Prehospital continuous positive airway pressure for acute respiratory failure: the ACUTE feasibility RCT

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Disclaimer: This report contains transcripts of interviews conducted in the course of the research and contains language that may offend some readers.

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Plain English summary

The ACUTE feasibility RCT

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Plain English summary

Acute respiratory failure is a life-threatening medical emergency. It occurs when heart or lung disease suddenly develops, or deteriorates, and leads to the patient being unable to maintain oxygen levels in their blood. Continuous positive airway pressure is a potentially useful treatment that could be used by paramedics. It involves delivering oxygen under increased pressure through a tight-fitting face mask. However, it is uncertain whether or not it could work effectively in NHS ambulance services, or if it represents value for money.

The Ambulance continuous positive airway pressure (CPAP): Use, Treatment Effect and economics (ACUTE) trial investigated whether or not it is possible and worthwhile to undertake a full-scale study comparing continuous positive airway pressure with normal paramedic treatment. Paramedics identified adults with acute respiratory failure when attending 999 emergency calls. Half were randomly assigned to receive continuous positive airway pressure, whereas the other half were treated normally. Patients were then followed up to see what happened to them.

Fewer patients than expected were entered into the trial, but paramedics were able to provide treatment with continuous positive airway pressure, and most patients were successfully followed up. It therefore seems possible to do a full-scale trial. A cost-effectiveness model also showed that it is uncertain whether or not continuous positive airway pressure represents value for money for the NHS, so further research might be worthwhile, if continuous positive airway pressure is thought to be effective.

However, examination of patients recruited to the trial uncovered important doubts about whether or not continuous positive airway pressure would help them. One-quarter of patients were not able to tolerate the tight continuous positive airway pressure mask. Some of the patients had conditions that are not usually treated by continuous positive airway pressure, or had severe underlying disease that could not be helped by this treatment. Others had collapsed lungs that could have been made worse by continuous positive airway pressure. This means that, although a full-scale trial may be possible, it is difficult to see how continuous positive airway pressure could save enough lives to make a trial worthwhile.

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This report

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