

CORRESPONDENCE

The World Health Organisation surgical safety checklist does not reduce mortality in general surgery

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Editor—We read with great interest the article by Abbott and colleagues¹ about the patient outcomes after surgery and the use of the World Health Organisation (WHO) surgical safety checklist. The authors found that the use of WHO checklist was associated with reduced mortality and postoperative complications.

The WHO checklist is now adopted and implemented world-wide.¹ As a consequence, we agree with the authors that randomised trials with patients randomly exposed or not exposed to the WHO checklist are no longer possible.¹ Furthermore, the meta-analysis of Abbott and colleagues¹ showed a great heterogeneity ($I^2 > 80\%$), probably this finding may influence the results.

With this premise in mind, we implemented the study by Abbott and colleagues¹ dividing the analysis according to the types of surgical procedures and to the study designs to find if they may have a potential influence on the results. Additionally, as the WHO checklist compliance was very different among the included studies, we performed a meta-regression analysis to evaluate if the checklist compliance may affect the risks of mortality and postoperative complications.

We allocated the considered studies according to the study designs and the types of surgical procedures. Two studies clearly stated to include patients undergoing non-cardiac surgery,^{2,3} two studies included patients undergoing any surgical procedures including cardiac,^{4,5} one study included only neurosurgical procedures,⁶ one study only gastrointestinal surgical procedures,⁷ one study involved non-day case surgery and patients undergoing more than one procedure during the study period.⁸ As a consequence, we considered the other three studies, involving more than one surgery without the need for rescheduled or second procedures, as general surgery.^{9–11} Concerning the study design, three studies had a

before/after design,^{4,10,11} three studies were retrospective,^{4,5,8} two studies were prospective,^{1,12} one was a case-control study,⁷ and one study was longitudinal.¹¹

In our random effects meta-analysis, we found that WHO checklist was associated with: (i) reduced mortality in non-cardiac surgery [odds ratio (OR) 0.644; 95% confidence interval (CI) 0.587–0.706; $P < 0.001$] and any surgery (OR 0.758; 95% CI 0.600–0.957; $P < 0.001$) but not in general surgery (OR 1.179; 95% CI 0.607–2.253; $P = 0.0004$; Fig. 1); (ii) reduced mortality in prospective (OR 0.535; 95% CI 0.347–0.825; $P = 0.01$) and retrospective studies (OR 0.838; 95% CI 0.706–0.995; $P = 0.012$) but not in before/after studies (OR 1.090; 95% CI 0.774–1.598; $P = 0.429$; Supplementary Fig. S1); (iii) reduced postoperative complications in general surgery (OR 0.619; 95% CI 0.433–0.885; $P = 0.08$) but not in any surgery (OR 0.704; 95% CI 0.480–1.032; $P = 0.429$) and in before/after studies (OR 1.012; 95% CI 0.974–01.052; $P < 0.001$; Supplementary Fig. S2). In our random effect meta-regression (Supplementary Fig. S3), we found that the risks of mortality ($P = 0.069$, $\beta = -0.007$) and of postoperative complications ($P = 0.268$, $\beta = 0.008$) were not affected by the WHO checklist compliance.

To date, this is: (i) the first meta-analysis dividing the studies about the WHO checklist according to the study design and type of surgery; and (ii) the first meta-regression evaluating the effect of checklist compliance of mortality and postoperative complications. Interestingly, we found that the use of WHO checklist may affect the mortality in selected types of surgical procedures and study designs. Furthermore, the reduced risk of postoperative complications was statically significant only in general surgery. According to our meta-regression, these results were not affected by the WHO checklist compliance, but were mainly influenced by the heterogeneity of study designs and included populations.

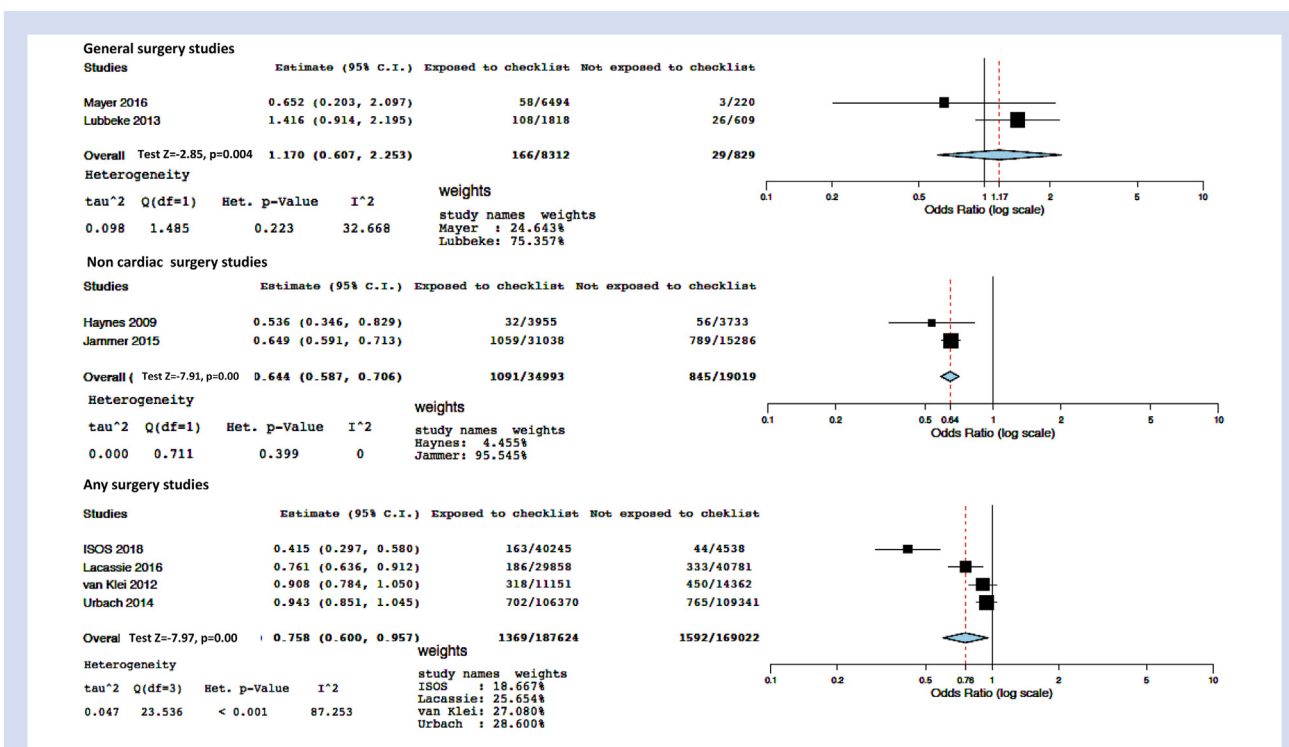


Fig 1. Forest plot for meta-analysis of exposure to surgical safety checklist and relative risk of postoperative mortality in general surgery studies, non-cardiac surgery studies, any surgery studies from the top to the bottom.

This meta-analysis had different limitations. The categorisations according to the type of surgical procedures and to the study design resulted in a small number of studies included for each planned subgroup analyses. The great heterogeneity of the results was a limitation even in this analysis; however, our results of mortality in non-cardiac surgery and in the postoperative complications in any surgeries showed an $I^2 < 25\%$.

In conclusion, the WHO checklist may improve the postoperative outcomes, but further prospective studies in selected types of surgical procedures are needed to better clarify its effectiveness.

Declaration of interest

None declared.

Appendix A. Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.bja.2018.02.003>.

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