

Christchurch Hospital Intensive Care Unit

# The “CURE Study”

# Getting mechanical ventilation right for ICU patients

Intensive care doctors and nurses use ventilators to support a person’s breathing in intensive care. Pneumonia, trauma, inflammation, or too much fluid in the lung stops it from working properly. When this happens the lung gets “stiff”; this makes breathing difficult. Some people with stiff lungs will need their breathing helped by a ventilator. However, the ventilator, keeping them alive, may make their lungs worse. High breathing volumes and/or pressures can damage stiff lungs. Unfortunately, the lung can’t be rested and immobilised like a broken bone, so it is very important we ensure the ventilator does not cause more lung injury.

Our research aims to find out if people receiving mechanical ventilation in intensive care are helped by keeping their lung stiffness as low as possible to minimise the damage done to the lung by the ventilator.

The lung’s stiffness, or *elastance*, can be measured directly at the bedside using a laptop computer. A setting on a ventilator called “positive end expiratory pressure” or “PEEP”, which controls the pressure in the lung at the end of each breath, can be adjusted so that the lung’s stiffness is kept as low as possible.

Currently, doctors have no standard way of selecting PEEP, so they use their best guess. Every person’s lung is different, and his or her lung condition may also change during their stay in ICU. Therefore, choosing the level of PEEP can be tricky, and it might not always be right.

You may be asked by a staff member to consider your friend/relative/whanau participating in the CURE trial (**C**linical **U**tilisation of **R**espiratory **E**lastance). Specifically, this study is finding out whether a computer-based method of PEEP selection can improve the care of people who are ventilated in a randomised control trial. Your relative or friend may be allocated to either A) a standard ventilation treatment or B) a ventilation treatment using a computerised method, which selects PEEP according to how stiff their lungs are. A randomised trial means every person, who is eligible to take part in this study, has an equal chance of receiving either treatment. This means the results of this research are not influenced by the ICU doctors or nurses.

Thank you for considering your friend/relative/whanau’s participation in this research study.

If you have any questions or concerns about this study, please contact the Principal Investigator:

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