



University of  
Zurich<sup>UZH</sup>

PPRU « Dynamiques du vieillissement en bonne santé »

Dynamics of Healthy Aging



# Possibilités de mesurer la qualité des traitements administrés aux personnes âgées

WHO Working Group on Metrics and Research Standards for Healthy Ageing

**Mike Martin**

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Berne, le 15.12.2017



- 1) Que peut-on mesurer, pour qui et comment ?**  
**Population vs individu x contexte**
  
- 2) Comment définir une personne âgée ?**  
**Comment définir des personnes âgées ?**  
**Quand la qualité d'un traitement est-elle bonne ?**
  
- 3) Possibilités de mesure**  
**Qu'est-ce qui est mesuré ?**  
**Caractéristiques, avantages et inconvénients**



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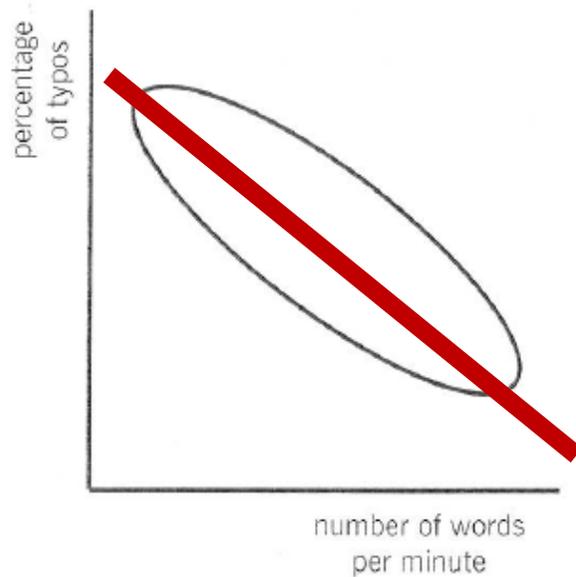


# Nouveau : deux questions de recherche requièrent deux types de recherche

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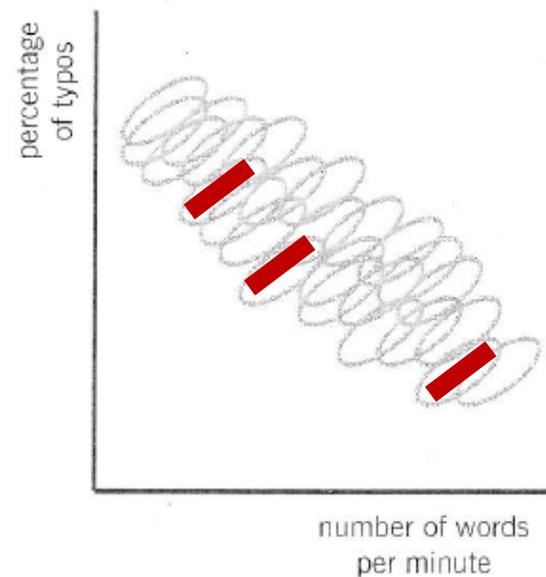
**Décideur : par rapport à avant,  
y a-t-il plus ou moins de  
personnes en bonne santé ?**

Cross-sectionally



**Individu/clinicien : qu'est-ce qui fait  
que, au quotidien, la personne en  
face de moi est en meilleure santé ?**

In general



**FIGURE 3.1.** Left: The cross-sectional relationship between typing speed and percentage of typos. Right: The within-person relationship for a number of persons.



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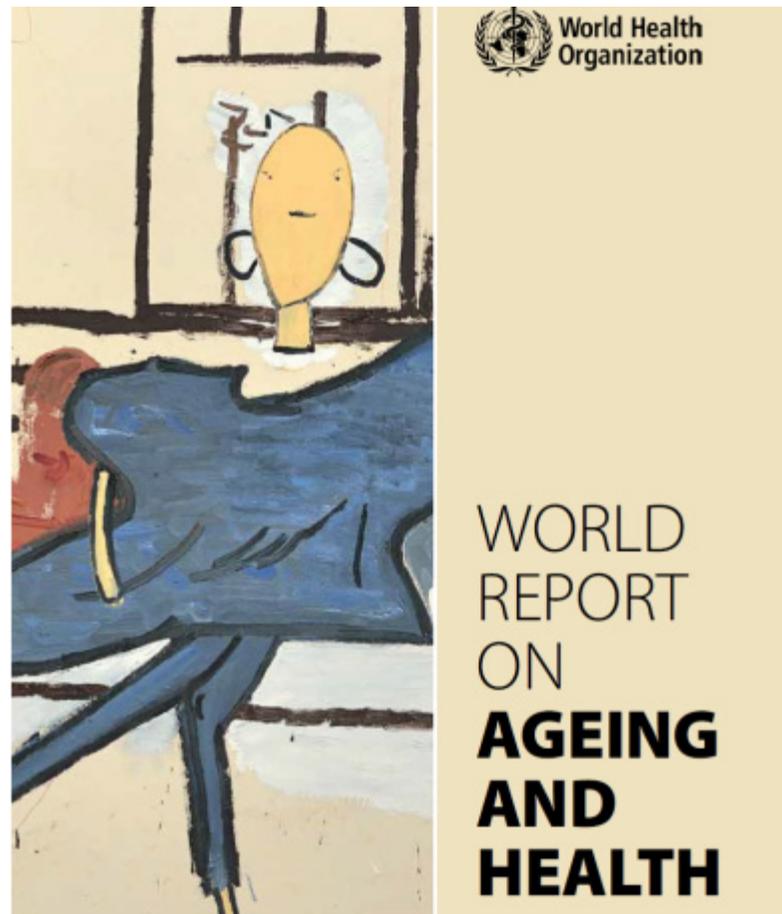


Calendrier

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## 2015 : 1. World Report on Aging and Health





**Fig. 2.4.** A public-health framework for *Healthy Ageing*: opportunities for public-health action across the life course

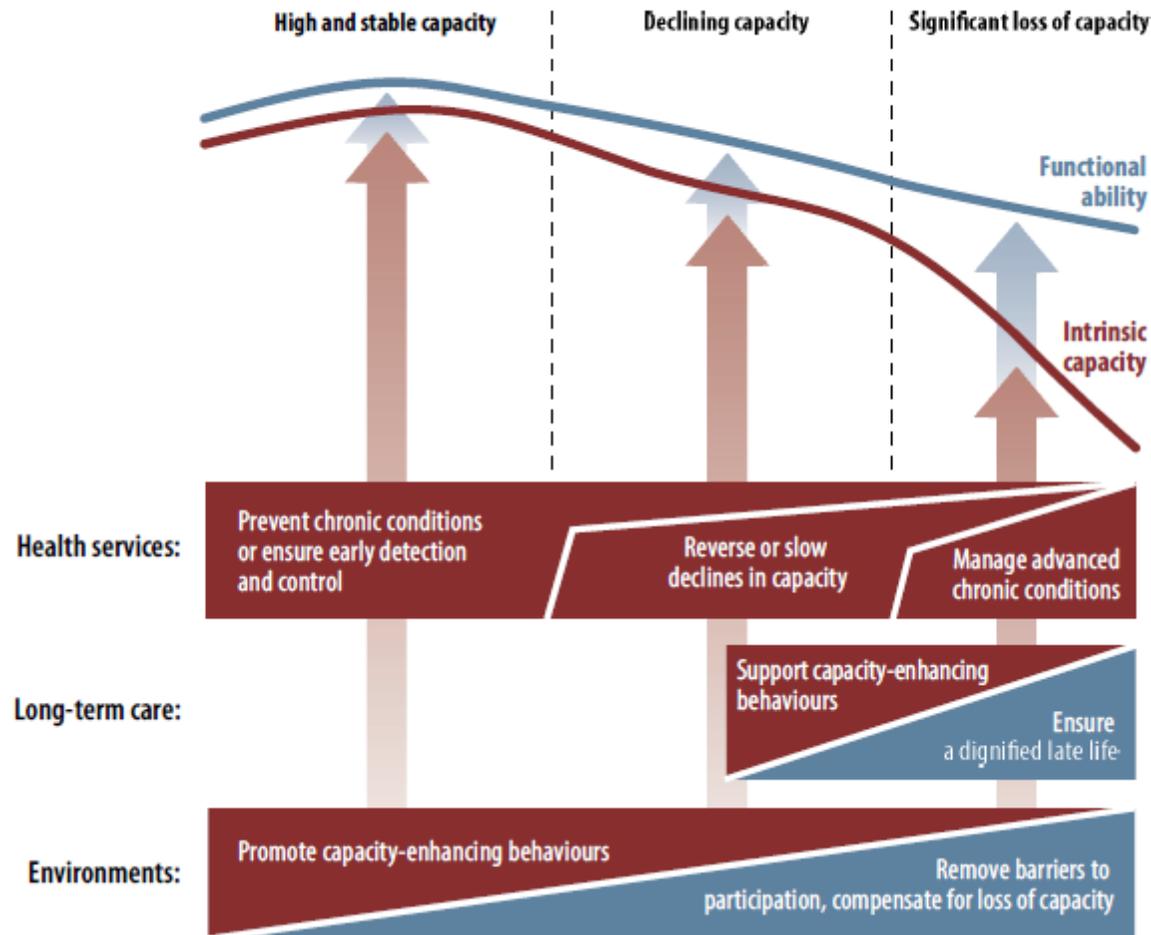
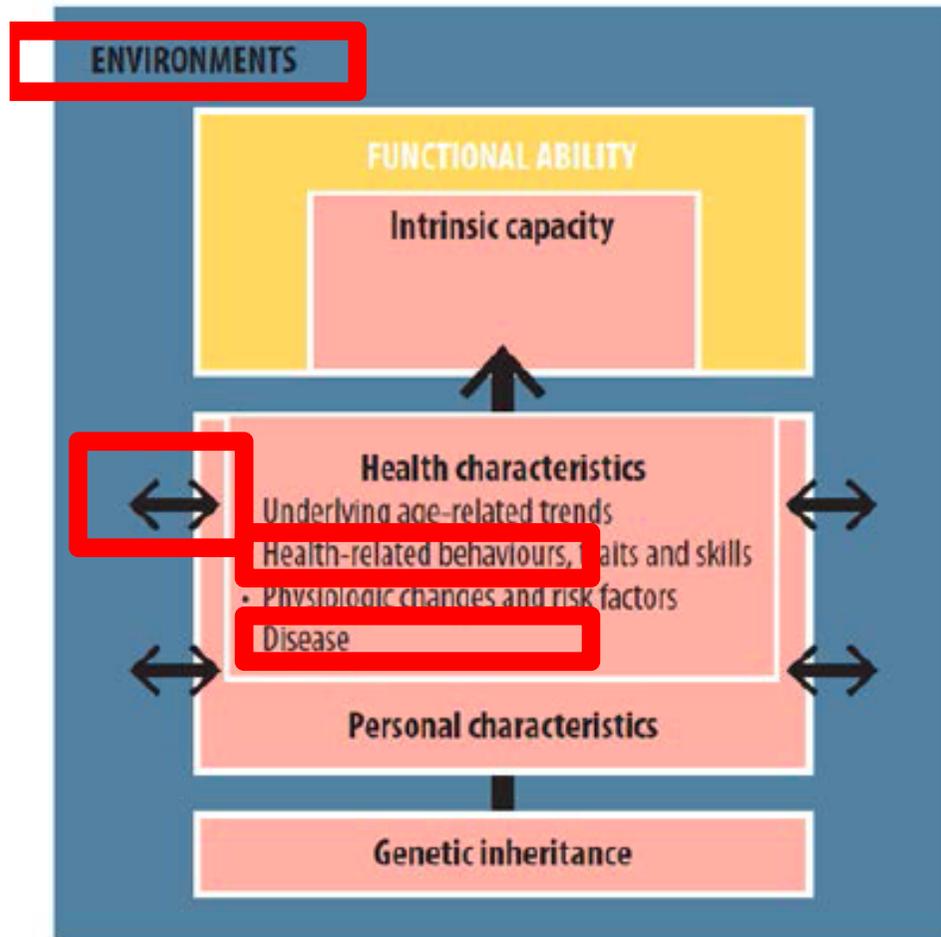




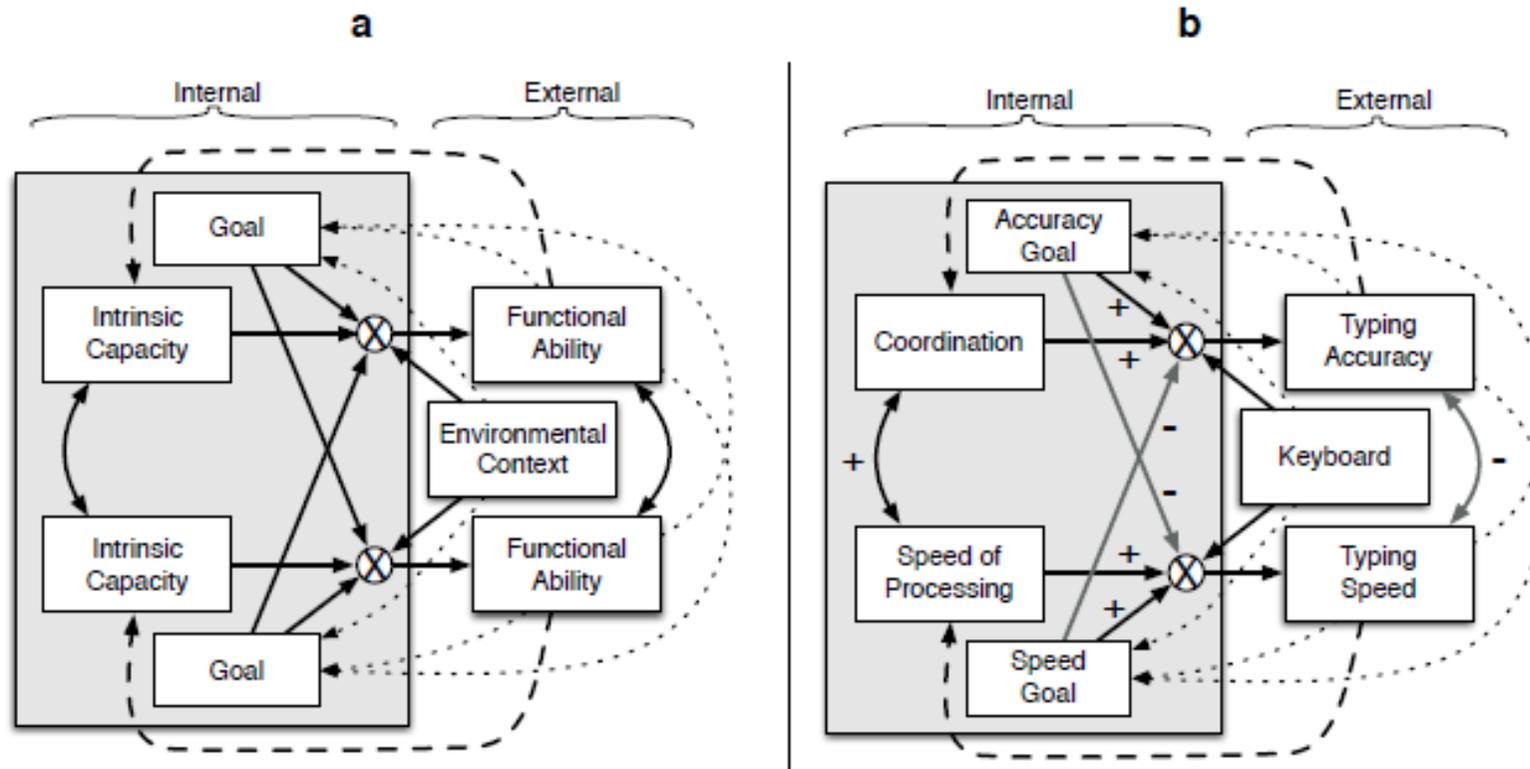
Figure 1. Healthy Ageing (source: WHO World Report on Ageing and Health, forthcoming)



“Intrinsic Capacity” is the composite of all the physical and mental capacities of an individual.

“Functional Ability” 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 characteristics and the interaction between these characteristics and the individual.

Healthy ageing is not defined by a specific level or threshold of functioning or health. Healthy ageing reflects the ongoing interaction between an individual and the environments they inhabit, shaped by many factors as illustrated in Figure 1.



**Besoin de données : quelles méthodes conduisent, pour chaque personne, à un objectif exactement identique → plus il y a de méthodes, plus il y a d'options → la recherche sur l'efficacité de la coordination systématique des interventions est un bon investissement**



## Promouvoir la santé auprès de chaque personne âgée, qu'elle présente des symptômes ou non

- Pour pouvoir mesurer le degré de réussite d'une mesure, celle-ci doit reposer sur une procédure intégrative qui tienne compte du contexte et de la capacité fonctionnelle
- Toutes les personnes âgées doivent être intégrées, indépendamment de leurs symptômes
- La notion de santé ne se concentre pas sur les symptômes (approche statique), mais sur la fonctionnalité au quotidien, dont l'importance diffère d'une personne à l'autre (approche dynamique)
- Les possibilités d'agir dans l'environnement font partie du vieillissement en bonne santé



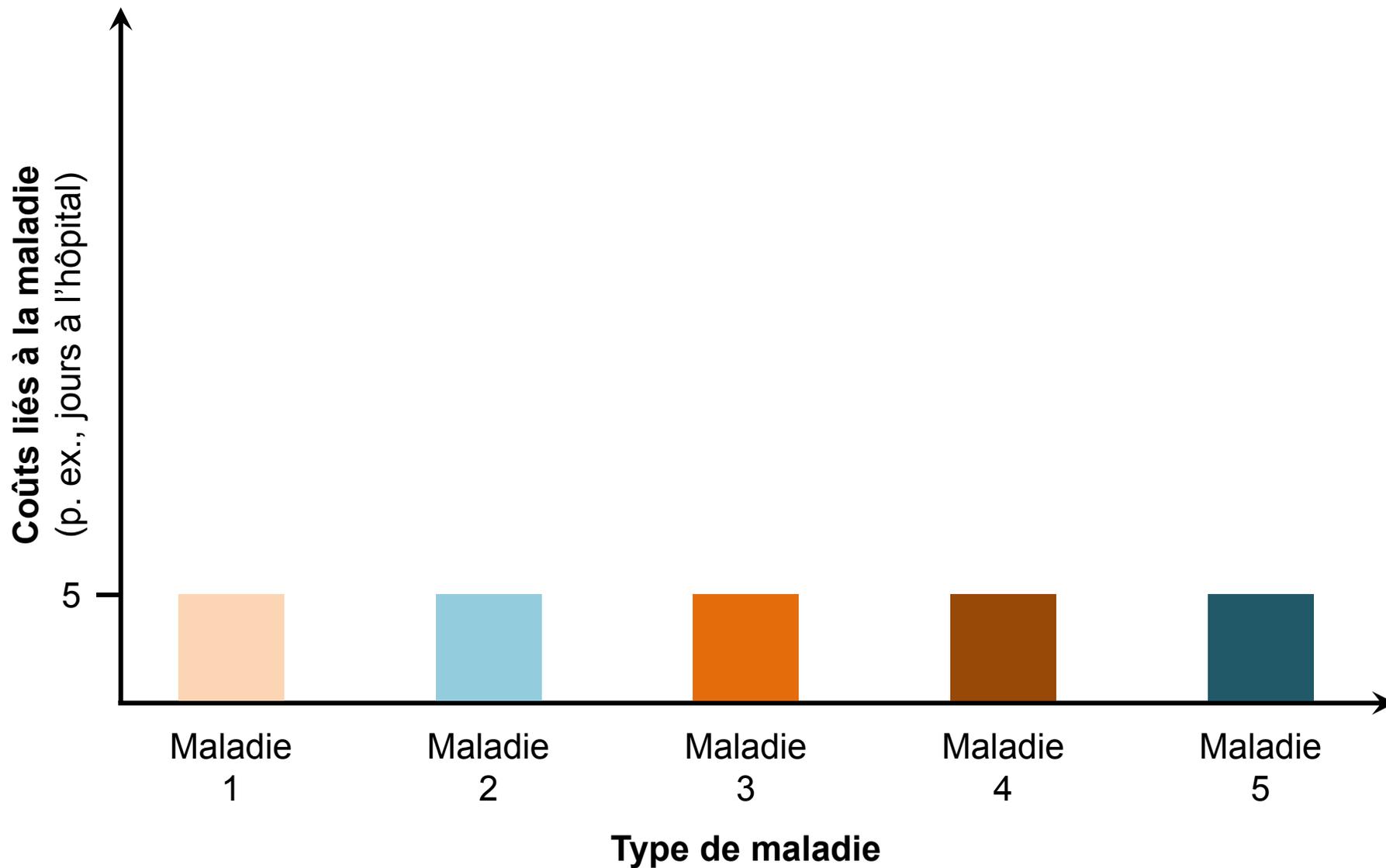
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- (1) Symptômes (écart par rapport à la norme, détérioration)**
- (2) Plusieurs symptômes (SF 36)**
- (3) Dégradation des activités de base de la vie quotidienne (AVQ, AIVQ)**
- (4) Mesure des symptômes par les patients (PROs)**
- (5) Dégradation des activités au quotidien +1 an (ICHOM)**
- (6) Propriétés, fonctions et contextes (CIF)**
- (7) Profils pour déterminer la capacité fonctionnelle (OMS 2020)**
- (8) Capacité des systèmes individuels (personne x contexte x activité) pour stabiliser les capacités fonctionnelles (OMS 2022)**

**Question :**

**Qui fixe les résultats ? Qui les mesure ? Sont-ils adaptés à la multimorbidité ?**





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**International Consortium for Health  
Outcomes Measurement**

'Frail Elderly' Working Group

March 2015

# ICHOM was formed to drive the industry towards value-based health care by defining global outcome standards

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ICHOM's three founders...



...launched ICHOM as a  
nonprofit

- Independent 501(c)3 organization
- Idealistic and ambitious goals
- Global focus
- Engages diverse stakeholders



**Our mission:**

*Unlock the potential of Value-Based Health Care by **defining global standard sets of outcome measures that really matter to patients** for the most relevant medical conditions and by **driving adoption and reporting of these measures worldwide.***

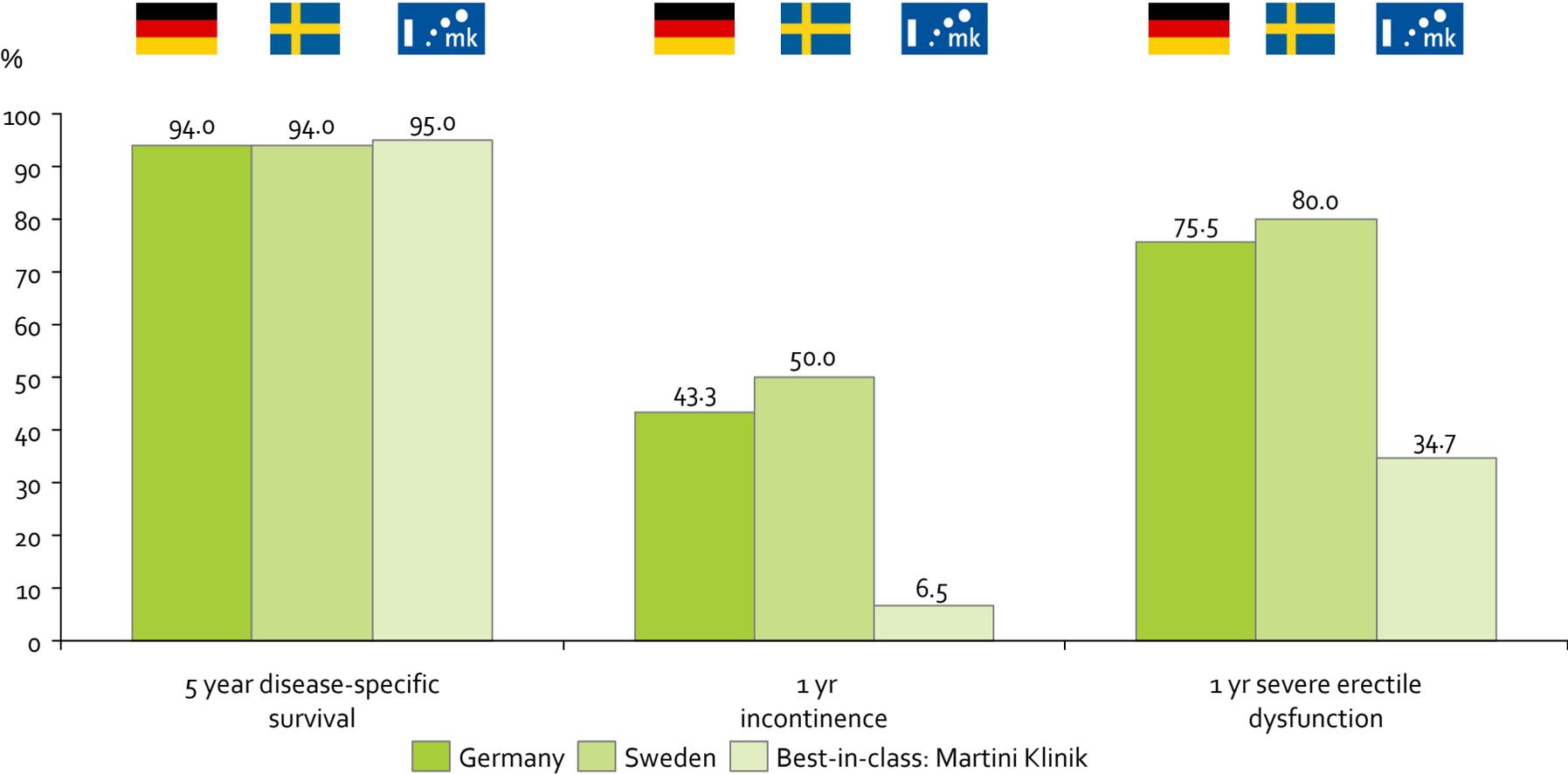
# The ICHOM Strategic Agenda

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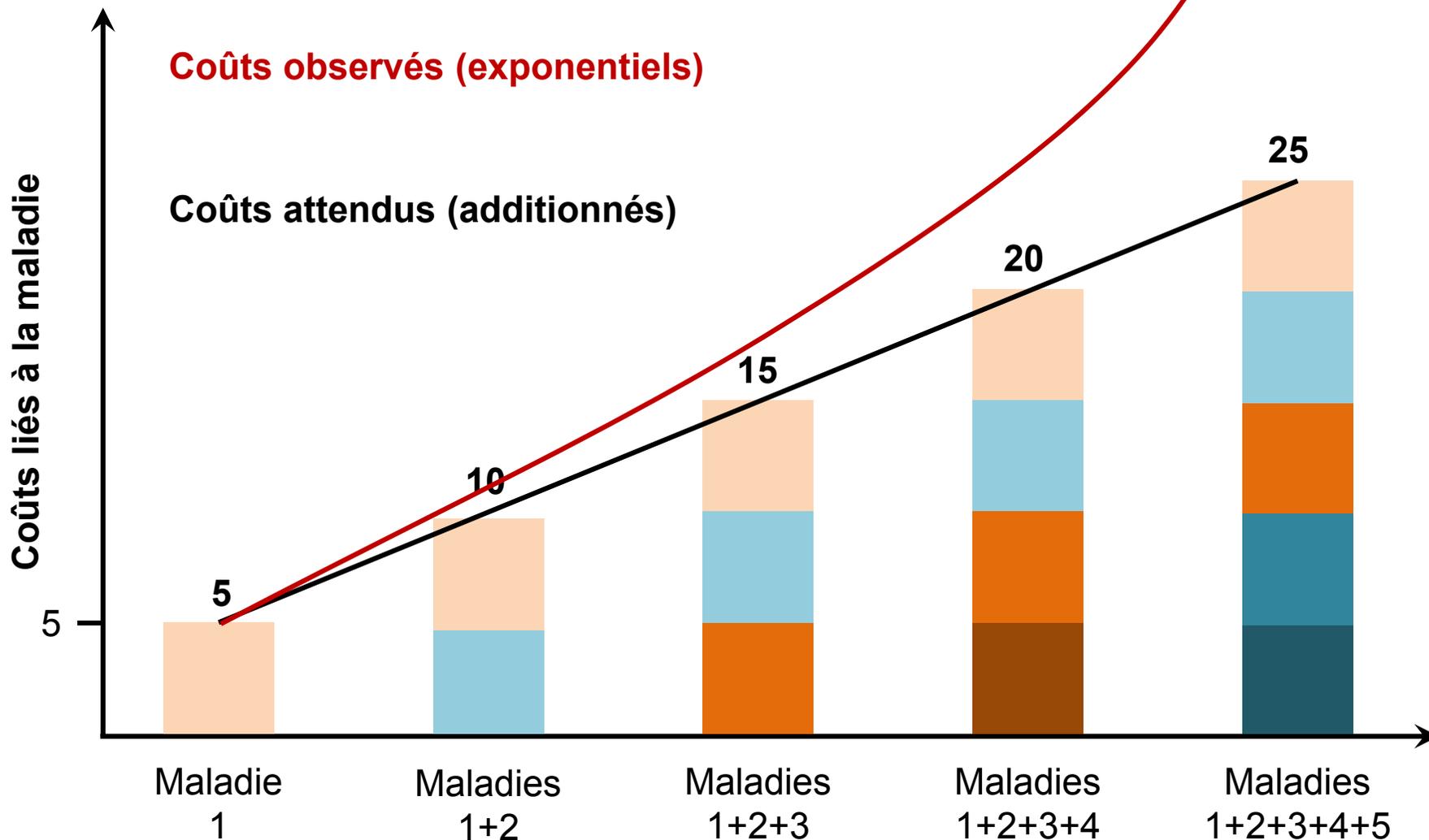
Focus to date

- 1 Define internationally recognised Standard Sets of outcomes that matter most to patients along with corresponding case-mix factors**
- 2 Secure Standard Set adoption by value-oriented providers in major health care markets**
- 3 Facilitate an international network of value-oriented institutions to benchmark outcomes and drive improvement**
- 4 Engage payors and governments to drive wider adoption and transparency through financial incentives or reporting requirements**

# Voilà pourquoi les résultats proches de la réalité font une différence

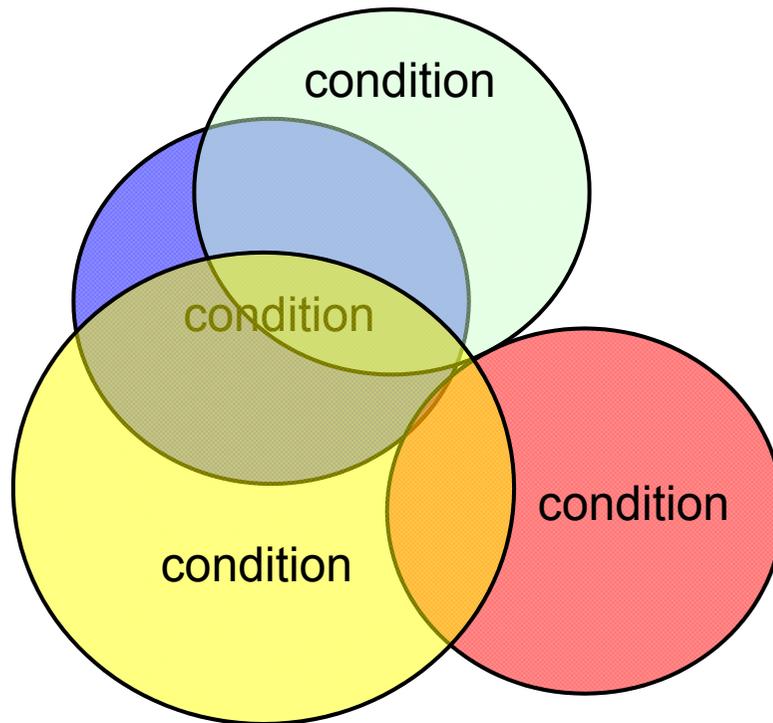


Swedish data rough estimates from graphs; Source: National quality report for the year of diagnosis 2012 from the National Prostate Cancer Register (NPCR) Sweden, Martini Klinik, BARMER GEK Report Krankenhaus 2012, Patient-reported outcomes (EORTC-PSM), 1 year after treatment, 2010





## Multimorbidité



Éléments à prendre en compte systématiquement, pour chaque personne :

- **Disease-Medication Interactions (DMIs)**
- **Disease-Disease Interactions (DDIs)**
- **Treatment-Treatment Interactions (TTIs)**
- **Treatment-Real Life Function Impairment Interactions (TRFIs)**
- **Treatment-Context Interactions (TCIs)**
- **Treatment-Individual x Context Interactions (TlxCIs)**

# Des résultats au plus près de la réalité chez les personnes âgées

Amongst many discussed, the groups felt the following were most important :

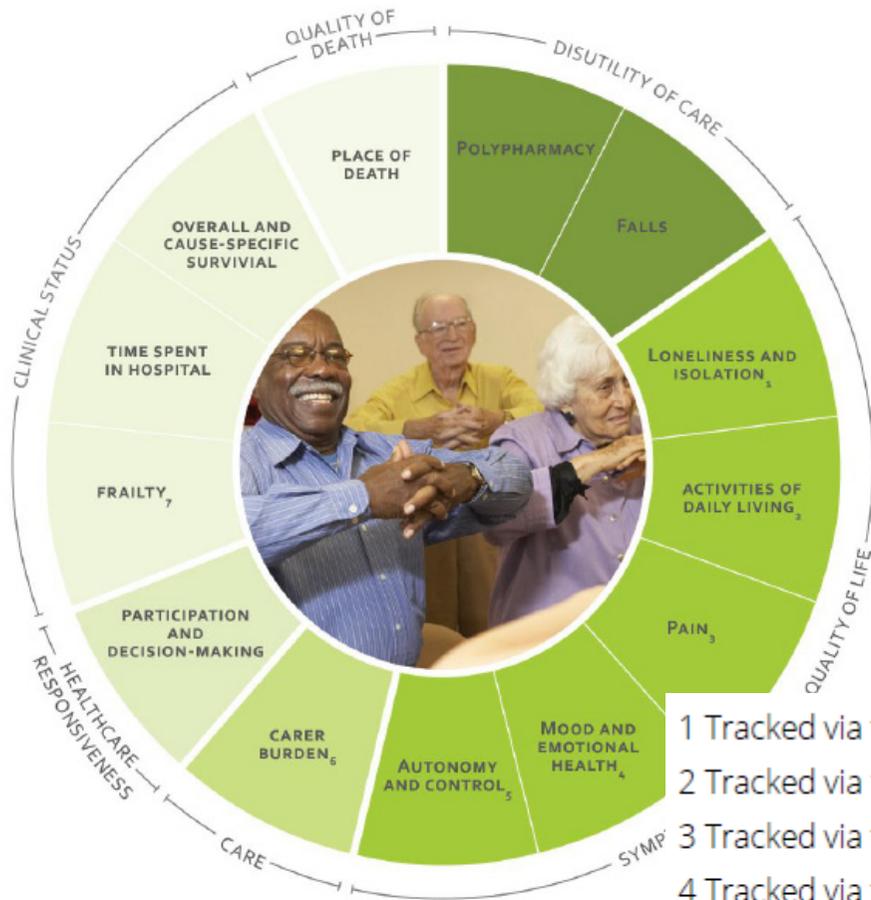
- Social and community participation
- Independence and remaining in own home
- Quality of life and wellbeing
- Avoiding inappropriate discharges and readmissions
- Isolation
- Loneliness and friendship
- Physical disabilities – hearing, vision, continence, mobility
- Hobbies and activities
- Access to 24 hour healthcare and social services
- Avoiding falls
- Delaying frailty
- Care and respite for the carer
- Malnutrition, weight loss and appetite
- Physical symptom burden
- Pain
- Sleep quality

However, there were a few new topics and points to consider:

- Survival/mortality was seen **less important as others** – instead seen as inevitable and expected
- Role in society e.g. formal/informal job or volunteering
- Consistency of medical service / single coordinator or care

<http://www.ichom.org/medical-conditions/older-person/>

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- 1 Tracked via the UCLA 3-item Loneliness Scale
- 2 Tracked via the 36-Item Short Form Survey Instrument Version 1 (SF-36)
- 3 Tracked via the SF-36
- 4 Tracked via the SF-36
- 5 Tracked via the Adult Social Care Outcomes Toolkit
- 6 Tracked by the Zarit Burden Interview 4-item screening questionnaire
- 7 Tracked via the Canadian Study on Health & Aging Clinical Frailty Scale



# Défi : mesurabilité pour toute la population

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## The End of the Disease Era

Mary E. Tinetti, MD, Terri Fried, MD

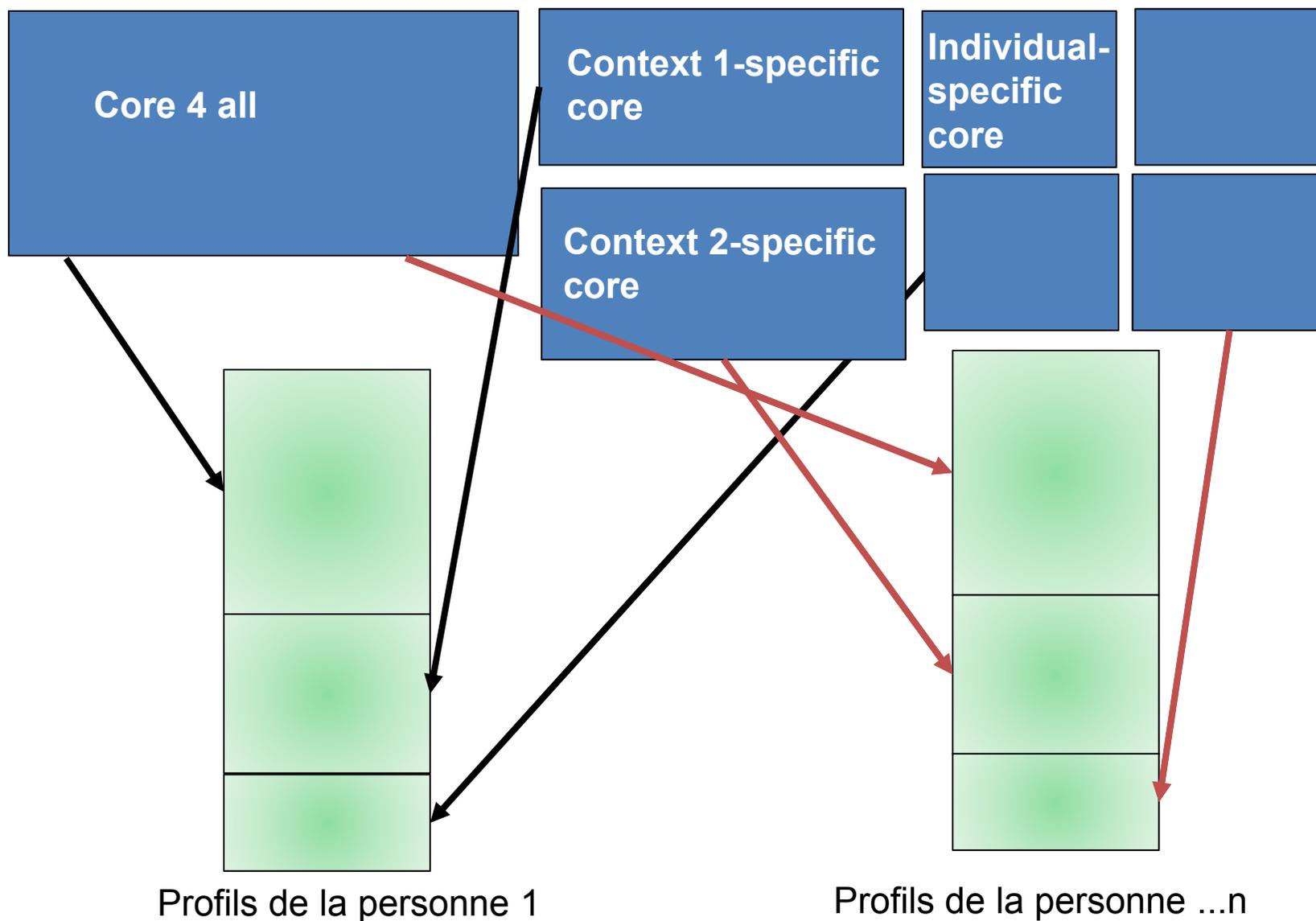
Table 2. Clinical Decision Making with the Disease-Oriented and Integrated, Individually Tailored Models for a 44-Year-Old Obese Man Reporting Decreased Activity Tolerance

Disease-Oriented Model	Integrated, Individually Tailored Model
<p><i>Collect clinical data</i></p> <ul style="list-style-type: none"> <li>History (e.g., heavy tobacco and alcohol intake, occasional exercise-induced chest pain, family history of coronary artery disease)</li> <li>Physical examination (e.g., blood pressure 158/94 mm Hg, body mass index 31.2 kg/m<sup>2</sup>, trace peripheral edema, S<sub>4</sub> on cardiac examination)</li> <li>Laboratory and ancillary testing (e.g., blood chemistries, complete blood count, chest radiograph, electrocardiogram, echocardiogram, pulmonary function tests, exercise stress test)</li> </ul>	<p><i>Collect patient-specific information</i></p> <ul style="list-style-type: none"> <li>Patient concerns (e.g., worried about losing job which involves heavy lifting, worried about having a myocardial infarction and dying before age 50 years like his father)</li> <li>Patient priorities (e.g., wants to live as long as possible but does not want to take medications if they interfere with sexual functioning, energy level, or alertness; willing to trade off some increased risk of myocardial infarction or stroke to avoid these problems now)</li> <li>Nonbiological determinants: increased smoking and alcohol and decreased physical activity after his son died in an accident; religion is source of support</li> </ul>
<p><i>Diagnoses</i></p> <ul style="list-style-type: none"> <li>Coronary artery disease, hypertension, hypercholesterolemia, tobacco and alcohol abuse</li> </ul>	<p><i>Contributing factors impeding goals</i></p> <ul style="list-style-type: none"> <li>Coronary artery disease, bereavement, tobacco, alcohol, depressive symptoms, employment opportunities limited by education</li> </ul>
<p><i>Management</i></p> <ul style="list-style-type: none"> <li>Risk factor modification (e.g., counsel to stop smoking, reduce or eliminate alcohol, lose weight, begin exercise program)</li> <li>Treat blood pressure (e.g., thiazide diuretic, beta-blocker, +/- angiotensin-converting enzyme inhibitor)</li> <li>Treat cholesterol (e.g., statin)</li> <li>Refer to cardiologist for further diagnosis and management</li> </ul>	<p><i>Management (based on patient's priorities)</i></p> <ul style="list-style-type: none"> <li>Bereavement counseling through church</li> <li>Patient selects risk factor(s) that he is willing to address (e.g., Alcoholics Anonymous meeting at church)</li> <li>Encourage increased physical activity during daily activities rather than exercise</li> <li>Patient willing to start with thiazide diuretic and aspirin; later agrees to a low-dose beta-blocker because a higher dose makes him tired; declines antidepressant but willing to undergo counseling</li> </ul>
<p><i>Outcomes</i></p> <ul style="list-style-type: none"> <li>Blood pressure level</li> <li>Cholesterol level</li> <li>Myocardial infarction, stroke, heart failure, survival</li> </ul>	<p><i>Outcomes (in order of patient's priorities)</i></p> <ul style="list-style-type: none"> <li>Physical activity level and sexual functioning</li> <li>Maintain employment</li> <li>Survival, myocardial infarction</li> </ul>



# Solution : profils en tant que signatures de la capacité fonctionnelle

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# Exemple : Mobility Healthy Aging Profiles

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WHO Healthy aging	Mobility profiles	Specific instruments
Environments	<ol style="list-style-type: none"> <li>1. Neighborhood green space</li> <li>2. Walking within and outside the local neighborhood: Main destinations used for walking and frequency and duration of walks to each destination (self-report)</li> </ol>	<ol style="list-style-type: none"> <li>1. Data collected from high resolution landmap true colour aerial photography (Gong, Gallacher, Palmer, &amp; Fone, 2014)</li> <li>2. Neighborhood Physical Activity Questionnaire (NPAQ; Giles-Corti, Timperio, Cutt, Pikora, Bull, Knui-man, ... &amp; Shilton, 2006)</li> </ol>
Functional ability	Being and doing what one has reason to value with respect to mobility (self-report)	Modified version of the Schedule for the Evaluation of the Individual Quality of Life (SeiQOL; O'Boyle, Brown, Hickey, McGee, & Joyce, 1993)
Age-related trends	<ol style="list-style-type: none"> <li>1. Balance (self-report)</li> <li>2. Gait (self-report)</li> <li>3. Gait (real-life measure): Walk analysis</li> </ol>	<ol style="list-style-type: none"> <li>1. Performance Oriented Mobility Assessment (POMA; Tinetti, 1986)</li> <li>2. Telephone-based Mobility Assessment Questionnaire (TMAQ; Verghese, Katz, Derby, Kuslansky, Hall, &amp; Lipton, 2004)</li> <li>3. GaitRite (<a href="http://www.gaitrite.com/index.html">http://www.gaitrite.com/index.html</a>)</li> </ol>
Behaviors	<ol style="list-style-type: none"> <li>1. Physical activity (real-life measure): Body-mounted sensors to assess 16 different states of physical activities</li> <li>2. Physical activity (self-report): Weekly frequency and duration of various physical activities</li> </ol>	<ol style="list-style-type: none"> <li>1. Barcoding human physical activity to assess chronic pain conditions (Paraschiv-Ionescu, Perruchoud, Buchser, Aminian, 2012)</li> <li>2. CHAMPS Physical Activity Questionnaire (Stewart, Mills, King, Haskell, Gillis, &amp; Ritter, 2001)</li> </ol>
Traits	Personality traits (self-report)	NEO-FFI (Courneya, & Hellsten, 1998)
Skills	Fear of falling (self-report): Low levels of fear	Falls Efficacy Scale International (FES-I; Yardley, Beyer, Hauer, Kempen, Piot-Ziegler, & Todd, 2005)
Interactions	<ol style="list-style-type: none"> <li>1. Motives and goals (self-report): In leisure and health sports and the psychological conditions for sport commitment (e.g., Body/Appearance, Positive Exercise Experiences)</li> <li>2. Goals: Goal identification in cognitive rehabilitation (individualized intervention)</li> </ol>	<ol style="list-style-type: none"> <li>1. Berner Motiv- und Zielinventar höheres Erwachsenenalter (BMZI-HEA; <i>Motives and Goals Inventory in Old Age</i>; Schmid, Molinari, Lehnert, Sudeck, &amp; Conzelmann, 2014)</li> <li>2. Cognitive rehabilitation (Clare, 2010)</li> </ol>
	<ol style="list-style-type: none"> <li>3. Needs (structured interview): Mobility needs inside and outside the home and transportation needs of older adults with mental disorders</li> <li>4. Needs (self-report): Illness-related needs of individuals with cognitive impairment and dementia</li> </ol>	<ol style="list-style-type: none"> <li>3. Camberwell Assessment of Need for the Elderly (CANE; Reynolds, Thornicroft, Abas, Woods, Hoe, Leese, &amp; Orrell, 2000)</li> <li>4. Bedürfnisinventar bei Gedächtnisstörungen (BIG-65; <i>Needs Inventory in Memory Disorders</i>; Schmid, Eschen, Rügger-Frey, &amp; Martin, 2012)</li> </ol>

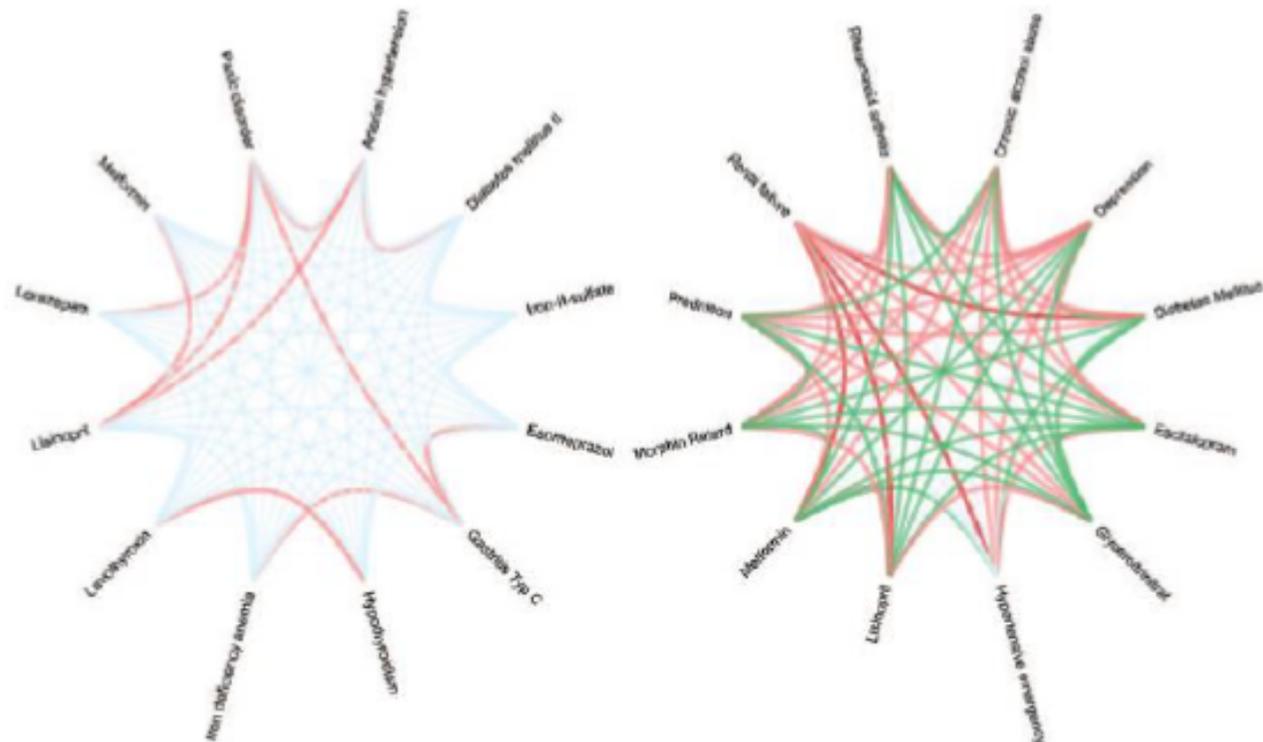


## Disease-Disease-Medication Interactions in Internal Medicine

- 176 patients admitted from the ED to the medical ward
- 166 suitable for final analysis: 8 subjects excluded due to monomorbidity, 2 aged <18 year
- 59% male, mean age: 63 ( $\pm 19$ ) years
- Mean number of diagnoses: 6.6 ( $\pm 3.4$ )
- 239 therapeutic conflicts encountered (in 49% of all patients)
- 29% of all patients *major* therapeutic conflicts
- 41% of all patients *minor* therapeutic conflicts



## Example 2: Mapping the interactions between conditions (plus person characteristics and environment)



**Figure 1.** Network graph generated from the multimorbidity interaction matrix on the basis of the participants' ratings of interaction severity, showing (A) the graph for the low conflict case with little risk of harmful interactions, and (B) the graph for the high conflict case with a high risk of harmful interactions.

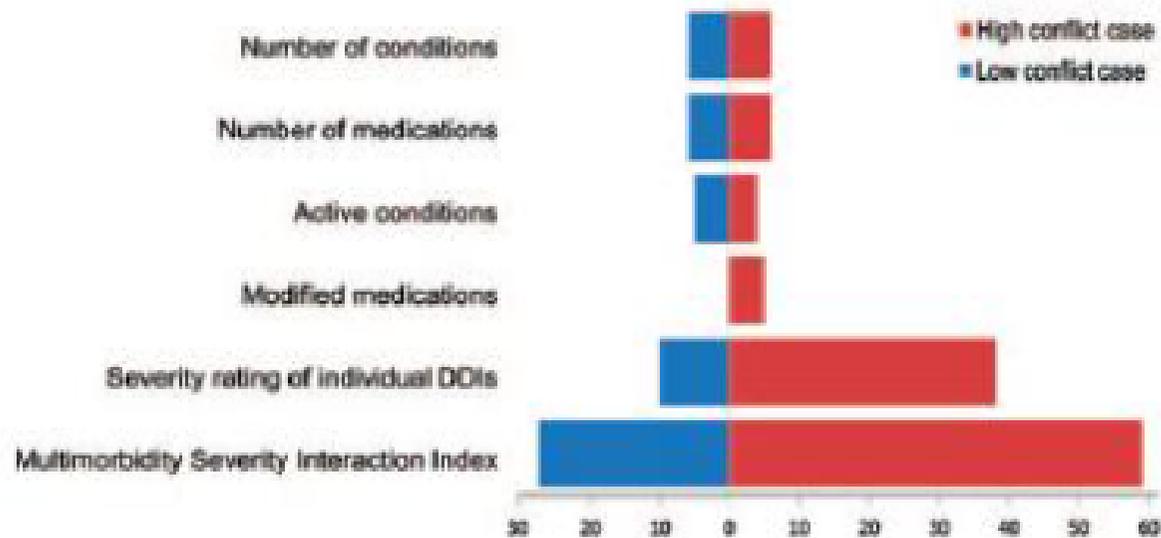
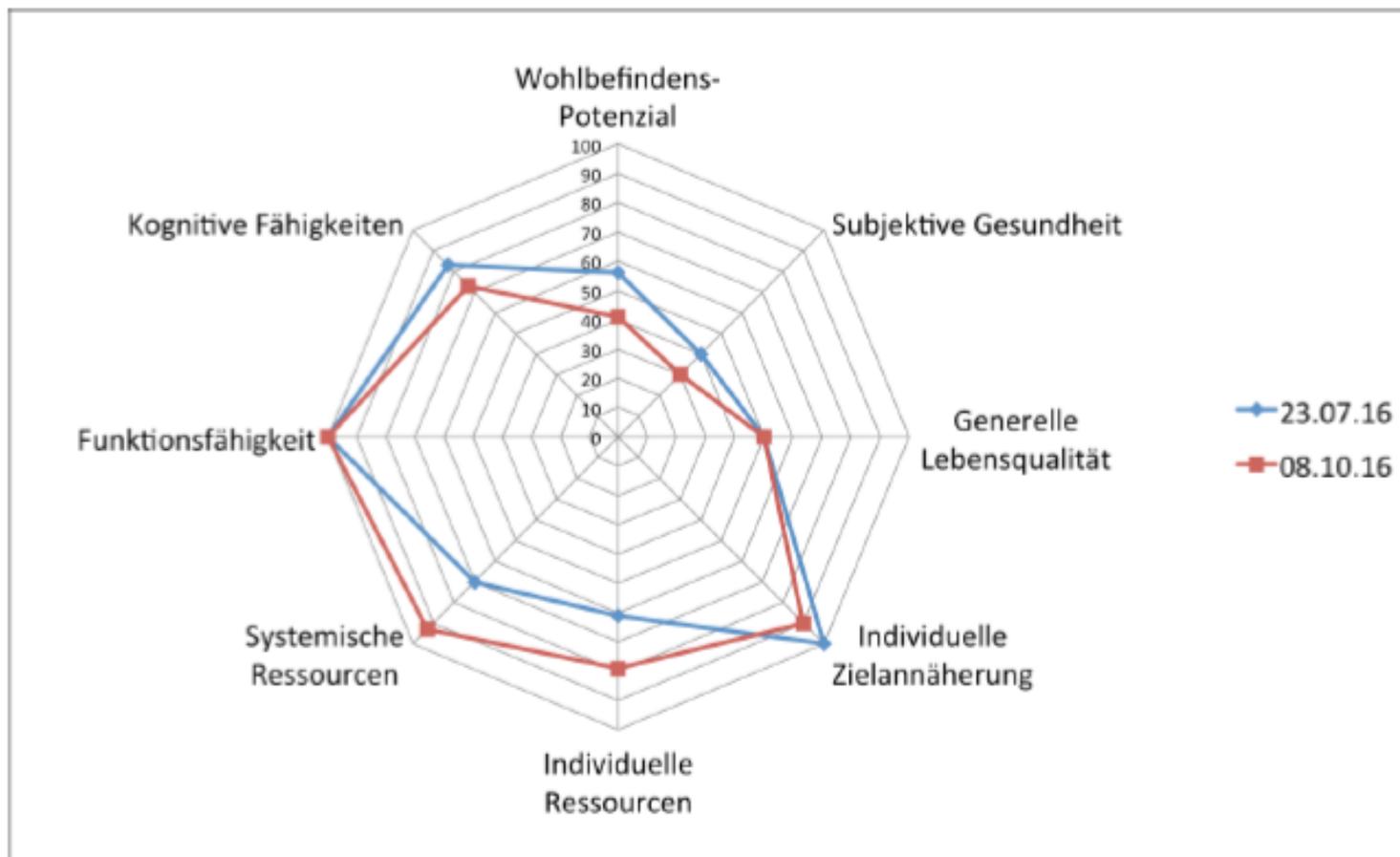


Figure 3. The figure illustrates the composition of the MISI, based on one physician's ratings of a low conflict case (right side of main panel) and a high conflict case (left side of main panel).

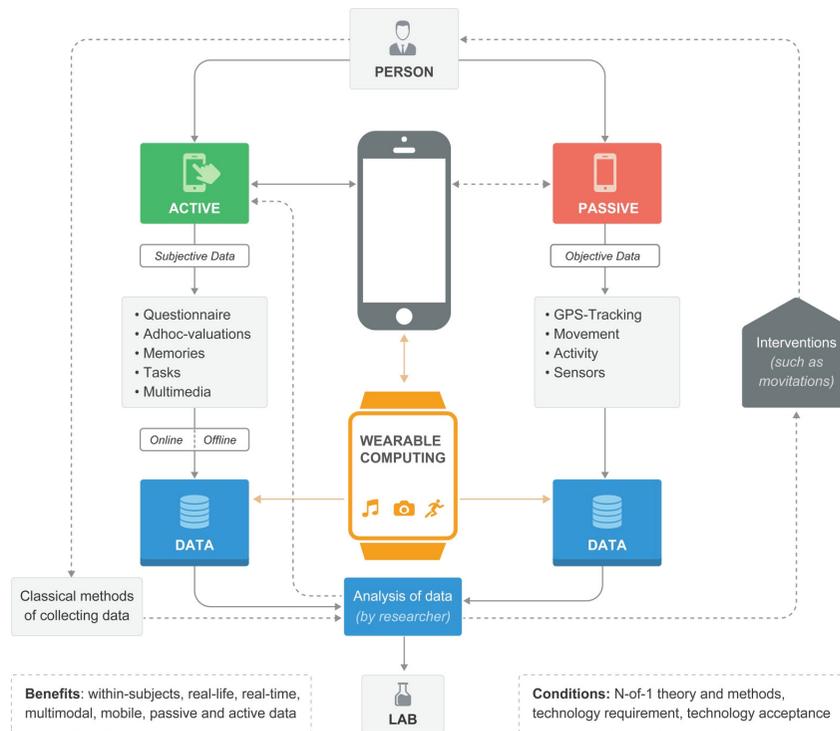


## Example 1: Mapping and analyzing the possibility/capability space





# Perspective : mesurer les effets des traitements sur la vie quotidienne en cas de multimorbidité et en comprendre l'importance



Mobilité

Activité sociale

Activité cérébrale

Activité physique

Sommeil

...



- (1) La mesure de la qualité du traitement des personnes âgées dépend du modèle « de personne âgée »**
- (2) Les mesures diffèrent selon les symptômes, les fonctions, la réalité quotidienne, la prise en compte du contexte et l'interaction personne-contexte.**
- (3) Les mesures diffèrent selon qui définit les critères de mesures et qui procède à la mesure.**
- (4) Selon la question, différents instruments doivent être utilisés.**
- (5) Différenciation importante : questions épidémiologiques vs questions individuelles**