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REVIEW

Integrating and Defragmenting Multi-Specialty Care for People With Multiple Long-Term Conditions

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Abstract

There is an increasing prevalence of people living with multiple long-term conditions (MLTC), defined as two or more long-term conditions. People with MLTC have reduced life expectancy and increased healthcare usage compared to people without MLTC. Most hospital healthcare systems have developed to deal with single conditions in isolation. For people with MLTC, this results in fragmentation of their care across multiple different specialty clinics, which can waste resources and is often unsatisfactory for patients and for their primary care clinicians. Clinical trials are commonly undertaken on patients with only a single condition and there is little evidence about care for patients with MLTC. We have developed an integrated multi-specialty clinic in which multiple specialists meet the patient in a single room at the same time to develop a realistic consensus management plan. Further research is needed to determine the most effective ways to deliver integrated healthcare for people with MLTC.

Key words: multiple long-term conditions; multimorbidity; integrated care

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Introduction

Many people now live with more than one long-term condition (LTC) and this poses challenges for them, for the clinicians caring for them and for the health service. Major long-term conditions often have implications for medical care beyond the specialty concerned with the condition itself. For example, it is well-recognised that diabetes can cause chronic kidney disease which in turn can influence the management of diabetes (Triozzi et al, 2021). However, in secondary care the management of long-term conditions continues to be managed almost exclusively in single-specialty clinics. Delivering high-quality care for people living with multiple long-term conditions (MLTC) is a major and growing challenge as highlighted in a recent UK Chief Medical Officer's report (Whitty, 2023). People living with more than 2 long-term conditions are deemed to have MLTC and some of the risk

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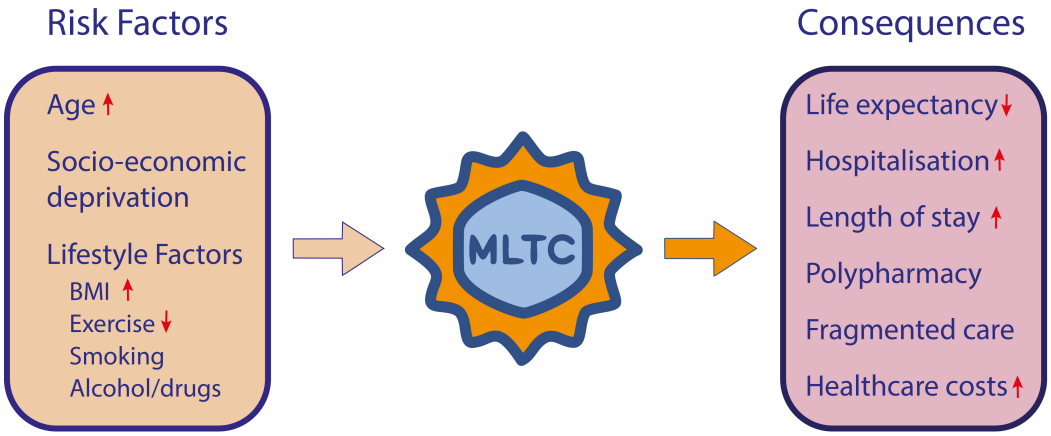

Fig. 1. Overview of risk factors for, and consequences of, MLTC. This figure was created using Adobe Illustrator version 28.4 (Adobe Inc., San Jose, CA, USA). MLTC, multiple long-term conditions; BMI, body mass index.

factor and consequences of living with MLTC are illustrated in Fig. 1. The term multimorbidity has been used previously to refer to MLTC.

In a study of over 400,000 people in the UK, 27% had MLTC and the prevalence increased with age and with social deprivation (Cassell et al, 2018). Healthcare usage was raised in the group with MLTC who accounted for 53% of primary care consultations, 78% of prescriptions and 56% of hospital admissions. Between the ages of 40 and 70, the prevalence of MLTC was 26.9% in the UK Biobank—a large cohort that is less socioeconomically deprived than the overall UK population (Hanlon et al, 2022). By comparison, data from the Secure Anonymised Information Linkage (SAIL) databank in Wales identified a prevalence of 33% for MLTC in the same age group (Hanlon et al, 2022). These two cohorts showed a strong association between the number of MLTC and both risk of unscheduled hospital attendance and 5-year mortality (Hanlon et al, 2022). Similar patterns have been observed in other countries including Denmark, where a prevalence of 22% was found in a study of around 1.4 million people over the age of 16 and MLTC correlated strongly with hospital admission and length of stay (Frølich et al, 2019). The prevalence has been estimated at 25% in China (Hu et al, 2024) and at 24% in people over the age of 60 in India (Chauhan et al, 2022). Between 2012 and 2018 the indices of MLTC in patients aged over 55 who were hospitalised in the US rose in all age, sex and ethnicity groups (Loyd et al, 2024).

People with physical MLTCs have an increased incidence of mental health problems and these can influence lifestyle, self-management of long-term conditions and healthcare-seeking behaviour (Felez-Nobrega et al, 2022; Launders et al, 2022; Wei and Mukamal, 2019). Various LTC are likely to cluster together, perhaps reflecting common risk factors, such as obesity, or causative relationships, such as diabetes causing chronic kidney disease (Fan et al, 2022; Zemedikun et al, 2018; Zhong et al, 2023). Cardiometabolic clusters carry higher risk for primary and secondary healthcare usage, hospitalisation and all-cause mortality across all age groups (Krauth et al, 2024).

Challenges for Patients

Most hospital services were established decades ago to treat single conditions in single-disease clinics, but this is increasingly anachronistic and does not match the high prevalence of MLTC in the contemporary patient population. Whilst in some specialty contexts this may not be a major challenge, in other specialties many, and sometimes most, patients have other conditions that influence the care that they need.

The current configuration of hospital services rarely offers cohesive care for people with MLTC. Over time, a typical patient with MLTC may be referred to multiple different specialties and receive numerous but frequently uncoordinated contributions to their healthcare (Fig. 2A). This fragmentation of their hospital healthcare can be confusing for both the patients and their primary care team (Charns et al, 2022; Sinnott et al, 2013). At times, contradictory advice may be given by different teams, but perhaps a more common problem is that of delay and decision-making paralysis—a decision about management is delayed or not taken at all because it requires input from another team who may need to see the patient to give their opinion. If a patient deteriorates while awaiting a further opinion, this may result in an unscheduled emergency hospital attendance.

Fragmentation of care can be perceived by patients and lead to a sense that no single clinical team understands their situation or how to care for them (van der Aa et al, 2017). It can also degrade their own view of their condition. If it seems that even experienced doctors cannot get to grips with the complexity of their problems, then they may question whether anyone understands their health problems and whether they themselves have any chance of understanding their own health. This is a particularly insidious potential problem for people living with MLTC where self-management can play a major role. It may also contribute to the increased frequency of visits by people with MLTC to hospital with minor changes to their health that would not normally require hospital input (Starfield et al, 2005). On top of these considerations, there is also the practical burden for people of having to get to multiple hospital clinics, including the need to take time off work if they have a job.

Challenges for the Health Service

The care of people with MLTC accounts for a substantial proportion of overall healthcare costs. In a large-scale Finnish study of over 3 million people, the 15% of the population with more serious MLTC accounted for 62% of the total healthcare budget and had annual healthcare costs that were nearly 5 times higher than those for people without MLTC (Wikström et al, 2023). The cost of caring for people with MLTC should itself be a major trigger for reviewing how the healthcare system provides care for these people and for exploring how this can be made more efficient and effective. However, most hospital services, most training programmes, most guidelines and most clinical trials continue to focus on single diseases (Langenberg et al, 2023).

The features that frustrate patients with MLTC also lead to inefficiencies in healthcare. Multiple clinic appointments are scheduled with different specialties, often requiring costly hospital transport. Communication between specialties can be inefficient, involving exchanges of correspondence that may not involve the patient. Decisions are delayed until there is input from another team. The experience of general practitioners (GPs) receiving fragmented advice is that it is unsatisfactory and they can feel isolated in their decision-making in the absence of a single specialty to help with the integrated care of patients with MLTC (Sinnott et al, 2013). There is also evidence that people with MLTC are more frequently seen by hospital specialists than other people for conditions that would not normally require hospital specialist input and would be managed in primary care (Starfield et al, 2005).

Inefficiencies also arise when medications or treatments, which might be deemed unnecessary with real-time input from other specialties, are provided. Specialty A may regard a medication initiated by Specialty B as potentially problematic from their own specialty perspective, but find it difficult to evaluate the strength of need for the medication that Specialty B identified. Problems can arise along similar lines in the interpretation of guidelines which are mostly based on evidence from trials of patients who have only one key condition and not MLTC (Wallace et al, 2015).

Previous Interventions in MLTC Care

There are very few studies testing interventions designed to improve how to deliver optimising care for people with MLTC. In primary care, a 2021 Cochrane review identified only 17 randomised controlled trials of interventions to improve care of people with MLTC (Smith et al, 2021). However, these were generally small studies of specific interventions to achieve for example, dietary change or increase physical activity. Twelve studies involved organisation of care, typically introducing a care coordinator or case manager, but changes in measured outcomes were only slight and cost analysis was largely absent. A randomised trial of focused medication review in primary care was inconclusive as to whether this improved appropriateness of prescribing for people with MLTC (Jungo et al, 2023).

In secondary care, some attempts have been made to bring together different specialists. A Danish intervention coordinated specialty appointments on the same day, reducing blood tests by 29%, though patients spent extended hours in the hospital (Bell et al, 2022). A videoconference-based multi-specialty multi-disciplinary team meeting was evaluated for the discussion of UK patients with heart failure, many of whom have other long-term conditions (Essa et al, 2022). Each patient was discussed only once, but after this discussion, patients had fewer clinic appointments and fewer hospitalisations than before, with associated cost savings. Cost savings were also demonstrated for Canadian patients with kidney disease who also had diabetes and/or heart disease and were randomised to have all their care in a combined clinic or multiple single-specialty clinics (Weber et al, 2012). A further Canadian study randomised around 150 patients to either standard care or a meeting with a primary care nurse followed by a case conference and a further

meeting, but no difference in healthcare usage or costs was identified (Ryan et al, 2023). Following stroke in patients with MLTC, a 6-month intervention of input from a team of therapists, nurses and a social worker did not alter healthcare usage, but did improve patient experience (Markle-Reid et al, 2023).

A multi-specialty group in the US produced some recommendations for care of people with MLTC including diabetes, chronic kidney disease and heart disease, but inevitably the evidence for these guidelines was largely based on trials done in a single disease context (Handelsman et al, 2022).

Development of a Multispecialty MLTC Clinic

Given the clear unmet need for new approaches to the delivery of care for people with MLTC, we have been developing an integrated multi-specialty clinic in which the relevant specialists see the patient together in the same room at the same time to generate a consensus management plan with the patient (Fig. 2B). There are organisational challenges associated with ensuring that the right specialties are present for a given patient.

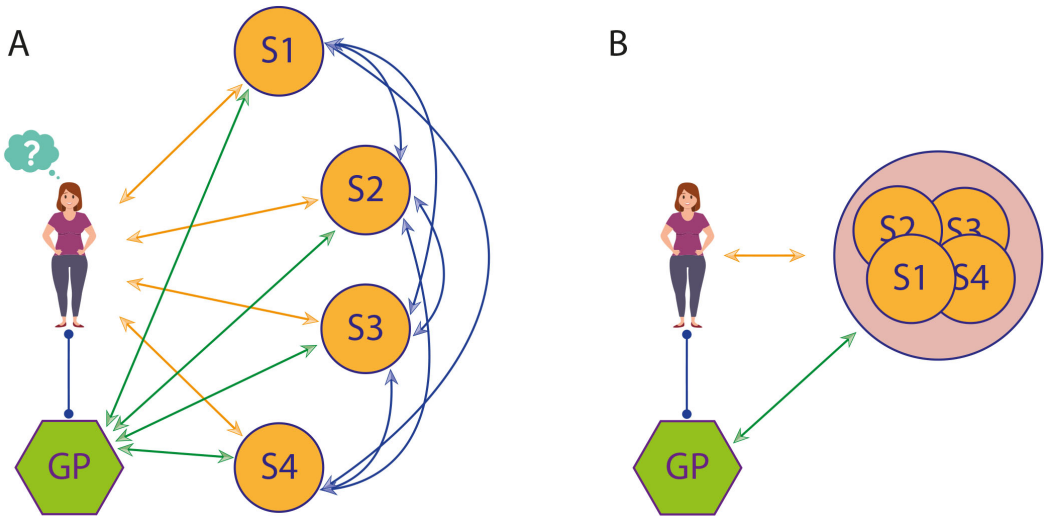

Fig. 2. Communication pathways involved in different models of care for a person with MLTC. (A) The standard model with multiple single-specialty clinics. Arrows indicate the different channels of communication required for the coordination of care when, for example, four specialty teams are involved (S1–S4 represent specialties 1–4 respectively). (B) Our multi-specialty clinic model with the same number of specialties all seeing the patient together, illustrating the much simpler pathways of communication. This figure was created using Adobe Illustrator version 28.4 (Adobe Inc., San Jose, CA, USA). GP, general practitioner.

Patients are referred to the clinic by primary care or by secondary care teams. We have not imposed specific patient selection criteria and try to see any patient with MLTC whom the referring team feels may benefit from multispecialty review. As this clinic was developed as a pilot innovation, we coordinated particularly with a large local general practice serving a population with significant socioeconomic disadvantage. On occasion we have been able to conduct a consultation with the

patient's general practitioner present and this was especially valuable for a patient with a severe long-term psychiatric illness.

Not all patients have the same set of long-term conditions and whilst we want the appropriate specialists present for each patient, we do not want to waste specialist time seeing patients who do not have a long-term condition relevant to their specialty. Therefore, one clinician reviews each patient's records in advance of the clinic to determine which specialists will be relevant. If there is ambiguity, input from one or more other specialists is sought to establish the specialties that might be needed for the patient. In practice, we have found it expedient to cohort patients with particular combinations of conditions and assemble the correct specialists for that combination.

The clinic is staffed by consultants rather than trainees as we aim to develop a management plan in real-time with the patient and this is best done with on-the-spot consultant-level discussion. We recognise the importance of trainee specialists being exposed to the clinic and they are welcome to attend. However, trainees are always supernumerary and although they observe and engage in discussion, they are not there to provide specialist opinions. Most, but not all, of the specialists who contribute to the clinic also take part in the acute general medical take rota and look after general medical as well as specialist patients. The clinic team includes a psychiatrist with experience in the care of people with long-term physical conditions.

During clinic appointments the different specialists see the patient together in a single room. As in other clinic contexts, patients are always welcome to bring companions if they wish. The list of patients to be seen in the clinic is available in advance to allow clinicians to review the electronic records before the clinic if they wish to do so. One specialist leads the consultation, effectively chairing it, typically starting with a relatively standard history, but it is a team conversation with the aim being for each specialty to get to grips with the patient's situation and for the patient to have the opportunity to engage with all the specialists together. Often the answer to a question from one specialist will be followed up by another specialist picking on something relevant to their domain. The different specialists do not have different roles in the clinic and operate as a single team of equals with each other and with the patient. Telemedicine consultations are also possible when needed.

The key aspect of the consultation is the discussion that follows the assessment. In this we aim to identify the patient's main concerns and to address these to the extent that it is possible to do so. Patients are invited to ask questions about their health and we explain that we will answer them as well as we can. As some of the common major LTC are progressive, there is usually discussion of the future and of prognosis. This is a context in which the presence of multiple specialties can be very helpful. For example, what the patient may have mistakenly understood from a tangential discussion in a non-renal specialty clinic to be mild kidney impairment may be seen by a nephrologist to be a descent likely to result in end stage kidney disease within a few years. Bringing all this expertise together into a single room means that for almost all the patients we see there is no question that need remain unanswered for lack of expertise. Our aim is to help patients develop as clear an

understanding of their health as is possible and to dispel the sense, developed by some, that their complex health cannot be understood by them or by their clinicians.

A challenge beyond the logistics of ensuring that the correct specialties are present in the clinic, is that of financing a clinic of this nature. Inevitably, the presence of multiple specialists in the clinic costs more than that of seeing only one specialist. However, it may still be cheaper than the cost of seeing all the specialists individually on multiple different occasions with the associated administrative and transport costs.

Patient feedback has been very positive about the clinic and it is undoubtedly popular—patients appreciate the benefit of input from multiple senior doctors. Clinicians value the experience of delivering this holistic care and appreciate the absence of the otherwise common frustration of not being able to make decisions in real-time when another specialty view is needed. It is also more comfortable to take some decisions with the patient that might not be consistent with standard single-disease guidelines with the support and input of other consultant colleagues.

A key strength of the unified approach is that all the specialists can agree with the patient in real-time on a forward plan. The value of this consensus is particularly evident when discussing lifestyle factors—for example, a patient may be reluctant to follow advice from a diabetologist or nephrologist to increase their level of exercise because they are worried that their heart specialist might not approve of this, but such notions can be dispelled by the cardiologist at the time. Patients are often worried about the impact of a proposed new medication on one of their conditions such as their chronic kidney disease, but again this is easily dealt with in the moment.

In general, we try to help patients to develop their understanding of their health problems so that they can better self-care and self-manage their long-term conditions. Lifestyle measures are often important and a consensus view from the team about the measures that could reasonably be aimed for provides clarity and realistic objectives. Following the clinic, a letter is sent to the patient and their general practitioner outlining the conversation and the consensus plan in a way that minimises the workload for primary care and allows further clarification if needed.

Future Perspectives

Looking forward, the care of people with MLTC and the complexities arising from the combination of their different conditions will need a more prominent place in undergraduate and postgraduate medical training. Similarly, more research in this area is essential. It is interesting that a number of therapeutic interventions such as sodium-glucose cotransporter-2 (SGLT2) inhibitors or glucagon-like peptide-1 (GLP-1) agonists seem to be beneficial across a spectrum of disorders and this may represent a growing trend in the future (Drucker, 2024; Seidu et al, 2024). Greater integration with primary care will be important as much of the day-to-day care of people with MLTC is undertaken by the primary care team, who need to understand what is planned in secondary care and might ideally be involved in that planning. Similarly, involvement of other health care professionals is key, especially in sup-

porting lifestyle change, and our team includes nurses, pharmacists and other health professionals. The design of integrated care may need to be tailored to local needs and context across different countries and regions. Ultimately, from a societal and individual perspective, prevention is of paramount importance and steps to reduce weight gain will be particularly valuable in this respect, as will early detection and intervention where beneficial for particular MLTCs.

Conclusion

The number of people with MLTC continues to increase globally across all adult age groups and how to deliver optimising care for people with MLTC is a major challenge for healthcare systems. The current organisation of secondary care services to deal with single diseases in isolation is increasingly unfit for purpose for people living with MLTC. These people often experience fragmented care and attend multiple clinics, each of which is unable to give them a sense of their overall healthcare problems and of how they might approach their problems in a unified manner. For the health service, this fragmented care is expensive and inefficient. Clinical trials and clinical guidelines are largely based on evidence from studies of carefully selected patients, typically without MLTC and there is a dearth of evidence about how to deliver optimising care for people with MLTC. We have developed an integrated multi-specialty clinic in which patients are seen by multiple different specialists in the same room at the same time to generate a consensus management plan. Further work is underway to evaluate this clinic and our aim is to include clinical outcomes, healthcare usage and health economics analysis as well as assessing the experience of patients, of the clinicians in the clinic and of primary health care teams.

Key Points

- People are considered to have multiple long-term conditions (MLTC) if they have two or more long-term conditions.
- The prevalence of MLTC is increasing in most countries and in most adult age groups.
- People with MLTC have reduced life expectancy, experience increased hospitalisation and their healthcare costs are considerably higher than those of people without MLTC.
- Hospital healthcare for people with MLTC is commonly fragmented across multiple different specialties and this can be frustrating for patients and for primary care.
- Most clinical trials and guidelines are based on patients with single conditions and may not translate well to people with MLTC.
- We have shown that it is possible to deliver an integrated service in secondary care and future research should evaluate the costs and outcomes of integrating care across specialties.

Availability of Data and Materials

Not applicable.

Author Contributions

CAO'C drafted the manuscript with help from MER. CAO'C, JJR, GT, MM, AL, RDR, LS, and MER participated in the conception and research design of this manuscript. All authors contributed to the development and implementation of the multi-specialty clinic. All authors contributed to editing the important changes in the manuscript and approved the final version. All authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work.

Ethics Approval and Consent to Participate

Not applicable.

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Conflict of Interest

The authors declare no conflict of interest.

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