



Articles

Establishment and Future Prospects of the Japanese Delirium Society

Takehiko Yamanashi¹, Ryoichi Sadahiro², Yoshitaka Nishizawa³, Miho Miyajima⁴, Katsuji Nishimura⁵, Kotaro Hatta⁶, Yasuhiro Kishi⁷, Gen Shinozaki⁸

¹ Neuropsychiatry, Tottori University, ² Psycho-Oncology, National Cancer Center Hospital, ³ Psychiatry, Osaka Medical and Pharmaceutical University, ⁴ Psychiatry and Behavioral Sciences, Tokyo Medical and Dental University, ⁵ Psychiatry, Tokyo Women's Medical University School of Medicine, ⁶ Psychiatry, Juntendo University Nerima Hospital, ⁷ Psychiatry, Nippon Medical School Musashikosugi Hospital, ⁸ Psychiatry and Behavioral Sciences, Stanford University School of Medicine

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Delirium

Delirium is a common neuropsychiatric syndrome with major consequences for patients, families, and healthcare systems. Japan has a rich history of delirium research and clinical activity, yet national coordination has been limited.

The DELIRIA-J research network has conducted multiple randomized controlled trials (RCTs),¹⁻³ and several Japanese academic societies have developed clinical guidelines⁴ and consensus statements on delirium.^{5,6} Building on these and other Japanese contributions, the Japanese Delirium Society (JDS) has been established to unify clinical practice, research, and education. This manuscript describes the historical background, highlights representative scientific accomplishments by Japanese investigators, outlines the organizational structure of JDS, and summarizes recent international engagement with the American Delirium Society (ADS) and Australasian Delirium Association (ADA). JDS is positioned to strengthen national collaboration and to contribute to global delirium science and care.

BACKGROUND: DELIRIUM IN JAPAN

Delirium is an acute and fluctuating disturbance of consciousness and cognition, affecting up to one in three hospitalized older adults. It is associated with prolonged hospital stays, increased morbidity and mortality, institutionalization, and higher healthcare costs.⁷⁻⁹ Despite its prevalence and impact, delirium is often under-recognized and undertreated in clinical practice.

Japan, with one of the world's fastest aging populations, faces a particularly urgent challenge in addressing delirium. Elderly individuals frequently require complex care in perioperative, oncological, and intensive care contexts, making delirium prevention and management a national health priority.

Japan hosts more than 80 medical schools and a large network of general hospitals, with many clinicians and researchers actively engaged in delirium research. Over the past two decades, Japanese investigators have made significant contributions to the global evidence base, including pioneering randomized controlled trials,¹⁻³ a systematic management program aimed at screening high-risk groups and preventing delirium,¹⁰ development of clinical guidelines, and translational work in biomarkers and neu-

rophysiology.¹¹⁻¹⁸ These activities set the stage for the formation of a dedicated national society.

HISTORICAL FOUNDATIONS: DELIRIA-J

The roots of the Japanese Delirium Society can be traced to the establishment of DELIRIA-J, a nationwide research consortium that emerged in 2011. Following the 2005 U.S. Food and Drug Administration (FDA) warning against the use of atypical antipsychotics in dementia patients due to increased mortality risk, Japanese clinicians sought safer and more effective strategies to manage delirium.

In response, the Japanese Society of General Hospital Psychiatry released clinical guidelines on delirium management,⁶ which provided a crucial reference point for everyday practice. From this initiative, the DELIRIA-J network was launched, connecting approximately 40 hospitals across the country.

DELIRIA-J became a highly productive research collaboration, conducting landmark studies with direct clinical relevance. One of the most impactful contributions was the randomized controlled trial of ramelteon for delirium prevention, published in *JAMA Psychiatry* in 2014.¹ This trial demonstrated a significant reduction in the incidence of delirium among hospitalized elderly patients. Subsequent trials explored other pharmacological options such as suvorexant^{2,3} and Yokukansan.¹⁹⁻²² Together, these studies positioned Japanese researchers at the forefront of global efforts to test preventive interventions.

REPRESENTATIVE SCIENTIFIC CONTRIBUTIONS BY JAPANESE INVESTIGATORS

Japanese researchers have contributed substantially to the global understanding of delirium across multiple domains. In the area of pharmacological interventions, randomized controlled trials of ramelteon¹ and suvorexant² have provided robust evidence supporting novel preventive ap-

proaches, offering alternatives to traditional antipsychotic-based strategies. Japanese investigators have also developed and evaluated the DELirium Team Approach (DELTA) program, a systematic management program aimed at screening high-risk patients and preventing delirium, which demonstrated the feasibility and clinical benefit of a structured, team-based prevention strategy.¹⁰ In addition to these advances, Japanese team have pioneered the development of the bispectral EEG (BSEEG), a simplified point-of-care neurophysiological tool that enables rapid bedside detection of delirium and prediction of clinical outcomes.¹¹⁻¹³ Complementary work in translational models has further demonstrated that rodent EEG alterations mirror those observed in humans, particularly under conditions of systemic inflammation, thereby providing mechanistic insights into delirium pathophysiology.^{14,23-25} More recently, genome-wide DNA methylation studies have begun to uncover epigenetic signatures of delirium, implicating immune and inflammatory pathways as critical biological substrates.^{15-18,26-31} Collectively, these contributions highlight the breadth of Japanese delirium research, spanning clinical trials, technological innovation, animal models, and molecular biology.

ESTABLISHMENT OF THE JAPANESE DELIRIUM SOCIETY (JDS)

The momentum generated by DELIRIA-J and broader Japanese research culminated in the establishment of JDS. Leadership includes President (Y. Kishi), Vice-President (K. Hatta), Advisor (K. Nishimura), and Secretary (G. Shinozaki). The founding membership spans ~25 institutions, including the Juntendo University Nerima Hospital, Nippon Medical University Musashikosugi Hospital, Tokyo Women's Medical University, Tottori University, Osaka Medical and Pharmaceutical University, National Cancer Center, and more.

Although psychiatrists represent the largest group, anesthesiologists, surgeons, nurses, pharmacists, researchers, and industry are included, reflecting delirium's multidisciplinary nature. The JDS establish meeting was held during the annual meeting of the Japanese Society of General Hospital Psychiatry in November 2024 in Kumamoto.

OPPORTUNITIES AND CHALLENGES FOR JDS

As with any newly established professional society, the Japanese Delirium Society faces both challenges and opportunities. A key challenge is the overlap with pre-existing organizations and meetings in Japan, which risks duplicating efforts and fragmenting the community. Ensuring sustainable funding is another pressing issue, as financial resources will be essential to support educational programs, annual conferences, and large-scale collaborative research initiatives. In addition, while psychiatrists currently form the core membership, expanding beyond psychiatry to fully incorporate anesthesiology, surgery, geriatrics, nursing, pharmacy, basic sciences, mental health officers of the Min-

istry of Health, Labour and Welfare, Japan, as well as active patient and public involvement, will be critical for building a truly multidisciplinary society. Such inclusivity is intended not only to advance clinical and scientific perspectives but also to address broader goals, including the reduction of healthcare costs and the sustainable maintenance of society. At the same time, JDS is uniquely positioned to seize important opportunities. Japan's extensive hospital network offers an unparalleled platform for conducting national multicenter trials, thereby generating high-quality, generalizable data. The society is also well placed to strengthen ties with international partners, particularly the American Delirium Society, the European Delirium Association, and the Australasian Delirium Association, creating avenues for joint symposia, research collaborations, and trainee exchanges. Looking further ahead, JDS aspires to host a World Delirium Conference in Japan, which would showcase the nation's contributions and establish it as a central hub for global delirium research and clinical innovation.

INTERNATIONAL ENGAGEMENT

As above, JDS will value an international collaboration. In 2025, Japanese investigators contributed to ADS meetings in Nashville, TN, USA, presenting several high impact research projects, ranging from pharmacologic RCTs, molecular investigation of pathophysiology, rodent model using BSEEG, and also cellular and epigenetic work.³¹ JDS members also participated in the ADA DECLARED conference in Cairns, Australia, highlighting Pan-Pacific collaborations. Such meetings facilitate harmonization of methodologies and establish a framework for joint trainee exchanges and multicenter protocols.

FUTURE DIRECTIONS

The Japanese Delirium Society has outlined a set of strategic goals that balance immediate priorities with longer-term aspirations. In the near term, the society aims to build a national training pipeline that equips clinicians across disciplines with standardized tools for delirium prevention, detection, and management. This includes disseminating practical resources such as delirium novel screening tools developed through recent research, integrating order sets into electronic medical records to support routine practice, and promoting the adoption of common data elements across multicenter studies to enable large-scale data harmonization. Over the longer term, JDS seeks to elevate the methodological rigor of delirium research by supporting pragmatic trial designs that bridge effectiveness with implementation science. Parallel efforts will focus on advancing biomarker development, including physiological markers such as EEG as well as molecular markers such as epigenetic signals, to improve risk stratification and mechanistic understanding. Finally, the society intends to formalize international liaisons with the American Delirium Society, the European Delirium Association, and the Australasian Delirium Association, with the goal of co-devel-

oping consensus statements and launching joint multicenter trials. These initiatives position JDS to not only improve delirium care in Japan but also to make substantive contributions to the global scientific community.

CONCLUSIONS

The establishment of JDS represents a pivotal step for delirium science and care in Japan. By unifying education, research, and clinical activities, JDS will accelerate national progress while contributing to international networks. With robust past achievements^{1-3,11-18} and a clear roadmap, JDS is well positioned to contribute in delirium prevention, detection, and treatment.

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REFERENCES

1. Hatta K et al. Preventive effects of ramelteon on delirium: a randomized placebo-controlled trial. *JAMA Psychiatry*. 2014;71(4):397-403. doi:[10.1001/jamapsychiatry.2013.3320](https://doi.org/10.1001/jamapsychiatry.2013.3320)
2. Hatta K et al. Preventive Effects of Suvorexant on Delirium: A Randomized Placebo-Controlled Trial. *J Clin Psychiatry*. 2017;78(8):e970-e979. doi:[10.4088/JCP.16m11194](https://doi.org/10.4088/JCP.16m11194)
3. Hatta K et al. Suvorexant for Reduction of Delirium in Older Adults After Hospitalization: A Randomized Clinical Trial. *JAMA Netw Open*. 2024;7(8):e2427691. doi:[10.1001/jamanetworkopen.2024.27691](https://doi.org/10.1001/jamanetworkopen.2024.27691). PMID:39150711
4. Matsuda Y et al. A revision of JPOS/JASCC clinical guidelines for delirium in adult cancer patients: a summary of recommendation statements. *Jpn J Clin Oncol*. 2023;53(9):808-822. doi:[10.1093/jjco/hyad042](https://doi.org/10.1093/jjco/hyad042)
5. 公益社団法人 日本麻酔科学会 安全委員会. 高齢者における術後せん妄の予防と治療のプラクティカルガイド. 日本麻酔科学会; 2024.
6. 日本総合病院精神医学会 せん妄指針改訂班. せん妄の臨床指針 - せん妄の治療指針 第2版. Vol 1. 星和書店; 2015.
7. Inouye SK. Delirium in older persons. *N Engl J Med*. 2006;354(11):1157-1165. doi:[10.1056/NEJMra052321](https://doi.org/10.1056/NEJMra052321)
8. Inouye SK, Westendorp RG, Saczynski JS. Delirium in elderly people. *Lancet*. 2014;383(9920):911-922. doi:[10.1016/S0140-6736\(13\)60688-1](https://doi.org/10.1016/S0140-6736(13)60688-1). PMID:23992774
9. Fong TG, Tulebaev SR, Inouye SK. Delirium in elderly adults: diagnosis, prevention and treatment. *Nat Rev Neurol*. 2009;5(4):210-220. doi:[10.1038/nrneurol.2009.24](https://doi.org/10.1038/nrneurol.2009.24). PMID:19347026
10. Ogawa A et al. Quality of care in hospitalized cancer patients before and after implementation of a systematic prevention program for delirium: the DELTA exploratory trial. *Support Care Cancer*. 2019;27(2):557-565. doi:[10.1007/s00520-018-4341-8](https://doi.org/10.1007/s00520-018-4341-8)
11. Shinozaki G et al. Delirium detection by a novel bispectral electroencephalography device in general hospital. *Psychiatry Clin Neurosci*. 2018;72(12):856-863. doi:[10.1111/pcn.12783](https://doi.org/10.1111/pcn.12783). PMID:30246448
12. Shinozaki G et al. Identification of Patients With High Mortality Risk and Prediction of Outcomes in Delirium by Bispectral EEG. *J Clin Psychiatry*. 2019;80(5).
13. Yamanashi T et al. Evaluation of point-of-care thumb-size bispectral electroencephalography device to quantify delirium severity and predict mortality. *The British Journal of Psychiatry*. 2022;220(6):322-329. doi:[10.1192/bjp.2021.101](https://doi.org/10.1192/bjp.2021.101)
14. Yamanashi T et al. Bispectral EEG (BSEEG) quantifying neuro-inflammation in mice induced by systemic inflammation: A potential mouse model of delirium. *J Psychiatr Res*. 2021;133:205-211. doi:[10.1016/j.jpsychires.2020.12.036](https://doi.org/10.1016/j.jpsychires.2020.12.036)
15. Shinozaki G et al. Epigenetics of Delirium and Aging: Potential Role of DNA Methylation Change on Cytokine Genes in Glia and Blood Along With Aging. *Front Aging Neurosci*. 2018;10:311.
16. Yamanashi T et al. DNA methylation in the inflammatory genes after neurosurgery and diagnostic ability of post-operative delirium. *Transl Psychiatry*. 2021;11(1):627. doi:[10.1038/s41398-021-01752-6](https://doi.org/10.1038/s41398-021-01752-6). PMID:34887385
17. Yamanashi T et al. The genome-wide DNA methylation profiles among neurosurgery patients with and without post-operative delirium. *Psychiatry Clin Neurosci*. 2023;77(1):48-55. doi:[10.1111/pcn.13495](https://doi.org/10.1111/pcn.13495). PMID:36266784
18. Nishizawa Y et al. Epigenetic signals associated with delirium replicated across four independent cohorts. *Transl Psychiatry*. 2024;14(1):275. doi:[10.1038/s41398-024-02986-w](https://doi.org/10.1038/s41398-024-02986-w). PMID:38965205
19. Wada S et al. Yokukansan for Treatment of Preoperative Anxiety and Prevention of Postoperative Delirium in Cancer Patients Undergoing Highly Invasive Surgery. J-SUPPORT 1605 (ProD Study): A Randomized, Double-Blind, Placebo-Controlled Trial. *J Pain Symptom Manage*. 2021;61(1):71-80. doi:[10.1016/j.jpainsymman.2020.07.009](https://doi.org/10.1016/j.jpainsymman.2020.07.009)
20. Sadahiro R et al. Prevention of delirium with agitation by yokukansan in older adults after cancer surgery. *Jpn J Clin Oncol*. 2022;52(11):1276-1281. doi:[10.1093/jjco/hyac123](https://doi.org/10.1093/jjco/hyac123). PMID:35907781
21. Tanio A et al. A Prospective Randomized Study of the Herbal Medicine Yokukansan for Preventing Delirium After Gastrointestinal Cancer Surgery. *Yonago Acta Med*. 2023;66(4):432-439. doi:[10.33160/yam.2023.11.008](https://doi.org/10.33160/yam.2023.11.008). PMID:38028268

22. Sugano N et al. Randomized phase II study of TJ-54 (Yokukansan) for postoperative delirium in gastrointestinal and lung malignancy patients. *Mol Clin Oncol.* 2017;7(4):569-573. doi:[10.3892/mco.2017.1357](https://doi.org/10.3892/mco.2017.1357). PMID:28855990
23. Nishiguchi T et al. Lipopolysaccharide-Induced Delirium-Like Behavior and Microglial Activation in Mice Correlate With Bispectral Electroencephalography. *J Gerontol A Biol Sci Med Sci.* 2024;79(12). doi:[10.1093/gerona/glae261](https://doi.org/10.1093/gerona/glae261). PMID:39492697
24. Nishiguchi T et al. The Bispectral Electroencephalography Method Quantifies Postoperative Delirium-Like States in Young and Aged Male Mice After Head-Mount Implantation Surgery. *J Gerontol A Biol Sci Med Sci.* 2024;79(8). doi:[10.1093/gerona/glae158](https://doi.org/10.1093/gerona/glae158). PMID:38877811
25. Nishiguchi T et al. The age-related susceptibility to postoperative delirium quantified by bispectral electroencephalography correlates with postoperative delirium-like behavior in mice. *PCN Rep.* 2025;4(3):e70142. doi:[10.1002/pcn5.70142](https://doi.org/10.1002/pcn5.70142). PMID:40625340
26. Saito T et al. The relationship between DNA methylation in neurotrophic genes and age as evidenced from three independent cohorts: differences by delirium status. *Neurobiol Aging.* 2020;94:227-235. doi:[10.1016/j.neurobiolaging.2020.06.003](https://doi.org/10.1016/j.neurobiolaging.2020.06.003). PMID:32650186
27. Saito T et al. Epigenetics of neuroinflammation: Immune response, inflammatory response and cholinergic synaptic involvement evidenced by genome-wide DNA methylation analysis of delirious inpatients. *J Psychiatr Res.* 2020;129:61-65. doi:[10.1016/j.jpsychires.2020.06.005](https://doi.org/10.1016/j.jpsychires.2020.06.005). PMID:32590150
28. Yamanashi T et al. DNA methylation in the TNF-alpha gene decreases along with aging among delirium inpatients. *Neurobiol Aging.* 2021;105:310-317. doi:[10.1016/j.neurobiolaging.2021.05.005](https://doi.org/10.1016/j.neurobiolaging.2021.05.005)
29. Wahba NE et al. Genome-wide DNA methylation analysis of post-operative delirium with brain, blood, saliva, and buccal samples from neurosurgery patients. *J Psychiatr Res.* 2022;156:245-251. doi:[10.1016/j.jpsychires.2022.10.023](https://doi.org/10.1016/j.jpsychires.2022.10.023). PMID:36270064
30. Nishizawa Y et al. The Genome-wide DNA methylation changes in gastrointestinal surgery patients with and without postoperative delirium: Evidence of immune process in its pathophysiology. *J Psychiatr Res.* 2024;177:249-255. doi:[10.1016/j.jpsychires.2024.07.013](https://doi.org/10.1016/j.jpsychires.2024.07.013)
31. Ishii T et al. Glial Contribution to the Pathogenesis of Post-Operative Delirium Revealed by Multi-omic Analysis of Brain Tissue from Neurosurgery Patients. *bioRxiv.* Published online 2025. doi:[10.1101/2025.03.13.643155](https://doi.org/10.1101/2025.03.13.643155). PMID:40161597