

A precision psychiatry roadmap: towards a biology-informed framework for mental disorders

Martien Kas

University of Groningen, the Netherlands

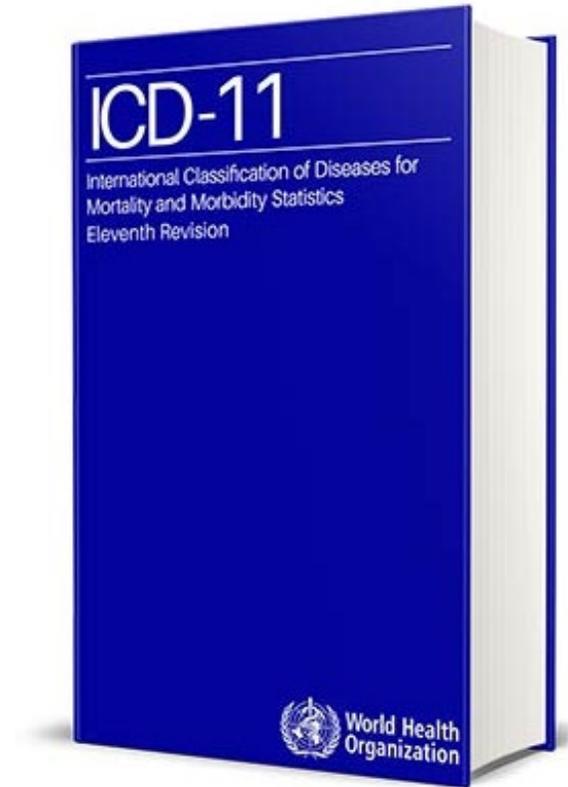
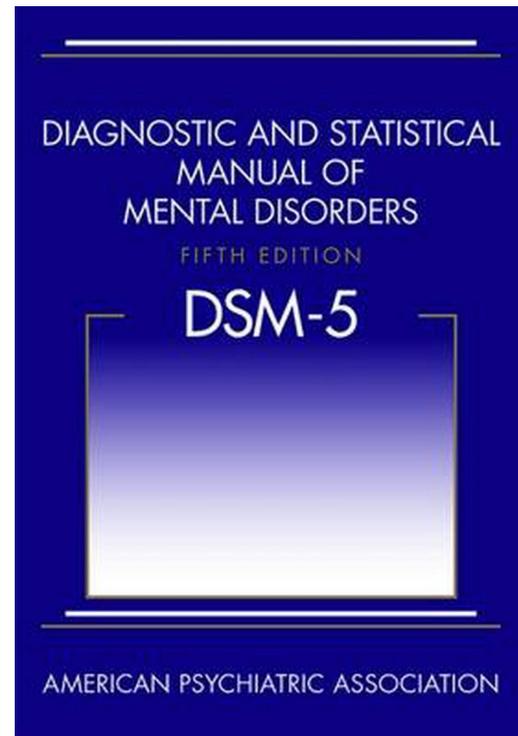
ECNP Past-President



Disclosures

- Past-President of the European College of Neuropsychopharmacology (ECNP).
- Voting Member of the Future Diagnostic and Statistical Manual of Mental Disorders (DSM) Strategic Committee.
- Shareholder and CSO of Behapp.
- Research is supported by a research grant from Boehringer Ingelheim.

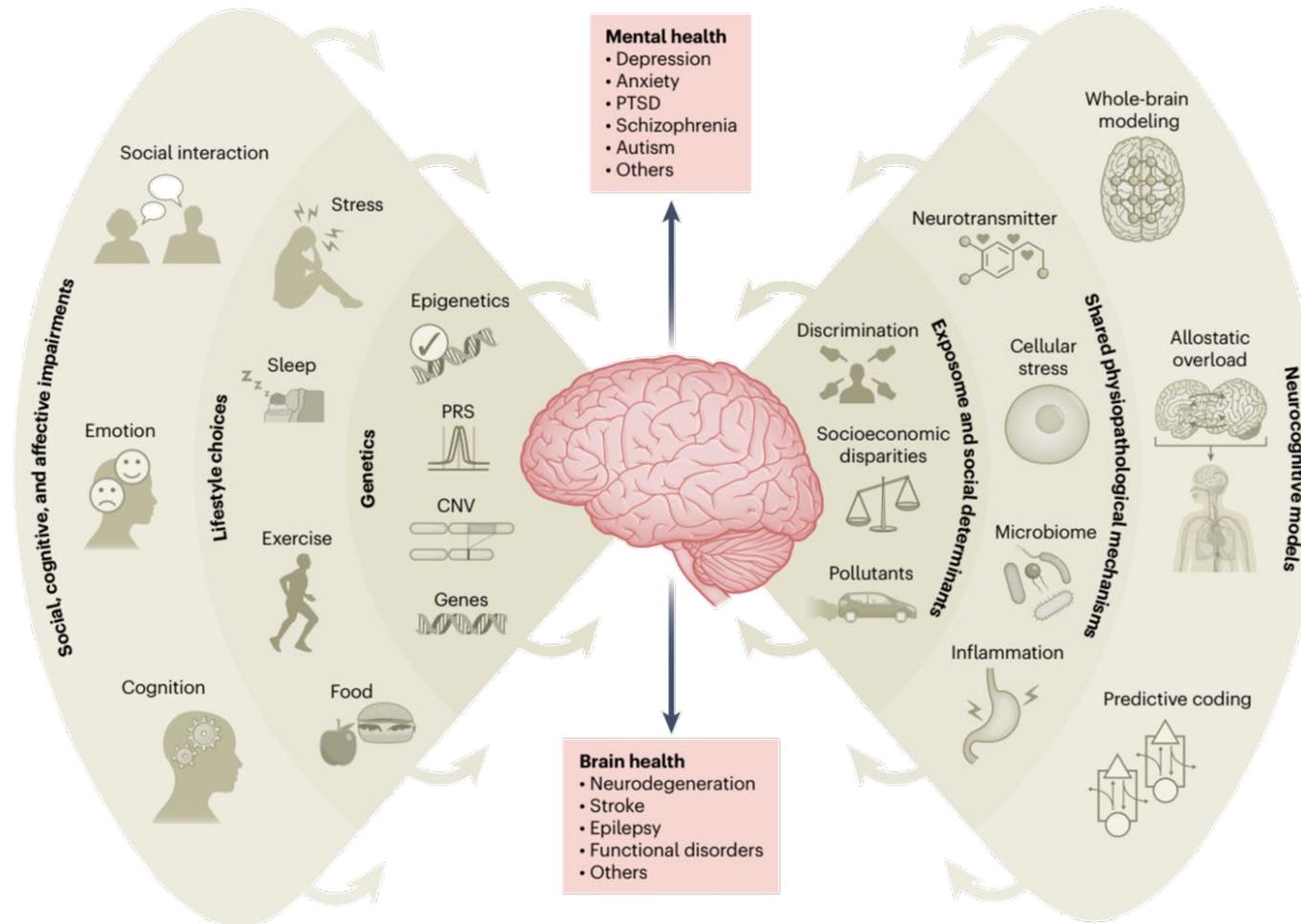
Current classification methodologies for mental disorders based on common signs and symptoms



Current use of DSM-5 and ICD

- These classification systems **provide a uniform 'language'** to assess psychiatric and neurological disorders across the globe.
- Clinicians use DSM-5 and ICD diagnoses **to communicate with their patients and with other clinicians**, and to request reimbursement from insurance organisations.
- ICD diagnoses are also used by public health authorities **to compile and report mortality and morbidity statistics**.

Mental disorders arise from a bilateral interaction between the environment and the brain.



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- Clinicians use DSM-5 and ICD diagnoses to communicate with their patients and with other clinicians, and to request reimbursement from insurance organisations.
- ICD diagnoses are also used by public health authorities to compile and report mortality and morbidity statistics.
- These systems also form the basis for research on mental disorders and **do not map onto neurobiology**.
- Current treatment regimes follow current diagnostic framework with **low treatment efficacy** of psychotherapies and pharmacotherapies for mental disorders in adults.
- Do not account for **phenotypic heterogeneity** within diagnoses, as well as **transdiagnostic biological overlap**.
- Provide **a translational gap** to optimize biological knowledge and drug discovery for mental disorders

ECNP New Frontiers 2024 Meeting outcomes

The meeting indicated a **high need for a biology-informed framework to establish more precise diagnosis and treatment for mental disorders.**

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Towards a consensus roadmap for a new diagnostic framework for mental disorders

Martien J.H. Kas^{a,*}, Steven Hyman^b, Leanne M. Williams^c, Diego Hidalgo-Mazzei^d,
Quentin J.M. Huys^{e,f}, Matthew Hotopf^g, Bruce Cuthbert^h, Cathryn M. Lewisⁱ,
Livia J. De Picker^{j,k}, Paris A. Lalouis^{l,m}, Amit Etkin^{n,o}, Gemma Modinos^{p,q}, Hugh M. Marston^r

Challenges for the field

- Lack of understanding of the underlying mechanisms of psychiatric and neurological disorders.
- What biology to measure, how and when?
- Bringing the right treatment to the right patient at the right time.
- Obtaining regulatory approval for innovative quantitative (biological) endpoints and treatments beyond the current diagnostic framework.

PERSPECTIVE **OPEN**

Precision psychiatry roadmap: towards a biology-informed framework for mental disorders

Martien J. H. Kas¹✉, Brenda W. J. H. Penninx², Gitte M. Knudsen³, Bruce Cuthbert⁴, Peter Falkai^{5,6}, Gary S. Sachs⁷, Kerry J. Ressler⁸, Ewa Bałkowiec-Iskra^{9,10,11}, Florence Butlen-Ducuing^{12,13,14}, Marion Leboyer¹⁵, Hugh Marston¹⁶, Johan Luthman¹⁷ and Valentina Mantua¹⁸

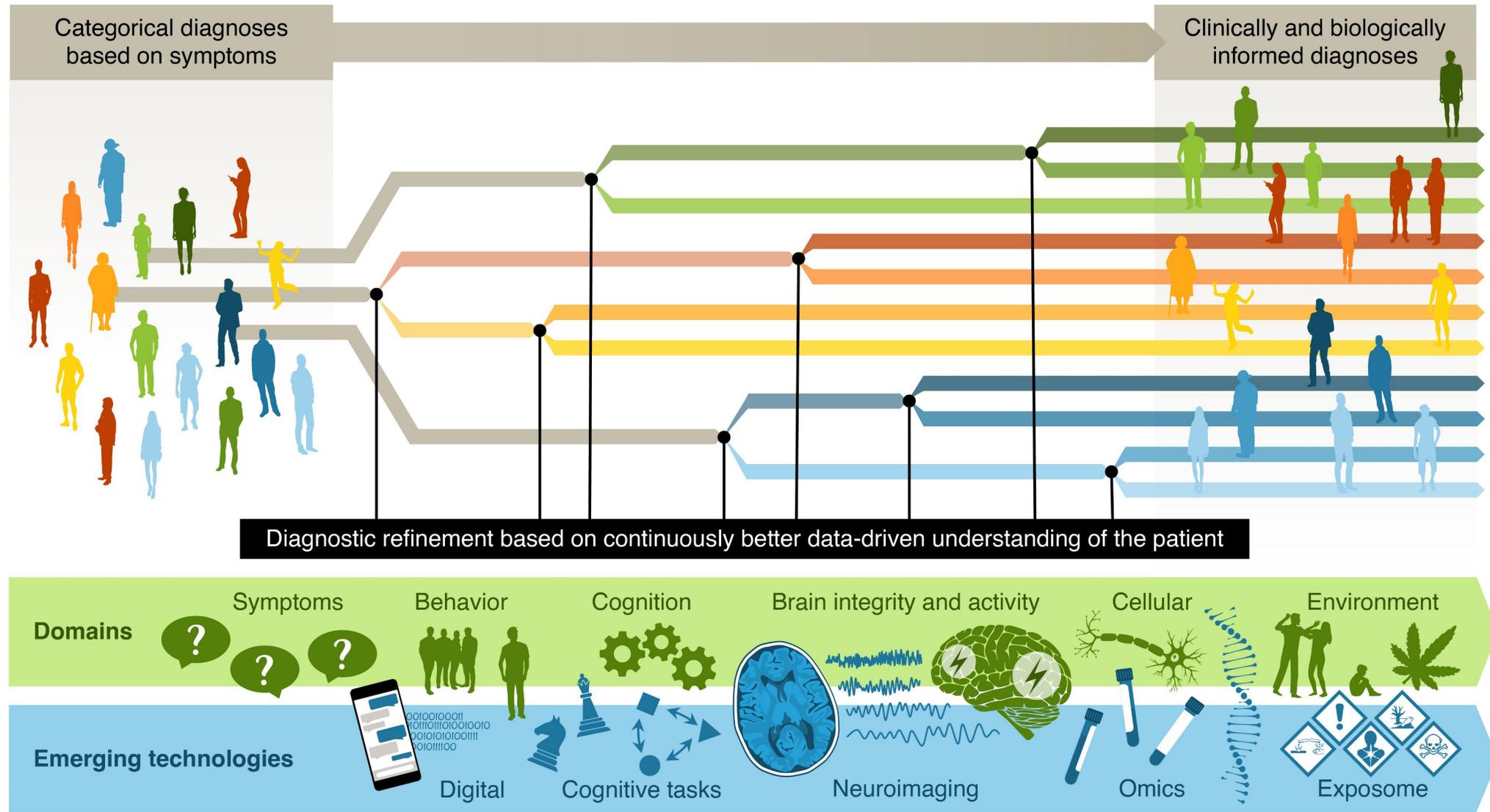
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The current classification systems for mental disorders provide a uniform symptom-based language to describe and diagnose mental disorders. Clinicians use these classifications to communicate with their patients and colleagues, to treat patients, and when applicable, to request reimbursement from payers. In clinical research and drug development, diagnostic categories are used as enrollment criteria for clinical trials and to inform prescribing information for the appropriate use of therapeutic interventions. However, like other neuropsychiatric diseases, mental disorders arise from the biology of the brain and its bidirectional interaction with the environment. Current classification systems do not reflect this knowledge. With scientific progress in neuroscience, the time has come for global stakeholders to align research efforts to work toward integrating symptomatic, biological, and behavioral information into the definition of mental disorders to advance the development of effective treatments. The European College of Neuropsychopharmacology (ECNP), following the 2024 New Frontiers Meeting, is coordinating a global initiative to design and implement a Precision Psychiatry Roadmap. By mobilizing resources and harmonizing translational methodologies and datasets, the aim is to discuss, design, and implement an iterative framework that incorporates biology-informed evidence into symptom-based syndromes, allowing for more discovery and implementation of mechanism-based effective treatments for mental disorders.

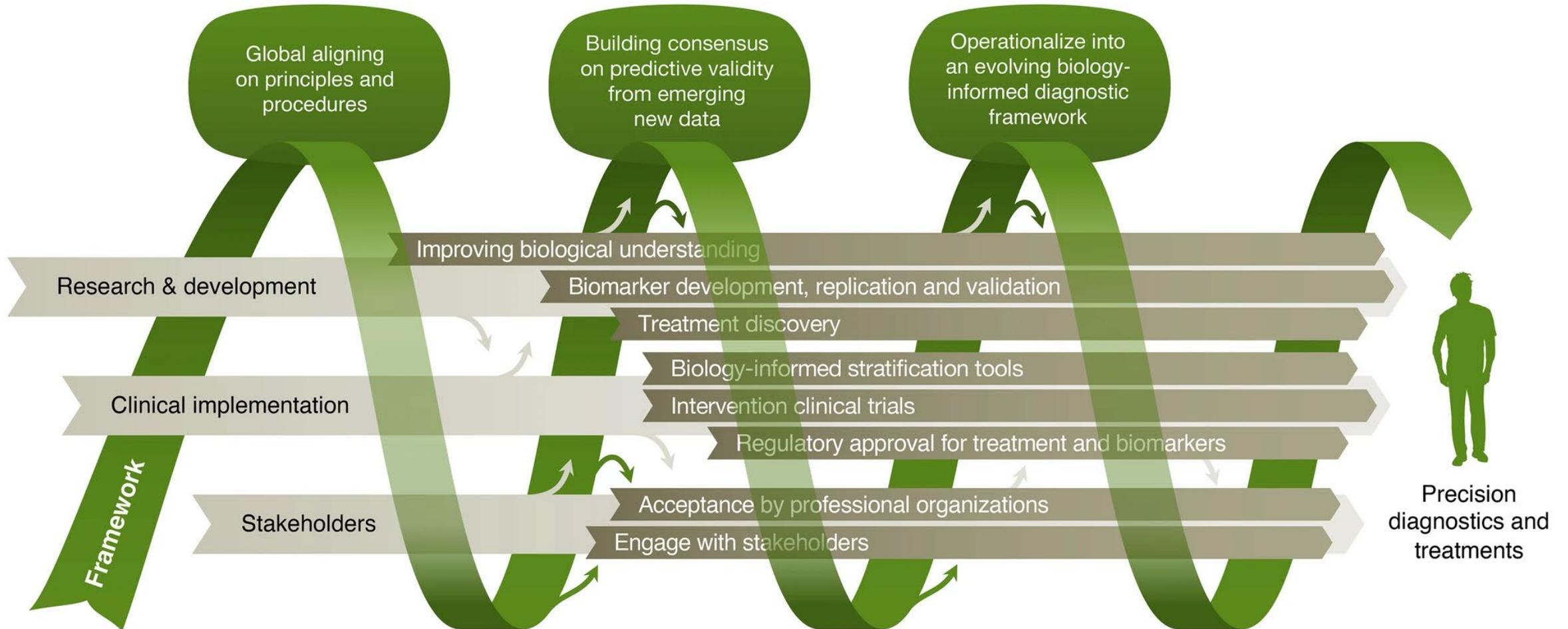
Molecular Psychiatry; <https://doi.org/10.1038/s41380-025-03070-5>

A continuously evolving diagnostic framework

leading to mechanistic-based treatments



Implementation and operational delivery of a continuously evolving biology-informed diagnostic framework



① Globally align on principles and procedures

② Build a consensus on the predictive validity of new data

③ Operationalise into a new diagnostic framework



The right treatment for the right person at the right time

Main PPR components	PPR sub-components	Years 1-3	Years 4-6	Years 7-9	Years 10-12	Years 13-15 onwards	Stakeholders involved	New Implementation steps
1. Global alignment of principles and procedures	1.1. Engagement and communication with all stakeholders, including funders and partner organisations						All stakeholders*	Knowledge distribution through partner organisations (e.g. CINP, ACNP, EBC) and policy makers. Discuss coordinated funding with funding agencies.
	1.2. Harmonisation and platform development						Academic and industry representatives	Implementation and expansion of centralized and harmonized databases through e.g. cohort club** and large global biomarker (e.g., FNIH, Wellcome projects) initiatives.
	1.3. Identifying and reaching consensus on relevant quantitative biological measures						All stakeholders*	Establishing coordinated funding availability for precompetitive projects. Regular ECNP and other targeted meetings with all stakeholders, publication of meeting outcome reports. Implementation of a biomarker library to inform and steer consensus building (e.g., through ECNP knowledge hub).
	1.4. Validation biomarkers and identification of new biotypes						Academic and industry representatives, patients	Establishing coordinated funding availability for precompetitive projects.

Engagement, alignment and communication with stakeholders

JAMA Psychiatry | Special Communication

Implementing Precision Medicine in Psychiatry

Federico Cevoli, PhD; Hussein K. Manji, MD, PhD; Andrew H. Miller, MD, PhD; Brenda W. J. H. Penninx, PhD; Martien Kas, PhD; Carmine Pariante, MD, PhD; Livia De Picker, MD, PhD; Pawel Swieboda; Marion Leboyer, MD, PhD

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Precision Medicine in Mental Health: Applications, Challenges, and Recommendations

Authors: Celso Arango¹, Eduard Vieta^{2,3,4,5,6}, Lourdes Fañañás⁷, Philippe Courtet, Livia de Picker, Martien Kas, Peter Keri, Pavel Mohr, Inez Myin-Germeys, Brenda WJH Penninx, Andreas Reif^{x,y,z}, Martina Rojnic Kuzman, Andrea Fiorillo⁹, Ana Catalán⁸



Toward Regulatory-Ready Biomarkers in Psychiatry: A Precompetitive Roadmap for Precision Trials.

An ACNP Position Paper

Authors: Sahib Khalsa, Deanna Barch, Linda Brady, William Carlezon, Christopher Chatham, Wayne Drevets, Neill Epperson, Amit Etkin, Bernard Fischer, Daniel Graham, Steve Hoffman, Martien Kas, Helmuth Kolb, Marion Leboyer, Sarah Lisanby, Lauren Liss, Hussein Manji, Valentina Mantua, Hugh Marston, William Potter, Frank Yocca, and Kerry Ressler



American College of
Neuropsychopharmacology

Role of funding agencies in prioritizing key areas of research

ECNP biomarker mapping exercise funded through the Wellcome Trust

- 1). Making an inventory of the established and ongoing biomarker studies.
- 2). Organizing the meetings to reach consensus among the stakeholders.



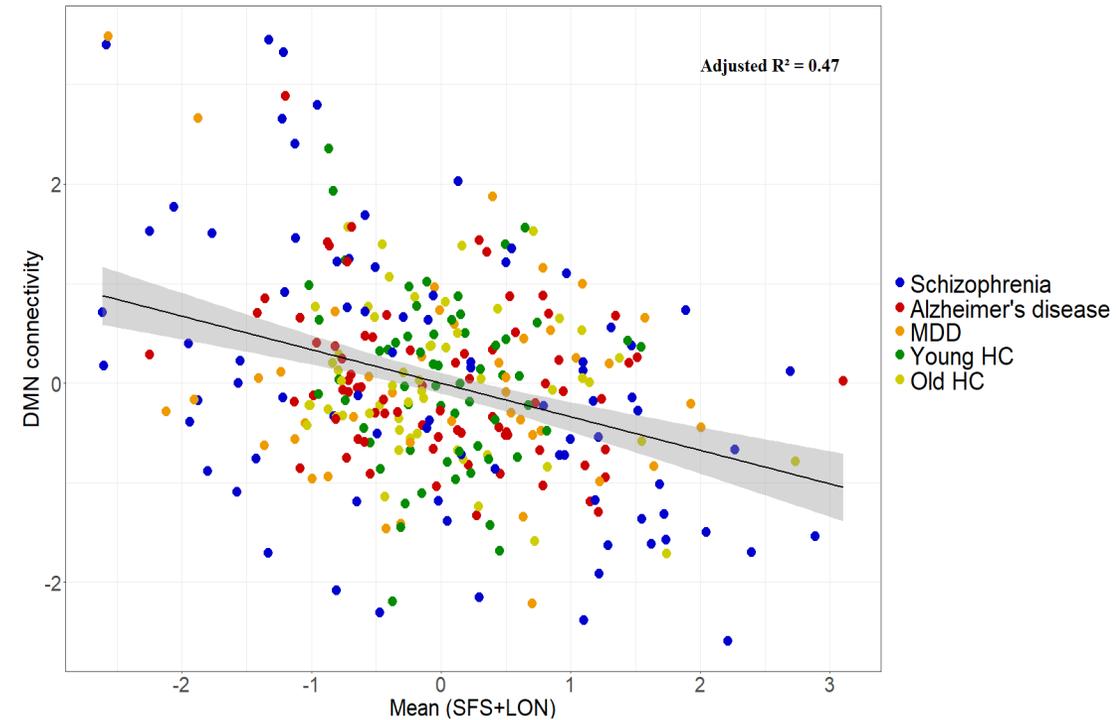
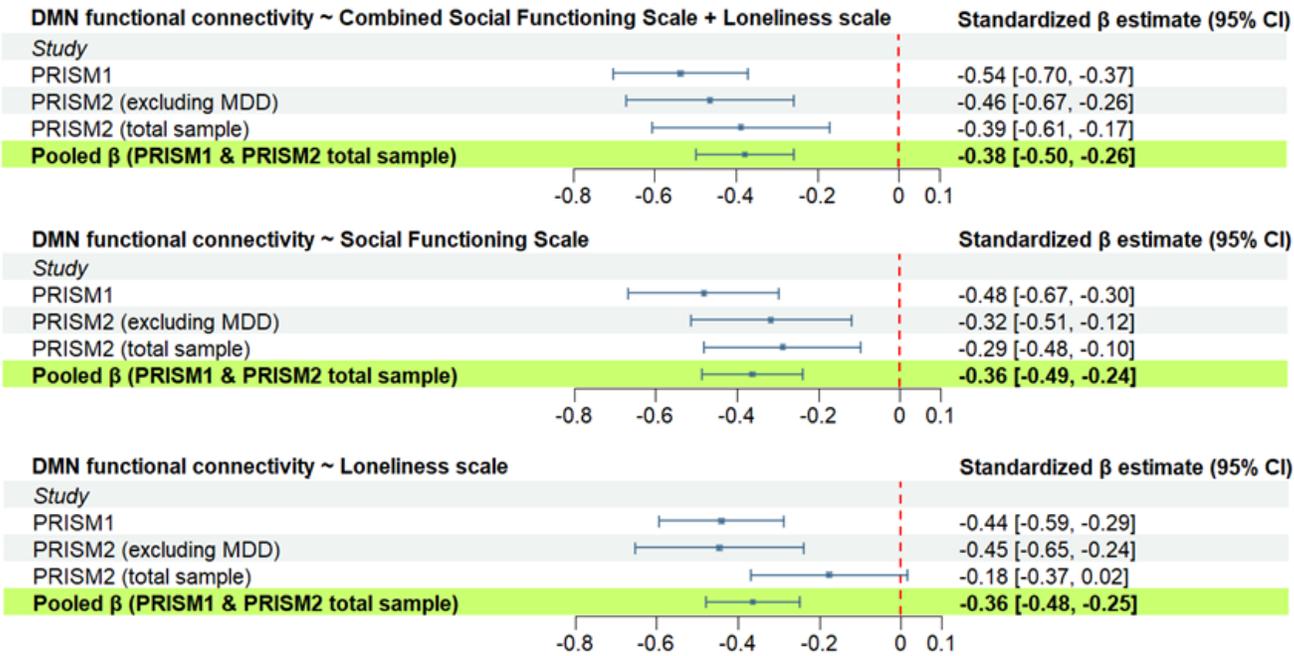
Towards precision medicine: platform for transdiagnostic stratification of brain Dysfunction (HORIZON-JU-IHI-2025-11-01-two-stage)

- 1). Data platform for precision medicine
- 2). Advancing mechanistic understanding
- 3). Patient outcomes and stigma
- 4). Efficiency in the healthcare system



The importance of funded pre-competitive public private partnerships

Replication and extension of transdiagnostic neurobiological findings !!



Saris et al, World J Biol Psychiatry. 2022; Braak et al., bioRxiv, 2025

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- ③ Operationalise into a new diagnostic framework



The right treatment for the right person at the right time

Main PPR components	PPR sub-components	Years 1-3	Years 4-6	Years 7-9	Years 10-12	Years 13-15 onwards	Stakeholders involved	New Implementation steps
2. Consensus on the predictive validity from emerging new data	2.1. Perform clinical intervention trials in stratified patient populations.						All stakeholders*	Performance of academic and/or industrial clinical intervention trials with biology-informed patient stratification.
	2.2. Obtaining regulatory approval for biomarkers, outcome measures and treatments.						Regulatory bodies	Having early, continuous regulatory discussions.

ECNP Precision Psychiatry Roadmap meeting 2025

In general, the recommendations emphasize **standardization, collaboration, clinical implementation, digital innovation, long-term planning, and, importantly, lived experience engagement**, as key priorities for advancing precision psychiatry.

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Biomarker innovations in precision psychiatry diagnostics and treatment strategies

Martien J.H. Kas ^{a,*} , Kim Q. Do ^b , Michael S. Sand ^c , Rouba Kozak ^d ,
Elizabeth M. Tunbridge ^e , Maria A. Oquendo ^f , Carol Tamminga ^g , Nikolaos Koutsouleris ^{h,m,n,o} ,
Gitte Moos Knudsen ⁱ , Brenda W.J.H. Penninx ^j , Frank J. Padberg ^k , Wayne C. Drevets ^l ,
Peter Falkai ^{m,p} , Derek L. Buhl ^q , Andreas Reif ^{r,s} 



ECNP Roundtable collaborative projects

Agreement to launch project:

1. Validating a Digital Endpoint for Social Functioning for Regulatory Approval

Projects currently under discussion:

1. Validating EEG-Based biomarkers for Cognitive Impairments
2. Platform for Collaborative Validation of Innovative Outcomes in Drug Development
3. Relevant Depression Symptom Dimensions – Expert Consensus

- ① Globally align on principles and procedures
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3. Implementation of an evolving biology-informed diagnostic framework	3.1. Incorporation of biological information in diagnostic classification and treatment guidelines.						American Psychiatric Association (APA), World Health Organisation (WHO), academic representatives, national clinical organisations	Roadmap steering committee members' involvement in the current future DSM strategic committee to implement the proposed framework.
	3.2. Developing strategies for implementation of precision diagnostics and treatments into health care practice.						Academic and industry representatives	Reach out to clinical organisations (e.g., EPA, APA, national societies) to disseminate knowledge, discuss and implement strategies necessary for health care implementation.



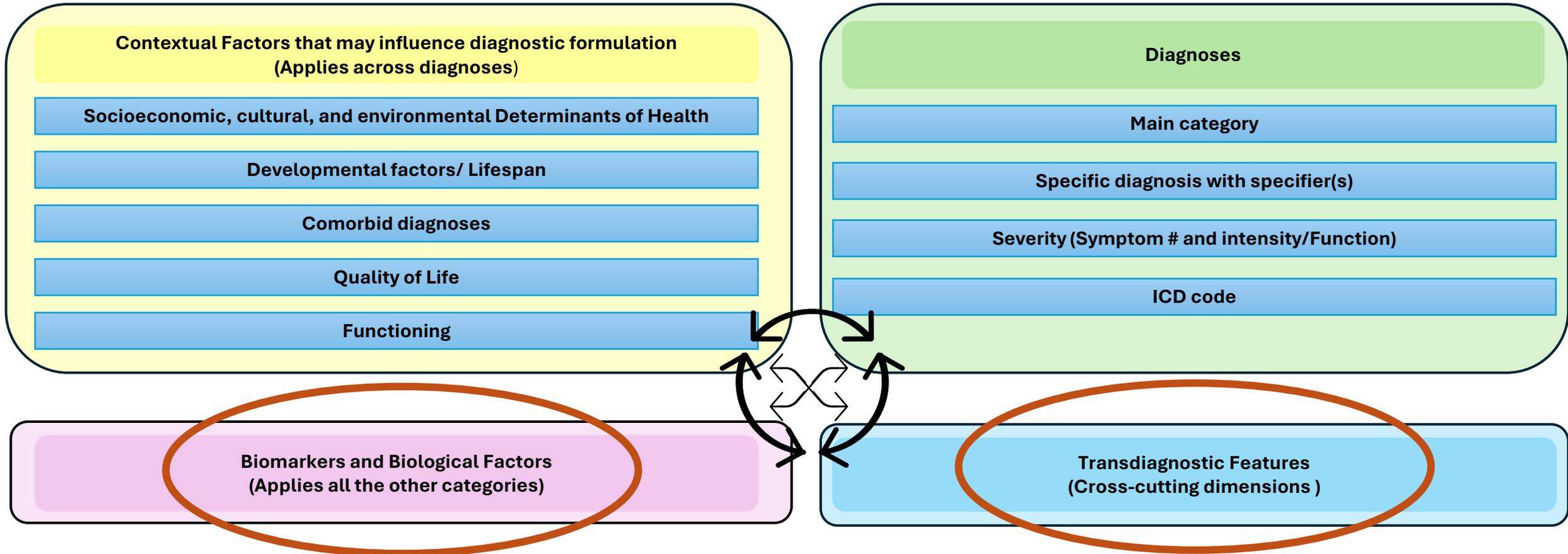
APA Releases Roadmap for the Future of the DSM

January 28, 2026

Washington, D.C. — The American Psychiatric Association (APA) has released a series of papers offering a proposed roadmap for the future of the Diagnostic and Statistical Manual of Mental Disorders (DSM). The papers are authored by members of the Future DSM Strategic Committee, chaired by Maria Oquendo, M.D., Ph.D., chair of psychiatry at the University of Pennsylvania Perelman School of Medicine, and [published online in the American Journal of Psychiatry](#).

The five papers, including the Initial Strategy for the Future of the DSM and four accompanying commentaries, are the result of the committee's year of structured debate and consideration of long-standing critiques and rapid scientific advances. They propose a forward-looking model for the evolution of the DSM. They also suggest changing the name from Diagnostic and Statistical Manual to Diagnostic and Scientific Manual to better reflect its scientific and global scope. The four accompanying papers address structure and dimensions of the DSM; the role of biomarkers and biological factors in diagnosis; vision for incorporating socioeconomic, cultural and

FUTURE DSM DIAGNOSTIC MODEL



Living document!

Acknowledgements

