

# Temporomandibular Disorders

## PRIORITIES FOR RESEARCH AND CARE

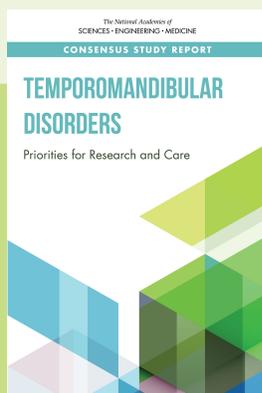
## ACTION GUIDE Researchers and Research Funders

*Temporomandibular disorders (TMDs) make up a set of more than 30 health disorders associated with both the temporomandibular joint and the muscles and tissues of the jaw. TMDs have a range of causes and often co-occur with a number of overlapping medical conditions. Because TMDs are not one disorder or disease, patients vary considerably in their initial symptoms and in the type of health care professional from whom they first seek care.*

*Significant opportunities are available for research across many fields of medicine, dentistry, other health sciences, and other areas of science to gain a better understanding of the complex biopsychosocial mechanisms underlying TMDs; develop an evidence base for care; and improve the implementation of best practices of care for individuals with a TMD.*

**Temporomandibular Disorders: Priorities for Research and Care** calls on a number of stakeholders—across medicine, dentistry, and other fields—to improve the health and well-being of individuals with a TMD.

For more information, visit [nationalacademies.org/tmd](https://nationalacademies.org/tmd)



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## Research Silos and Divided Care

Studying TMDs from only a singular research perspective has been insufficient to fully understand the causes of TMDs and how these disorders affect patients' lives. This is particularly relevant when it comes to evaluating treatment options provided by dentists and medical professionals. For example, dentists may study TMDs as a jaw issue, psychologists may exclusively consider the mental health implications, and medical researchers may study the mechanics of pain modulation, all of them without considering the larger considerations of TMDs on overall patient well-being. This is not to say that these individual studies are not valuable—each plays a role in growing the scientific evidence base related to TMDs—but each alone has proved to be insufficient for developing a full understanding of TMDs and how they affect the lives of individuals.

Because TMDs are not one disorder or disease, patients vary considerably in their initial symptoms and in the type of health care professional from whom they first seek care. Also for this reason, neither the dental nor the medical model of care alone truly fits the needs of many TMD patients. To better address patient needs, research should focus on a biopsychosocial model of TMDs that is interdisciplinary and bridges medicine and dentistry to address total health and well-being.

## Priorities for TMD Research

Despite the significant burden and often life-changing impact of TMDs and orofacial pain, relatively little is known about the neurobiology of temporomandibular joint tissues in health and in disease. As with many complex disorders featuring acute and chronic pain, understanding the pathophysiology of TMDs requires an in-depth understanding of the mechanisms of pain and their role at different levels, from a cellular to an inter-system level.

Clinicians cannot provide and patients cannot access safe and effective clinical treatment and care without a strong base of scientific evidence—from the basic sciences through to implementation research. Despite the work accomplished in the last few decades, there remain significant research gaps and systematic challenges related to translation across the basic, clinical, and epidemiological sciences that are hindering the development of safe and effective treatments for individuals with TMDs and that indicate the need for greater research coordination and translation.

# ACTIONS NEEDED

## RECOMMENDATION 1

A National Collaborative Research Consortium for TMDs, led by NIH along with other funders, should be established and sustained to coordinate, fund, and translate basic and clinical research (including behavioral, population-based, and implementation research) to address evidence gaps, generate clinically meaningful knowledge, identify safe and effective treatments, and improve the quality of TMD care.



### Consortium priorities:

- Establish and implement a national research framework for TMDs
- Provide infrastructure for the implementation of research projects
- Establish milestones and timelines
- Facilitate research collaborations
- Develop public-private partnerships
- Develop and test evidence-based strategies for knowledge transfer
- Support the development of a multidisciplinary research workforce for TMDs through existing and new training and center initiatives
- Evaluate progress and disseminate research findings

## RECOMMENDATION 2

The National Collaborative Research Consortium for TMDs along with others should fund basic research efforts and ensure translation as part of a patient-focused, multidisciplinary research agenda on TMDs to address evidence gaps, generate clinically meaningful knowledge, identify effective treatments, and improve quality of care.



### Major areas of need:

- Developmental biology and regenerative medicine
- Orofacial neurobiology research
- Neuroimmune research
- Neuroendocrine research
- Research on sex differences
- Omics and biomarker research
- Clinical trials
- Population-based epidemiological research

## RECOMMENDATION 3

The National Collaborative Research Consortium for TMDs along with others should fund clinical and implementation research to clearly define effective treatments and continuously improve the quality of care for patients with a TMD.



### Near-term efforts should:

- Explore and develop pilot projects on TMD treatment effectiveness and implementation
- Develop common data standards for TMD research, including validating existing standards and developing new ones for all research on TMDs.

## CONCLUSION

*Despite investment in research directly and indirectly related to TMDs, researchers have yet to unravel the causes or physical changes that lead to TMDs or to meaningfully translate research findings into improved clinical care practices. Fresh ideas and multiple disciplines are needed to advance TMD research to improve patient care. Given the number of individuals suffering from TMDs, there is a significant opportunity for NIH and other biomedical research institutions to drive increased funding to TMDs in order to spark new research interest and discoveries. To read the full report and view related resources, please visit [nationalacademies.org/tmd](https://nationalacademies.org/tmd).*