



# Conclusion: Moving Beyond Disease-Based Models of Prevention

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In the 2015 *World report on ageing and health*, the World Health Organization emphasised the need to consider *Healthy Ageing* from the perspective of people's functional ability to be, and to do, the things they value. This ability is determined by the intrinsic capacity of the individual (i.e. all of the individual's physical and mental, including psychosocial, capacities), the environments they inhabit, and the interaction between the individual and their environment. Furthermore, the report emphasised the importance of considering patterns of ability and capacity across people's lives.

This reframing of *Healthy Ageing* away from a conceptualisation defined by the absence of disease and towards a focus on an individual's functioning has many implications for clinicians and researchers. One of the most fundamental is a shift to considering *Healthy Ageing* as a trajectory of functioning that builds and declines across an individual's life. Interventions to promote health in older age can therefore occur at any stage of the life course, rather than being solely the domain of geriatricians. One greatly neglected area in this regard has been midlife.

While every individual's *Healthy Ageing* trajectories are unique, at a population level, people in the second half of life tend to fall into one of three groups: those with high and stable capacity, those with declining capacity and those with significant losses. The needs of each of these groups are quite distinct. Moreover, chronological age is only loosely associated with the group into which an individual falls.

The group with high and stable capacity are generally well served by existing health services, at least in high resource settings. This is a group in whom disease prevention is important and who should be encouraged and supported to avoid traditional cardiovascular risk behaviours such as smoking, lack of physical activity and poor nutrition. It is also a group where it is important to identify diseases, or risk factors such as hypertension, early and if possible cure or control them.

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At the other end of the spectrum, the group with significant losses of capacity are traditionally the domain of geriatrics and, while this area receives inadequate investment, it is a field where we generally have a good understanding of what needs to be done—typically the provision of comprehensive and integrated care that spans both health and social care services.

However, the middle group who are experiencing declines in capacity have quite different needs again, and rarely have access to the services they require. Nor do we yet have a clear understanding of the optimal interventions that might be most appropriate for them. These declines of capacity can arise from the complex multi-morbidities that the majority of people over the age of 65 years experience, or they may simply reflect complex shifts in systems biology that are the consequence of diverse factors such as the accumulation of physiologic deficits across the life course or early life infections that can set in place a cascade of immune senescence and inflammation.

Regardless of the cause, this period of many people's lives presents a significant opportunity to influence their subsequent trajectories of capacity and ability. For this is a group in whom prevention is still important, but this is not so much the prevention of disease, but rather the prevention of the declines that can be a consequence of disease and other physiologic changes. This book has explored some of these issues.

Making the most of these opportunities will require a significant shift in our thinking. For example, most current advice on physical activity emphasises the need for aerobic exercise as a preventive behaviour to reduce the risk of cardiovascular disease. Yet as declines in capacity progress, there is strong evidence that resistance training to improve muscle strength increases in importance. And there is also growing evidence that short burst high intensity training may be particularly beneficial in preventing age-related declines, at least at a cellular level. Tailoring this advice to an individual's physiologic state may be important, as is identifying the interventions and environmental context that can best encourage these activities.

Broader social advances are also creating new opportunities. For example, the advent of wearable devices means that many aspects of capacity and ability can be continuously monitored, although neither clinicians nor researchers typically make the most of the mega data that is already available. Nor do we yet have information systems that each of us might access as informed individuals to guide our personal choices and behaviours. Moreover, outdated stereotypes often cloud our thinking and can lead us to reject, or discourage in others, the activities (for example high intensity training in older adults) that might be in their best interest.

This book therefore represents an important watershed that signifies a shift from disease dominated thinking to models where diseases are still understood to be important, but are seen as both a manifestation and a contributor to complex systems that tend to decline in the second half of life. Moreover, by considering these changes in capacity within the context of an individual's physical and social environment, it highlights further opportunities to change the way we think, feel and act about ageing and to create supportive environments that can help us build and maintain capacity or compensate for losses.

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While it is only a start along this path, hopefully it will encourage more research on the subtle changes that occur in midlife, and the interventions that may have the most beneficial impacts on people's subsequent lives. Then, of course, we will need to redesign our health systems and communities to draw on this knowledge to support everyone to live the longest and healthiest life possible. And in doing that, we will need to pay particular attention to those at the bottom of the range of capacity and ability who are likely to have experienced the cumulative impact of disadvantage across their lives. This is a radical transformation. However, it is one that is within our reach if we just dare to grasp the opportunity.