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To The Editor:

Performance of chest compressions during prehospital transport is an underinvestigated issue. The recent publications by Stone and Thomas on resuscitation in ambulances and helicopters are, therefore, of great importance, and I know of only one report from another author on this subject.[1–4]

Please allow me some constructive criticism and some questions that possibly could be answered by Stone and Thomas in the Forum section of *Prehospital and Disaster Medicine.*

Their study on chest compressions in ambulances does not mention the type of ambulance used, the speed of the moving ambulance, and the success of chest compressions in a standing ambulance. It showed that chest compressions are difficult to perform in a moving ambulance, but does not answer the question of whether the problems are related to the movement, the ambulance design, or both.[1]

An influence of ambulance size and design is quite possible because the same authors showed differences between two types of helicopters.[2] If the ambulance design is the main problem, which could be shown by similar low rates of correct compressions in a standing and a moving ambulance, better ambulances would be an adequate solution. A pressure-sensing device, which was used successfully for two minutes in the "cramped quarters of the BO-105," seems a suboptimal solution because of the high physical demands to the operator.[3]

An influence of speed was shown by Greenslade who reported greater difficulties when driving over 30 mph, but this report is only qualitative and does not mention the type of ambulance used.[4] If the ambulance movement is the main problem, transport in a helicopter, preferably in a MBB BK-117 or something similar, would be a solution.[2] Obviously this is not always possible. A lower speed is another solution that also reduces the risks to the operator who stands in an ambulance driven with warning lights and siren. However, a lower speed prolongs transport, and this could be detrimental for the patient even if it is associated with better quality of chest compressions.

So pneumatic devices are probably the best solution to the problem because they might enable a better quality of chest compressions, allow the operator to be seated, and free the operator for other tasks. Further studies on this subject are needed.

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To the Editor:

The fact that mask ventilation with more than 20 mbar risks gastric insufflation has been known for more than 30 years, but often is forgotten. The publications by Weiler et al and Devitt et al are important because they remind us of a common and dangerous complication that also occurs with the laryngeal mask.[1–3] Weiler et al propose limitation of pressure to 20 mbar during mask ventilation and a reduction in tidal volumes during cardipulmonary resuscitation.[1] We agree to this and want to add some aspects.

There is at least one manufacturer that implements 20 mbar pressure-release valves (that can be switched to 60 mbar for intubated patients) in both automated and manual ventilators (Medumat–®: and Combigag®: Weinmann, Kronsaalasweg, D-22502-Hamburg, Germany).[4–6] These devices are far from perfect, but they are able to prevent gastric insufflation. Their main disadvantage is the lack of a loud audible control of the pressure-release valve as realized in 1959 by Lucas.[7]

Recently, we tested 10 manual ventilators.[8] We did not measure pressures but found that the Weinmann Combibag® limited tidal volumes to 1,100 ml on a Laerdal Recording Resusci® Anne. Use of ventilation bags without pressure-release valves resulted in tidal volumes up to 1,500 ml. It should be noted, however, that 20% of the ventilations with the Combibag® were below 500 ml, and the device got a bad handling assessment. Both problems might be overcome by training and the above-mentioned implementations of an audible control of the pressure-release valve.

Another interesting device in our test was the prototype bellows ventilator Cardiovent® (Kendall, Raffineriestr., D-93333-Neustadt, Germany). The 40-mbar pressure-release valve of the prototype does not prevent gastric insufflation, but the tidal volume can be adjusted in 200-ml steps. It allows controlled tidal volumes of about 500 ml with mask ventilation, as proposed by Weiler et al, and tidal volumes of 800–1,200 ml after intubation with the same ventilator.