A 16-year-old teenager with exceptionally keen intellect has now devised a solution to spot the unnoticed but fatal silent heart attacks. Akash Manoj, a school student from Hosur, Tamil Nadu has developed a skin patch made of Silicon membrane that can non-invasively detect heart attacks six hours before it happens.

With identifiable symptoms like chest pain, difficulty in breathing, and pain in the left arm, patients of heart attack can get immediate medical help but more deadly are ‘Silent Heart Attacks’ which appear asymptomatic and are often neglected and mistaken for indigestion, nausea, muscle pain or a bad case of the flu.

Silent heart attacks are sudden and put you at a greater risk of having another heart attack, increase complications which may lead to heart failure. Because of lack of visible symptoms, Electrocardiogram or Echocardiogram is the only way to detect silent heart attacks, but that may be too late sometimes.
A 16-year-old teenager with exceptionally keen intellect has now devised a solution to spot the unnoticed but fatal silent heart attacks. Akash Manoj, a school student from Hosur, Tamil Nadu has developed a skin patch made of Silicon membrane that can non-invasively detect heart attacks six hours before it happens. This patch can be attached to relatively thin skin exposures like back of the ear or the wrist.

FAB3 protein is a blood biomarker of heart attack. The levels of this protein increase alarmingly at the onset of cardiac ischemia. Akash’s pathbreaking heart device can frequently analyse the presence of FAB3 protein without puncturing the skin. A positively charged electric impulse will be released by the skin patch, which will attract the negatively charged FAB3 protein released by the heart to signal a heart attack. This device can measure the amount of FAB3 in patient’s blood when coupled with trans-cutaneous UV-protein quantification, and warn him/her about the risk of silent heart attack. The patient should get an immediate medical attention if the quantity of this protein is high.

It took Ashok Manoj two years to develop this novel device. He used to read medical literature for fun when he was in the eighth grade. The sudden demise of his grandfather after a silent heart attack prompted him to learn as much as he could on cardiovascular science at the age of 13.

For his innovation, he was invited to the palatial Rashtrapati Bhavan in New Delhi as a guest of Former President Shri Pranab Mukherjee for two weeks under the ‘Innovation-Scholar In-Residence Programme’. He also bagged the gold medal at the hands of President Shri Ram Nath Kovind for his invention.

Tokyo University of Science, London’s Royal Society of Medicine and Delhi’s All India Institute of Medical Sciences have already given the clinical validation to Manoj’s innovation. He is now in the process of getting his invention patented. The revolutionary device is expected to surface this year with a price of just Rs. 900 and potentially save the lives of thousands of people in India every year.

With a motive to keep the device cost-effective and its outreach to the remotest parts of the country, Manoj wants the government to promote his invention and not the private industry.

Contributed by Sonam Choudhary, Former Research Intern, CSIR-NISCAIR.