



doi: 10.15173/sw.v1i5.4052

## First Breaths and Second Chances

Author: Arun Nadarajah<sup>1</sup>

<sup>1</sup>McMaster University, Faculty of Science, Bachelor of Science (Honours) 2028

Illustrator: Anson Lim<sup>2</sup>

<sup>2</sup>McMaster University, Faculty of Science, Bachelor of Science (Honours) 2028

Breathing is something most of us never think about. It is an instinctive action we perform subconsciously. But when our bodies can't do it on their own, machines can be used to assist. Endotracheal mechanical ventilation (EMV) is a process in which tubes and machines help us breathe. For premature babies, this is a common solution to counter the side effects of early birth. EMV forcefully allows struggling babies to breathe, at the risk of damaging their fragile lungs. Premature babies are born with underdeveloped organs, and EMV can be a matter of life and death. The risk

of unintended lung damage can be reduced with a gentler solution, also

known as Non-invasive High-Frequency Ventilation (NIHFV). Researchers conducted a study to confirm that NIHFV could be an effective aid to premature babies who cannot breathe independently. 79 cases were studied where doctors used NIHFV instead of EMV. The team recorded each baby's age, weight, and medical condition before they were treated. This helped distinguish cases, such as whether the treatment was planned or an emergency. It also accounted for the variability of health conditions caused by early birth. In more than half of the cases, babies using NIHFV successfully stayed off breathing tubes and had more consistent breathing patterns. Most importantly, there was no unintended lung damage. NIHFV is a promising approach that shows progress toward refined healthcare. For a group of newborns who face the lowest odds of survival, this can be the difference between surviving and truly living.

