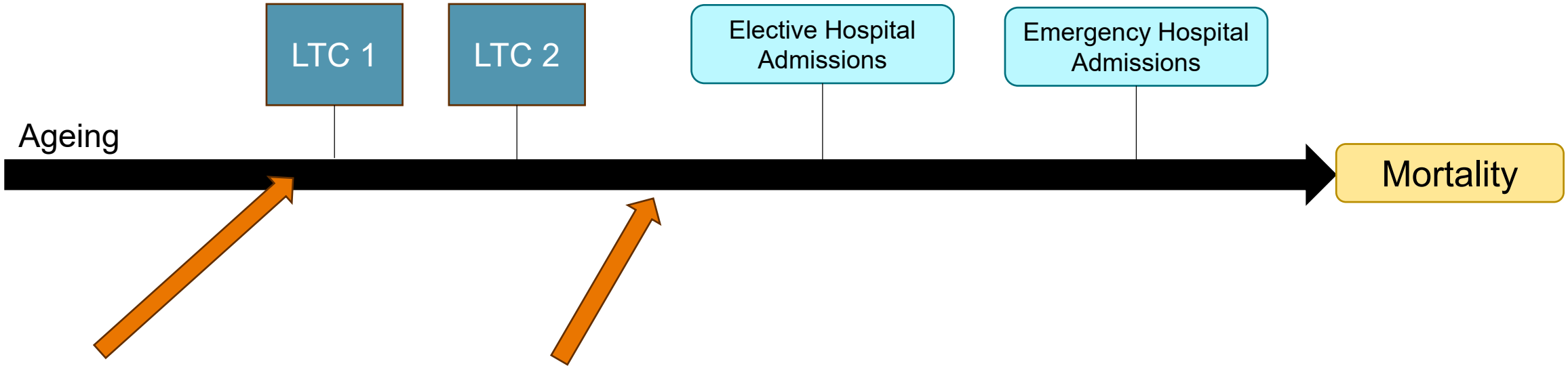

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What exactly do we mean by impacts?
And why are they important to study?

Understanding the Impacts of MLTCs

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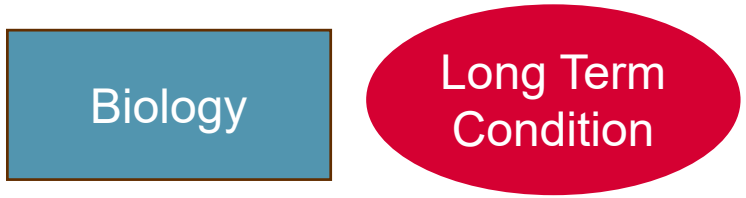

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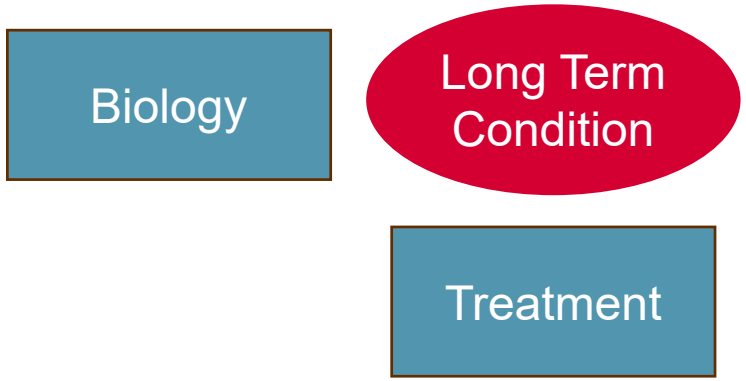

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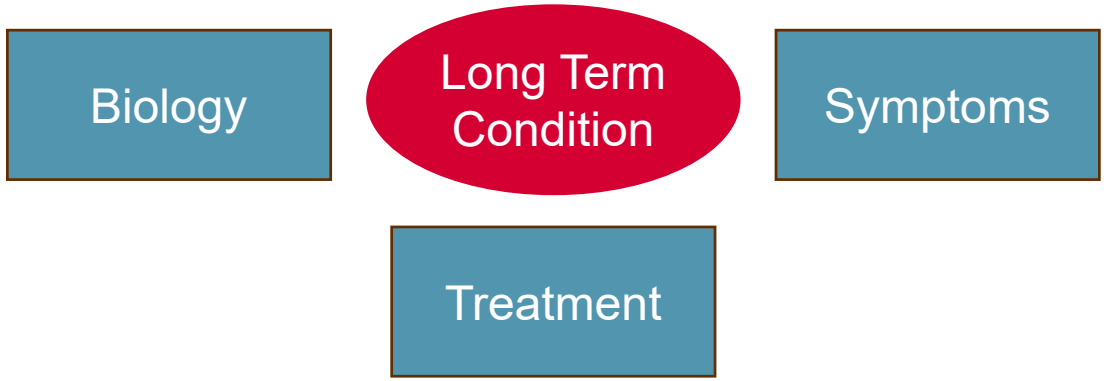

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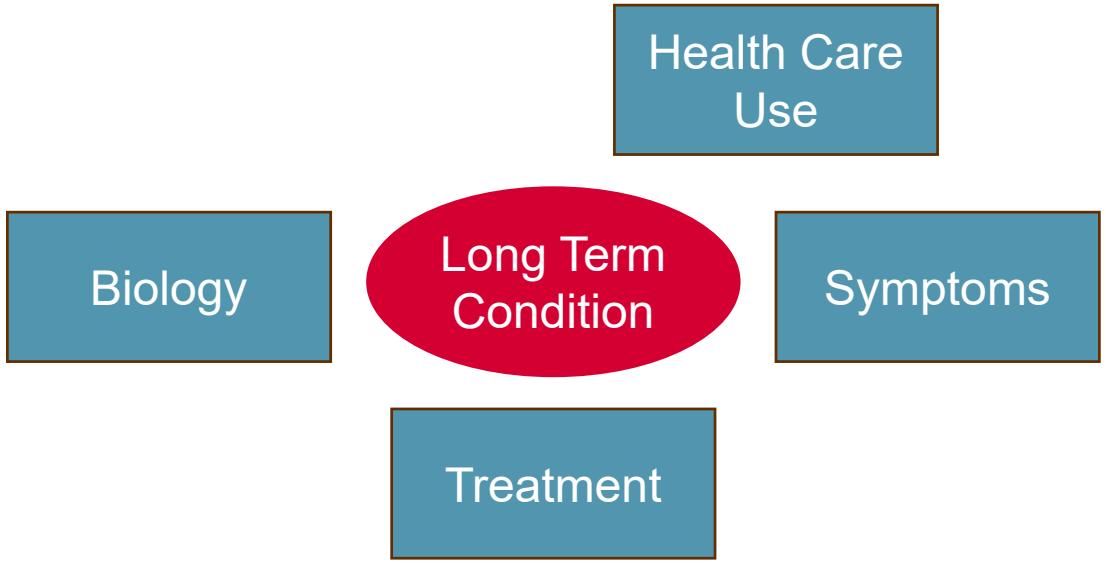

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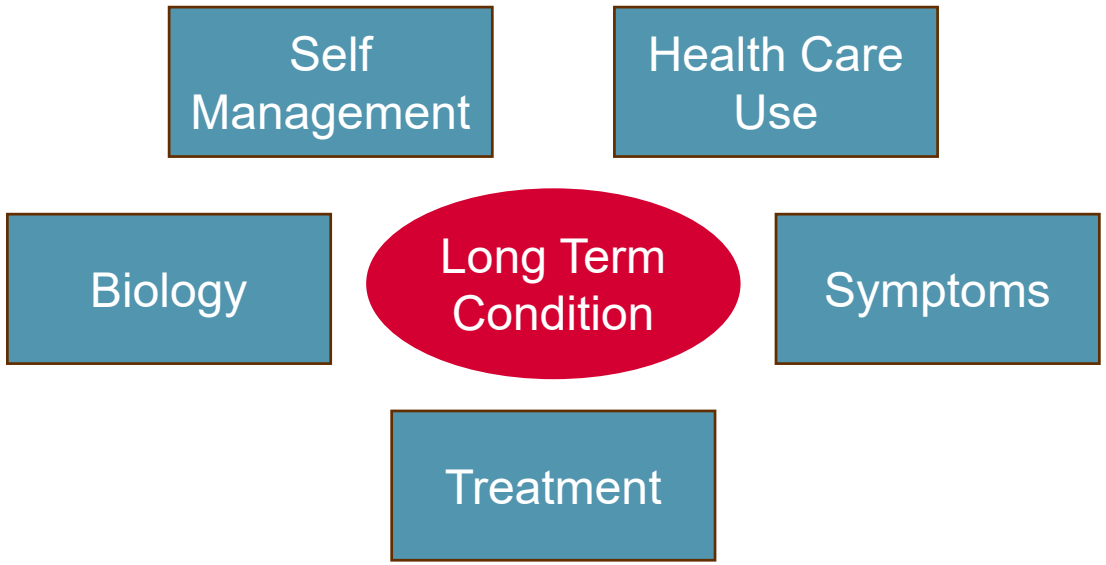

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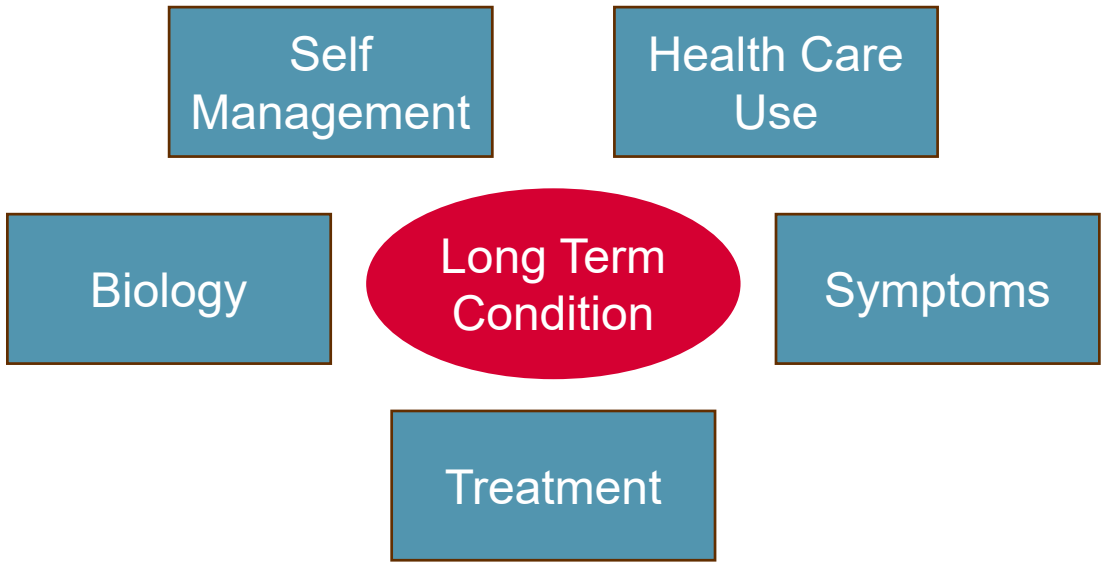

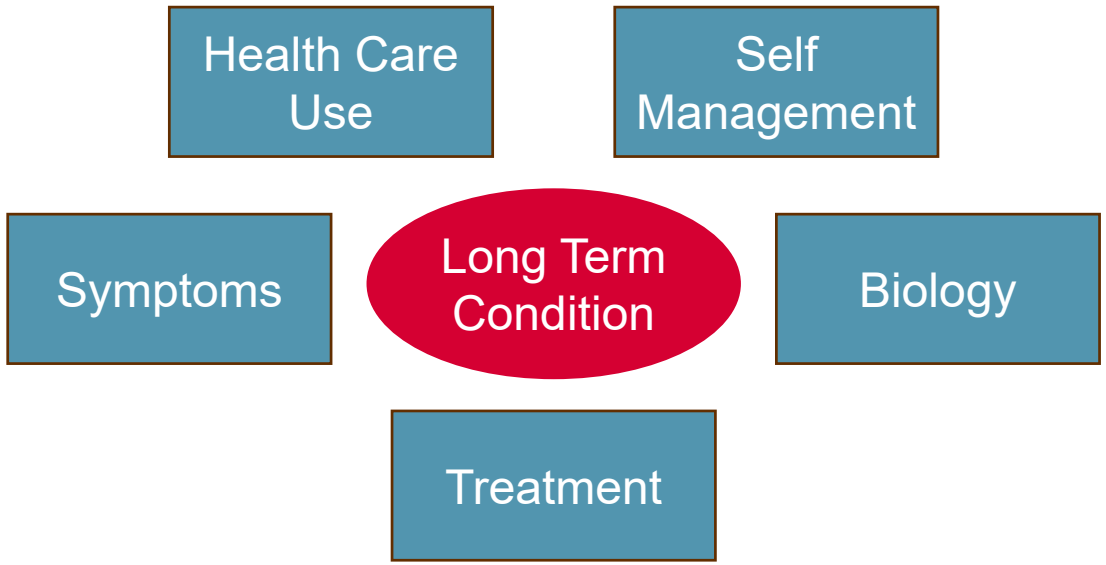

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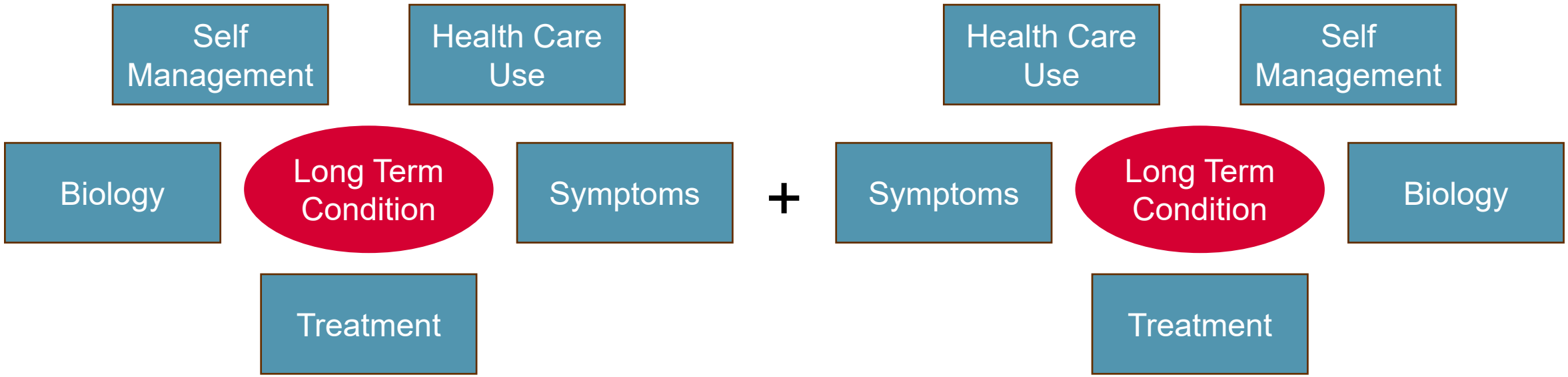

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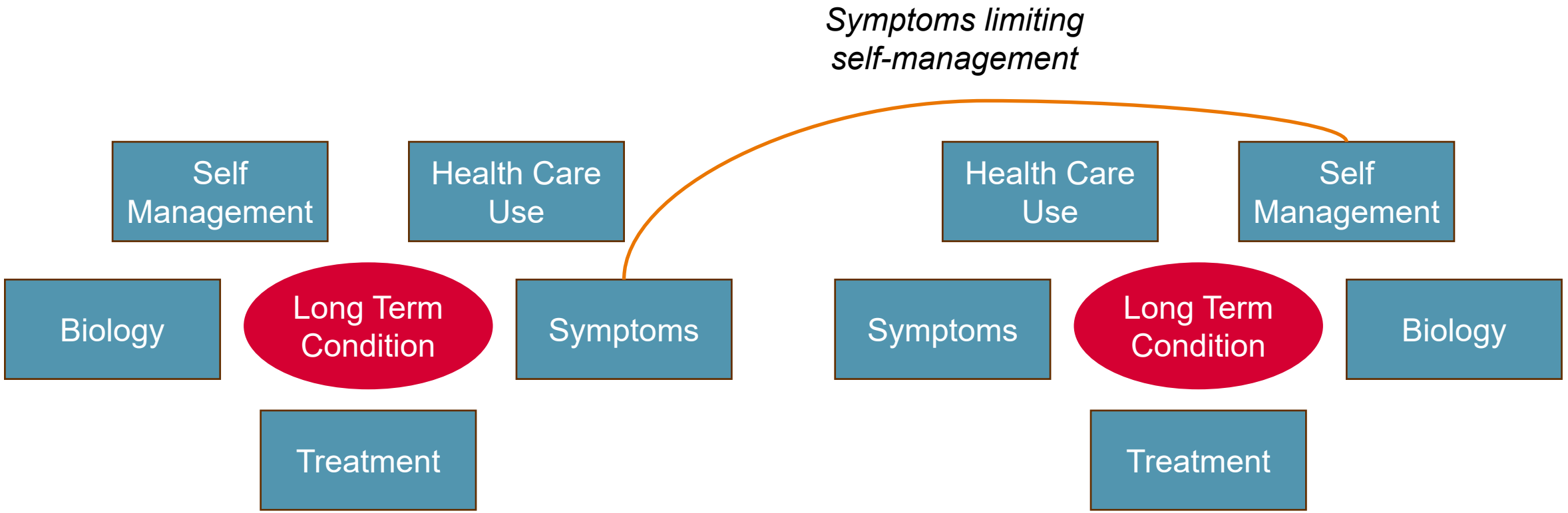
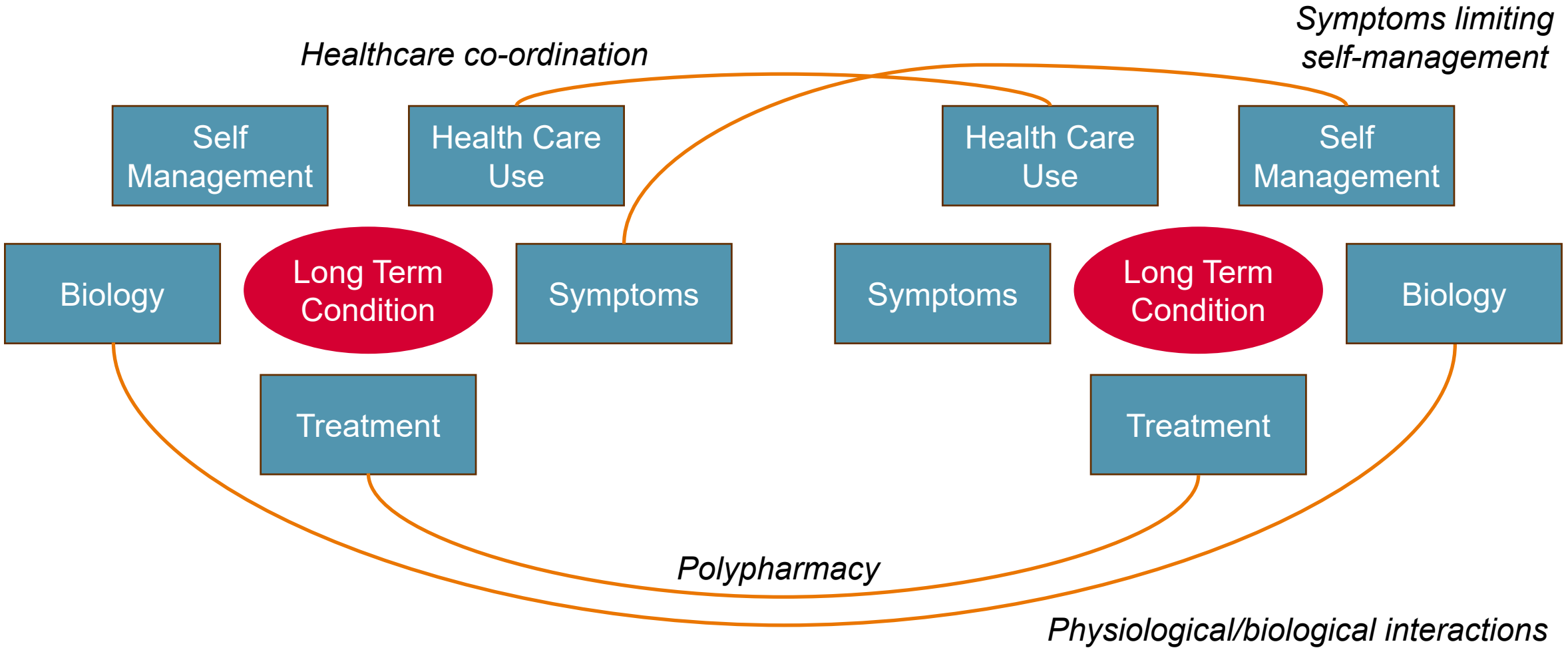
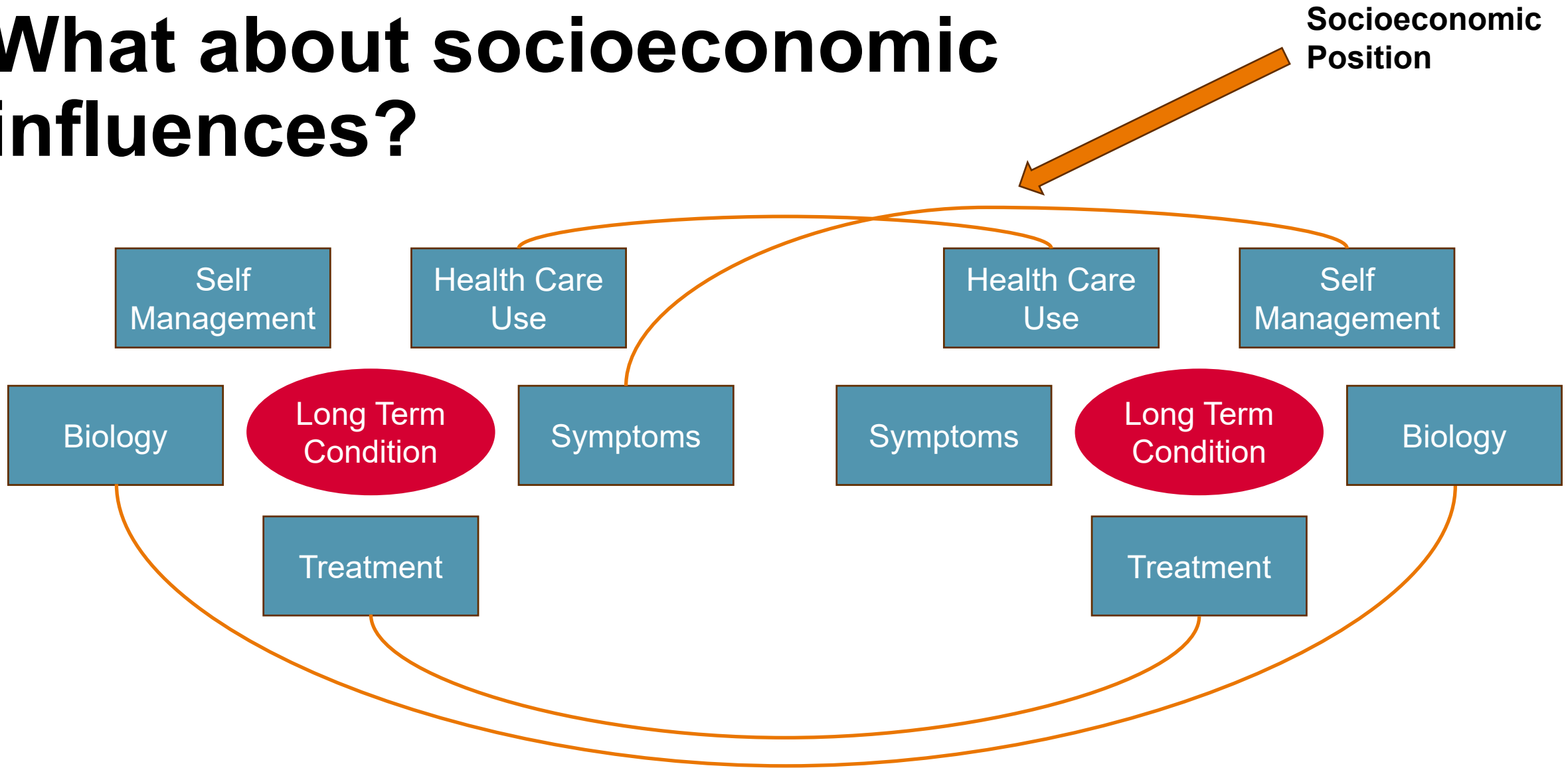


Understanding the Impacts of MLTCs

A complicated network... more than the sum of its parts



What about socioeconomic influences?



Socioeconomic Inequality in Impacts
Current Evidence

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Three types of inequality in the impacts of MLTCs

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Socioeconomic Inequality in Impacts
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3. **Levelling** – MLTCs level out inequality in impacts

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Results differ due to data, population, and methodological differences

(especially how MLTCs are defined and measured!)

Research Aims

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3. Explore socioeconomic inequality in the impacts of clusters

Data

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English Longitudinal Study of Ageing (ELSA)

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Hospital Episode Statistics (HES)

Linked NHS hospital admission data 2008 (baseline) – 2018 (N=7908)

11,433 **emergency** admissions

26,659 **elective** admissions

Methods

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  Latent Class Analysis (LCA), 20 LTCs

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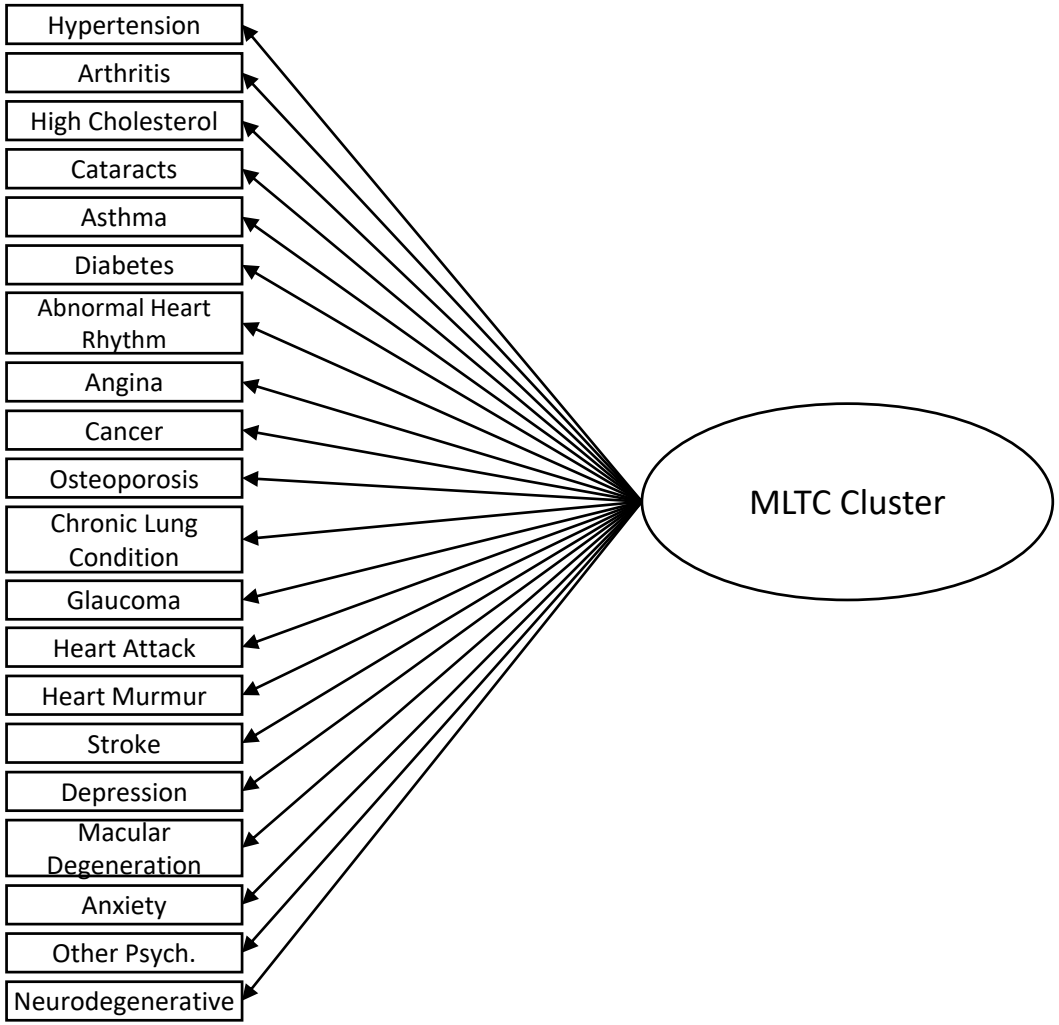
- Does socioeconomic position modify these relationships?

  Consider interactions between wealth and cluster

  Stratify analysis by wealth (household level)

Latent Class Analysis



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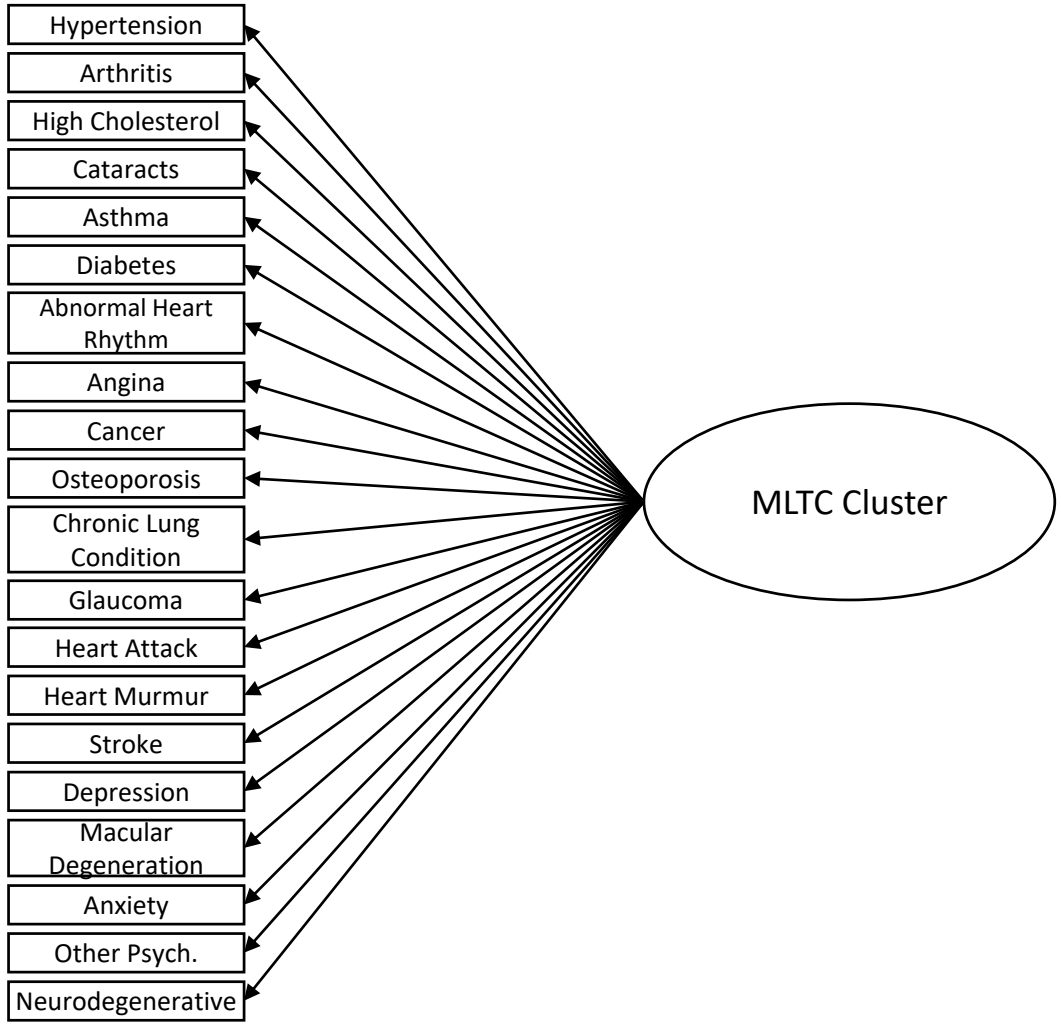
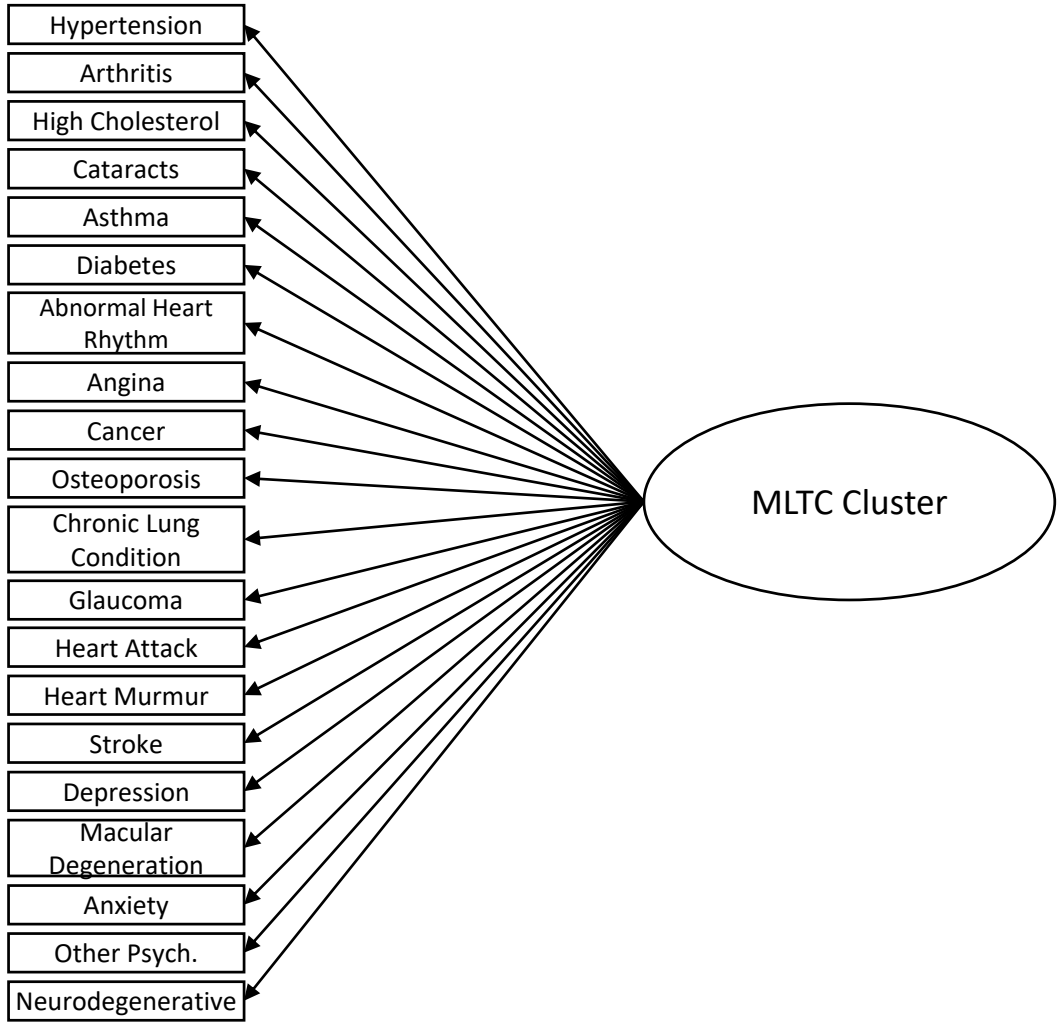


- Underlying latent class (cluster) which drives the development of observed variables (LTCs)

Latent Class Analysis



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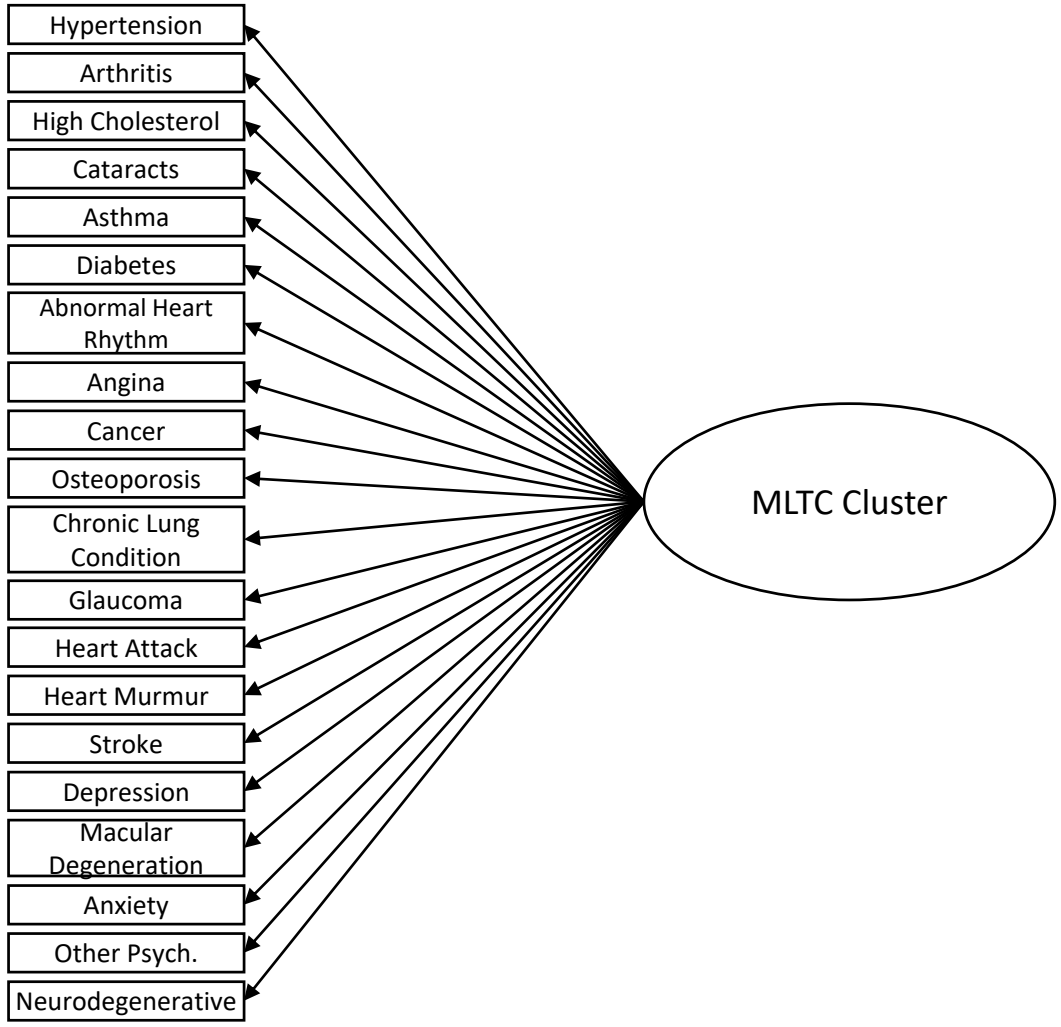

- Underlying latent class (cluster) which drives the development of observed variables (LTCs)
- Popular person-centred approach in MLTC research (40+ studies since 2020)
- Interpret clusters using probabilities (condition and person)
  ... somewhat subjective

MLTC Clusters

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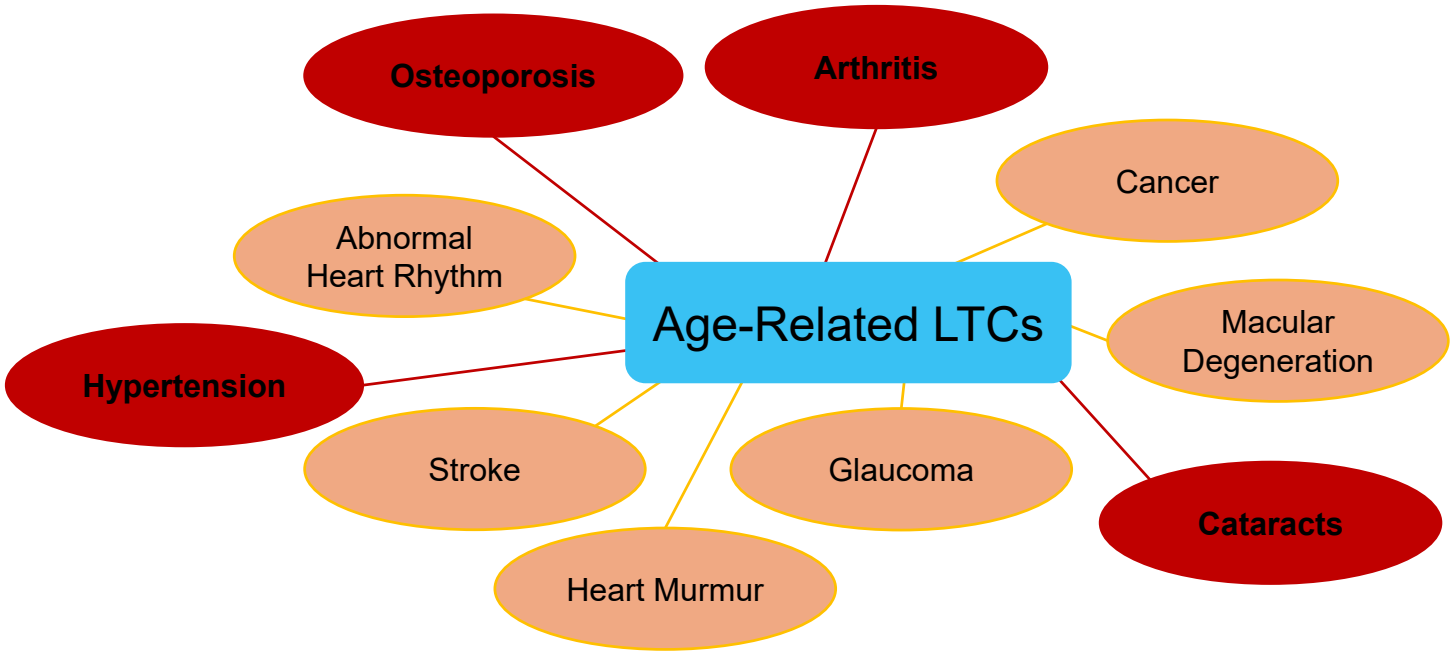

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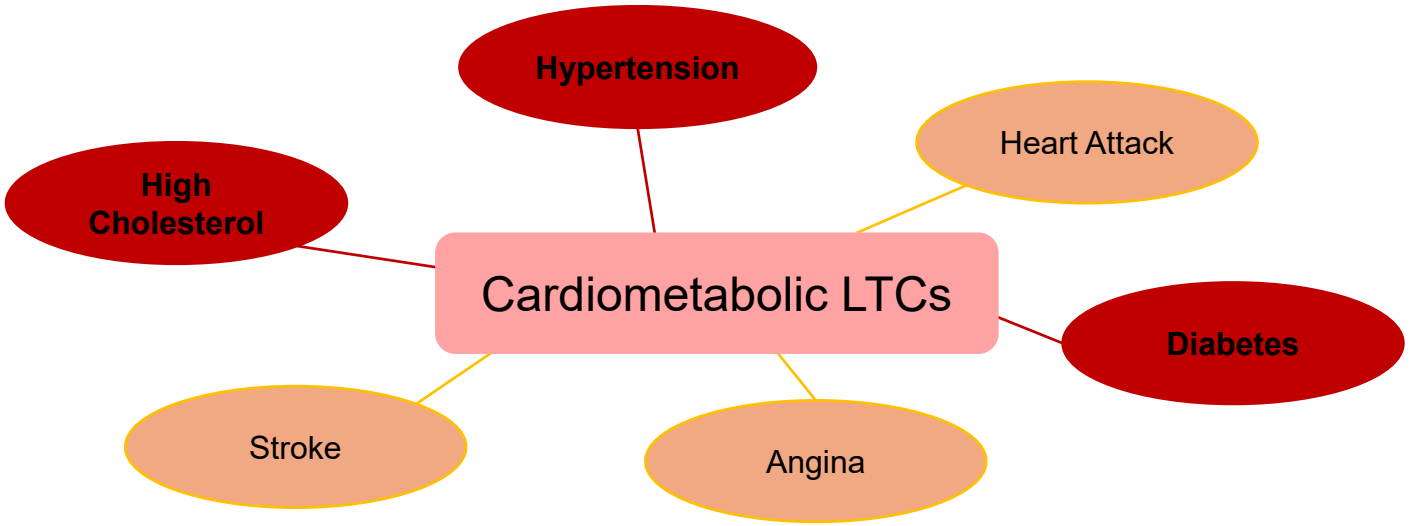

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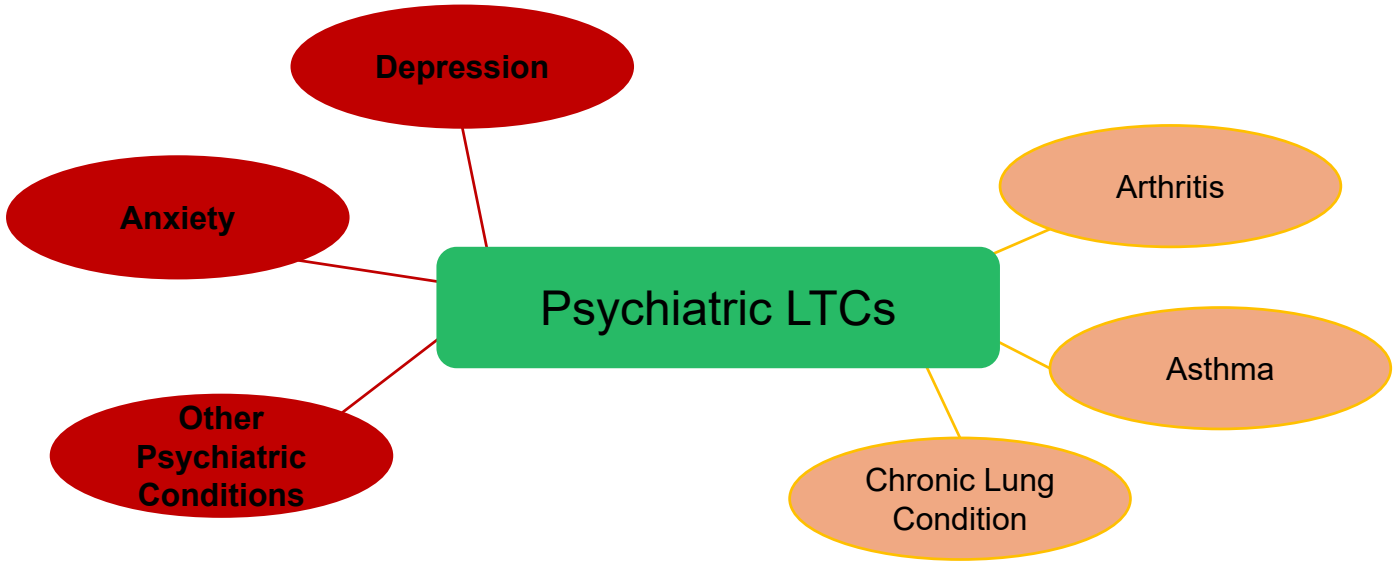

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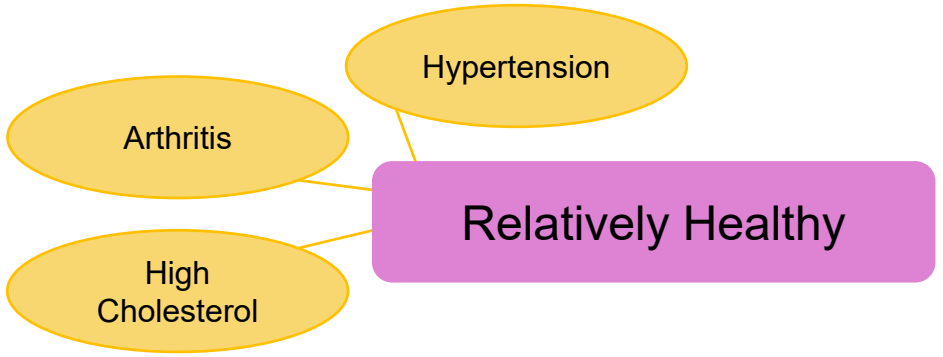

Multiple Cardiometabolic LTCs - Hospital Admissions and Mortality

Predicted number of **ELECTIVE** admissions over follow-up stratified by wealth group

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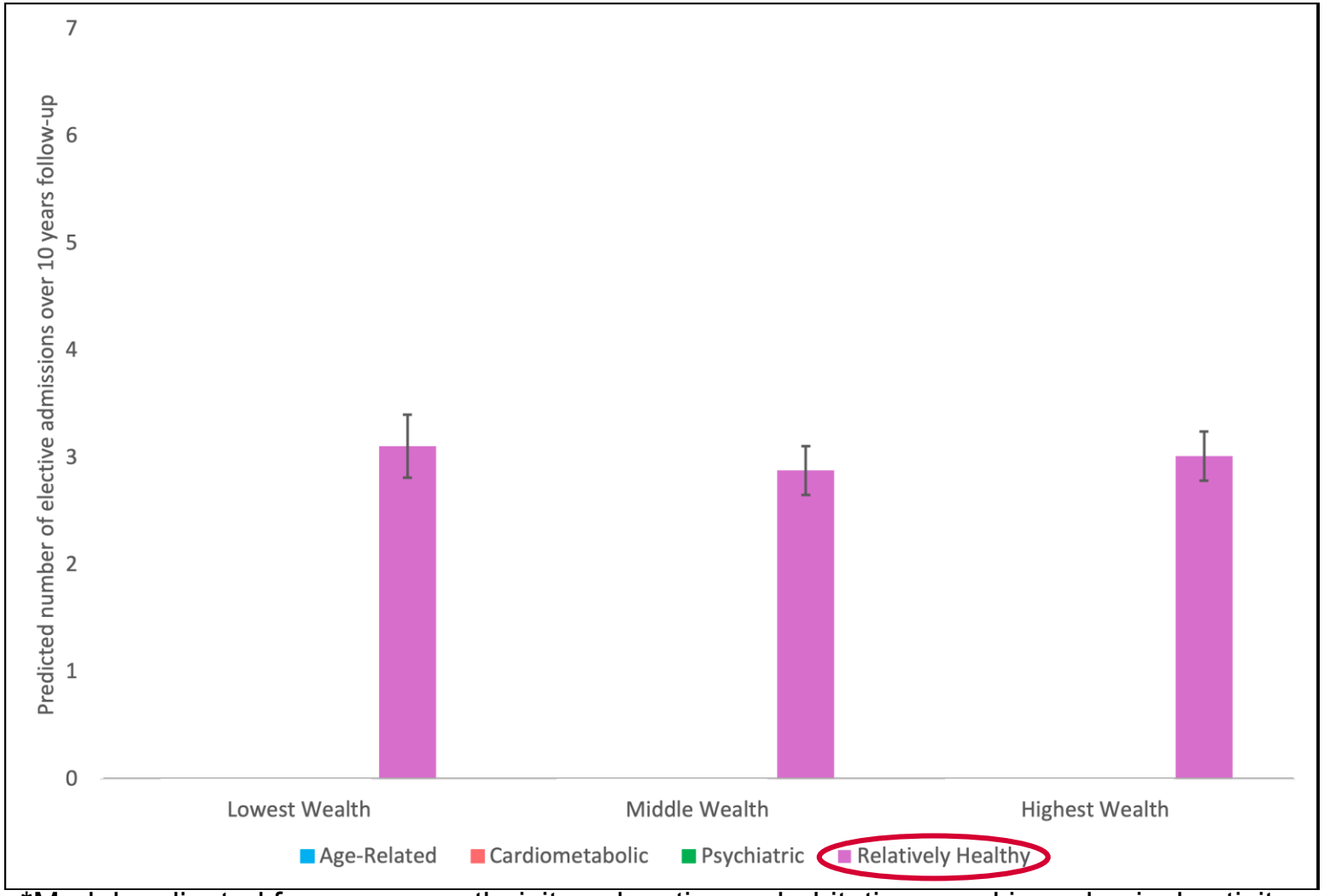

*Models adjusted for age, sex, ethnicity, education, cohabitation, smoking, physical activity

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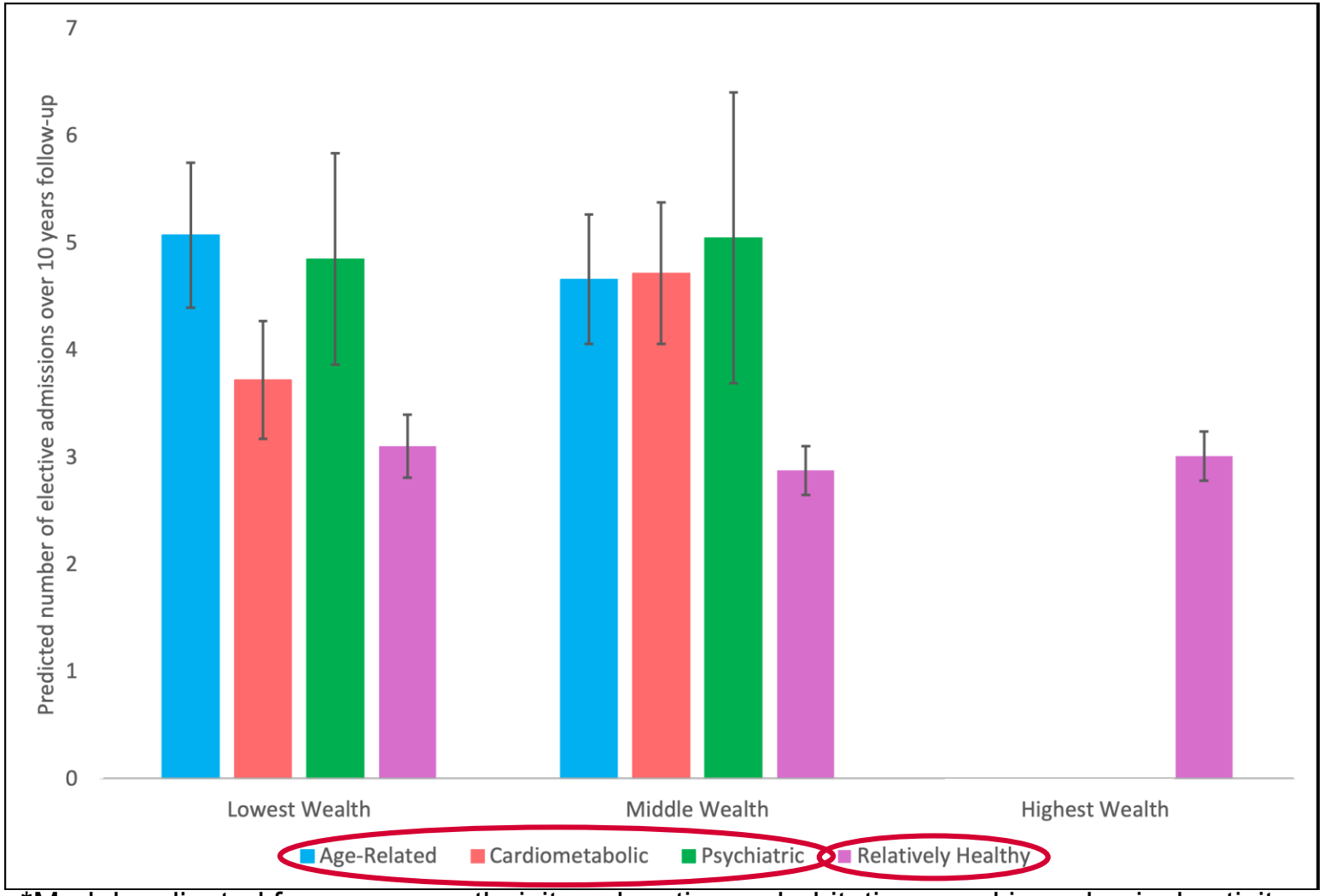

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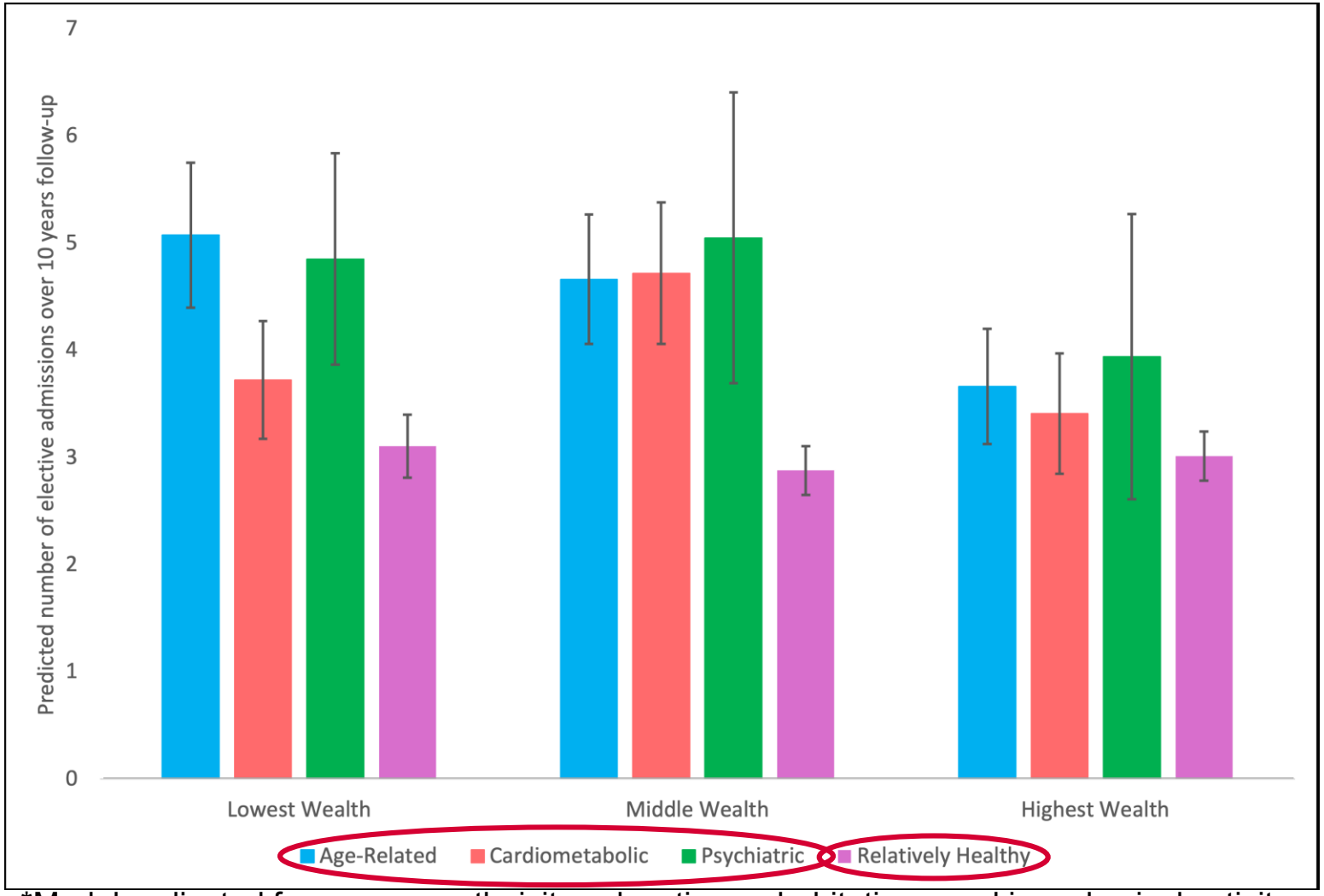

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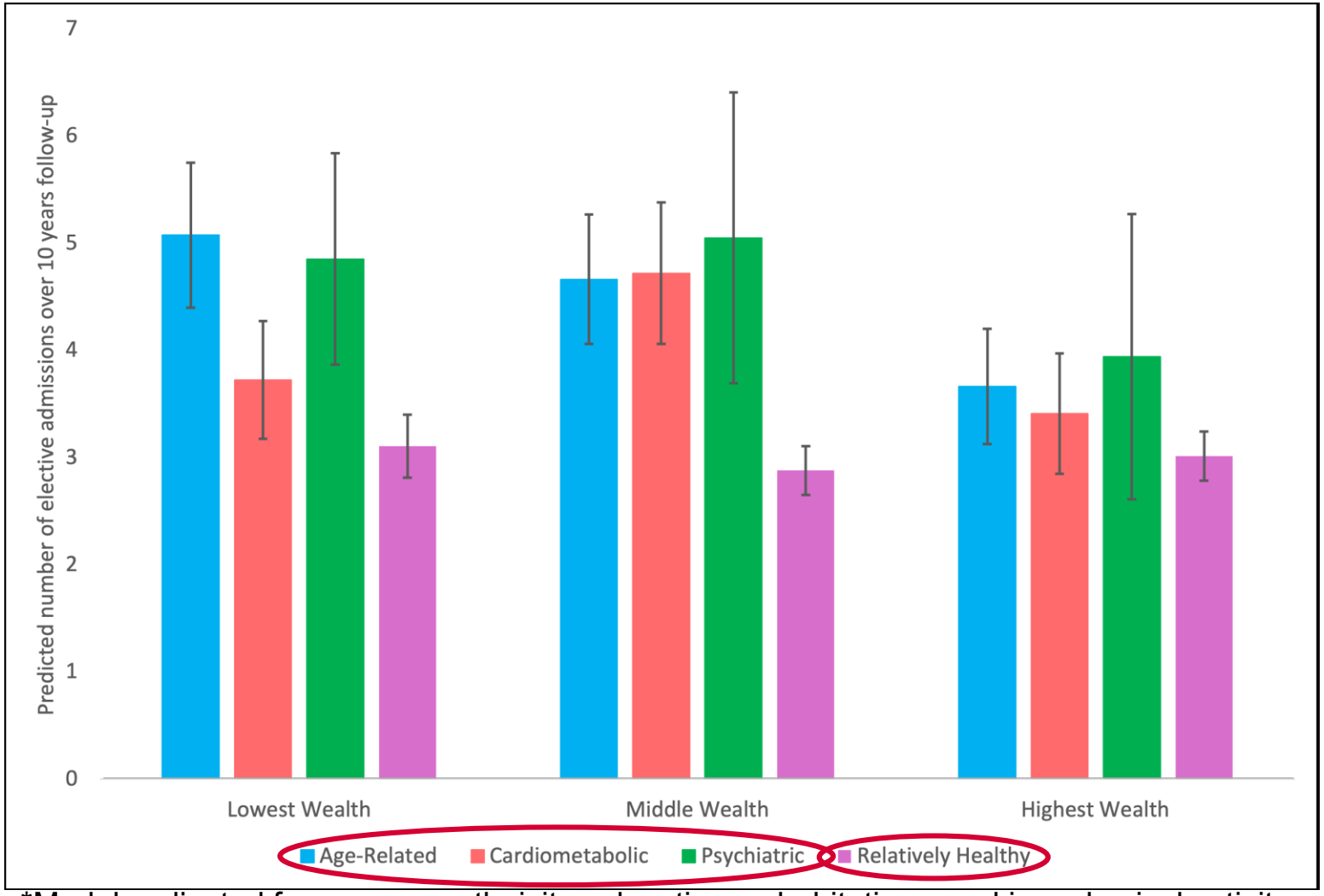

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Impact of MLTCs on elective admissions varies by wealth

Impact of MLTC clusters on elective admissions is reduced among highest wealth group

Predicted number of **EMERGENCY** admissions over follow-up for MLTCs clusters and wealth

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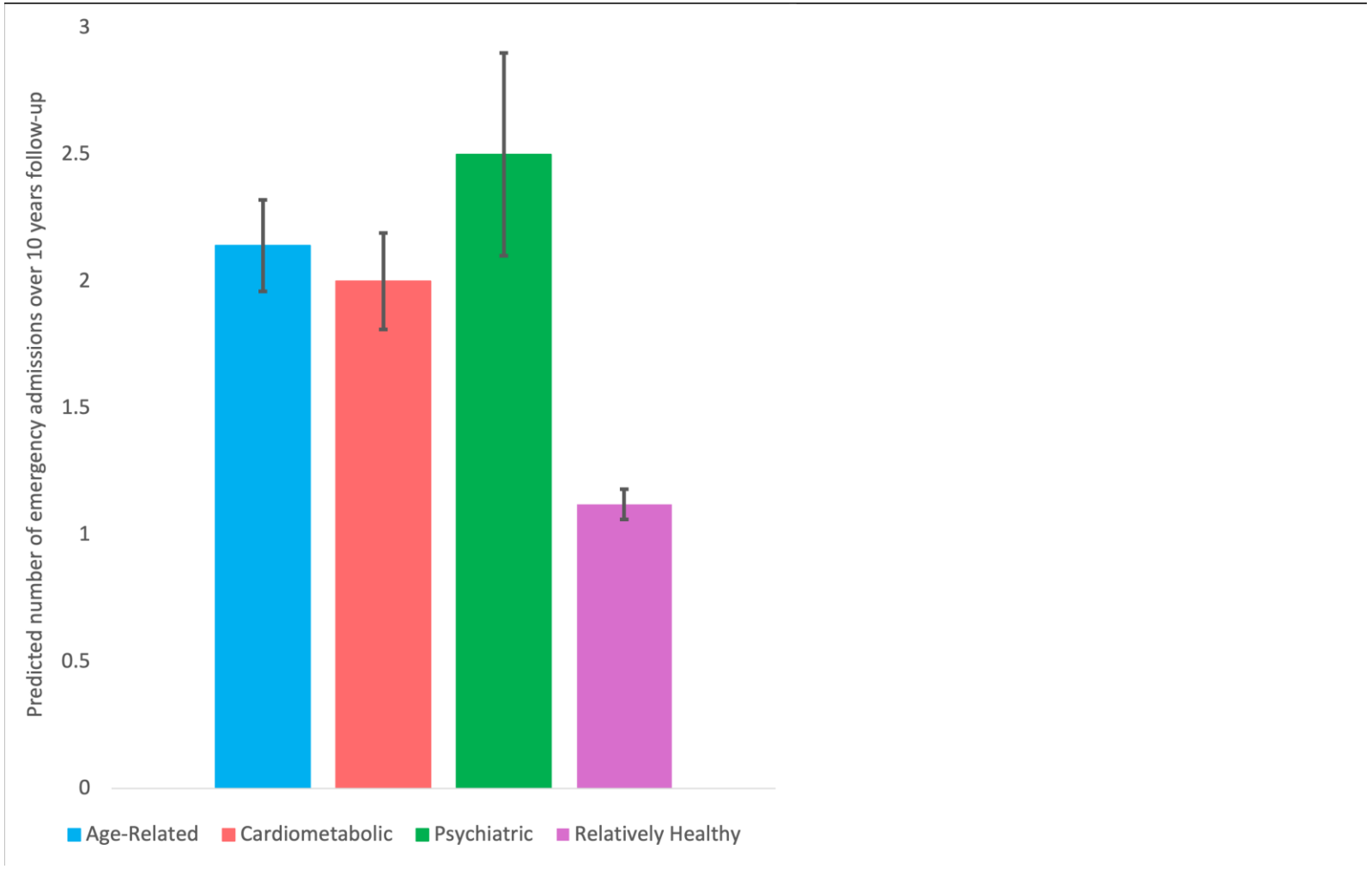

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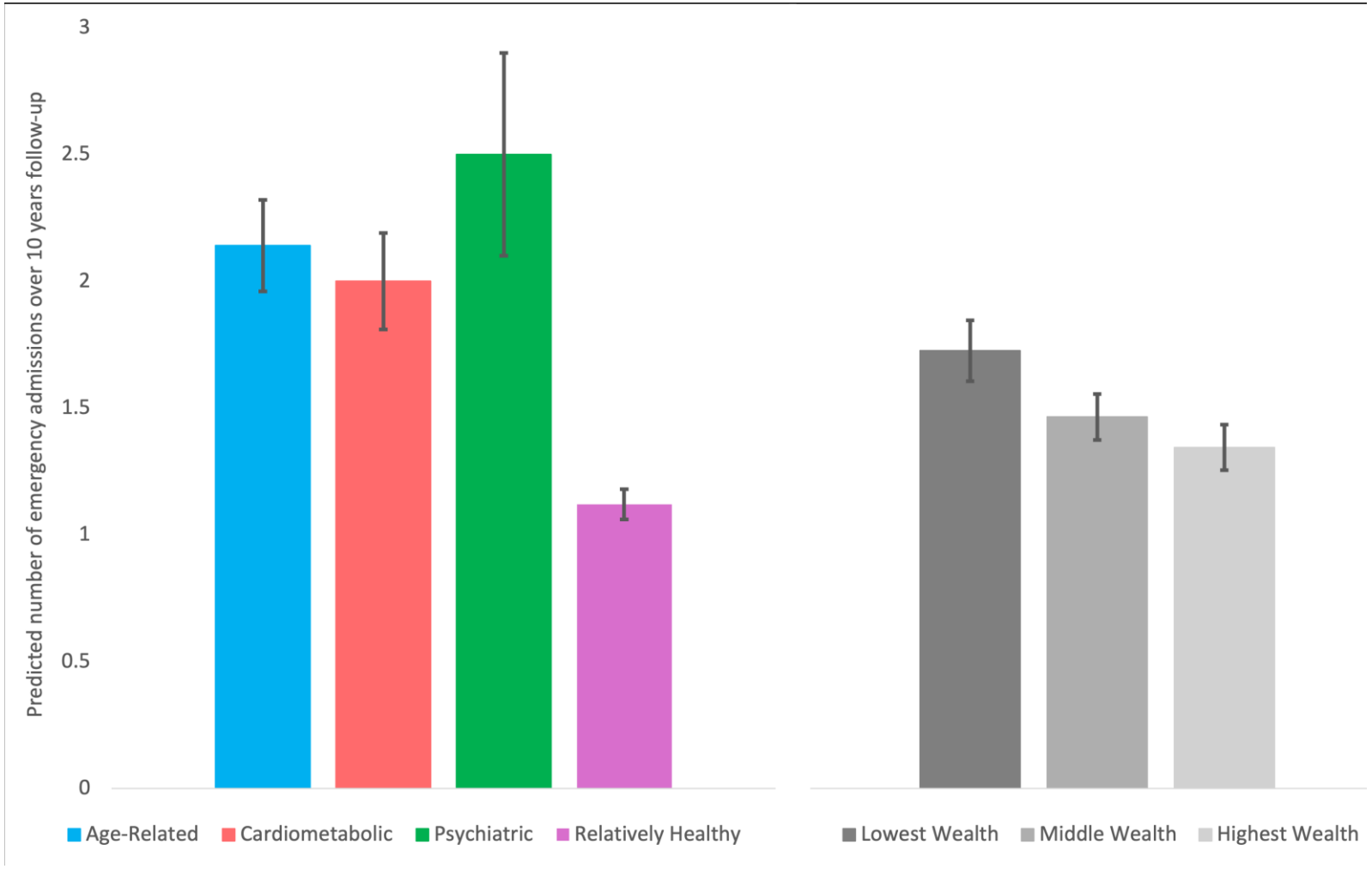

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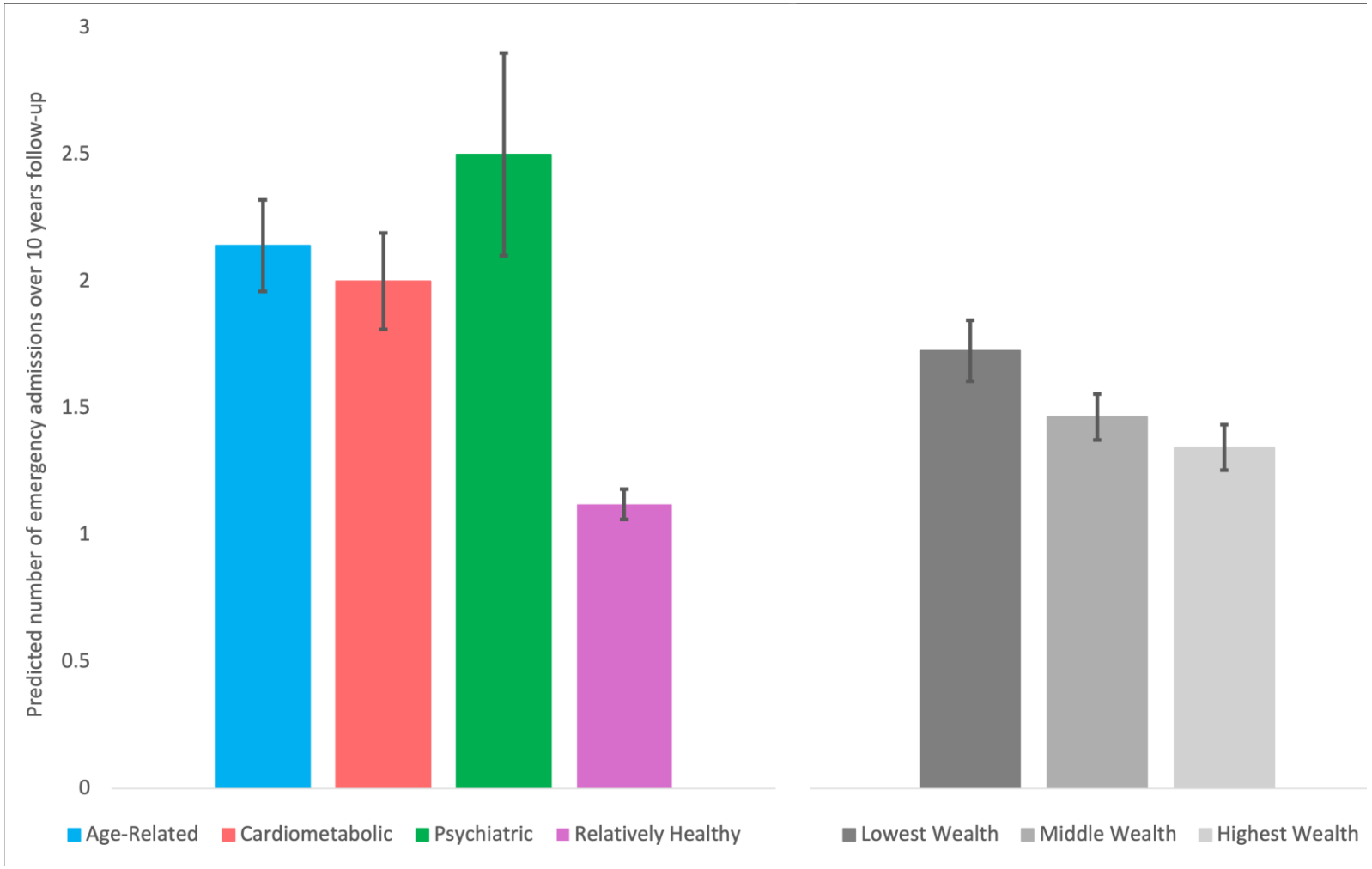

Impact of MLTC clusters on emergency admissions did not vary by wealth

All MLTC clusters ↑

Relatively healthy ↓

Lower wealth ↑

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4. Evidence of potential inequality in the impacts on elective admissions
5. BUT there are limitations... We need more research to understand mechanisms
6. It's a *long-term* process... Think about how inequality can arise throughout development, primary care management and secondary care outcomes

Thanks for listening!

Feel free to email any questions or comments ☺

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