

DARING

Digital Advancement and Resilience In
Neurodegenerative Healthcare through
Innovation and SMEs

**DARING CROSS BORDER CONFERENCE:
NEW PERSPECTIVES AND SOLUTIONS ON
NEURODEGENERATIVE CARE.**

CROSS BORDER CONFERENCE

Campobasso · 20 May 2026

Sviluppo Italia Molise · Campobasso, Italy

CONFERENCE SUMMARY

DARING CROSS BORDER CONFERENCE: NEW PERSPECTIVES AND SOLUTIONS ON NEURODEGENERATIVE CARE. CAMPOBASSO, 20 MAY 2026

The in-depth study conducted in Molise has aroused considerable interest and the next activities will be able to outline a more specific framework for the dissemination of important concepts related to Neurodegenerative diseases.

On May 20th, at the offices of Sviluppo Italia Molise in Campobasso, the Cross Border Conference planned within the DARING Project was organized.

The event aimed to present the preliminary results of the project, especially in terms of analyzing the clinical and social needs of patients and caregivers in each territorial area involved (for Italy, Molise and Puglia, for other countries, Albania and Montenegro).

During the *first working session*, in addition to verifying the emerging needs, a sectoral analysis of companies was presented, according to a specific taxonomy for sectors consistent with the project. The verification of legislative instruments and current regulations, at the European, national, and regional levels, then allowed for reconstructing the overall reference framework of the initiative.

In the *second session* of the conference, the contribution of companies, support structures, and research institutes in adopting innovative solutions in the field of neurodegenerative diseases was explored through technical presentations.

The in-depth discussion conducted in Molise generated considerable interest, and future possible activities could outline a more specific framework for spreading important concepts related to neurodegenerative diseases and the role of the various actors involved, not only in the strictly medical sector.

In this regard, the involvement of public and private organizations, including in the field of associations, represented a strength of the process.

CONTENTS

DARING CROSS BORDER CONFERENCE: NEW PERSPECTIVES AND SOLUTIONS ON NEURODEGENERATIVE CARE. CAMPOBASSO, 20 MAY 2026

DARING FIRST OUTCOMES:

Holistic analysis of clinical and social needs of patients and caregivers

- Alzheimer Bari - Nicole Ruta
- Clinical Center of Montenegro - Ljiljana Radulovic
- Metroresearch Center - Almarin Frakulli

Analysis of companies, patents, and funding

- Politecnico di Bari - Francesca Russo

Analysis of EU and Italian regulations

- Sviluppo Italia Molise - Fabrizio Spallone

TECHNICAL CONTRIBUTIONS:

“PEARL: A Colorimetric Point-of-Care Test for Salivary Alpha-Amylase in Alzheimer's Disease”

- Francesco Dell’Olio - CTO Weatecho srl

“Recentering Expertise: Co-designing for Dementia with People Living with Dementia - From Digital Solutions to Personalised Care”

- Eloisa Stella, Associazione Novilunio APS and Cristian Leorin, University of Padua

“Neuroinflammation and Biomarkers in Alzheimer’s Disease: Towards Early Prediction of Disease Trajectory”

- Antonio Bruno - Istituto Neurologico Mediterraneo NEUROMED

“Progress achieved, landmarks, and future concerns in biomedical and health informatics (with focus on neurogenerative disease)”

- Ivana Ognjanovic - Institute of Modern Technologies Montenegro

“Neurodegenerative Care in Albania: An Analysis of the Gap Between Patients’ Holistic Needs, Service Provision, and the Regulatory Framework”

- Eugjen Sotiri - University Hospital Center Tirana

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Holistic Needs Assessment — Italy Report

Nicole Ruta - Alzheimer Bari

ITALIAN HEALTHCARE SYSTEM

Italy's SSN (Servizio Sanitario Nazionale) operates across three levels: national, regional and local (ASL / Aziende Ospedaliere). Dementia services include CDCDs, IRCCS, day centres and Dementia Friendly Communities. The key gap is the absence of a structured PDTA applied consistently across regions.

CLINICAL NEEDS — PEOPLE LIVING WITH DEMENTIA

- Timely diagnosis and specialist access (safety needs)
- Support to maintain independence (self-actualisation)
- Cognitive stimulation and occupational therapy
- Assistance with activities of daily living (ADL)

SOCIAL & PSYCHOLOGICAL NEEDS

Peer networks, legal protection, employment support
Pain management and sundowning (sunset syndrome)

CONCLUSION

Technology must start from the real needs of people living with dementia and their caregivers, and demonstrate measurable improvement in quality of life over the long term.

DARING FRAMEWORK

From a hierarchical (Maslow) to a holistic, person-centred approach to fundamental human needs.

Innovating with people, not only for people

Clinical · Social · Psychological · Practical

Holistic Needs Assessment — Montenegro

Ljiljana Radulović — Clinical Centre of Montenegro

300

General practitioners

30

Neurologists (3.8 per 100k)

7–10.5k

Estimated people with dementia

NEEDS BY DISEASE STAGE

Mild dementia

Autonomy, stable routines, psychosocial support, adapted communication strategies

Moderate dementia

Simplified communication, safety modifications, caregiver training

Severe dementia

Neuropalliative care absent in Montenegro — burden falls entirely on families

SYSTEMIC SHORTCOMINGS

- No national dementia registry
- Delayed diagnosis, weak early detection
- Workforce shortages and geographic gaps
- Fragmented health and social care
- No neuropalliative or hospice services
- High informal care burden on women
- eHealth tools not adapted for dementia

Holistic Needs Assessment - Albania Report

Metroresearch Center - Almarin Frakulli

ABSENCE OF A NATIONAL DEMENTIA STRATEGY

Dementia care is delivered without a dedicated national strategy, resulting in fragmented service provision and limited long-term planning

LIMITED FORMAL SUPPORT

Families remain the main providers of dementia care due to the limited availability of integrated public support services

SERVICES CONCENTRATED IN TIRANA

Specialized healthcare services and support initiatives are mainly concentrated in Tirana, creating territorial disparities in access to care and assistance

KEY NEEDS IDENTIFIED

Clinical needs

Early diagnosis, specialist follow-up, multidisciplinary assessment and continuity of care

Social & psychological needs

Emotional support, social inclusion, reduction of isolation and stronger community-based services

Practical needs

Home-care support, caregiver training, assistive technologies and easier access to support services

SYSTEMIC GAPS

- Fragmented and medically-oriented care model
- Weak integration between healthcare providers, social services and NGOs
- Strong dependence on informal caregivers
- Low adoption of digital and assistive technologies
- Absence of standardized dementia care pathways

CONCLUSION

The Albanian assessment highlights the need to strengthen coordination, accessibility and innovation within the national dementia care model

Mapping SMEs in neurodegenerative healthcare

Francesca Maria Russo e Fulvio Iavernaro - Politecnico di Bari

2,686

COMPANIES ANALYSED

66.5%

USA SHARE OF TOTAL

\$53B+

USA TOTAL FUNDING

28

ITALIAN COMPANIES
(RANK #10 GLOBAL)

BIOTECHNOLOGY

3,716 PATENTS

~512 companies · gene therapies,
diagnostics, biomarkers

MEDICAL

1,858 PATENTS

~1,005 companies · devices, diagnostics,
sensors

NEUROSCIENCE

774 PATENTS

~230 companies · strategically central
for DARING

Italy — top companies by patents & funding

Company	Region	Patents	Funding
Newron Pharmaceuticals	Lombardy	51	\$129M
Neuron Guard	Emilia-Romagna	6	\$2.1M
Lay Line Genomics	Lazio	6	—

Neuroscience accounts for the smallest patent pool yet the highest strategic relevance for DARING — the clearest space where solutions to patients' concrete needs remain absent.

Regulatory Framework Study Report

Fabrizio Spallone, Sviluppo Italia Molise

Innovating in healthcare requires not only technological capability but also a sound understanding of the applicable regulatory landscape — especially as AI-based solutions and Software as a Medical Device become more prevalent.

KEY FRAMEWORKS ANALYSED

EU AI Act (2024/1689) — high-risk AI in medical applications
EHDS — European Health Data Space, secondary use of data
GDPR — data protection and privacy obligations
MDR / IVDR — medical devices and SaMD conformity assessment

COUNTRIES COVERED

Italy · Albania · Montenegro — gaps and transition timelines

STRATEGIC RELEVANCE

A foundational input for the Joint Cross-Border Healthcare Innovation Action Plan — a common regulatory strategy across the three partner countries.

SaMD · AI Act · EHDS

A practical guide for SMEs: which rules apply and how to comply without losing sight of innovation.



PEARL — Colorimetric Point-of-Care Test for Salivary Alpha-Amylase

Francesco Dell'Olio, Weatecho s.r.l.

24

AD saliva samples

28

Healthy donor samples

$R^2 \approx 0.90$

Baseline correlation at T1

10–60

U/mL dynamic range

MEASUREMENT WORKFLOW

1

Collect & filter



2

Apply sample



3

Develop colour



4

Record RGB

SCIENTIFIC RATIONALE

Salivary alpha-amylase (sAA) reflects enzymatic activity influenced by autonomic nervous system dynamics. Saliva is non-invasive and reduces the burden of sample collection versus blood or CSF.

ASSAY PRINCIPLE

Alpha-amylase hydrolyses a chromogenic probe releasing a yellow chromophore. Maltose expands the dynamic range.

Readout: Δ RGB at T1 = 1.5 min.

NEXT STEPS

Validate on larger clinically characterised cohorts

Validate portable reader and app pipeline

Complete storage and ageing studies

DARING cross-border, needs-driven evaluation



PROTOTYPE

Paper strip · 3D-printed cassette · portable colorimeter. Sample pad: MES pH 6.5, 500 mM.

Co-designing for Dementia with People Living with Dementia

Eloisa Stella, Associazione Novilunio APS and Cristian Leorin, University of Padua

Novilunio is a non-profit dedicated to amplifying the voice of people with dementia through self-advocacy and collective advocacy — integrating psychosocial support, peer facilitation and co-production.

"What keeps me positive is being useful, being busy and being engaged, as well as feeling valued and respected."

KEITH OLIVER, EXPERT BY EXPERIENCE

WHAT NOVILUNIO DOES

Post-diagnostic adaptation courses — Living Well with Dementia (8+2 sessions)

Participatory research co-designed with people with dementia

Digital literacy programmes for autonomy and social inclusion

Awareness-raising and anti-stigma campaigns

MEANINGFUL ENGAGEMENT

People with dementia participate as co-researchers. Lived expertise informs programme design.

Co-production embeds their voice into outputs, not only into process.

RELEVANCE FOR DARING

A transferable model for the Empowerment Program activities across Italy, Albania and Montenegro.

Neuroinflammation and Alzheimer's Disease: Towards Early Prediction of Disease Trajectory

Antonio Bruno, Istituto Neurologico Mediterraneo NEUROMED

Alzheimer's disease (AD) extends well beyond amyloid and tau pathology. Neurodegeneration and neuroinflammation are closely interconnected, with microglia and astrocytes actively contributing to disease progression.

KEY NEUROINFLAMMATORY BIOMARKERS

GFAP — marker of astroglial reactivity

sTREM2 — marker of microglial response

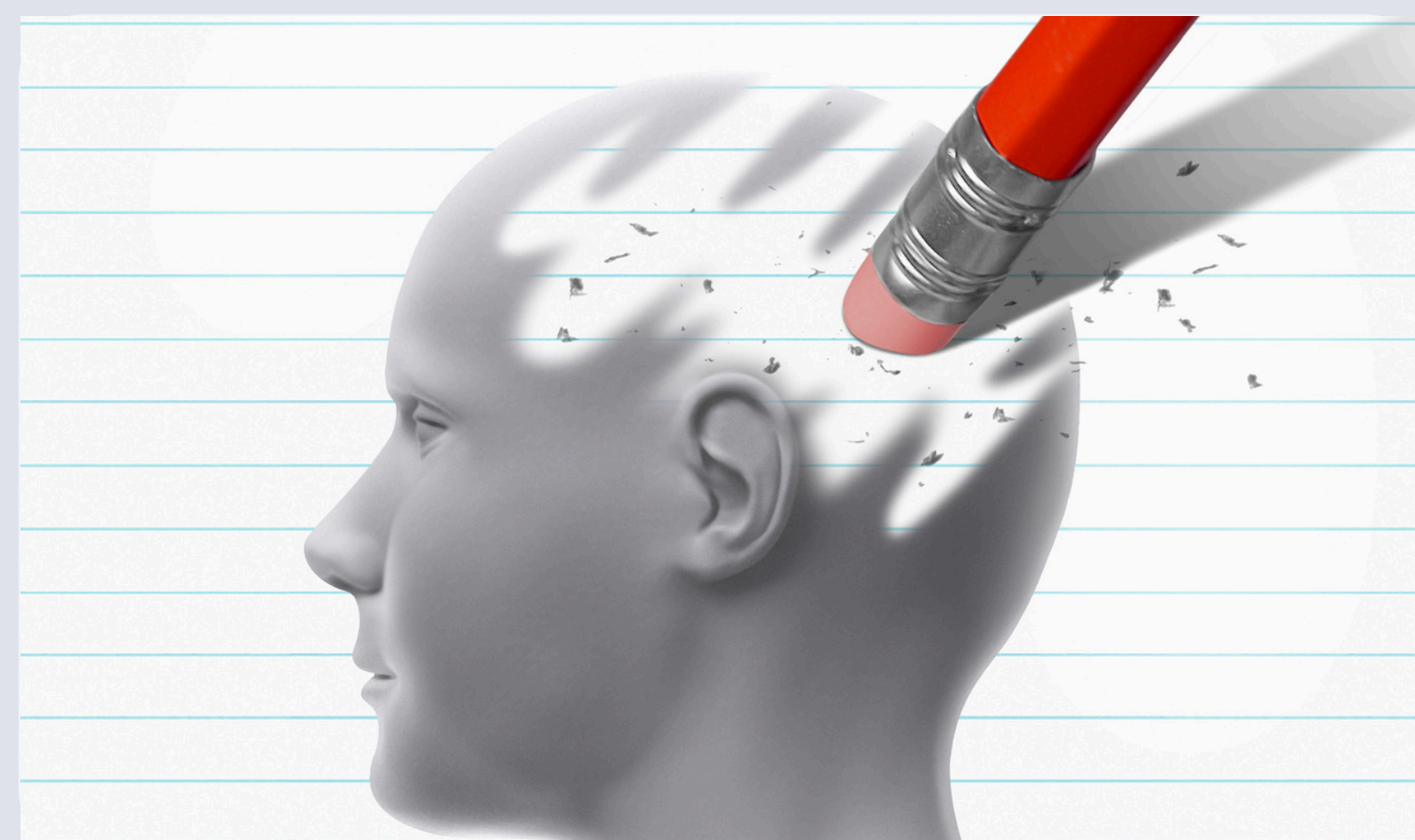
YKL-40 — astroglial and microglial activation

PREDICTIVE VALUE

Serum and CSF GFAP predict disease severity and increase at later stages. YKL-40 and sTREM2 rise with progression. YKL-40 predicts AD risk when combined with NfL (neurofilament light chain).

TOWARDS INTEGRATED BIOLOGICAL PROFILES

A multi-biomarker approach supported by advanced statistics and machine learning may help clinicians predict disease trajectory and improve longitudinal monitoring within personalised care pathways.



**Neuroinflammation is dynamic,
redundant and stage-dependent**

Moving from static diagnosis toward biological stratification of risk and disease course.

Progress Achieved, Landmarks, and Future Concerns in Biomedical and Health Informatics

Ivana Ognjanović, Institute of Modern Technologies Montenegro (IMTM)

SIX CHALLENGES TO QUALITY HEALTHCARE (DELOITTE, 2021)

- Lack of interoperability in EHR systems
- Optimising clinical workflows — alert fatigue
- Personnel shortages — 13 million nurse deficit by 2030 (ICN)
- Keeping pace with advances in medical science
- Advancing health equity — \$320B annual inequities (USA)
- Patient safety: medication and diagnostic errors

DIGITAL HEALTH LITERACY

In a pragmatic trial of a mobile app for diabetes self-management, only 18.2% of participants used the app consistently over 182 days. Assessing digital health literacy is essential to identify patients at risk of exclusion.

LESSONS LEARNT

- No single best approach to capacity building
- Academia–authorities–industry cooperation is fundamental

18.2%

App use consistency
(182-day trial)

13M

Nurse deficit by 2030
(ICN)

\$320B

Annual healthcare inequities — USA (Deloitte, 2021)

"A health worker lacking digital literacy cannot fully benefit from an electronic system, even when one is provided."

Neurodegenerative Care in Albania: An Analysis of the Gap Between Patients’ Holistic Needs, Service Provision, and the Regulatory Framework”

Eugen Sotiri — University Hospital Center Tirana



FIVE KEY GAPS

- 01

Diagnostic gap

MMSE / MoCA screening not routine in primary care;
neurologists and geriatricians concentrated in Tirana
- 02

Geographic gap

46% of older adults in rural or remote areas; over 40,000
people emigrate annually
- 03

Long-term care gap

Residential care: 0.78% of need; community care: 1.8% of
need; total public coverage: 1.6%
- 04

Capacity gap

~2% of medical training devoted to psychiatry / mental health;
no formal geriatric specialty pathway
- 05

Digital regulatory gap

No framework for Software as a Medical Device (SaMD), AI-based solutions or telemedicine services

DARING

PROJECT PARTNERS



Politecnico
di Bari



ALZHEIMER ITALIA®
BARI
La forza di non essere soli.

SviluppItalia
Molise
Regional Development Agency of Molise Region



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