

New device shortens chest-tube insertion to seconds, follows wave of stabbing attacks

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Students at the Hebrew University's BioDesign program developed ThoraXS, a one-handed thoracic portal opener that shortens the procedure time of chest-tube insertion from minutes to less than 30 seconds. Credit: The Hebrew University of Jerusalem

Pneumothorax is a medical emergency: the collection of air in the pleural space separating the lung from the chest wall, causing it to collapse and resulting in suffocation. Pneumothorax is caused by chest

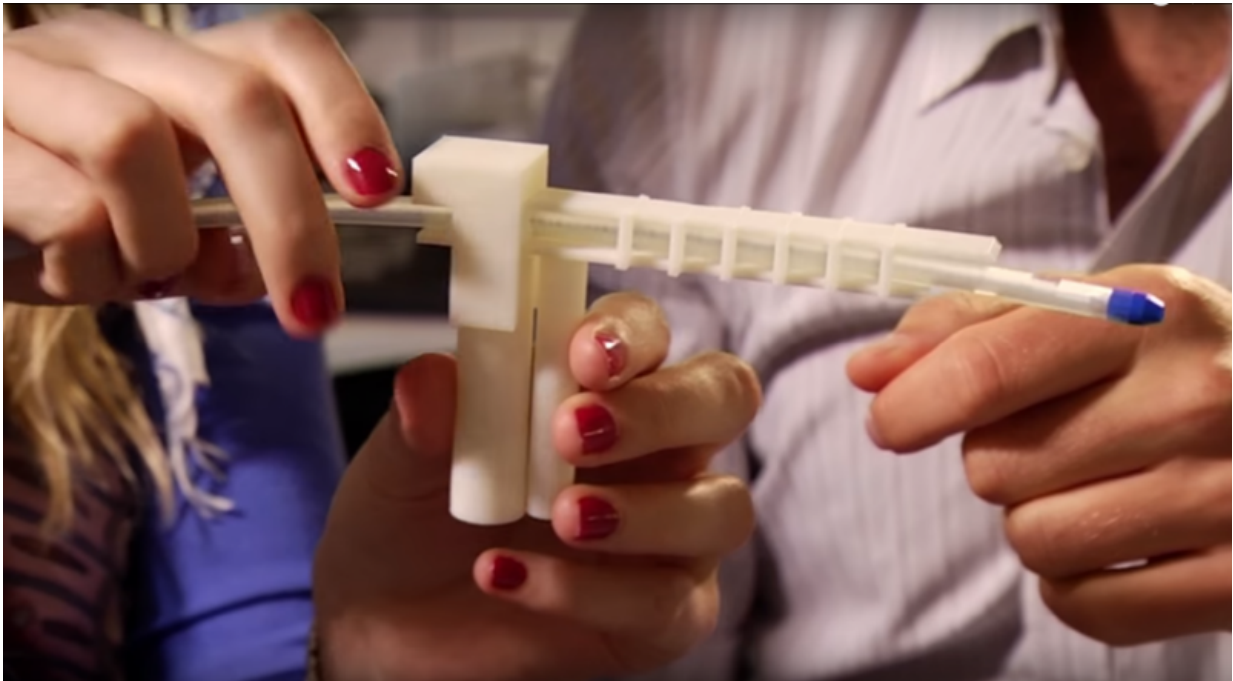
trauma, and is believed to be responsible for over a third of preventable deaths on the battlefield and in terror attacks.

The current treatment involves two steps: a fast needle decompression of the thorax (between the neck and abdomen, where the lungs and other vital organs are located), followed by a 10-minute tissue separation and tube insertion procedure into the chest to drain air and blood, allowing the lung to re-inflate.

"This is a very laborious and technically difficult procedure," said Dr. Ariel Drori, an internal medicine expert at Hadassah Medical Center, "leading caregivers to neglect the second step in favor of rapid evacuation from the scene to the hospital."

The need for an alternative solution was made evident by a recent wave of stabbing attacks that left dozens of Israeli civilians dead or wounded. Members of the BioDesign: Medical Innovation program, created by The Hebrew University of Jerusalem and its affiliated Hadassah Medical Center, set out to solve this problem.

To address this challenge, Dr. Drori partnered with Yoav Kan-Tor and Bettina Nadorp, engineering students at The Hebrew University's Alexander Grass Center for Bioengineering, along with Dr. Liran Levy, a pulmonologist from Hadassah Medical Center, and Chen Goldstein, an MBA student at The Hebrew University. Together they developed ThoraXS.



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ThoraXS is a one-handed thoracic portal opener that shortens the procedure time of chest-tube insertion from minutes to less than 30 seconds. Its closed knife-shape allows fast penetration of the pleural space, and its mechanical opening mechanism enables rapid and easy opening of a portal through which a chest tube can be quickly inserted. ThoraXS is thus a single-step, rapid life-saving solution for treating pneumothorax.

Prof. Yaakov Nahmias, director of the Hebrew University's Alexander Grass Center for Bioengineering, said: "Our students responded to [terror attacks](#) by developing life-saving medical devices, an approach that is the

very essence of our BioDesign: Medical Innovation program. ThoraXS is a life-saving innovation that exemplifies our commitment to helping the local and global communities through practical research and development projects."

Nahmias added that ThoraXS's market potential was estimated at \$300 million annually, and that continued investment is actively being sought.

Provided by Hebrew University of Jerusalem

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