Background
Preoperative airway assessment, registered in the Danish Anaesthesia Database (DAD), is based on a non-specified clinical assessment. No objective evaluation of a non-specified preoperative clinical airway assessment exists in the literature. The purpose of this study was to analyse the diagnostic value of a clinical assessment for prediction of difficult airway management (DAM), secondly to determine the proportion of unanticipated DAM.

Method
A cohort of 182,050 tracheal intubated patients from June 1st 2008 to June 1st 2011 was extracted from the DAD. Data from the preoperative airway assessment were compared with the actual conditions of airway management, described by objective scores for intubation and mask ventilation, respectively.

Results

Difficult intubation:
The proportion of difficult intubations (DI) was 1.86 % (1.80 - 1.92 %). Of which 93 % (92 - 94 %) was unanticipated and only 7 % (6 - 8 %) of the DI was correctly predicted. DI occurred in 25 % (22 - 28 %) of the anticipated cases. Likelihood ratio for a positive test for DI was 17.28 (14.94 - 19.98). Despite anticipation of DI in 48 % (46 - 51%) of these cases intubation by direct laryngoscopy was first choice of attempt.

Difficult mask ventilation:
The proportion of difficult mask ventilation (DMV) was 0.66 % (0.62 - 0.70 %) and 94 % (92 - 96 %) was unanticipated. Thus, only 6 % (4 - 8 %) of DMV was correctly predicted. The predictive value of a positive anticipation of DMV was 22 % (17 - 29 %). Likelihood ratio for a positive test for DMV was 43.68 (32.01 - 59.60).

Conclusion
Anticipation of DAM increases the likelihood of a difficult airway, suggesting the relevance of a preoperative airway assessment. In a clinical context, however, the low positive predictive values and the high proportions of unanticipated DAM downplay its value. Better prediction of DAM is needed. Randomized trials comparing a non-specified clinical assessment with objective predictive models, e.g. the Simplified Airway Risk Index, are warranted.