During sedation or altered levels of consciousness, the jaw can relax allowing the tongue and soft tissues to obstruct the airway. This can result in catastrophic consequences such as cardiac arrest and severe hypoxemic brain damage. Currently, a patient's airway must be continually monitored by a trained staff member because there are no standard airway support devices.

The Solution

A University of Michigan team, Kevin Ward, M.D., Albert Shih, Ph.D., and Jeff Plott, M.S., developed Airway Cradle, a low cost, disposable, adjustable device that will serve as a replacement for the manually performed Jaw Thrust Maneuver.

This new hands-free device is an external appliance capable of lifting the jaw upwards by using the mid-face as a stable fulcrum and negating the need for someone to actively hold the mandible forward. Because it is non-invasive, there is no risk of nose bleed, aspiration, or invoking a gag reflex and vomiting—side effects caused by current standard of care options.

Airway Cradle offers fast implementation and removal and can also be designed with ports or clips that allow for the provision of oxygen as well as carbon dioxide monitoring.

This project was funded by the University of Michigan Translational Research and Commercialization for Life Sciences Program, also known as MTRAC. MTRAC works to “fast forward” projects that have a high potential for commercial success, with the ultimate goal of positively impacting human health.

MTRAC has been made possible by the Michigan Economic Development Corporation, the Michigan Institute for Clinical and Health Research, and the generosity of friends of the University of Michigan.
Significant Need
Presently, there are no universally used standard airway support devices for patients experiencing procedural sedation, general anesthesia, or altered mental status due to alcohol/drug intoxication. Airway Cradle offers a low-cost, disposable, adjustable device that will replace the manually performed Jaw Thrust Maneuver.

Compelling Science
An external appliance capable of lifting the jaw upwards by using the mid-face as a stable fulcrum.

Competitive Advantage
Airway Cradle negates the need for someone to actively hold the jaw forward and is non-invasive, so there is no risk of nose bleed, aspiration, or invoking a gag reflex and vomiting—side effects caused by current standard of care options.

MTRAC Project Key Milestones

Develop prototype
Obtain IRB approval
Submit design to manufacturer
Test device on patients to confirm functionality, then continue testing including use with Ambu bag
Engage industry partners
Incorporate design feedback
Negotiate license agreement
Prepare for production

Overall Commercialization

Commercialization Strategy
Manufacturer relationship formed, given approval to proceed

Intellectual Property
Patent filed

Engage Investors
Use study data to seek additional investment and licensing opportunities

Regulatory Pathway
Class 1 Medical Device, 510K exempt

MTRAC funding has been essential in being able to create our 3-D prototype designs. And the mentorship and support provided are critical and have helped guide us as we design, test, and work to make this a commercially available product that could potentially help tens of thousands of patients.

Kevin Ward, M.D.
Albert Shih, Ph.D.
Jeff Plott, M.S.