

The future of rehabilitation in the United Kingdom National Health Service:  
using the COVID-19 crisis to promote change, increasing efficiency and effectiveness.

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**INTRODUCTION.**

Healthcare worldwide is failing, with more people using more resources. Long-term conditions are the major cause of increased demand on healthcare, and often it is disability rather than disease itself that uses resources. Covid-19 may precipitate major changes in healthcare's structure and processes. [1][2][3][4] It is also predicted that Covid-19 will leave much disability requiring rehabilitation. [5][6][7][8][9] This article focuses on the situation in one country, the UK, but I suspect that some of the problems afflicting the UK are also present in other countries. I hope that the ideas discussed and solutions proposed are helpful in general.

Rehabilitation services in the UK have failed to meet needs for many years. [10][11][12][13][14] They will find it difficult to meet the needs of people with problems secondary to Covid-19. This applies even to the small proportion of patients needing nationally commissioned inpatient services, [15] because these services cannot meet the current needs of patients after trauma [16] or neurosurgery. [17]

A radical solution is needed. History explains the problem. Rehabilitation developed in an unplanned, piecemeal way, with no coherent organising principle. The solution developed here is stolen from an economic analysis of the 2008 financial crisis. [18] Healthcare organisations are corporations, legally-defined bodies "authorised to act as a single entity and recognised as such in law". [OED] They evolved in Ancient Rome to provide public services - the *societas publicanorum*. Colin Mayer's analysis shows that good corporations have a clearly stated purpose. Healthcare organisations need to consider their purpose. Is it to diagnose and cure disease, or is it to help ill people return to a state of health? The former is based on a biomedical model of illness, [19] the latter on a biopsychosocial model. [20]

This article will suggest a clear purpose for healthcare, one which leads to a solution. It will also suggest how it can be achieved, using the network of rehabilitation centres of excellence that have, since 2014, developed services for people with complex rehabilitation problems. They understand the range of problems patients have, they are aware of the potential effective rehabilitation interventions, [5] and they will have working relationships with most services and organisations likely to be needed. They are well-placed to lead and facilitate change.

### **HISTORY OF REHABILITATION.**

Modern interest in assisting recovery from illness started in mid-nineteenth century with 'medical gymnastics' [20] The First World War stimulated services such as the Bath War hospital, [22] where exercise, electrotherapy, whirlpool baths and therapy were used, and also the foundation of the Artificial Limb and Appliance Services for amputees [23].

The term, rehabilitation, was first used in a health context in 1940: *"Our aim is to secure a co-ordinated system of rehabilitation designed to produce the maximum restoration of working capacity."* [24] The second World War also precipitated development of specialist rehabilitation services for patients with spinal cord injury and burns.

Rehabilitation continued to evolve primarily in response to particular problems. The polio epidemic in the 1950s rekindled interest in equipment, since when many specific services have developed for respiratory diseases, heart diseases, stroke, back pain, sports injuries and other problems. Each service developed in isolation, not sharing knowledge, experience or ideas. There were concerns about this piecemeal development, with national reviews, but no action followed. [25]

The medical speciality in Britain started in the 1930s as the British Association of Physical Medicine, which was later subsumed within rheumatology. In 1984 the Medical Disability Society, later renamed the British Society of Rehabilitation Medicine, was founded. In 1986 an influential report, "Physical Disability in 1986 and Beyond", was published. [25]

The theoretical basis for rehabilitation emerged in 1977, when the biopsychosocial model of illness was published. [26] This informed the World Health Organisation's International Classification of Impairments, Disabilities and Handicaps in 1980. [27] In 2000 the model and terminology were further developed in the World Health Organisation's International Classification of Functioning, [28] and has been further refined. [19][20]

In 2007, a report [29] led to a review of trauma services. [30] This review recognised that rehabilitation needed to manage patients who had multiple problems, often complex and spanning different body systems. Existing services could not meet the needs of patients with multiple needs. This gap led to National ('specialised') commissioning of high-cost low-volume inpatient rehabilitation for patients "with highly complex needs", [15] starting in 2014. These services are effective, generating financial saving in care and support costs within 36 months, [31][32] but are insufficient to meet need. [16][17] The commissioning also funded the UK Rehabilitation Outcomes Collaborative, [33] the first routine national data collection on patients' impairment and disability;

Clinical practice in rehabilitation was based on tradition until about 1980, since when research has grown massively. In 1997 it was shown that organised stroke unit rehabilitation reduced mortality and morbidity, [34] and now rehabilitation has a strong evidence base. [14][35] Cost-effectiveness has been found across conditions. [36][37] At the same time, the theoretical and

practical bases for rehabilitation have been developed into a coherent whole, [35] centred on the biopsychosocial model of illness [19][20] and the use of expert multidisciplinary teams. [38]

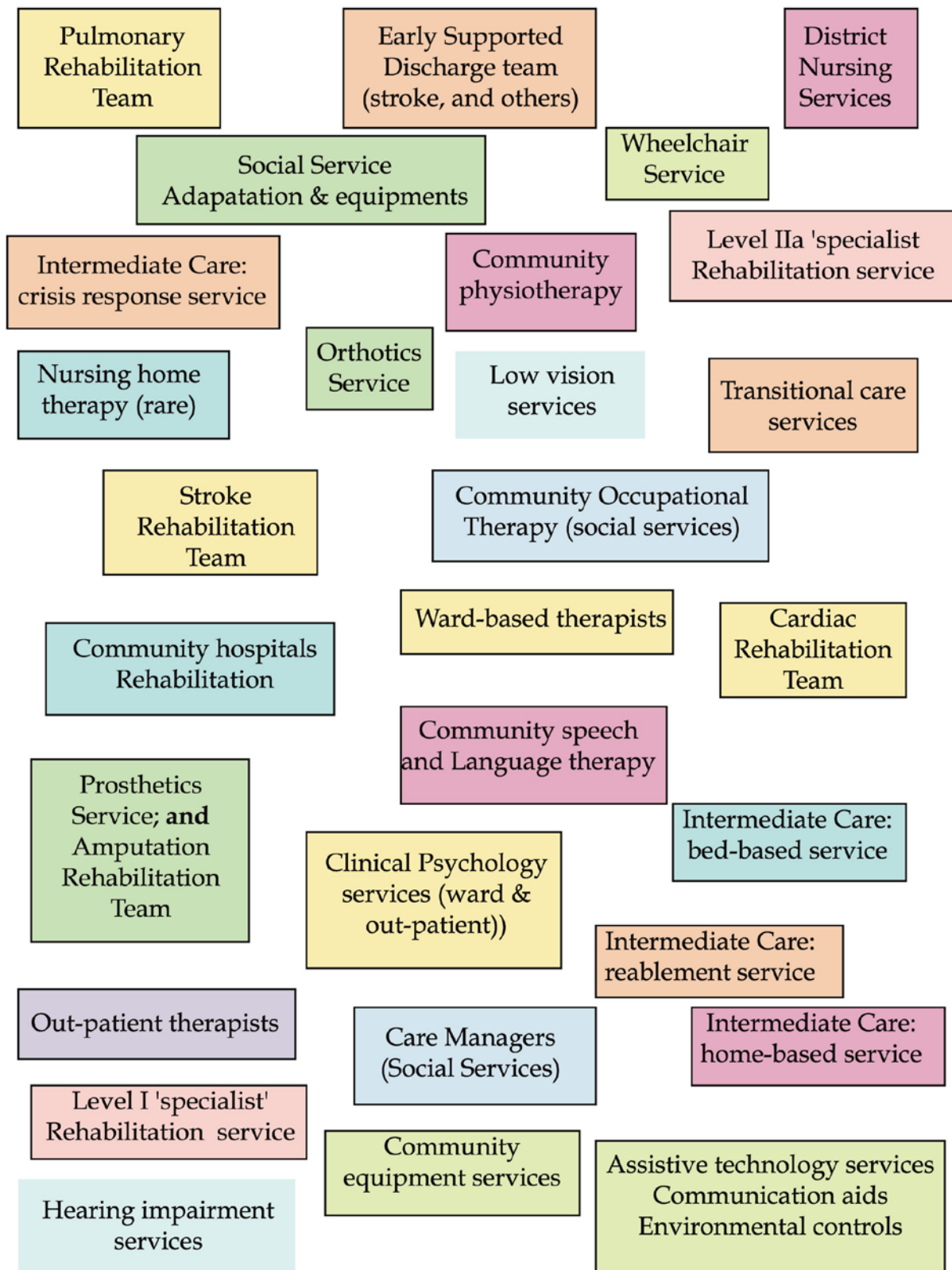
Thus, there is now a clear, evidence-based delineation of the scope of rehabilitation, the structures needed, the outcomes aimed for and the processes needed. [35] There remain three common misconceptions.

### **THREE MISCONCEPTIONS.**

The first mistake is to equate rehabilitation to seeing a therapist. Giving therapy is not synonymous with rehabilitation; it is but a small part of rehabilitation. Effective rehabilitation is a process [35] based on a multidisciplinary team with expertise in rehabilitation. [38][39]

The second mistake is not to recognise how many services undertake rehabilitation, because they use other names. Intermediate Care, which has four named sub-types - reablement, home care, crisis response, and bed-based service - is a good example. [40] Services with this name differ in their resources and service structures, [41] yet the purposes, structures and processes of intermediate care observed [41] are indistinguishable from rehabilitation. Many other services (e.g. early supported discharge, transitional care, restorative home care) also offer rehabilitation, and some are shown in Figure one.

Figure one  
 Rehabilitation services often available in a district



An incomplete list of services.  
 Colours suggest some similarities but have no other significance

The third mistake arises from the use of the term, specialised. NHS England defines specialised services thus: *“Specialised services support people with a range of rare and complex conditions.”* [41] and commissions *“tertiary and specialised rehabilitation”*. [13] They also say: *“These services can be expensive to provide and some may be described as high cost/low volume services.”* [42]

Several characteristics are conflated with specialised: rarity of cases, high-cost, and complexity. Specialised, rarity, cost, and complexity are four different constructs which may overlap, but not greatly. This misuse of terms leads to a perception that most rehabilitation does not require specific expertise (i.e. is not specialist). Rehabilitation is an area of specific expertise [39] just as cardiology is. Specialised commissioning of some complex cardiology services does not abolish the need for specialist cardiology services outside the nationally commissioned specialised cardiology services.

Stroke rehabilitation illustrates these points. It requires a specialist team [34] characterised by:

- co-ordinated multi-disciplinary rehabilitation with weekly meetings;
- staff with a specialist interest in stroke or rehabilitation, or both;
- routine involvement of carers in the rehabilitation process; and
- regular programmes of education and training for the team.

Moreover, it is now evident that all stroke patients benefit from rehabilitation, with no evidence to suggest that any specific group does not benefit. [44]

### **COVID-19: EXPOSING SYSTEM FAILURE.**

In 2007, the investigation into trauma care exposed the lack of any coherent foundation for rehabilitation services, eventually leading to the first commissioning of services to meet all the

rehabilitation needs of individual patients within a single service. Covid-19 is going to expose the continuing absence of any systematic organisation of rehabilitation outside regional specialist services, who will only see a minority of all patients.

Most Covid-19 inpatients will need pulmonary rehabilitation, but in addition some or many patients may need rehabilitation for: [6][8][9][45][46]

- fatigue, and muscle wasting
- emotional and mental health problems including post-traumatic stress disorder
- neurological problems: cognitive losses, cerebral infarction(s) and encephalitis;
- cardiac problems;
- chronic pain
- other less common or as yet unrecognised problems

Existing rehabilitation services, other than the nationally commissioned centres, are usually small and cannot manage patients with multiple needs because they are designed for one specific group of patients; they are also under-resourced. There is no potential for working across these boundaries, there is much duplication between services and, because services are small, there is little potential for flexibility or development of new methods of working.

Rehabilitation is of course adapting to new circumstances, for example using telerehabilitation, [47][48] but the long-standing complete separation of services, with minimal personal contacts between separate services that are almost always in separate management structures, has not allowed much reorganisation and redeployment of resources.



Setting up special services for patients with Covid-19 will doubtlessly be considered. This must be avoided at all costs: it will lead to further fragmentation; scarce staff will be removed from existing services, further reducing their ability to meet patient need and to adapt; the new service would not develop a sufficient degree and breadth of expertise for several years; and it would require yet another new management structure.

## ANALYSIS

Rehabilitation developed within a biomedical healthcare system, yet it is based within a much broader biopsychosocial framework. The healthcare system has increasingly focused on the diagnosis and treatment of disease, and hospitals and commissioning organisations rarely consider the broader consequences of illness. Rehabilitation, if considered at all, is considered something done by someone else somewhere else. As the chief operating officer of a large UK teaching hospital once said, “We do not do rehabilitation.”

On the other hand, the evidence suggests rehabilitation should be integrated into medical care from the outset. [49] There is evidence of benefit in intensive care, [50] and for starting rehabilitation early [51][52] although mobilisation within the first 24 hours may carry risk in some patients, for example after stroke. [53] Prophylactic rehabilitation may be beneficial before surgery. [54]

Colin Mayer’s key insight is that any corporation wishing to succeed in the long-term must have a clearly articulated purpose to which they are committed, this purpose relating to their services or goods, **not** to the owners of the business. [18] The financial state (capital) of a corporation is only one factor that contributes to achieving their purpose. The others are human

capital, environmental consequences, and infrastructure, [18] These very important parts of any corporation will not be considered further in this article.

The UK NHS constitution says: *“It is there to improve our health and wellbeing, supporting us to keep mentally and physically well, to get better when we are ill and, when we cannot fully recover, to stay as well as we can to the end of our lives.”* [55] That is a good purpose statement. The rest of the constitution sets out principles about access and process, values, and the rights owed to and responsibilities of patients and staff. All NHS organisations would benefit from considering the other four factors relating to their functioning: financial capital, human capital, infrastructure, and environmental consequences.

The behaviour of most NHS organisations suggests that they have a different purpose: “to diagnose and treat the diseases of the patients we see.” For example, almost all information collected and reported concerns disease, not health and well-being. Given this implicit purpose, it is easy to see why disability and rehabilitation have little attention within the NHS. However, in the absence of any other organisation committed to managing the consequences of disease, it is unacceptable from society’s perspective.

Often NHS organisations have a second purpose “to achieve financial balance.” Payment is related to disease diagnosis and management, not health and well-being. Rehabilitation is rarely specifically commissioned within a hospital, and naturally has a lower priority than biomedical activity. Commissioning practice unwittingly reduces patient-centred care. [56]

Colin Mayer points out that long-term financial stability follows on from adherence to purpose, and that organisations that give priority to financial matters rarely survive long-term. [18]

Should there be a completely separate organisation responsible for rehabilitation, such as Social Services? This is a legitimate question, but the arguments for rehabilitation remaining within healthcare are strong.

Every patient is seen initially within healthcare, and many patients need continuing access to medical (disease-focused) expertise. Doctors in the multi-disciplinary rehabilitation team could provide some medical input, but some patients still need to be seen by specialist hospital medical teams.

Rehabilitation should also start as soon as possible, including in the intensive care unit. Only a service embedded within healthcare can achieve immediate unfettered input.

The rehabilitation team must always include a doctor with expertise in rehabilitation. The disease diagnosis determines many aspects of rehabilitation, such as likely prognosis and possible complications. New medical problems will arise whilst a patient is receiving rehabilitation. Many patients need help from mental health services or, less often, from palliative medicine, both healthcare services. These considerations all reinforce the need for rehabilitation to be fully integrated into healthcare

The need for full integration of rehabilitation into all healthcare also follows naturally from the purpose set out in the NHS constitution, shown above. This purpose requires a focus on health, not disease. Although health is difficult to define, one generally accepted definition of health is “the ability [of the person] to adapt and self-manage [to changes in themselves and their environment].” [57] This is precisely what rehabilitation does. [35]

This purpose requires health services to consider each patient holistically, giving equal priority to all aspects of a person's illness: their disease, their disability, their distress and their need for succour and support. It needs healthcare systems to base structures and processes on the biopsychosocial model of illness, which includes disease but much more besides. [19][20]

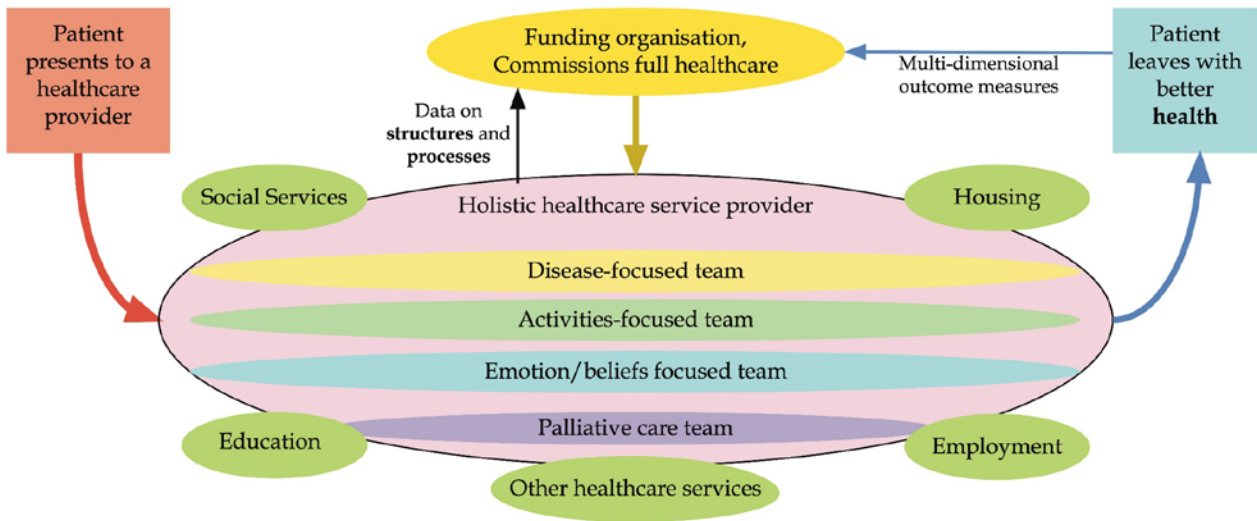
Last, although this approach requires healthcare to be interested in the social functioning of their patients, it does not require healthcare organisations to be responsible for enacting all actions identified in a rehabilitation analysis. Healthcare organisations should identify all problems, the actions needed, and who is responsible for each action. There should then be a collaborative sharing of responsibility with other services for actions located outside health.

#### **THE GOAL.**

Each patient should have immediate and unfettered access to expert services able to assess and manage the totality of their problems at all stages of their illness, regardless of where the patient is located. Transfers of care should not disrupt any rehabilitation (or other) plans and processes.

To achieve this, each healthcare organisation needs four expert teams covering disease (medical), disability (rehabilitation), distress (mental health), and complex symptom-control and end-of-life (palliative care). These should be available to all patients cared for by the organisation at all times, and should work jointly. It requires joint, collaborative working across organisational and geographic boundaries. This is illustrated in figure two,

Figure two  
 Organisation and relationships in healthcare system



The position of some existing services needs consideration, such as learning disability, chronic pain services, and sports and exercise medicine. These all focus on disability, not disease. Organisationally they fit well within a Rehabilitation (or Disability) directorate, and closer working with other aspects of rehabilitation would be mutually advantageous.

**NEXT STEPS**

Each healthcare organisation needs, in liaison with patients, commissioners, staff and the public, to develop an agreed purpose in line with that of the NHS constitution. They then need to agree ways in which their achievement can be measured.

Commissioners have a central role in achieving change. Corporations adapt to their environment. [18] In healthcare the most influential environmental factor is commissioning – ‘he who pays the piper calls the tune.’ Contracts need to reward organisations that are adapting in ways more likely to increase health, not simply treat disease. In principle reward should be influenced by measures of health, but this is difficult to measure. Initially they could encourage organisations to have structures and processes focused on:

- disease diagnosis and treatment
- disability assessment and rehabilitation management
- the emotional aspects of illness,
- palliative and end-of-life care
- collaboration with other organisations, especially but not only Social Services

Last, a cultural move is needed within all healthcare, moving from a biomedical to the holistic, biopsychosocial model of illness.

Covid-19 has not only precipitated many changes, but it has led to an acceptance that change is necessary and a willingness to change. It will lead to an increased demand for integrated rehabilitation services able to manage the totality of a patient’s problems in one service.

Different aspects of a model already exist in places:

- comprehensive rehabilitation for all disabilities - in regional rehabilitation units;
- hyper-acute rehabilitation wards where acute and rehabilitation services work as partners – in trauma centres
- funding conditional on providing rehabilitation – trauma service commissioning

Resources should not be re-located or added to a new 'Covid-19 service'. Instead, existing resources should be brought together to be more efficient and effective. Many resources are available: most medical and surgical ward teams include therapists; specialist nurses and therapists often support patients with specific diseases (e.g. Parkinson's disease) or problems (e.g. incontinence); geriatric and paediatric teams deliver rehabilitation expertise; a myriad of community and transitional services providing bits of rehabilitation; services for chronic spinal pain, stroke, pulmonary and cardiac disorders all offer rehabilitation; and assistive technology services are usually separate but are an important resource.

Change is most likely to succeed if undertaken locally, because the problems, resources and potential solutions will differ from place to place. This approach also allows different models to be tried, rather than dictating a single, monolithic structure.

The regional rehabilitation services are well placed to play a leading role. Thanks to national funding, they have existed long enough to develop local networks and contacts, they are linked with major trauma centres, they will know most but not all local services, and their remit has covered all complex disabilities, not simply neurological problems. NHS England should encourage local centres, with Trusts and Clinical Commissioning Groups, to reorganise services along the lines suggested.

Previous major crises, wars and diseases (e.g. polio) have led to change in rehabilitation.

Perhaps Covid-19 will cause the vital major change, a recognition that the purpose of the NHS and, I assume, healthcare systems in other countries, can only succeed if rehabilitation is fully integrated into all services. Rehabilitation is a vital part of any healthcare service that hopes to

*“improve our health and wellbeing, supporting us to keep mentally and physically well, to get better when we are ill and, when we cannot fully recover, to stay as well as we can to the end of our lives.”*



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