

THE MULTIDIMENSIONAL PROGNOSTIC INDEX (MPI)

MPI is a prognostic tool based on a standard CGA that has been shown to predict short- and long-term survival in older subjects, as well as other negative health outcomes (hospitalization, nursing home admission, length of hospital stay).

To obtain the final index of a given individual, a program calculates a MPI score, which ranges from 0 to 1. This calculation can be easily performed by a program that can be downloaded at no cost (www.mpiage.eu) or using an IOS free app (iMPI).

CORE ACTIVITIES OF MPI_AGE

- Analysis on the use of predictive rules in clinical decision making in community-dwelling older people. An analysis on the use of predictive rules (MPI) in clinical and management decision making in community-dwelling older subjects was performed using clinical, functional and administrative data included in large databases from different European regions.
- Use of MPI to improve cost-effectiveness of drug treatments in older people with multimorbidity and polypharmacy. MPI was used to identify the effectiveness of different drugs across different levels of frailty and dependence in large multinational databases.
- Use of MPI to improve resource allocation in older hospitalized persons. A large multicenter clinical trial was performed to analyze the role of MPI in the identification of hospitalized patients with different characteristics and needs, which were prospectively followed for 1 year.



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**RECOMMENDATIONS FOR
HEALTH CARE PROVIDERS
DECISION MAKERS
GENERAL PUBLIC**

INTRODUCTION

The MPI_AGE project is a research project co-funded by the European Union through the Health 2007-2013 Programme that has explored ways to reduce unnecessary use of health care

resources in older subjects through the design of appropriate, tailored, integrated, multi-professional, planned interventions. This project opted to use a well-validated diagnostic and prognostic tool, the Multidimensional Prognostic Index (MPI), based on a standard Comprehensive Geriatric Assessment (CGA), and analyzed how it can improve the cost-effectiveness of health interventions in complex older individuals with multimorbidity and polypharmacy. To do so, a review analysis on the use of predictive rules in clinical and management decision making in older residents in different European regions has been performed to identify reference models to allocate resources and lower costs in healthcare. Analyses of multi-national databases including information on drug prescriptions and older subjects' characteristics have identified some setting-specific MPI-profiles in which individual interventions are more cost-effective in terms of improved survival.

OBJECTIVES

The aims of the MPI_AGE project were to:

- identify the most cost-effective health interventions according to the individual prognostic mortality-risk profile;
- improve multi-professional interactions and collaboration in performing integrated care pathways of interventions according to the individual MPI-risk profile;
- develop tailored intervention programs based on the individual MPI-profile of older subjects;
- explore ways to reduce health-related costs, linked to a reduction of hospitalization rates, in-hospital length-of stay, institutionalization rates, and inappropriate and unnecessary prescription drug use.

RECOMMENDATIONS

FOR HEALTH CARE PROVIDERS

- Health interventions should be adapted to individual needs of older patients, especially for those with high disease burden, high complexity or relevant major physical and mental impairments.
- Individual needs should be objectively assessed by means of validated instruments. These instruments should be multidimensional in order to capture all relevant domains.
- Objective assessment of needs may avoid discrimination of older people (ageism) in decision-making.
- The Multidimensional Prognostic Index (MPI) has proved to be the best validated assessment instrument in various healthcare settings (community, hospital and nursing homes) and across a wide range of diseases and conditions.
- MPI also identifies problems in several domains that may benefit from specialist comprehensive geriatric care.
- Tailored healthcare interventions have the potential to reduce the inappropriate use of resources (hospitalizations, drugs, diagnostic and other procedures) and to allow well-established treatments and interventions to be used in older people who can benefit from them.
- Tailored healthcare interventions have the potential to reduce inappropriate health-related costs.
- MPI can be adapted for use in population-based (Primary Care) and disease-oriented databases to accurately predict survival and other health outcomes.
- MPI can be used to explore how evidence-based knowledge of drugs and invasive interventions applies across different levels of frailty, complexity and life expectancy.
- In hospitalized older persons MPI identifies groups at risk for several hospital outcomes (i.e. mortality, length of stay, use of diagnostic tests). Individuals within each risk group may benefit from the adaptation of interventions to his/her prognosis and needs.
- In hospitalized older persons MPI predicts several post-discharge outcomes: one-year mortality, rehospitalisation, admission to a nursing home, use of home-care services.
- Changes in MPI during hospitalization predict long-term mortality and use of home-care services.
- The role of MPI as a potential outcome measure for interventions needs to be explored.

FOR DECISION MAKERS

- Health interventions should be adapted to the individual needs of older people, especially for those with high disease burden, high complexity or major physical and mental impairments.
- Individual needs should be objectively assessed by means of validated instruments. These instruments should be multidimensional to capture all aspects that are relevant for each person.
- Objective assessment of needs may avoid discrimination of older people (ageism) in decision-making.
- The Multidimensional Prognostic Index (MPI) has proved to be the best validated assessment instrument in various healthcare settings (community, hospital and nursing homes) and across a wide range of diseases and conditions.
- MPI also identifies problems in several domains that may benefit from specialist comprehensive geriatric care.
- Tailored healthcare interventions have the potential to reduce inappropriate use of resources (hospitalizations, drugs, diagnostic and other procedures) and to allow well-established treatment and interventions to be used in older people who can benefit from them.
- Tailored healthcare interventions have the potential to reduce inappropriate health related costs, making health care services more efficient.
- MPI can be adapted for use in population-based (Primary Care) and disease-oriented databases to accurately predict survival and other health outcomes. This can be helpful in order to plan resource deployment and allocation.
- In hospitalized older persons MPI identifies groups at risk for several hospital outcomes (i.e. mortality, length of stay, use of diagnostic tests). Individuals within each risk group may benefit from the adaptation of interventions to his/her prognosis and needs.
- In hospitalized older persons MPI predicts different post-discharge outcomes (one-year mortality, rehospitalisation, admission to a nursing home, use of home-care services).

FOR THE GENERAL PUBLIC

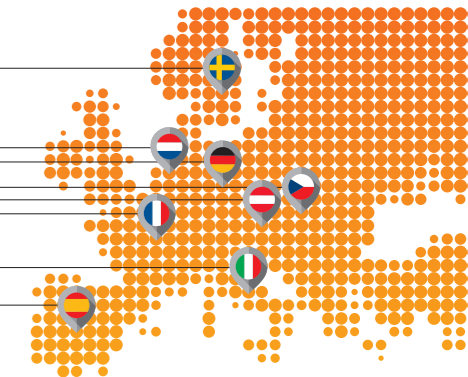
- Health interventions should be adapted to the individual needs of older people, especially for those who are very sick, have multiple health problems or are physically or mentally impaired.
- Healthcare professionals should assess the needs of each individual in an objective, reproducible way. Assessment has to consider every aspect of health and function that are relevant to each person.
- Objective assessment of needs may avoid discrimination of older people (ageism) in health care.
- The Multidimensional Prognostic Index (MPI) has proved to be an excellent objective assessment instrument in various healthcare settings (community, hospital, nursing homes) and across a wide range of diseases and conditions.
- MPI also identifies problems in several domains that may benefit from specialist comprehensive geriatric care.
- Tailored healthcare interventions have the potential to reduce the inappropriate and potentially harmful use of resources (hospitalizations, drugs, invasive procedures) and to allow well-established treatment and interventions to be used in older people who can benefit from them.
- Tailored healthcare interventions have the potential to reduce inappropriate health-related costs.
- MPI can be used to find out whether different treatments or interventions work in different older people.
- In older people who are hospitalized MPI identifies those at higher or lower risk of mortality or hospitalization for excessively long periods.
- MPI can also predict who will have a more/less favourable outcome and who will need social support (home-care services) or nursing-home care after hospitalisation.

PARTNERS OF MPI_AGE

The MPI_AGE project involves the following centers and organizations in twelve different countries.

ASSOCIATE PARTNERS

- **Italy:** AULSS16 - Azienda Unità Locale Socio Sanitaria n° 6 Euganea, Padova (Coordinating center)
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- **Spain:** Fundación Para la Investigación Biomédica del Hospital Universitario Ramon y Cajal, Madrid
- **Sweden:** Karolinska Institute, Stockholm
- **Europe:** European Union Geriatric Medicine Society (EUGMS)



COLLABORATING PARTNERS

- **Australia:** Flinders University - Adelaide
- **Belgium:** EUREGHA; AGE platform Europe
- **Bulgaria:** Bulgaria Association on Ageing
- **Estonia:** Estonian Association of Gerontology
- **Italy:** Regione del Veneto - Servizio per le relazioni socio-sanitarie; Centro Regionale Management Progetti Europei - CREMPE; National Research Council - CNR; IRCCS Casa Sollievo della Sofferenza; Università degli Studi di Messina; E.O. Ospedali Galliera di Genova
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- **United States of America:** National Institute on Aging; John Hopkins Bloomberg School of Public Health