



**PAIN/RELife**

## **Sustainable and integrated data ecosystem for continuity of care and decision support for person with post-stroke pain (pwPSP)**

Dr Luca Chiveri  
*Casa di Cura del Policlinico*  
Dept. of Neurorehabilitation Sciences  
Milano, Lombardy



UNIVERSITÀ  
DEGLI STUDI DI TRIESTE





EU-funded regional project with the general purpose of improving care of frail people

*Casa di Cura del Policlinico (CCP)* is a clinical partner of the project consortium who will take over the management of pwPSP

The consortium envisages another clinical partner (*Istituto Europeo di Oncologia, IEO*, for the management of oncological pain) and technological partners for the digital development and data processing analysis



UNIVERSITÀ  
DEGLI STUDI DI TRIESTE



Euleria



## Dipartimento di Scienze Neuro Riabilitative

Casa di Cura Privata del Policlinico S.p.A



UNIONE EUROPEA

Fondo europeo di sviluppo regionale



Regione Lombardia



LO STILE DELLA RAGIONE



UNIVERSITÀ DEGLI STUDI DI TRIESTE



Euleria

POR 2014-2020 FESR / INNOVAZIONE E COMPETITIVITÀ



# Technological innovation projects for integrated-care for better treatment of person with chronic neurological disease

- Tele-monitoring
- Motor/cognitive tele-rehabilitation
- Tele-consulting
- Virtual Coaching



- Post-stroke
- Parkinson disease
- Dementia
- Neuropathies
- Motor Neuron Disaeses



LO STILE DELLA REGIONE

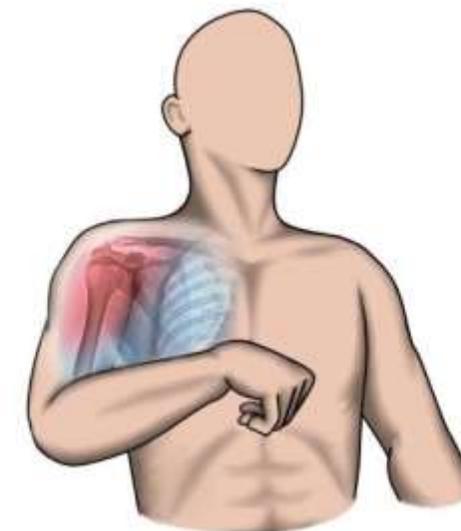


UNIVERSITÀ DEGLI STUDI DI TRIESTE



Euleria

# What is Post-stroke Pain (PSP)?

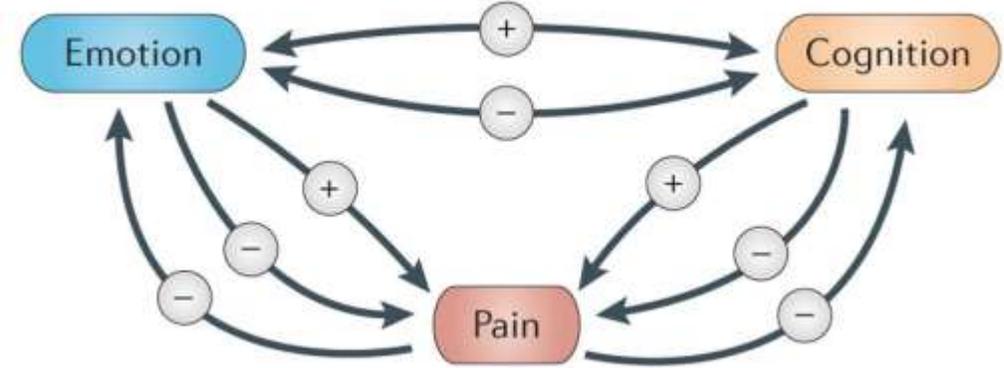
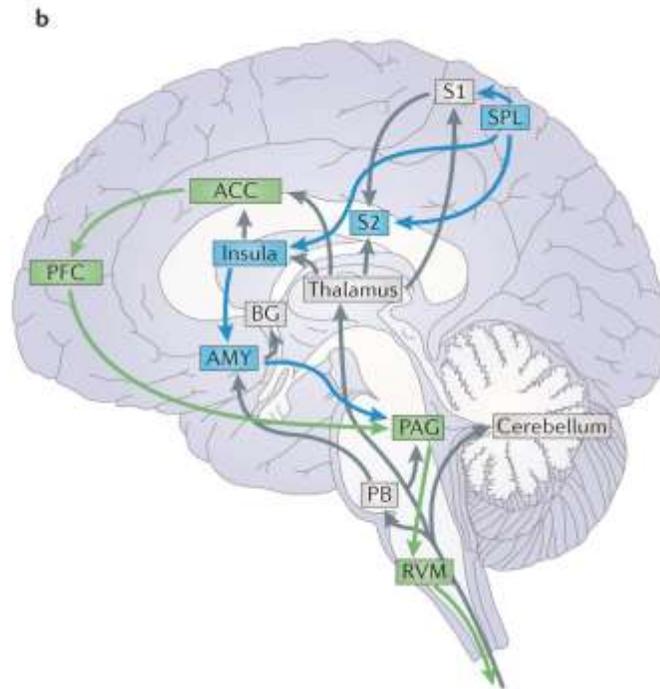
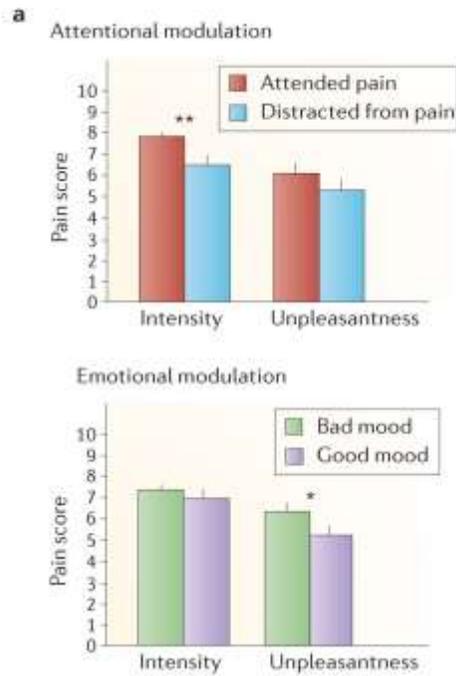


It is complex clinical condition that includes different forms of pain of both nociceptive and neuropathic origin, with possible peripheral and central pathogenetic mechanisms

Several forms of post-stroke pain are known, the most common are central pain, spasticity related pain and painful hemiplegic shoulder. However, other less specific forms of pain also tend to increase after a stroke such as headache, joint pain or back pain.

Various factors contribute to these forms of pain: acute hypotonia, joint subluxation, alterations in the neural sensitive and pain pathways networks and, in medium to long term, immobility, forced and protracted postures, hypertonia, microtraumatism, hypotrophy, joint trophic changes, retractions, calcifications, inflammation.

# Emotional and cognitive aspects affect the perception of pain





# What is Post-stroke Pain (PSP)?



Pain is a **common post-stroke complication** (up to 40%).

Its effect on the recovery of post-stroke persons can substantially impact on the individual future **quality of life**, by preventing optimal participation and gains during **rehabilitation**.

The management and treatment of these syndromes include various pharmacological and non-pharmacological therapies. The optimal treatment for an individual patient often requires a combination of therapy modalities (**multidisciplinary approach**).

It should also be considered that these painful syndromes most often affect subjects with **multiple associated pathologies** and **multi-drug therapies**.



# PSP: state of the art



Post stroke pain is generally **under-recognized** and often neglected because of **heterogeneity of pain**, possible overlap of other **confounding conditions** (e.g., depression, chronic fatigue) or because of possible **cognitive / speech issues** related to stroke that make it difficult for patients to communicate symptoms and to measure it by clinicians

About 25% of persons PSP **needs are not met** at 5 years.

PSP has **not standardized monitoring tools** (e.g., scales, questionnaire) due to his heterogeneity and above all due to possible stroke-related cognitive or language problems.

Because of its heterogeneity PSP management requires support of **different health professionals** spanning a broad spectrum of health care, it is not obvious or guaranteed, especially in situations where the necessary health professionals are not available.

PSP **safety issues** must also be considered, especially in persons using pain-control drugs in conjunction with other therapies and / or presenting comorbidities (e.g., anticoagulants, antiepileptics, hypnotics drugs).

# PAINRElife Pilot study

## Patient assessment

Neurological  
Functional  
Cognitive



Tablet

- rescheduling of visits
- changes in therapy
- Teleconsultation
- further diagnostic insights



Web platform

- Recurrent self-measurement of pain
- periodic measurement of the impact of pain in daily activities
- periodic measurement of the impact of stroke in person life
- periodic measurement of mood

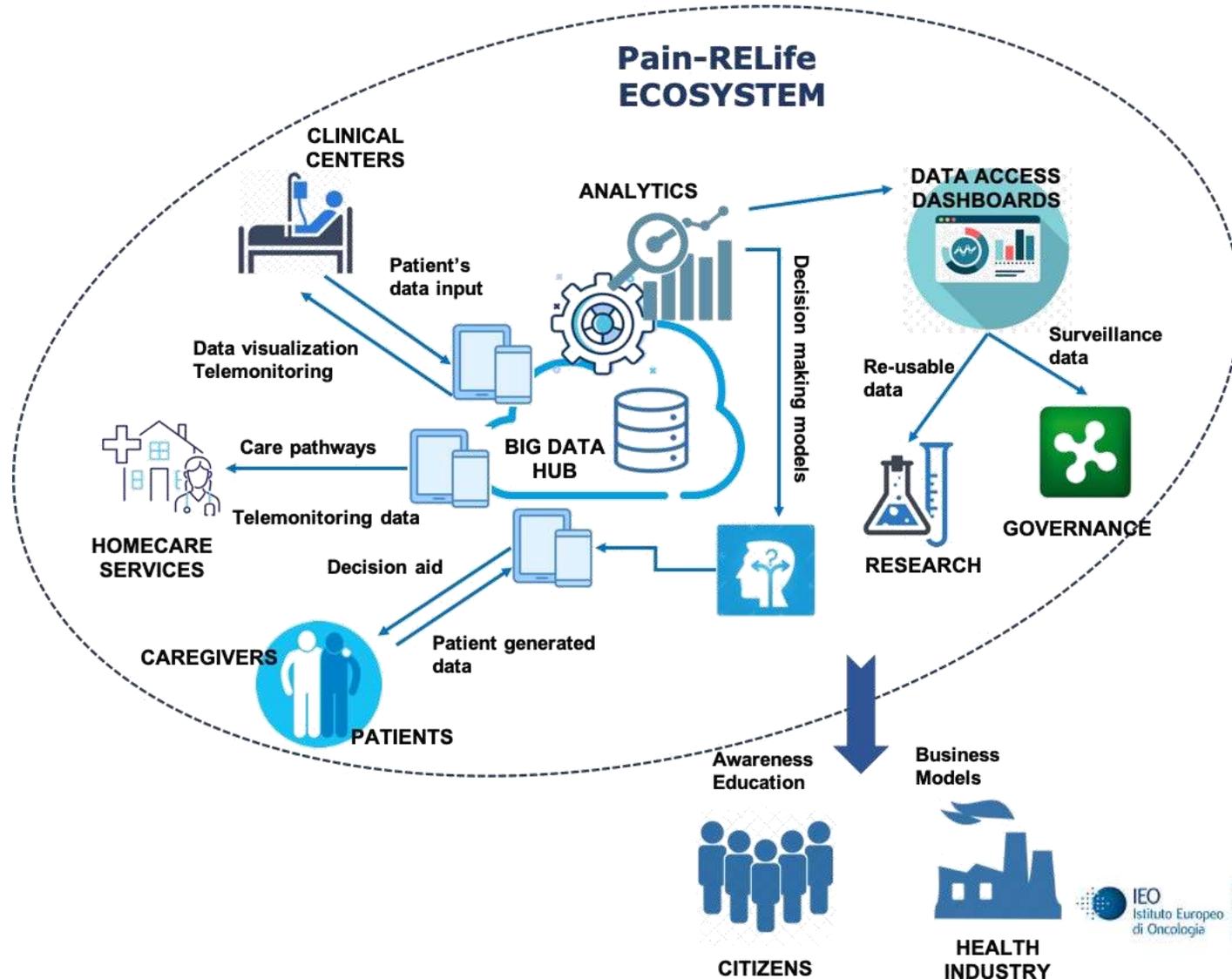
## Possible Issues related to:

- Patient/caregiver:
  - level of digital culture of the user
  - compilation complexity
  - cultural or language differences (caregivers)
  - lack of motivation
  - caregiver overload
  - **others?**
- Health professionals:
  - to deal with incomplete data
  - time consuming
  - organizational difficulties
  - **others?**



Usability

# PAINRElife possible future application



<b>BIG DATA HUB</b>	- Infrastructure for data collection and management
<b>HEMOCARE SERVICES</b>	- Home treatment of the patient - Care pathways - Dedicated network of professionals
<b>CLINICAL CENTERS</b>	- Treatment of patients - Data visualization - Telemonitoring
<b>ANALYTICS</b>	- Data processing - Knowledge extraction
<b>DATA ACCESS DASHBOARD</b>	- Visualization for users not involved in the project (governance, research)
<b>DECISION AID/APP</b>	- Patient and caregiver support
<b>DISTANCE EDUCATION</b>	- Education

Thanks for the attention!