From the concept of frailty to intrinsic capacity

Islene Araujo de Carvalho
Senior Policy and Strategy Advisor
Ageing and Life Course Department
Functional ability (FA) comprises the health-related attributes that enable people to be and to do what they have reason to value.

It is made up of the

- **intrinsic capacity** of the individual,
- relevant **environmental factors** and
- the **interactions** between the individual and these factors.
Population in the second half of life

Intrinsic Capacity

Increasing age group
Population in the second half of life

High and Stable

Intrinsic Capacity
Population in the second half of life

Intrinsic Capacity

High and Stable

Declining
Population in the second half of life

High and Stable

Declining

Intrinsic Capacity

Significant losses
Three common periods of intrinsic capacity in older age

<table>
<thead>
<tr>
<th>Period</th>
<th>High and stable capacity</th>
<th>Declining capacity</th>
<th>Significant loss of capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risks and challenges</td>
<td>Risk behaviours, emerging NCDs</td>
<td>Falling mobility, sarcopenia, frailty, cognitive impairment or dementia, sensory impairments</td>
<td>Difficulty performing basic tasks, pain and suffering caused by advanced chronic conditions</td>
</tr>
</tbody>
</table>

**Goals**

- Build and maintain capacity and resilience
- Reverse, stop or slow the loss of capacity
- Compensate for loss of capacity

**Responses**

- Reduce risk factors and encourage healthy behaviours
- Early detection and management of chronic diseases
- Build resilience through capacity-enhancing behaviours, strengthening personal skills and building relationships
- Implement multicomponent programmes delivered at primary health care level
- Treat the underlying causes of declines in capacity
- Maintaining muscle mass and bone density through exercise and nutrition
- Interventions to recover and maintain intrinsic capacity
- Care and support to compensate for losses in capacity and ensure dignity
- Rapid access to acute care
- Palliative and end-of-life care
Frailty: Geriatricians’ Perspective

• Aging-related state of vulnerability
• Thought recognizable clinically
• High risk - for: mortality; falls; disability; hospitalization
• Potential for treatment and prevention of frailty as well as its poor outcomes
Formalized phenotype:  
Definition and validation of the clinical syndrome of frailty

Multiple (3-5/5) criteria present = frail:

• Weight loss
• Weakness
• Exhaustion
• Slowed walking speed
• Low activity

Population in the second half of life

High and Stable | Declining | Significant loss

Intrinsic Capacity
Population in the second half of life

Intrinsic Capacity

High and Stable | Declining | Significant loss
Population in the second half of life

Intrinsic Capacity

High and Stable | Declining | Significant loss
Frailty

High and Stable | Declining | Significant loss

Intrinsic Capacity

"Frailty"
Frailty

- High and Stable
- Declining
- Significant loss

Intrinsic Capacity

"Frailty"
Frailty and Intrinsic Capacity

• Frailty is part of the trajectory of intrinsic capacity

• Shift from focus on clinical diseases end points to multifaceted traits and longitudinal trajectories of intrinsic capacity.

• That would allow to consider health from the perspective of an older person’s trajectory of functioning rather than disease or co-morbidity they are experiencing at a single point in time

• It means that IC should be monitored and assessed before any clinical threshold is reached

• This will require a composite marker or markers, that can be assessed at different points across the life course
ICOPE Partners:

- **ICOPE Steering Group**: 10 WHO Departments (nutrition, disabilities, mental health, NCDs, health services) and 6 Regions

- **WHO Clinical Consortium on Healthy Ageing**: 55 organizations, 9 member States (Spain, Japan, Germany, China, Mexico, France, Thailand, India, South Africa), 2 WHO Collaborating Centers

- **Community of practice** led by Thailand in partnership with WHO SDS (Brazil, Mexico, Japan, South Africa, Australia, Saudi Arabia, India, Morocco, Kuwait, Lebanon, Ethiopia)
Focus on Frailty and Intrinsic Capacity

- IC relevant for clinical practice if split into domains
- The group recommended the development of instruments: detect IC declines, monitor and trigger subsequent actions
- IC plus routine clinical assessment leads to a care plan
- Measurement of IC – first step in the evaluation of older people
- Assessment of IC also in mid life
Evidence for the domains of intrinsic capacity

Review

Evidence for the Domains Supporting the Construct of Intrinsic Capacity

Matteo Cesari, MD, PhD,1-4 Islene Araujo de Carvalho, MD, MPH,5 Jotheeswaran Amuthavalli Thiyagarajan, MSC, PhD,5 Cyrus Cooper, MD, FMedSci,6 Finbarr C. Martin, MD, MSc,7 Jean-Yves Reginster, MD, PhD,8 Bruno Vellas, MD, PhD,1,2 and John R. Beard, MBBS, PhD5
DOMAINS OF INTRINSIC CAPACITY

**VITALITY**
- Time orientation
- Memory
- Balance
- Gait speed

**COGNITION**
- Grip strength
- Abdominal circumference

**LOCOMOTION**
- Core Symptoms of depression
- Snellen test
- Low energy/fatigue

**SENSORY**
- Audiometry or whisper test

**PSYCHOLOGICAL**
- Grip strength
- Abdominal circumference
- Low energy/fatigue

**VITALITY**
- Time orientation
- Memory
- Balance
- Gait speed

**COGNITION**
- Grip strength
- Abdominal circumference

**LOCOMOTION**
- Core Symptoms of depression
- Snellen test
- Low energy/fatigue

**SENSORY**
- Audiometry or whisper test

**PSYCHOLOGICAL**
- Grip strength
- Abdominal circumference
- Low energy/fatigue
Structural Equation Model of Theory Derived Factor Score and Incident loss of IADL
Confirmatory Factor Analysis

Intrinsic Capacity

- Vitality
  - FEV
  - DHEAS
  - Haemogi
  - Grip

- Locomotor
  - Chair
  - Gait

- Cognitive
  - Memory
  - Execut

- Sensory
  - D vision
  - N vision
  - Hearing

- Psysocial
  - Depress
  - Control
  - Autonomy
  - Pleasure
  - Self-real
Theory Based Structure

Integrated Care:

One goal:
Intrinsic Capacity

One Care Plan with Multidimensional interventions
Fig. 1. The cycle of frailty and cognitive impairment. Fried et al.’s (2001) model is outlined in the grey shaded boxes. Our additions to this model are the mental outlined in red (dashed) and the cognitive decline cycle outlined in blue (dotted) lines.
INTEGRATED CARE FOR OLDER PEOPLE

Older people are frequently faced with...

1. Fragmented services
2. Too far from where they live
3. Ageist attitudes of healthcare workers
4. Lack of interventions to optimize Intrinsic Capacity and Functional Ability

INTEGRATED CARE is important to help older adults maximize their Intrinsic Capacity and Functional Ability in the community.
HOW DOES INTEGRATED CARE WORK?

1. Providing care at the communities, close where people live
2. Comprehensive assessment and care plan shared with everyone involved
3. All professionals work together to maintain IC and FA
4. Engaging communities and supporting family care givers
Thank you!

araujodecarvalho@who.int

@islene123

#ICOPE

See Guidelines in full:

www.who.int/ageing/health-systems/icope