

## Mouth-to-mouth ventilation reduces interruptions in chest compressions during lifeguard CPR: A randomized manikin study

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### Introduction

The quality of cardiopulmonary resuscitation (CPR) is a crucial determinant of the outcome following cardiac arrest. Interruptions in chest compressions are detrimental. The aim of this study was to compare the effect of mouth-to-mouth ventilation (MMV), mouth-to-pocket-mask ventilation (MPV) and bag-mask ventilation (BMV) on CPR quality.

### Materials and methods

Surf lifeguards in active service were included in the study. Each surf lifeguard was randomized to perform three sessions of single rescuer CPR using each of the three ventilation methods (MMV, MPV and BMV) separated by five minutes of rest. Data were obtained from a resuscitation manikin and video recordings.

### Results

In total 50 surf lifeguards were included (35 males, 15 female, mean age 25.4 years). Interruptions in chest compressions were significantly reduced by MMV (8.6±1.6 sec) when compared to MPV (10.7±3.2 sec,  $p<0.001$ ) and BMV (12.4±3.6 sec,  $p<0.001$ ). No significant differences were observed in chest compression depth and rate. Significantly more effective ventilations (visible chest rise) were delivered using MMV (93%) when compared to BMV (59%,  $p<0.0001$ ) while no difference were observed when compared to MPV (80%,  $p=0.14$ ). Tidal volumes were significantly lower following BMV (0.42±0.16 L,  $p<0.001$  for both) compared to MMV (0.65±0.21 L) and MPV (0.62±0.26 L), while no difference were observed when comparing MMV and MPV.

### Conclusion

MMV reduces interruptions in chest compressions during lifeguard CPR. Furthermore, MMV seems to result in a higher proportion of effective ventilations. Our results suggest that CPR quality is improved using MMV compared to MPV and BMV.

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