

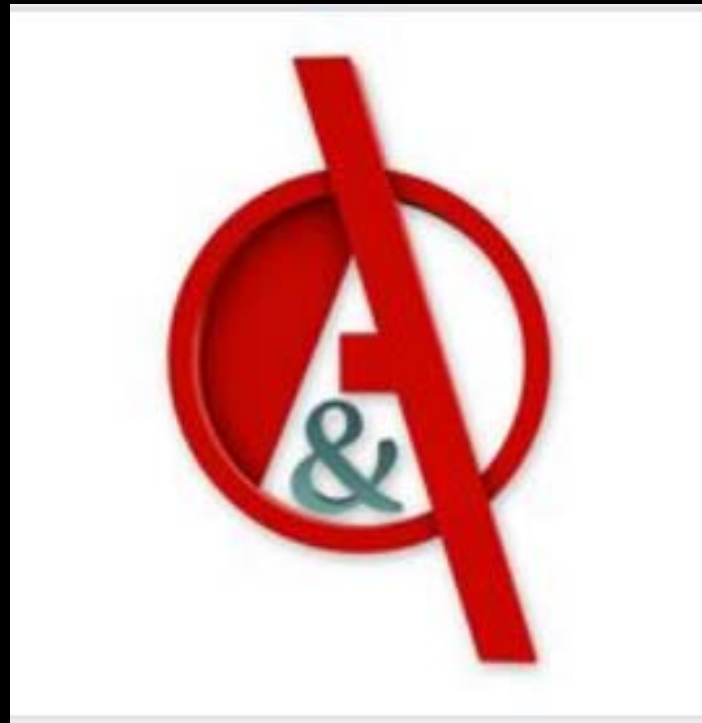
# Shifting Definitions of Health and Illness: The role of Rehabilitation Medicine

Michael Pollack

Rehabilitation Medicine Physician

George Burniston Oration

Sydney 2018

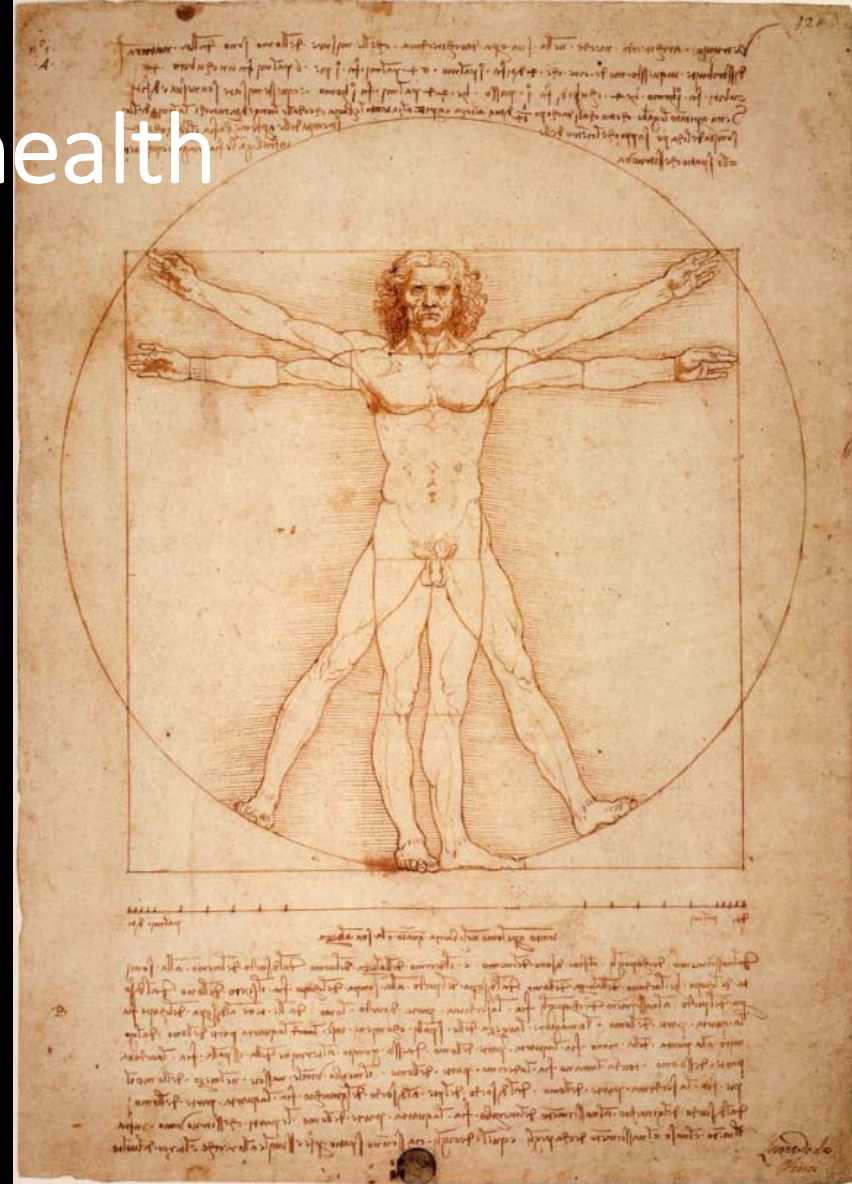


# Overview

- A brief history of Health
- The current context of Health
- Pressures for Change
- The Role of Rehabilitation

# The WHO definition of health

Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. (1948)



# A Brief History of Health (and Illness)



The Smith papyrus; circa 1600 BCE

# A brief history...

- Earliest Days?
  - Religious and mystical interpretations and treatments
- Oldest civilisations?
  - Health and Disease now included some concepts of Nature. Empiricism allowed some categorisation and prognostication. Medical and surgical interventions added to religious and mystic therapies.
  - Hippocrates: 'freed medicine from the shackles of magic, superstition, and the supernatural'; collected data and conducted experiments.
  - Galen: A model of Health and Disease as a structure of elements, qualities, humors, organs, and timing, all requiring 'balance'.



Hippocrates refusing a gift from Alexander the Great.  
Engraving by Anne-Louis Girodet

["Health and Disease: I. History of the Concepts." Encyclopedia of Bioethics.](#) . [Encyclopedia.com](#). 12 May. 2018



# A brief history....

- Middle Ages:
  - Dominance of the Theological perspective of Health and Illness.
  - Illness as a physical entity AND an act of God
  - Recordings of specific 'Health Rules'.
- Modern Era:
  - Commences with the Renaissance
  - Secularisation, empiricism, causality, research, gradually taking dominance in Health philosophies
  - Enlightenment Era associated with more awareness of Public Health, social reforms. Books published on Prevention and Rehabilitation



# A brief history....

- Considerations:
  - Concepts of Health and Disease have been a reflection and an influence on the knowledge, philosophy, and culture of the era.
  - Understanding of influences on Health and factors in Illness have shifted as knowledge and science has 'improved', BUT
  - Basic concepts of Health and Disease being a balance between functioning of the 'Body and Mind', the Environment, activity and diet, as well as cultural and religious beliefs, has been present for centuries, but with varying emphases.



# Current Concepts of Health



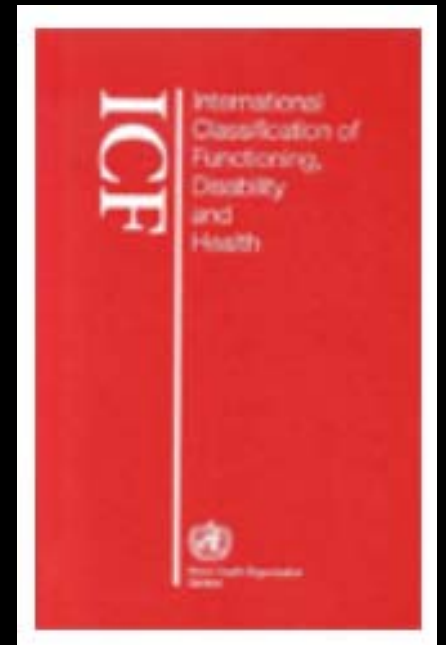
# A Broader Context of Health:

- 1977: George Engel: **Bio-Psycho-Social** model of Health, moving beyond the Biomedical model
- “**Introducing** the Biopsychosocial Model for good medicine and good doctors”... it is **no longer sufficient** for clinicians to state that treatment is successful in terms of its effect on a specific biological illness but it is now **also necessary** to know whether the treatment **gives significant improvement in the way in which a person lives.**
- it may only be after changes occur at a **political** level that the vicious cycle of social circumstances affecting psychological and medical circumstances will be broken.

**BMJ 2018;324:1533**

# International Classification of Functioning, Disability and Health (ICF) (WHO 2001)

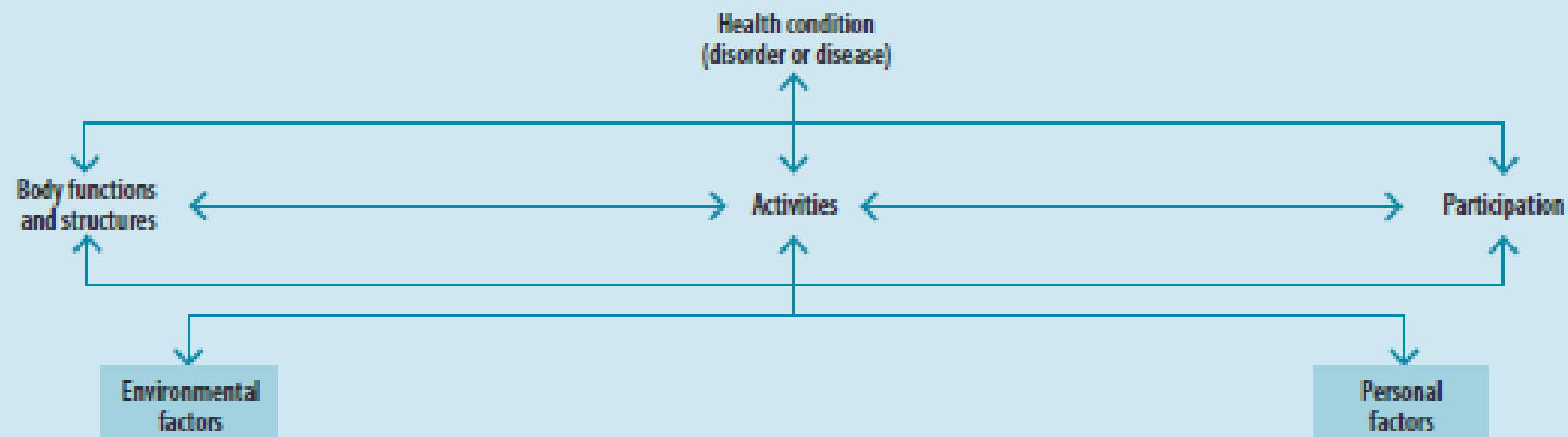
- The international standard to describe and measure **health and disability**
- As the functioning and disability of an individual occurs in a **context**, ICF also includes a list of environmental factors.



# WHO: ICF

**Disability** arises from the interaction of health conditions with contextual factors – environmental and personal factors as shown in the figure below.

## Representation of the International Classification of Functioning, Disability and Health



- **impairments** are problems in body function or alterations in body structure – for example, paralysis or blindness;
- **activity limitations** are difficulties in executing activities – for example, walking or eating;
- **participation restrictions** are problems with involvement in any area of life – for example, facing discrimination in employment or transportation.

# Contemporary concepts

- Contemporary medicine increasingly faces the task not only of **overcoming sickness** but also of **preserving health**. **Prevention and rehabilitation** play increasingly important roles **alongside curative therapies**.
- Health can also be regarded as the ability to bear injury, handicaps, and the anticipation of death, and to successfully integrate these abilities into one's life

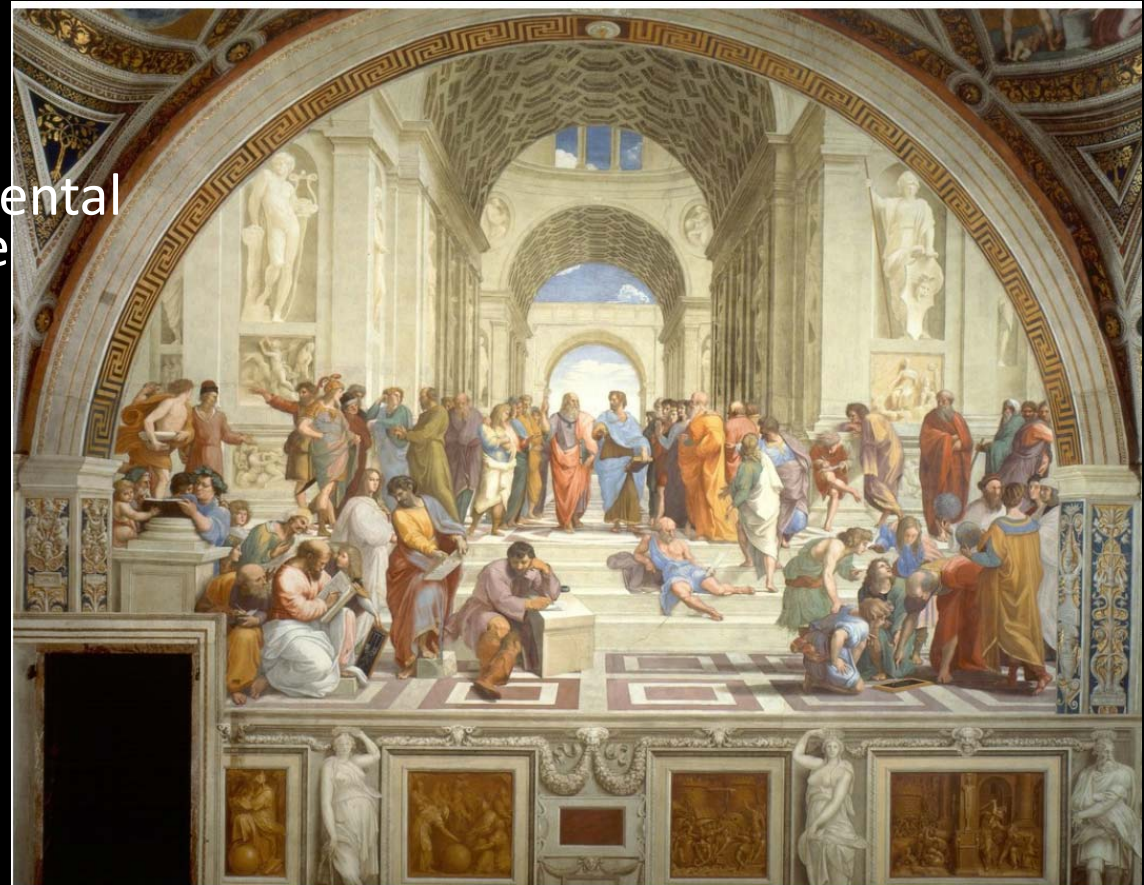
["Health and Disease: I. History of the Concepts."](#) *Encyclopedia of Bioethics*. . *Encyclopedia.com*. 12 May. 2018

# Definitions of Health?

- **The WHO definition of health:**

Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.

- Political and social context.





# Determinants of Health: a broader context

- **Income and social status** - higher income and social status are linked to better health. The greater the gap between the richest and poorest people, the greater the differences in health.
- **Education** – low education levels are linked with poor health, more stress and lower self-confidence.
- **Physical environment** – safe water and clean air, healthy workplaces, safe houses, communities and roads all contribute to good health. **Employment** and working conditions – people in employment are healthier, particularly those who have more control over their working conditions
- **Social support networks** – greater support from families, friends and communities is linked to better health. **Culture** - customs and traditions, and the beliefs of the family and community all affect health.
- **Genetics** - inheritance plays a part in determining lifespan, healthiness and the likelihood of developing certain illnesses. **Personal behaviour and coping skills** – balanced eating, keeping active, smoking, drinking, and how we deal with life's stresses and challenges all affect health.
- **Health services** - access and use of services that prevent and treat disease influences health
- **Gender** - Men and women suffer from different types of diseases at different ages.

World Health Organization. [\*The determinants of health\*](#). Geneva. Accessed 12 May 2011.

# Social determinants of Health



# Population Health....

- ..... has been defined as "the health outcomes of a group of individuals, including the distribution of such outcomes within the group"

- Kindig D, Stoddart G (March 2003). *American Journal of Public Health*. **93** (3): 380–3.

# Current pressures to change the model of Health



# Health Care Is Ripe for Disruption—Are We Ready for the Tipping Point?

December 13, 2017

Helen Leis

Partner, Health & Life Sciences practice for Oliver Wyman

We are seeing this dangerous mix of conditions right now in health care. Regulatory changes are enabling new reimbursement models; new data and insights promise to revolutionize diagnostic capabilities and to personalize care; and consumers are beginning to expect their doctors and health plans to offer the same convenience and personalization that online shopping or ordering an Uber does.

# Why reforming health care is integral for our economy

October 24, 2017 12:57pm AEDT

Michael Woods

Professor of Health Economics, University  
of Technology Sydney

Released

today, the Productivity Commission report also highlights how the health-care sector (among others) could play a starring role in improving productivity.

The commission has offered a short list of thematic directions for reform. In health these include eliminating low-value services that have uncertain clinical impacts, changing the way services are delivered to focus more on the patient, and moving away from a community pharmacy model to more automatic dispensing in a greater range of more convenient locations.

As the Australian Institute of Health and Welfare points out in its latest review of Australia's health, the community's burden of disease is changing. There is now a greater need for longer-term integrated care to deliver services for those with chronic diseases, the elderly, those with dementia, disability and poor mental health, and to provide services to those in rural areas and remote communities.

The challenge remains to reform the health system, and its workforce in particular, so that practitioners, administrators and others have the skills, knowledge and professional attributes to meet the emerging health-care needs of our community.



# The Innovation Health Care Really Needs: Help People Manage Their Own Health

by Clayton M. Christensen, Andrew Waldeck, and Rebecca Fogg

OCTOBER 30, 2017 **UPDATED** NOVEMBER 06, 2017

In most industries, disruption comes from startups. Yet almost all health care innovation funded since 2000 has been sustaining to the industry's business model rather than disruptive. ↘

Less than 1% of those investments have focused on helping consumers to play a more active role in managing their own health, an area ripe for disruptive approaches.

This is now beginning to change. Seeing the potential to improve health with simple primary-care strategies, some of the biggest incumbent players are inviting new entrants focused on **empowering consumers** into their highly-regulated ecosystems, bringing down costs.

# Self-management support for patients with chronic disease: potential and questions

Nicholas A Zwar<sup>1</sup>, Sarah M Dennis<sup>2,3</sup>

Helping patients help themselves works: but questions remain about what works and for whom



MJA; 5 Feb 2018

# Influencing-Not Directing- Patient Choices

The final common pathway for the application of nearly every advance in medicine is human behavior. No matter how effective a drug, how protective a vaccine, or how targeted a therapy may be, a clinician usually has to prescribe it, and a patient accept and use it as directed, for it to improve health. Clinicians' and patients' environments influence their decisions about taking these actions, and the seemingly subtle design of information and choices can have outsize effects on our behavior.

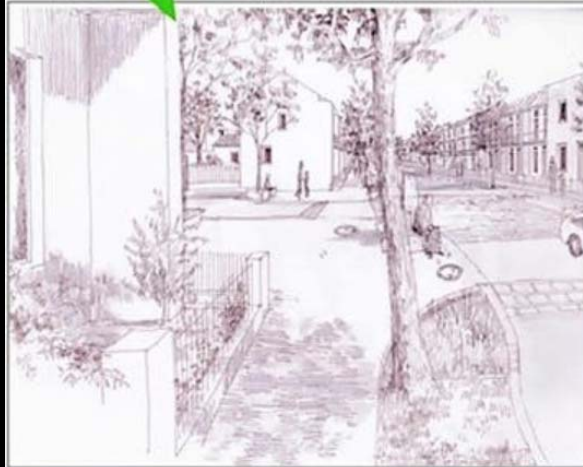
When the “choice architecture” is designed to influence behavior in a predictable way but without restricting choice, it is often called a “nudge.”

Mitesh S. Patel, M.D., M.B.A., Kevin G. Volpp, M.D., Ph.D., and David A. Asch, M.D., M.B.A.

N ENGL J MED 378:3 NEJM.ORG JANUARY 18, 2018

# Nudging

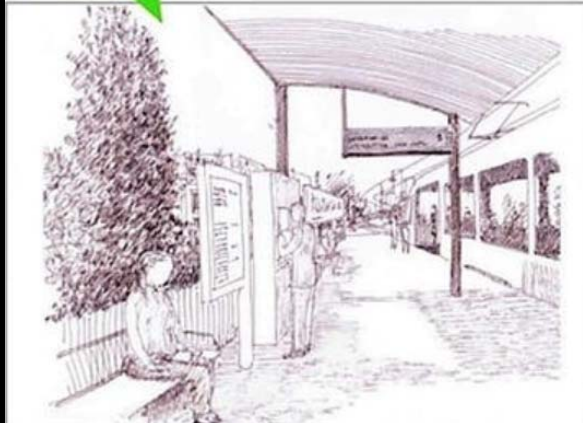
Walk



Drive



Use public transport



Avoid public transport







Anton van Dellen · Anthony J. Hannan

## **Genetic and environmental factors in the pathogenesis of Huntington's disease**

Received: 26 October 2003 / Accepted: 25 November 2003 / Published online: 24 January 2004  
© Springer-Verlag 2004

Recent evidence that environmental factors modify the onset and progression of neurodegeneration has shed new light on Huntington's disease and other devastating brain diseases.



OXFORD TEXTBOOKS IN PUBLIC HEALTH

# Oxford Textbook of Nature and Public Health

The role of nature in improving  
the health of a population

Edited by  
Matilda van den Bosch  
William Bird



## Section 2: How nature can affect health- theories and mechanisms

2.1: Environmental psychology, *Agnes E. van den Berg, and Henk Staats*

2.2: Therapeutic landscapes, restorative environments, place attachment, and wellbeing, *Mardie Townsend, Claire Henderson-Wilson, Haywantee Ramkissoon, and Rona Weerasuriya*

2.3: Microbes, the immune system and the health benefits of exposure to the natural environment, *Graham Rook*

2.4: Environmental enrichment: **neurophysiological responses** and consequences for health, *Heidi Janssen, Julie Bernhardt, Frederick R. Walker, Neil J. Spratt, Michael Pollack, Anthony Hannan, and Michael Nilsson*

2.5: Biological mechanisms and physiological responses to sensory impact from nature, *Caroline Hägerhäll, Richard Taylor, Greg Watts, Gunnar Cerwén, Matilda van den Bosch, Daniel Press, and Steven Mintz*

2.6: The role of nature and environment in behavioural medicine, *Leonie Venhoeven, Danny Taufik, Linda Steg, Marino Bonaiuto, Mirilia Bonnes, Silvia Aricchio, Stefano de Dominicis, Massimiliano Scopelliti, Matilda van den Bosch, Paul Piff, Jia Wei Zhang, and Dacher Keltner*

## Section 3: Public health impact of nature contact - pathways to health promotion and disease prevention

3.1: Promoting physical activity reducing obesity and NCDs, *Billie Giles-Corti, Fiona Bull, Hayley Christian, Mohammad Javad Koohsari, Takemi Sugiyama, and Paula Hooper*

3.2: Preventing stress and promoting mental health, *Matilda van den Bosch, Catharine Ward Thompson, and Patrik Grahn*

3.3: Promoting social cohesion and social capital increasing wellbeing, *Birgit Elands, Karin Peters, and Sjerp de Vries*



# Designing the compassionate city to overcome built-in biases and help us live better

[Jenny Donovan](#) April 27, 2018 6.15am AEST



# The future of health care in Australia

The Hon Greg Hunt

Med J Aust 2017; 207 (9): 369-370. || doi: 10.5694/mja17.00816

We now have a clear sense of direction for reforming the health system over the coming years in a continuous and considered way. The May 2017 Budget funded the first wave of reform. In 2018, wave two will strengthen private health insurance, the health workforce, mental health care (particularly in rural Australia), sport and aged care. Wave three in 2019 and beyond will focus on primary care and hospitals.

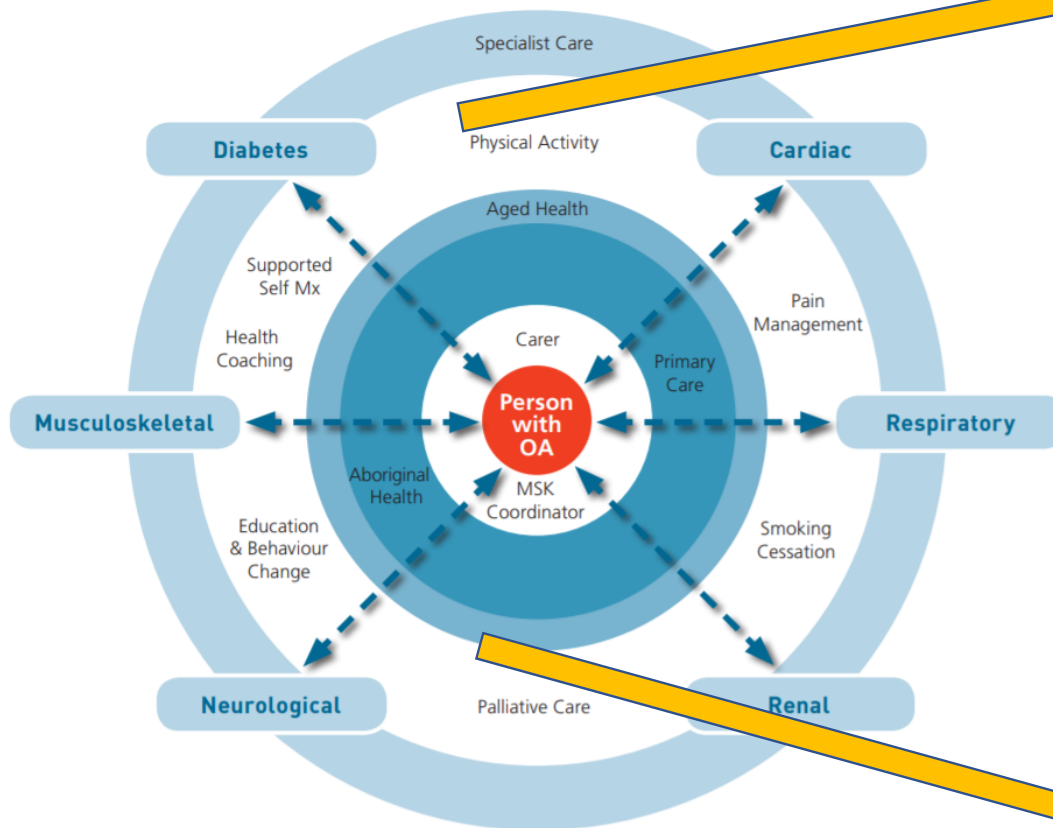
# The future of health care in Australia

The Hon Catherine King

Med J Aust 2017; 207 (10): 415-416. || doi: 10.5694/mja17.00739

A second and related dynamic is the **chronic disease crisis** — unquestionably our biggest health challenge. The Australian Institute of Health and Welfare has shown that half of all Australians have one of eight chronic conditions (arthritis, asthma, back problems, cancer, chronic obstructive pulmonary disease, cardiovascular disease, diabetes mellitus, or a mental or behavioural condition), and that 5.3 million Australians have two or more of these.<sup>8</sup> As well as the **personal and social harms** of these diseases, their **economic cost** is immense — conservative estimates attribute 39% of health expenditure to chronic disease.<sup>9</sup>

Diagram 4: ACI Model of Care for Chronic Disease – Osteoarthritis Chronic Care Program



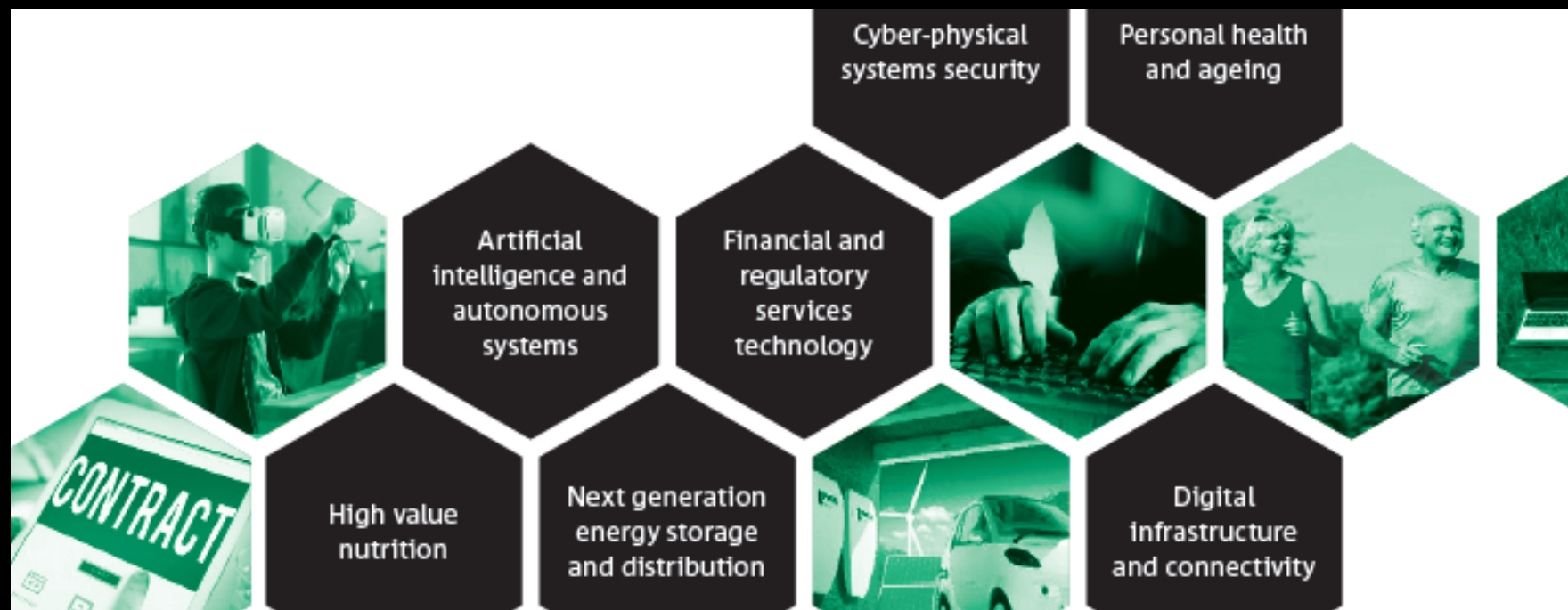
### Opportunity for 'new' industries:

- Life coach
- Personal trainer (physical and psychological)
- Stress management
- Technology to make exercise 'fun'
- Home and urban design to facilitate healthier lifestyles
- and many more

### Opportunity for non-clinicians to join Health:

- Research Scientists
- Architects
- Landscape and Urban Designers
- Engineers
- IT and software designers
- Sales and marketing
- Healthcare Providers and Funders
- More

Sunrise Industries: A snapshot of seven emerging industries in the formative stages of growth within ASEAN and neighbouring nations. CSIRO, Brisbane.



Horton J, Devaraj D, McLaughlin J, Pham H, Naughtin C and Hajkowicz S (2018)



# The Health Care Team?

- Doctors
- Nurses
- Physios
- OTs
- SPs
- Psychol
- Neuropsychol
- SWs
- Diet'ns
- More



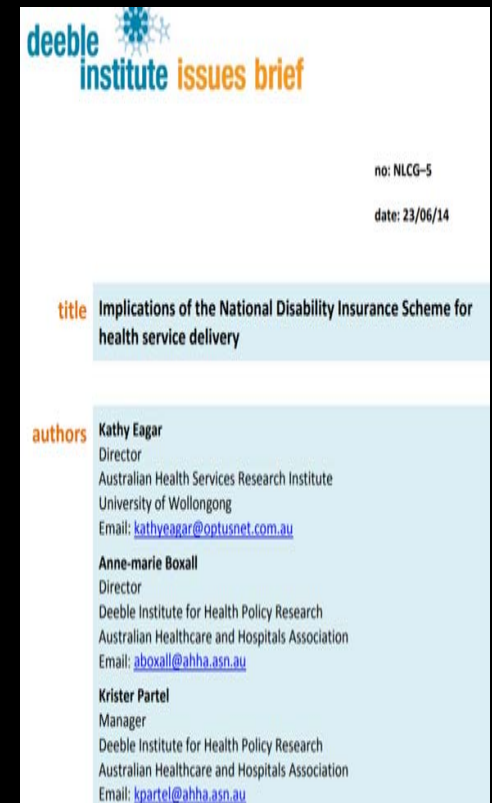


# The Health Care Team?

- Doctors
- Nurses
- Physios
- OTs
- SPs
- Psychol
- Neuropsychol
- SWs
- Diet'ns
- More
- Architects
- Engineers
- Non-clinical Scientists
- IT and software designers
- Landscape and Urban designers
- Economists
- **Politicians?**

# National Disability Insurance Scheme

- Long-term care and support
- People with life-long disabilities (not otherwise covered)
- NOT a Health scheme
- Maximise independence
- Funds aids, equipment, prosthetics, home mod's, personal care, domestic assistance
- Funds AHPs for Maintenance, but not for Functional Improvement



# Why is there disruption in the Health System?

- **Changing definition of Health:** more understanding of the social determinants of health incorporated into the bio-psycho-social model
- **Evolving understanding of Health and Disease;** including genetics, epigenetics (incl. the organism-environment interaction)
- **Politics:** 'Popular' policies for re-election. What are the priorities of the 'Community'? (How do these differ from 'high-value' and 'evidence-based' care?)
- **Technology:** Allowing a changing understanding of Health and Disease as well as new opportunities for 'therapeutic' interventions.
- Growing number of **professions claiming a place** in the Health delivery space
- **Consumers demanding a voice** in making decisions.
- **Population Health vs Personal / Tailored Healthcare**
- **Economics**
  - Shift to business model to save money (if run by government), or create a profit (if managed by a business, incl. the role of Health Insurance Funds)

# The Role of Rehabilitation Medicine



# What is Rehab Medicine?

- Based in Bio-Psycho-Social model of Health.
- Focus on Recovery, Prevention, Adaptation, and Compensation to maximise the prioritised Functions, Independence and Quality of Life of individuals.....
- ....With awareness of the interactions between individuals, their community, and the environment.
- Can apply to anyone, but mostly focus on people with (or at risk of) a PERSISTING limitation of function.
- NOT just in the Sub-Acute phase, but also a key element in maximising recovery, starting in the Acute phase, and continuing into the Post-Acute.



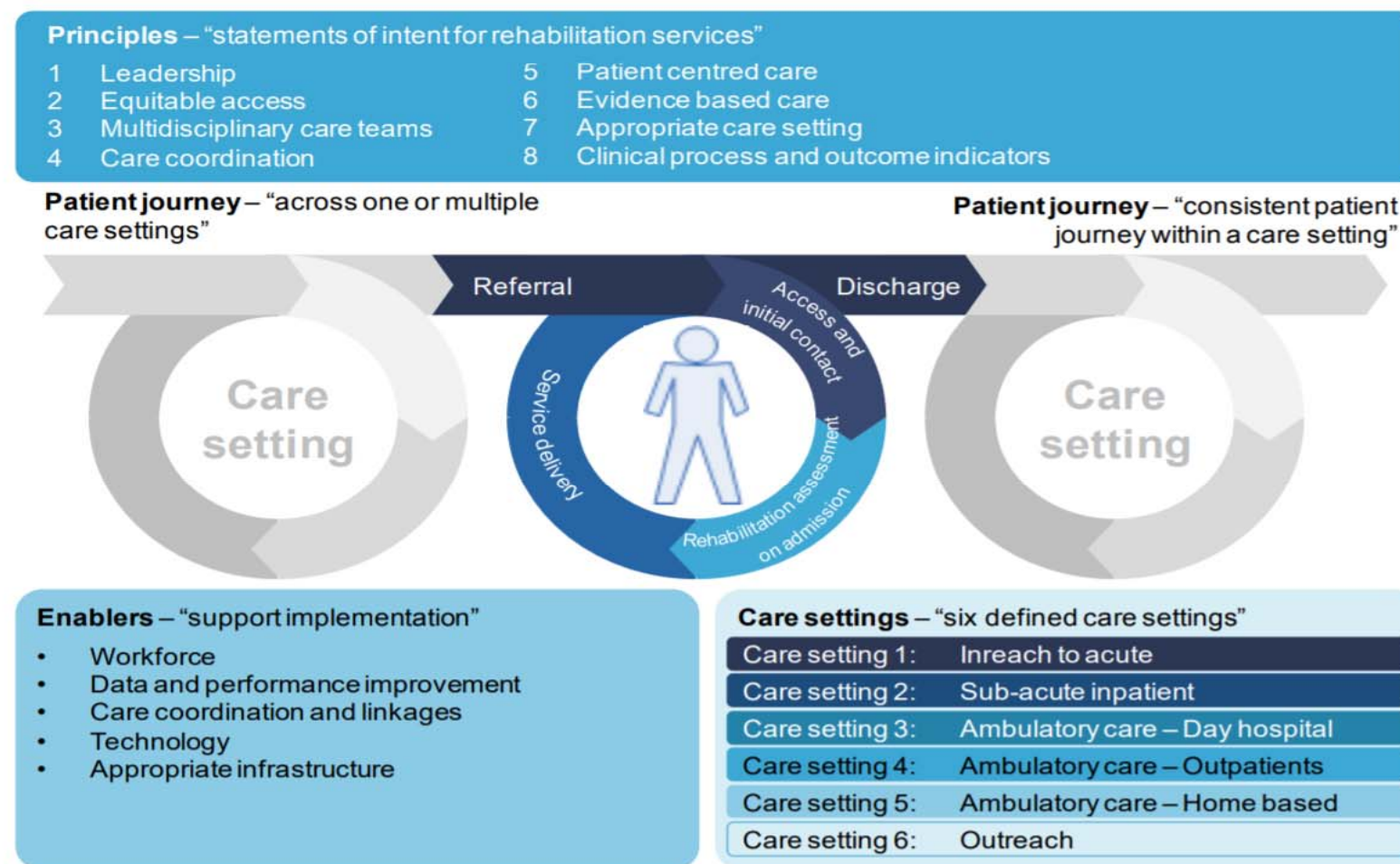
# What is the Role of Rehabilitation Medicine?

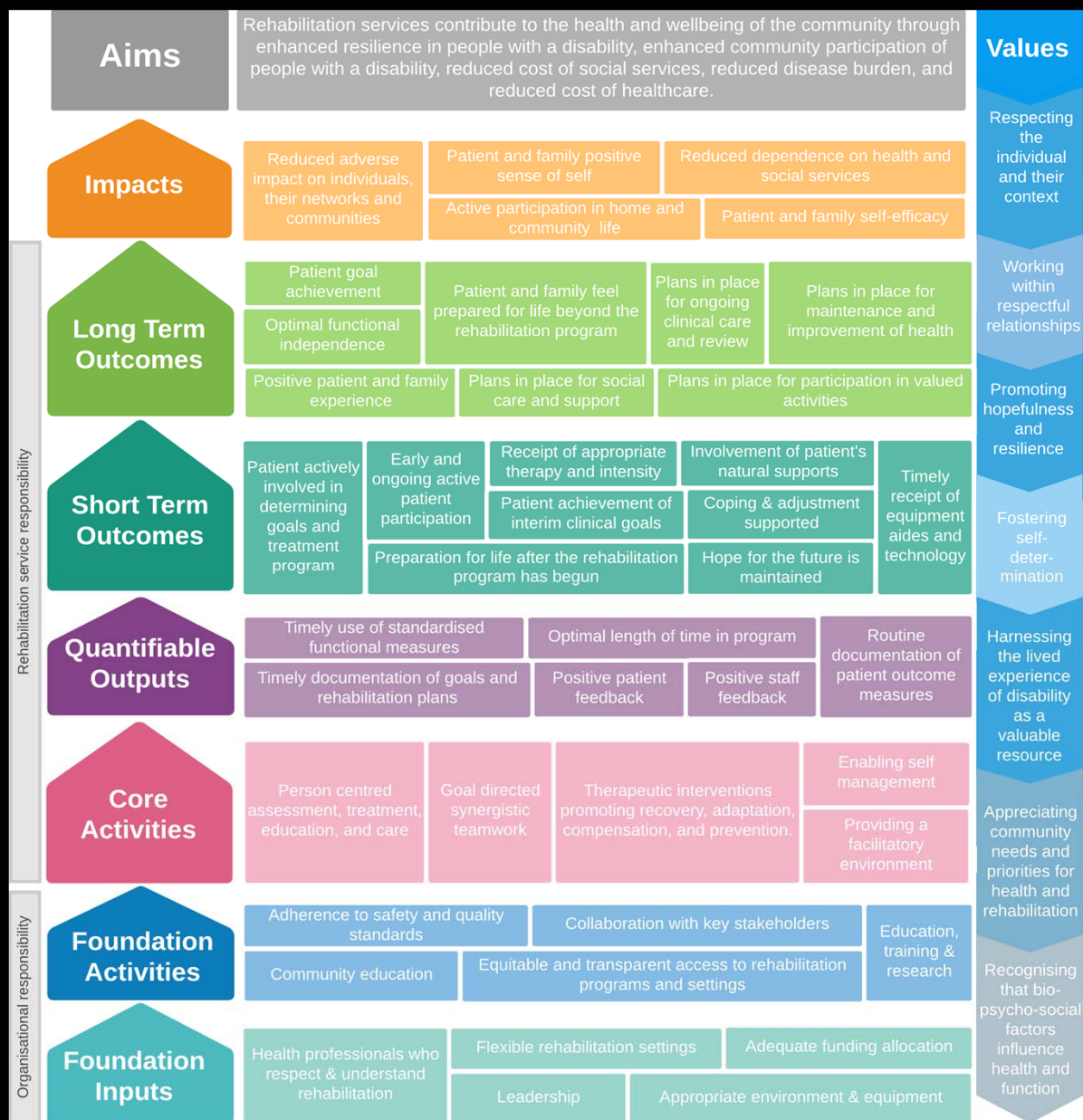
- Accurate assessment of the impact of Health (bio-psycho-social model) on Disability (activity limitation, participation, QOL) of an Individual, and / or impact at a Community level (diagnosis and epidemiology)
- Determination of Prognosis, considering:
  - Natural recovery prognosis
  - Evidence-based Interventions available to improve outcome beyond natural recovery
  - Opportunities available to maximise adaptation to changed functioning
  - Inputs that may facilitate compensation (for lost function)
  - Processes that protect/maintain Health/function as much as possible
- Facilitating, maximising and maintaining Recovery, for Function, Independence, and QOL

# What is the Role of Rehab Medicine?

- Research:
  - Healing and Recovery
  - Enhancing Healing and Recovery
  - Determinants of, and (Reversible) Factors causing / facilitating, disability
  - Preventing loss, or reduction, of function
  - Epidemiology of Disability
  - Models of Care for Disability Management
  - Implementation of Models of Care
  - Outcome measures (which are most relevant, when?)

Figure 13: NSW Rehabilitation Model of Care





## Care settings - where rehabilitation is delivered

Care setting 1: Inreach to Acute

Care setting 2: Sub-acute Inpatient

Care setting 3: Day Rehabilitation Service

Care setting 4: Outpatients Service

Care setting 5: Home-based Rehabilitation

Care setting 6: Outreach

Care setting 7: Telehealth



## Aims

Rehabilitation services contribute to the health and wellbeing of the community through enhanced resilience in people with a disability, enhanced community participation of people with a disability, reduced cost of social services, reduced disease burden, and reduced cost of healthcare.

## Impacts

Reduced adverse impact on individuals, their networks and communities

Patient and family positive sense of self

Reduced dependence on health and social services

Active participation in home and community life

Patient and family self-efficacy

## Core Activities

Person centred assessment, treatment, education, and care

Goal directed synergistic teamwork

Therapeutic interventions promoting recovery, adaptation, compensation, and prevention.

Enabling self management

Providing a facilitatory environment

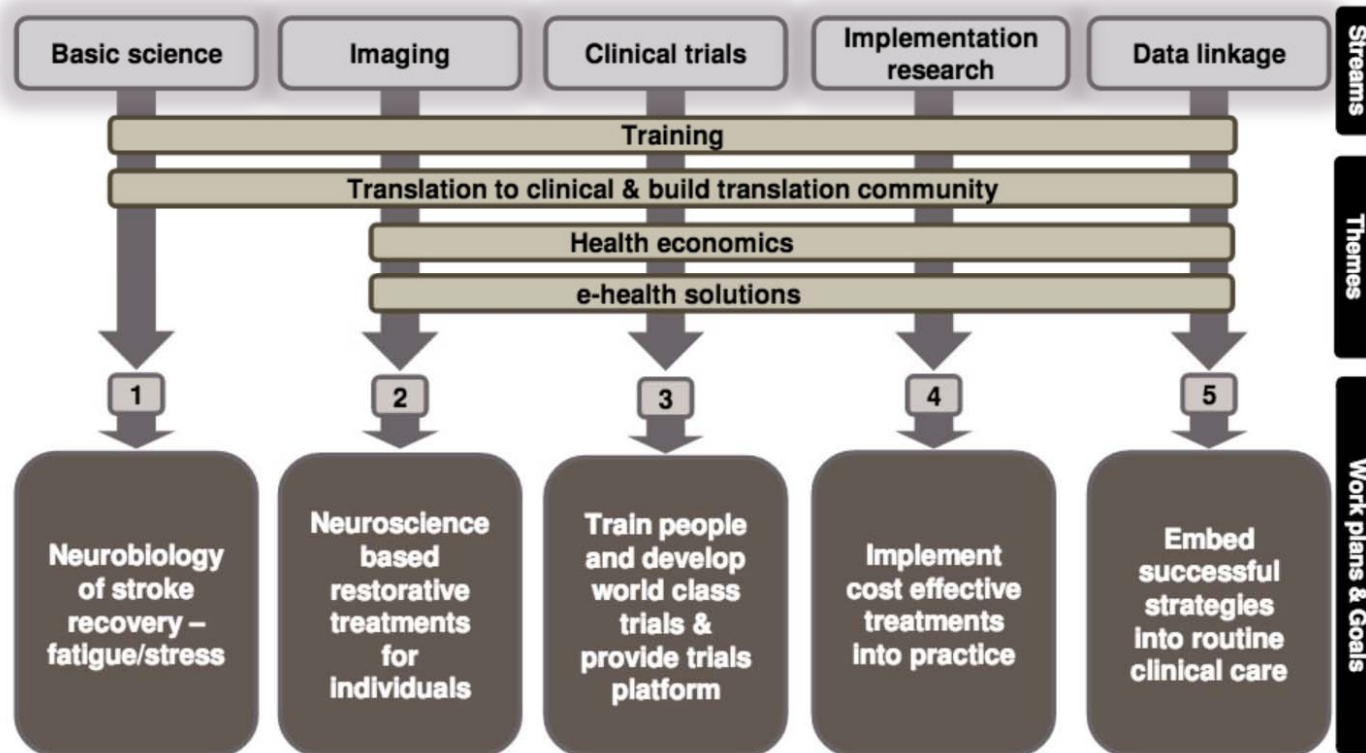


# CRE: Stroke Rehabilitation and Brain Recovery

stroke recovery



## CRE streams and themes



# Role of Rehab Med in an Evolving System

- **Evolving Teams: purpose, membership, and Clinical Leadership.** Rehab Med provides the Team with 'accurate' insights into disease process, prognosis, healing and recovery.
- Evolving **understanding of healing and recovery:** increasing role of rehab in acute settings
- Deal with the increasing demand of population to remain in **community rather than institution** (e.g. nursing home): rehab can minimise disability and maximise independence **using Medical AND Technological advances, and the 'right Team'.**
- Help address the political and community requirement to **minimise demand on tax-payer dollars:** rehab maximises opportunities to maximise independence and vocational opportunities (return to work)
- **Advocacy:** maintaining a **balance** between:
  - Acute and sub-acute / chronic care demands on Health care design and resources
  - Inpatient and community based opportunities for care
  - Biomedical vs bio-psycho-social focus on health
  - Focus on patient, also the patient/carer dyad, empowered in decision making

# Evolving perspective of Health: Impact on Advocacy

- “Medical model” vs

- “Charity” model vs

- “Social” model

- Perceived by (some of) those with a Disability as the most empowering model
- Identifies the social determinants of limitations rather than the personal limitations

- **Self advocacy** – undertaken by someone with disability who speaks up and represents themselves. Support and training for self-advocacy is available through community-based groups.
- **Individual advocacy** – a one-on-one approach, undertaken by a professional advocate, relative, friend or volunteer, to prevent or address instances of unfair treatment or abuse.
- **Group advocacy** – involves advocating for a group of people with disability, such as a group of people living in shared accommodation.
- **Citizen advocacy** – where community volunteers advocate for a person with a disability, such as an intellectual disability, over the long-term, supported by a Citizen Advocacy organization.
- **Systemic advocacy** – involves working for long-term social changes to ensure the collective rights and interests of people with disability are served through legislation, policies and practices.
- **Legal advocacy** – where a lawyer provides legal representation in the justice system, pursues positive changes to legislation, or gives legal advice to people with disability about discrimination and human rights.



# Conclusion

- What is Health, Disability, Illness?
  - Biomedical and Bio-psycho-social contexts
  - Cultural, Political, Environmental, Economic contexts
  - Evolving definition/s BUT are we 'Back to the Future'?
- Disrupting forces and Shifting balances
  - Multifactorial
- The Role of Rehabilitation Medicine:
  - Be a Leader in the Science of Recovery and Health Maintenance
  - Translate the Science into Meaningful outcomes for the Patient and the Community
  - Advocacy

# Lao Tzu

- *If you do not change direction, you may end up where you are heading.*

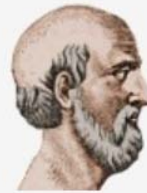
- *A philosophy*
- *A prediction*
- *A warning*
- *A law of physics*





# The Legacy of Hippocrates:

- He is most remembered today for his famous Oath, which set high ethical standards for the practice of medicine.
- Hippocrates was the personification of **the ideal physician** - wise, caring, compassionate and honest



“Read the past, diagnose the present, foretell the future; practice these acts. As to diseases, make a habit of two things — to help, or at least to do no harm.”

**HIPPOCRATES**  
*Epidemics I*

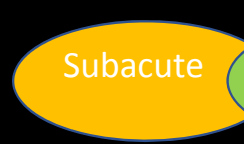
[http://www.greekmedicine.net/whos\\_who/Hippocrates.html](http://www.greekmedicine.net/whos_who/Hippocrates.html)

**MAYBE - Some things should never change!**

THANK YOU

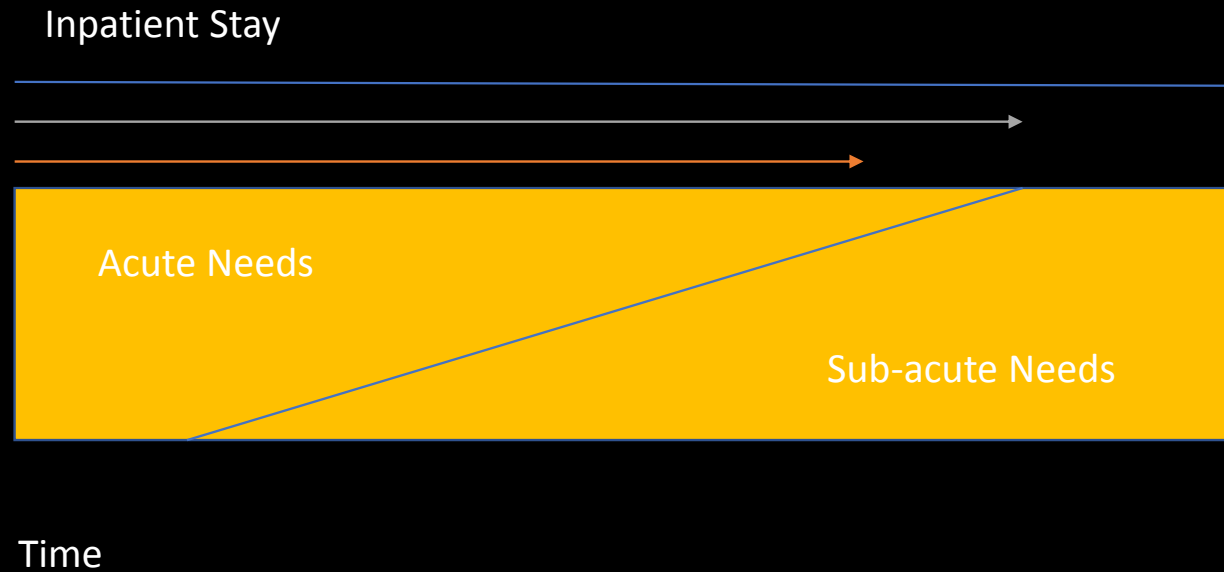






Episode of Care

# Episode of Care



Strong evidence for a 'Shared Care' model in Stroke and Fractured Neck of Femur (at least)