

## Closed-loop communication during out-of-hospital resuscitation: Are the loops really closed?

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### Abstract

*Training for effective communication in high-stakes environments actively promotes targeted communicative strategies. One oft-recommended strategy is closed-loop communication (CLC), which emphasises three components to signal understanding: call-out, checkback and closing of the loop. Using CLC is suggested to improve clinical outcomes, but research indicates that medical practitioners do not always apply CLC in team communication. Our paper analyses a context in which speakers' linguistic choices are guided by explicit recommendations during training, namely out-of-hospital cardiac arrest (OHCA) resuscitation. We examined 20 real-life OHCA resuscitations to determine whether paramedics adopt CLC in the critical first five minutes after the arrival of the designated team leader (a paramedic specially trained in handling OHCA resuscitation), and what other related communication strategies may be used. The findings revealed that the standard form of CLC was not consistently present in any of the resuscitations despite opportunities to use it. Instead, we found evidence of non-standard forms of CLC and closed-ended communication (containing the first two components of standard CLC). These findings may be representative of what happens when medical practitioners communicate in time-critical, real-life contexts where responses to directives can be immediately observed, and suggest that CLC may not always be necessary for effective communication in these contexts.*

*Keywords: closed-loop communication; dialogue annotation/dialogue coding; out-of-hospital cardiac arrest resuscitation; paramedic team communication*

### 1. Introduction

Medical miscommunication has been identified as a dominant cause of patient death or permanent loss of function (Joint Commission on Accreditation of Healthcare Organizations 2016). Problems of ineffective communication are also an issue in other 'high-reliability' fields, such as engineering and aviation (Flin *et al.* 2008): for example, the Three Mile Island nuclear accident of 1979 has been traced to non-optimal communication in letters prior to the incident, and a fatal collision between two Boeing 747 aeroplanes in 1977 was later revealed to have been a result of miscommunication between a pilot and an air traffic controller (Riley 1993; Cushing 1994). The increased awareness of the importance of accurate and effective communication in high-risk domains has led to the development and implementation of various communication strategies designed to minimise the risk of unwanted outcomes.

#### 1.1. The closed-loop communication strategy

A strategy often recommended for effective communication in high-risk domains is closed-loop