

Mair, F. S., Montori, V. M. and May, C. R. (2021) Digital transformation could increase the burden of treatment on patients. *British Medical Journal*, 375, n2909. (doi: <u>10.1136/bmj.n2909</u>)

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Deposited on 11 January 2022

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Digital transformation could increase the burden of treatment on patients

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The burden of treatment refers to the demands that health care professionals and systems place on patients and their support community, and the implications this has on their quality of It is an important barometer of quality of care. It includes the work involved in selflife. [1] management of care such as: gaining an understanding of chronic conditions, their management and implications; engaging with health and social care professionals, family, and friends to access care and treatments; putting self-management recommendations into practice, which includes taking multiple medications, enduring side effects, attending appointments and investigations, and enacting lifestyle and behaviour changes; self-monitoring activities and reconfiguring treatments to make them workable; and navigating complex care systems.

Many factors have been recognised as increasing the burden of treatment such as multimorbidity and associated polypharmacy; inadequate provision of information; the administrative burden

associated with managing a chronic illness, such as dealing with poorly coordinated healthcare; and inadequate communication.

People vary in their capacity to cope with any given level of burden of treatment depending on factors ranging from the individual (cognitive abilities, health literacy, physical condition) to wider issues such as their financial circumstances, environment, and the strength of a person's support community. [2]

Digital transformation is viewed as a potential solution to the challenges facing healthcare systems internationally, but if it results in more workload shifting to patients and their support communities, it could increase rather than lessen the treatment burden. The NHS Long Term Plan aims to provide a "digital first" option within 10 years. [3] The current chancellor of the exchequer says that he plans to spend "billions on digitising the NHS." [4] Digital health provides opportunities and challenges, particularly to ensure that the move to digital health does not widen health inequalities. Scant consideration has been given to how, and to what extent, digital health ameliorates or contributes to the burden of treatment experienced by patients and their supporters.

Digital health has the potential to reduce burden of treatment for some. The ability to teleconsult (via telephone or video) can reduce the number of visits to health professionals. Attending clinic or hospital appointments is time consuming, can be stressful and may entail considerable expense and effort. The distance a person must travel, availability and affordability of transportation, building accessibility, and whether the appointment requires the person to negotiate time off work or childcare can all influence the perceived burden of treatment associated with attending appointments. Reducing such visits through teleconsulting can lessen burden of treatment for those with busy home or work lives, or for those for whom accessing transportation is difficult or expensive or those with disabilities (visible or invisible). However, teleconsulting via video requires access to fast broadband and Wi-Fi in the home and assumes that people can use such systems. People who are homeless, those living in poverty and the less affluent will not have access to such resources and may be seriously disadvantaged and find burden of treatment exacerbated by a move to digital or remote care. Similarly, those who do not speak English, have learning difficulties, or cognitive or other sensory impairments may also find the move to remote care increases the burden of treatment as they are unable to access digital services unaided.

The promotion of home telemonitoring systems for chronic conditions such as hypertension or asthma may similarly lessen treatment burden for some as it may decrease face-to-face appointments (although this will be substituted with additional self-monitoring work) and may enhance knowledge and understanding of their condition and an individual's sense of control. Whether it succeeds in lessening treatment burden will depend on the individual's personal circumstances as outlined above. Furthermore, a person with multiple chronic conditions who has multiple separate home telemonitoring systems to operate may find the self-monitoring workload overwhelming and unmanageable, increasing their burden of treatment.

Evidence-based apps for people to promote weight loss or help manage low back pain or diabetes may lessen burden of treatment if users find the apps to be useful, usable, and desirable. When, on the other hand, apps are poorly integrated into plans of care, offer misinformation or poor-quality advice, or are demanding to use, they may increase the burden of treatment. This may also be the case when users are overwhelmed by demands (made by life or health care) on their time which they must face alone because of the move to remote care. In either case, patients may feel abandoned by healthcare that in offering digital "solutions" is not just unresponsive but also burdensome.

The move to remote digital healthcare can reduce the burden of treatment to the extent that these services are purposefully designed primarily to reduce the demands on time, energy, and attention placed on the patient, and only secondarily to reduce costs or improve operational efficiency. Devices, applications, workflows, systems, and practices must be designed to avoid exceeding the capacity of those less digitally able – because of financial, language, literacy, cognitive, physical, and social support limitations. In addition, an overemphasis on disease focused digital health solutions will be inappropriate for the growing population that lives with multimorbidity (two or more chronic health conditions). Digital and remote healthcare not designed with these factors in mind will render patients vulnerable, not only to digital inequalities, but to loss of wellbeing due to their contribution to an already unsustainable burden of treatment.

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