

## **Ageing well: from precision medicine to personalized prevention [1] Press release from the French National Academy of Medicine June 08, 2023**

“Precision medicine”, a concept first mentioned in 1999 (1), concerns patient populations, often limited in number, who can benefit from a targeted “health product” often expensive to develop.

This concept should also be applied to the case of populations marked by ageing and loss of autonomy, or evolving towards these situations. This elderly population, the most costly to care, very generally suffers from numerous chronic illnesses and functional incapacities.

These situations prompt us to promote prevention, for an early clinical decision-making and effective, safe interventions, by extending the concept of “precision medicine” to that of “personalized prevention” (2). The aim of this extension is to ensure a healthy ageing by being functionally active (3).

This “personalized prevention” is based on predictive data collection on family health history, determinants linked to the environment (general, professional, domestic) and lifestyle behaviors, particularly diet, and risk assessment (4).

This “personalized prevention” encourages to identify risk factors on which it is possible to act in order to: i) reduce the frequency of heart diseases, diabetes, cerebrovascular diseases, depressions and cancers, whose onset is insidious, progression often misleading and prognosis difficult before any detectable clinical symptoms (5-8), ii) control their consequences in terms of health and autonomy (9), iii) avoid the soaring costs they induce.

In addition to snapshots taken at annual medical check-ups, it also encourages to make a greater use of continuous health monitoring systems (data collection, search engines), which will provide a higher-resolution picture of the risks incurred and the first signs of disease, with a view to redefining “asymptomatic” and “presymptomatic” statuses.

Finally, to facilitate "ageing well", it calls for the development of self-carried "precision" technologies (sensors) providing physiological data, whose real-time analysis will enable an objective monitoring of functional health (mobility, posture, daily activity and quality of sleep), personalized rehabilitation, therapeutic decision-making and evaluation of results.

With the important obligation of securing confidentiality, these technologies based on data collection, portability, geolocation and teleassistance could benefit to: i) risk screening, ii) diagnosis, particularly cardiovascular, and iii) seven-day prediction of any acute exacerbation of chronic diseases.

**In order to optimize the prevention of chronic diseases, and to contain the economic burden associated with their care as well as keeping pace with advances in precision medicine (10), the French National Academy of Medicine recommends that :**

- Doctors, other healthcare professionals and the public develop personalized preventive measures, in particular vaccination, by generating a real-time "movie" of individual's health, identifying the periods when interventions would be the most effective to improve "ageing well";
- Prevention campaigns, targeting in particular "prevention appointments" at the key "ages of life" (40-45 and 60-65) and technological advances, for a healthy aging;
- Public authorities allocate financial resources to ensure that preventive health policies contribute to the development of personalized prevention.

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[1] Communiqué from the Academy's Rapid Communication Platform.