**Supplementary Online Content**

**eTable 1**: Complete PubMed and EMBASE search strategies

| **PubMed search terms** | **EMBASE search terms** |
|---|---|
| surgery OR surgical OR surgeries OR admit* OR admission* OR "patient admission"[MeSH Terms]<br><br>AND<br><br>weekend* OR weekday* OR Monday OR Tuesday OR Wednesday OR Thursday OR Friday OR Saturday OR Sunday OR "day* of the week" OR "day* of week" OR "After-Hours Care"[MeSH Terms]<br><br>AND<br><br>mortalit* OR "Mortality"[MeSH Terms] OR death* OR outcome* OR complication* OR complications[Subheading] | weekend* OR weekday* OR Monday OR Tuesday OR Wednesday OR Thursday OR Friday OR Saturday OR Sunday OR "day* of the week" OR "day* of week" OR "After-Hours Care"<br><br>AND<br><br>exp surgery OR exp hospital admission OR surgery OR surgeries OR surgical OR admit* OR admission*<br><br>AND<br><br>exp mortality OR exp surgical mortality OR exp adverse outcome OR exp complication OR mortalit* OR death* OR complication* |

**eTable 2**: Criteria for classifying risk of bias

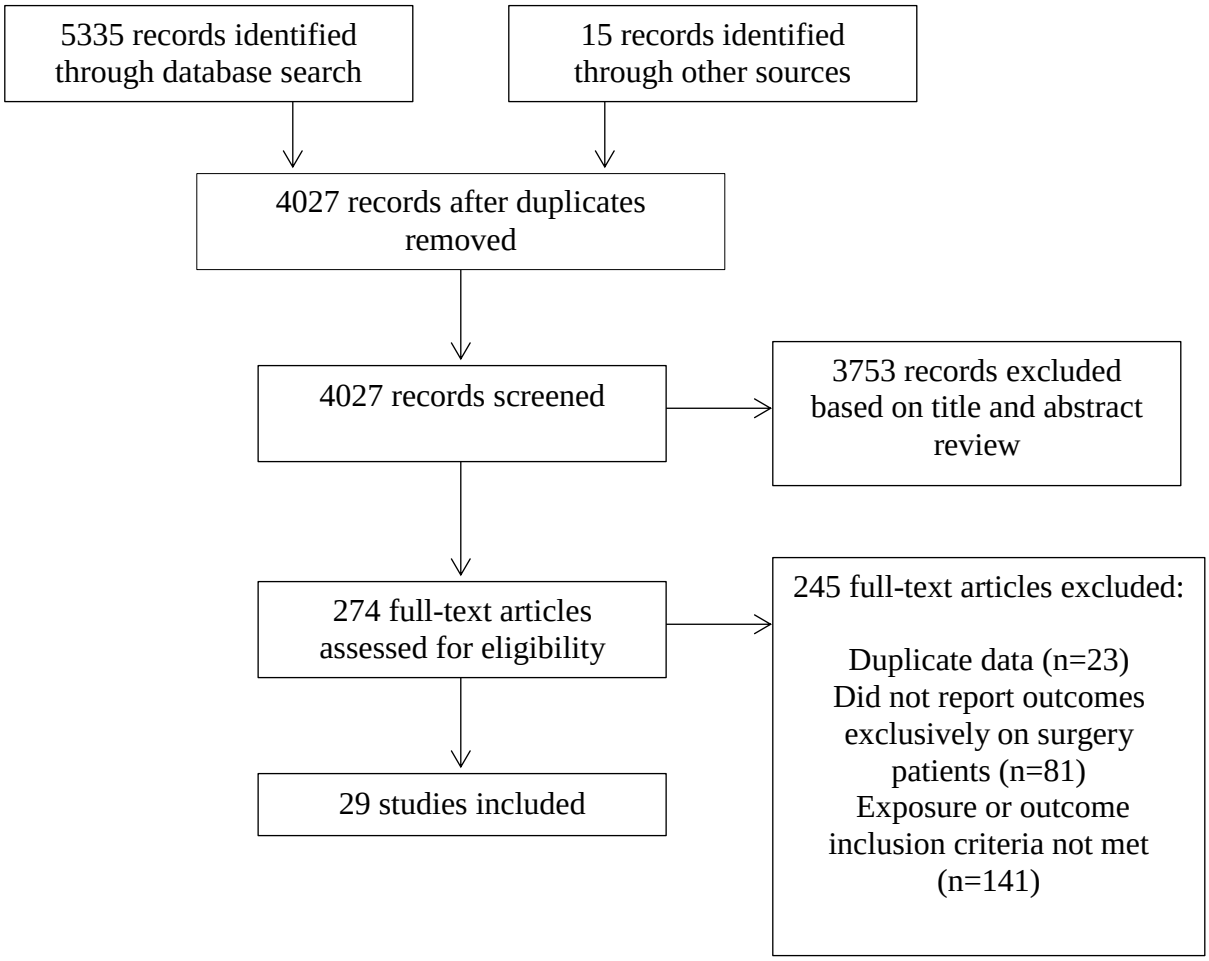
| **Area of potential bias** | **Classification procedure** |
|---|---|
| Study participation | Study classified as low risk of bias if all of the following criteria met:<br><br>1) Clear inclusion and exclusion criteria.<br>2) Bias in elective versus urgent/emergent categorization minimized as evidenced by:<br>a) Elective versus urgent/emergent categorization coded prospectively before study initiation; or<br>b) Clear and well defined procedures described to minimize bias in coding elective versus emergent status.<br>3) Source population and sampling frame adequately defined.<br>4) Complete capture of eligible individuals or adequate procedures to minimize bias introduced by non-capture of eligible individuals.<br>5) No restriction by time between admission and surgery for emergency analysis (e.g. did not limit analysis to patients who had surgery on day of admission). |
| Attrition | Study classified as low risk of bias if any of the following criteria met:<br><br>1) Study reported on in-hospital mortality.<br>2) Reported adequate procedures to ensure minimal loss to follow-up or reported loss to follow-up with data suggesting no important differences existed between those lost to follow-up and remainder of cohort. |
| Outcome measurement | Study classified as low risk of bias if a clear definition of short-term mortality was applied uniformly across study participants. |
| Confounding measurement and account | Study classified as low risk of bias if all of the following potentially important confounders were accounted for (by either restriction, matching, or adjustment) in the analysis: age, sex, surgery type or procedural risk, hospital teaching status or hospital characteristics, and patient comorbid status. |
| Statistical analysis | Study classified as low risk of bias if the statistical model was adequate for the study design and there was no selective reporting of pertinent results. |

**eTable 3.** Risk of bias assessment

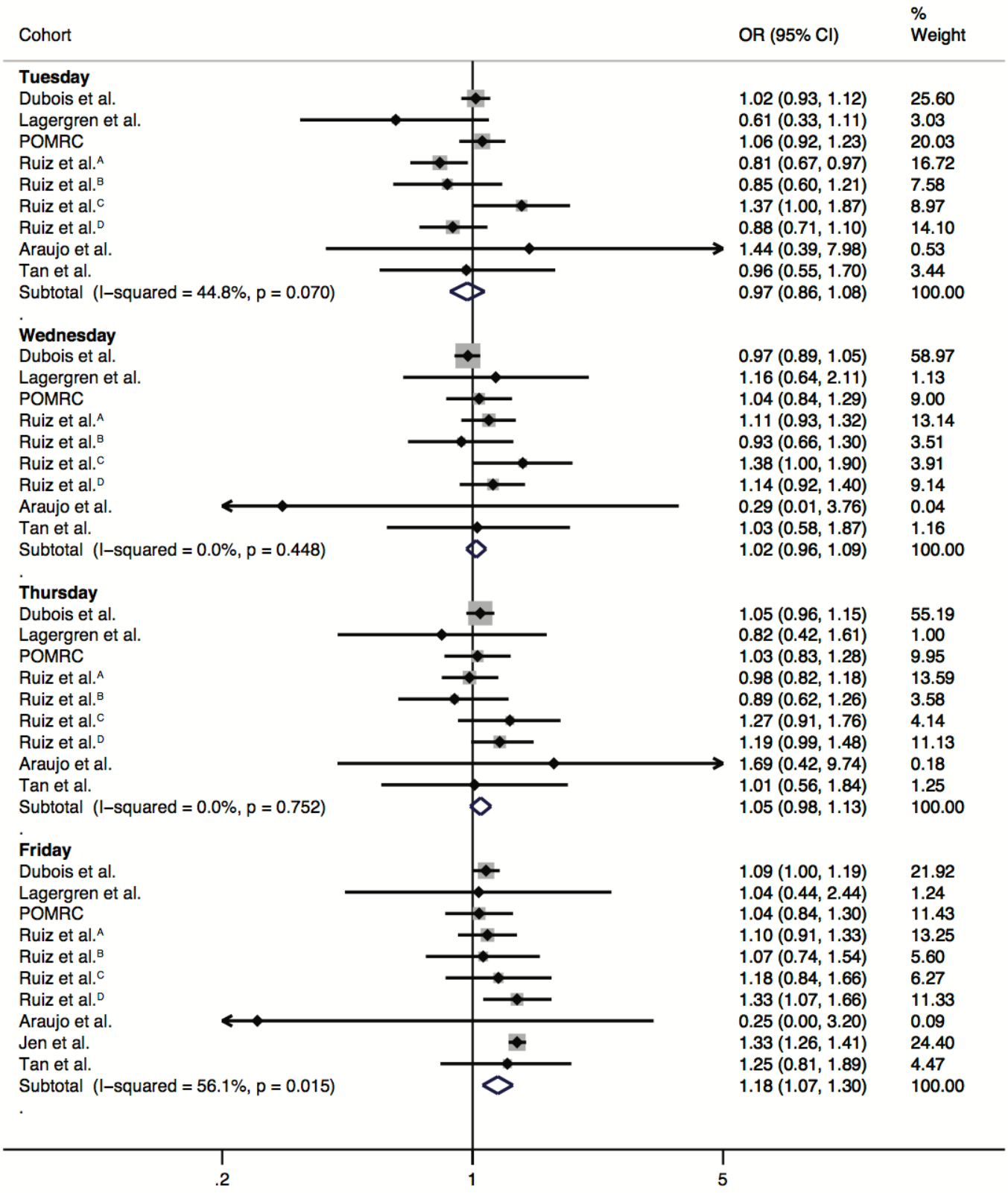
| Risk of bias* by potential source | Elective Surgery Studies | Dubois et al | Lagergren et al | POMRC | Vohra et al | Ruiz et al | Ruiz et al | McIsaac et al | Araujo et al | Jen et al | Tan et al | Urgent/Emergent Surgery Studies | Rumalla et al | Hoehn et al | Ozdemir et al | Khoshchehreh et al | Kristiansen et al | Glance et al | Zapf et al | Knudsen et al | Boylan et al | Thomas et al | Karthikesalingam et al | Mell et al | Goldstein et al | Nandyala et al | Ananthakrishnan et al | Worni et al | Worni et al | Dasenbrock et al | Foss et al |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Participation** | | H | L | H | L | L | L | L | U | U | U | | L | L | L | L | L | H | H | L | L | L | L | L | H | L | H | L | L | L | L |
| **Attrition** | | L | L | L | L | L | L | L | U | U | L | | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L |
| **Outcome Measurement** | | L | L | L | L | L | L | L | L | U | L | | L | H | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L |
| **Statistical Analysis** | | L | L | L | L | L | L | L | L | H | L | | L | L | H | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | H |
| **Confounding Measurement and account** | | L | H | H | H | L | L | L | H | U | H | | L | L | H | L | L | H | H | H | L | L | H | H | L | H | L | L | L | L | H |

L = low risk of bias; H = high risk of bias; U = unclear risk of bias; POMRC = Perioperative Mortality Review Committee (New Zealand)
*Refer to Supplementary Table 2 for criteria for classifying bias

**eFigure 1.** Study selection flowchart

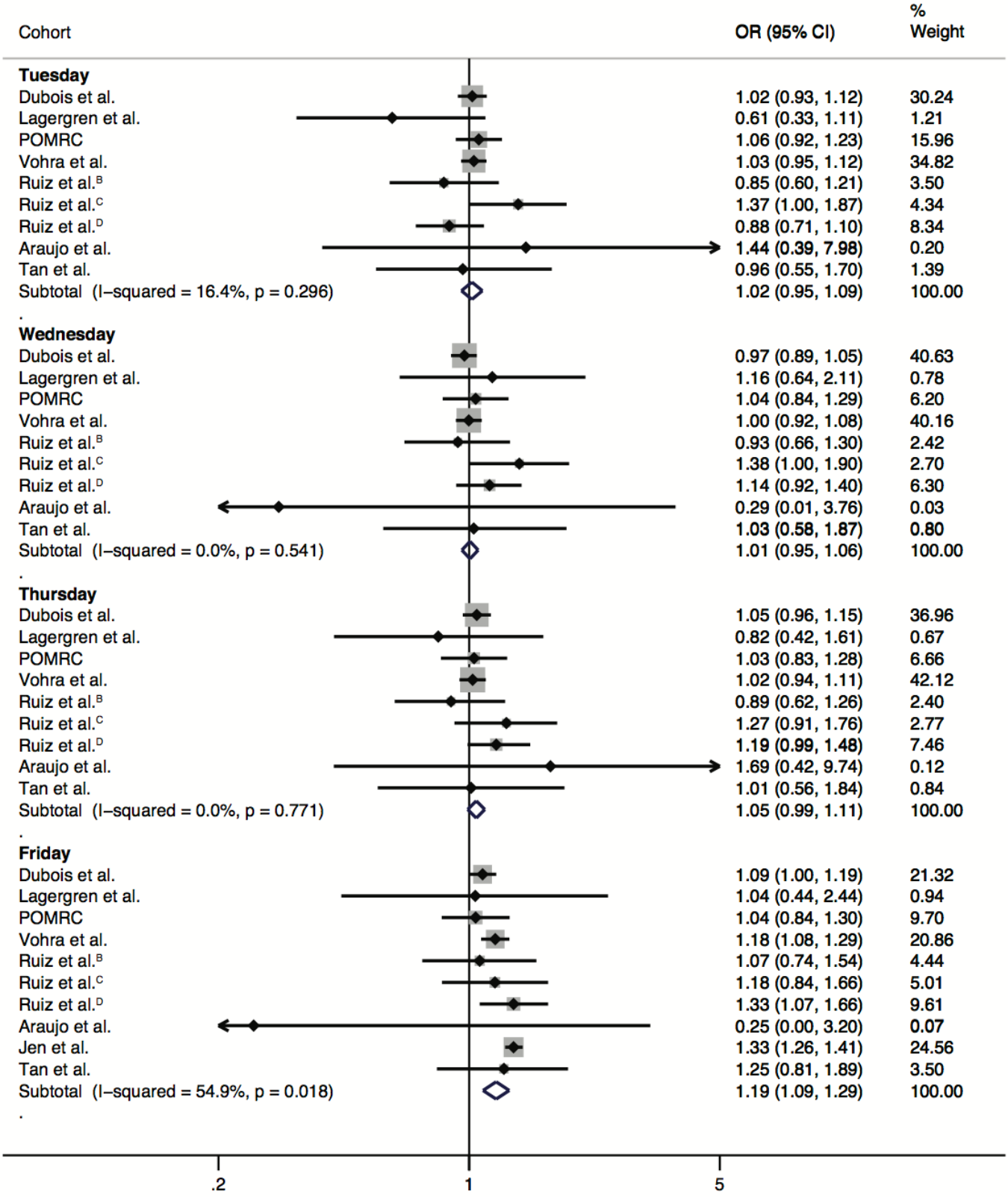


**eFigure 2**. Elective surgery sensitivity analysis incorporating results of a smaller cohort (Ruiz et al[3] cohort A) in the place of a larger cohort included in the main analysis (Ruiz et al[22]) that potentially included duplicate patients



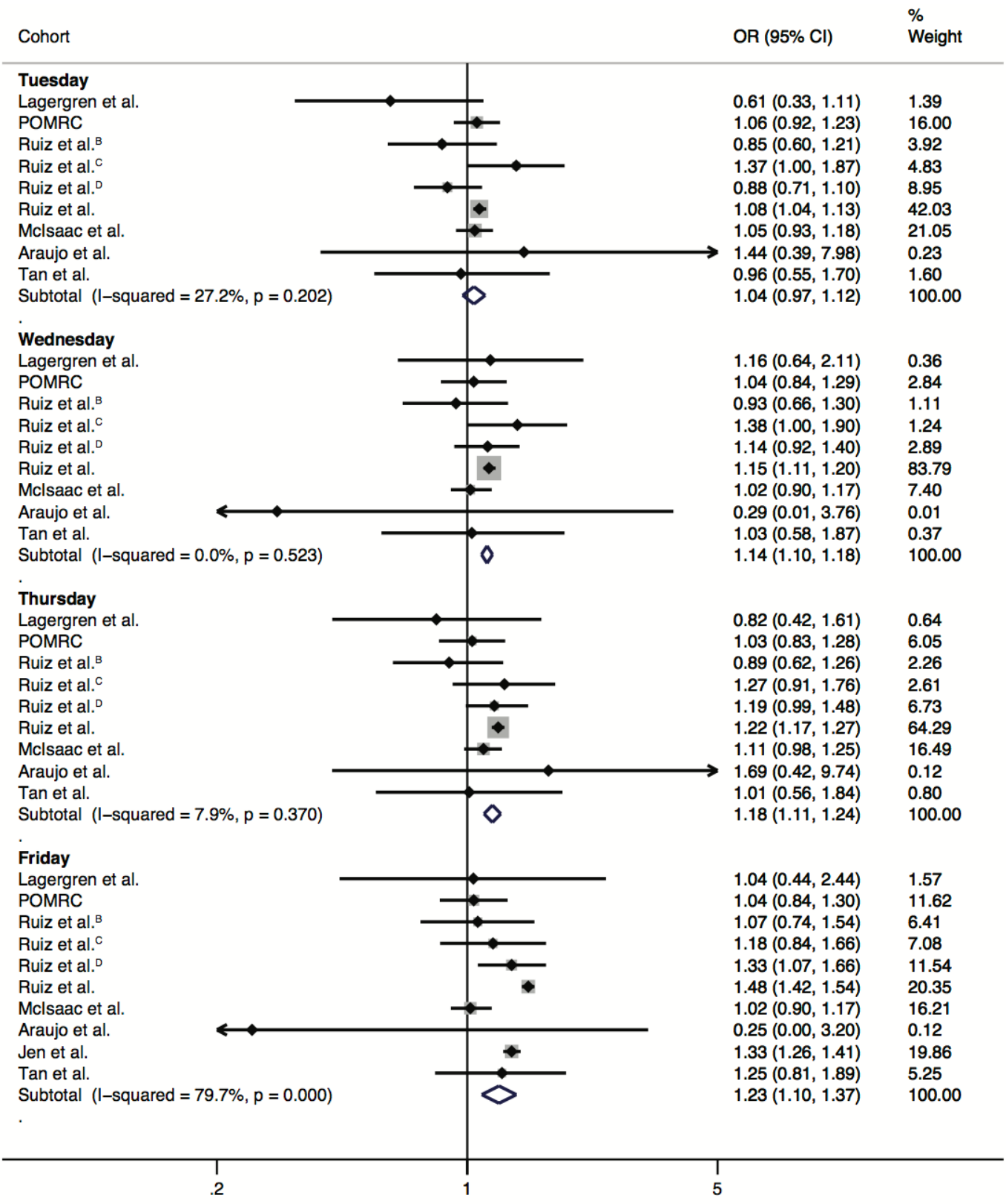

A,B,C,D Discrete cohorts from single study as specified in Table 1

**eFigure 3.** Elective surgery sensitivity analysis incorporating results of a smaller cohort (Vohra et al[25]) in the place of a larger cohort included in the main analysis (Ruiz et al[22]) that potentially included duplicate patients

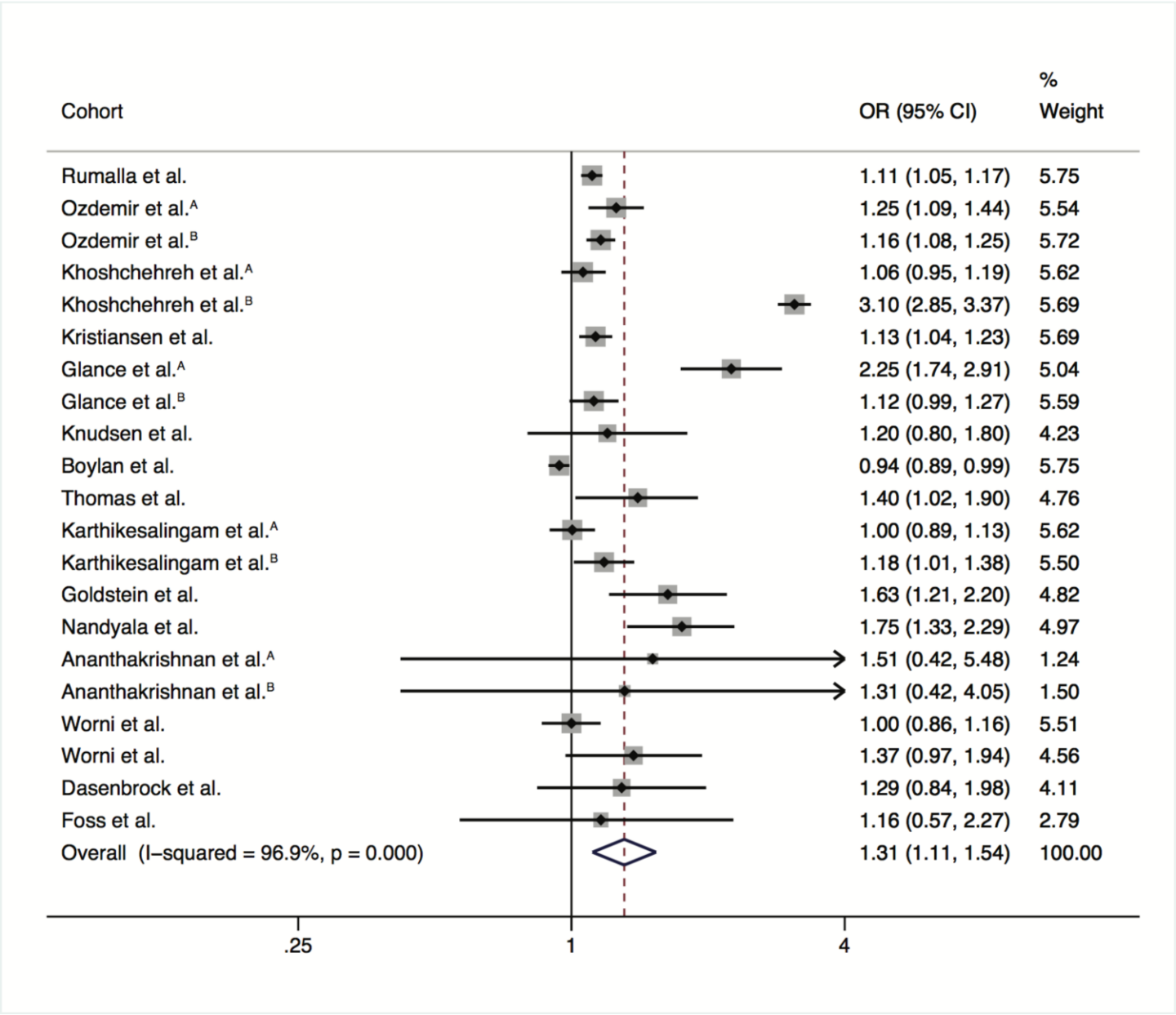



[B,C,D] Discrete cohorts from single study as specified in Table 1

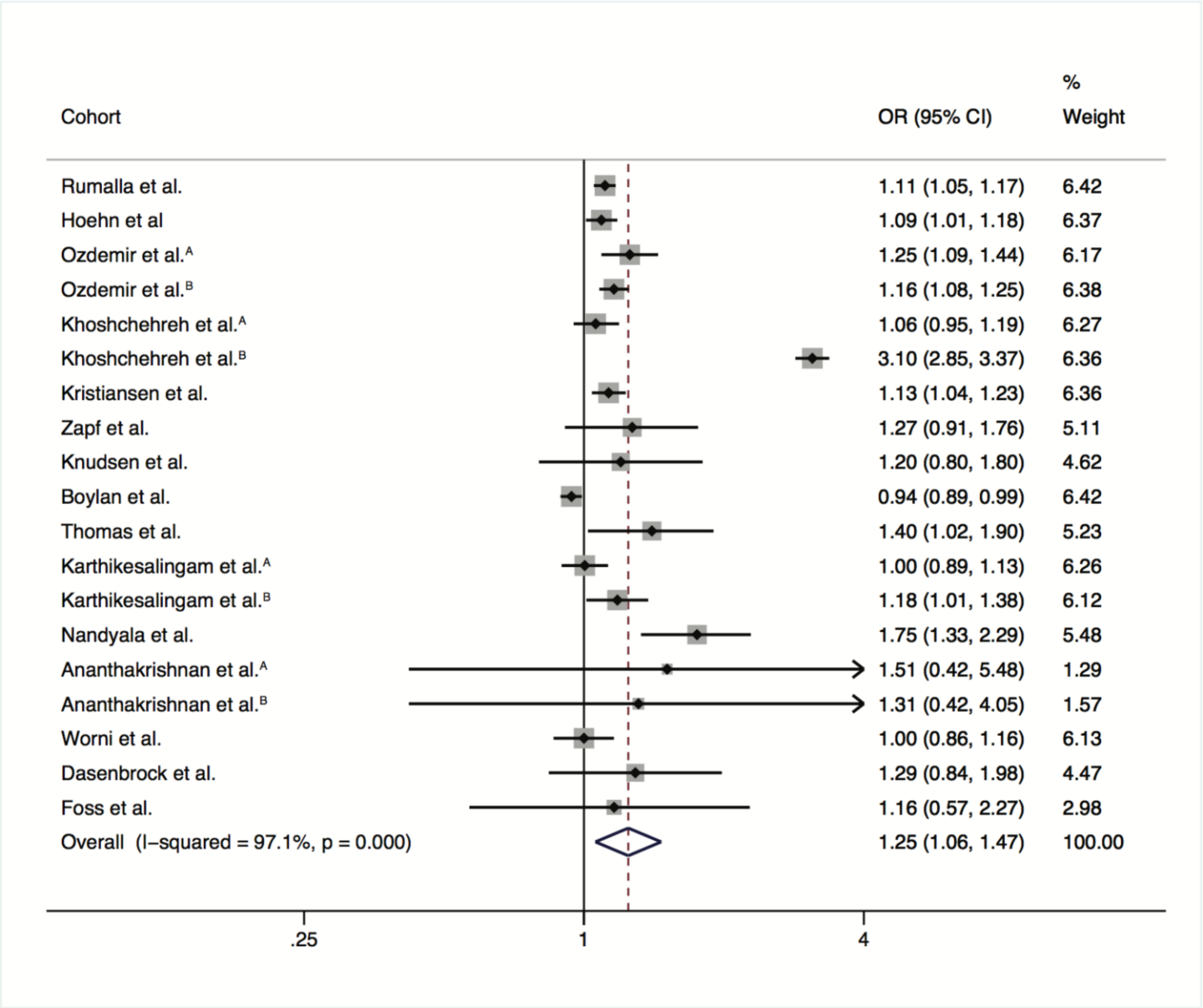
**eFigure 4.** Elective surgery sensitivity analysis incorporating results of a smaller cohort (McIsaac et al[12]) in the place of a larger cohort included in the main analysis (Dubois et al[31]) that potentially included duplicate patients



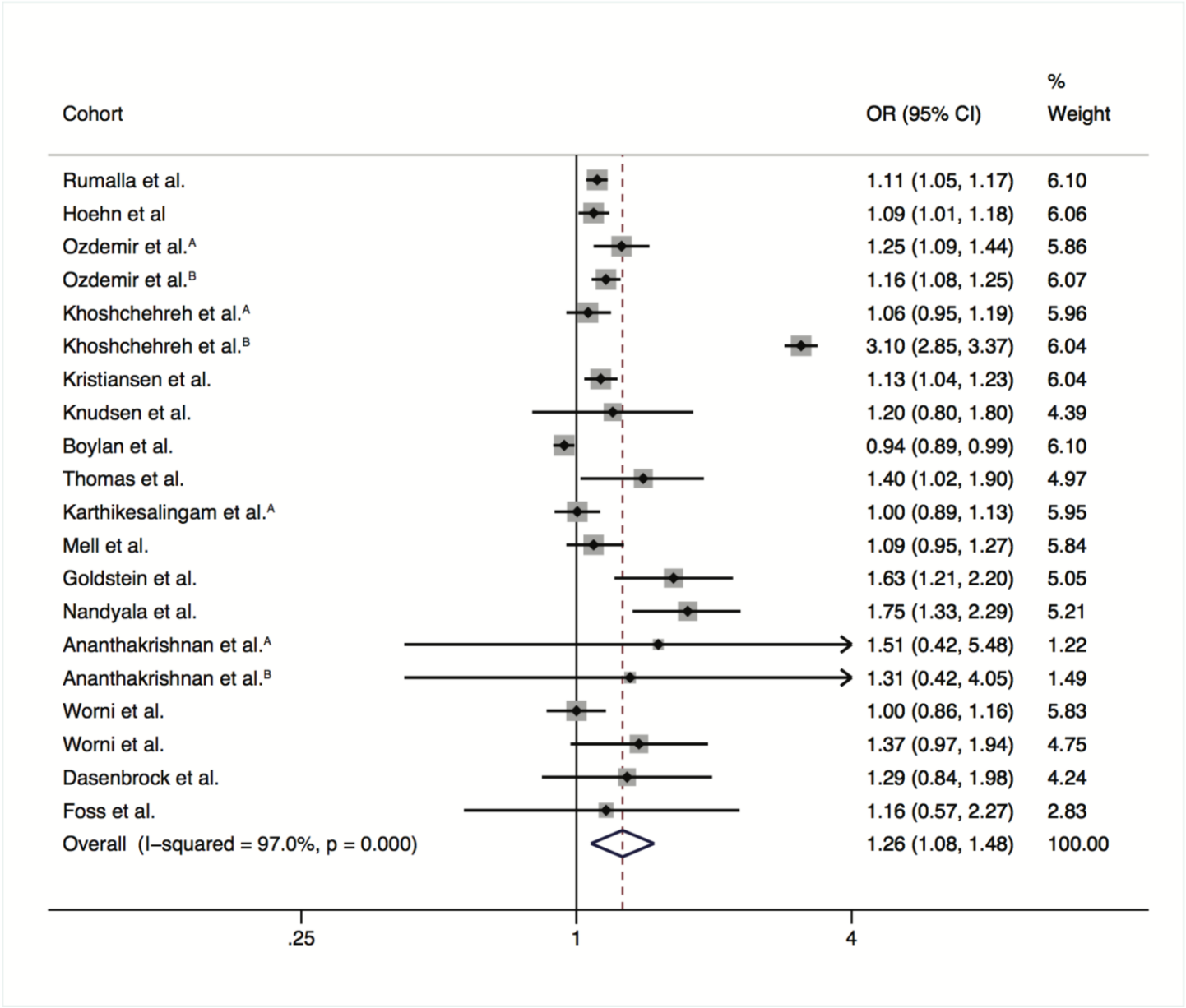
**eFigure 5.** Urgent/emergent surgery sensitivity analysis incorporating results of a smaller cohort (Glance et al[8]) in the place of a larger cohort included in the main analysis (Hoehn et al[44]) that potentially included duplicate patients



**eFigure 6.** Urgent/emergent surgery sensitivity analysis incorporating results of a smaller cohort (Zapf et al[6]) in the place of larger cohorts included in the main analysis (Worni et al[14] and Goldstein et al[38]) that potentially included duplicate patients



**eFigure 7.** Urgent/emergent surgery sensitivity analysis incorporating results of a smaller cohort (Mell et al[33]) in the place of a larger cohort included in the main analysis (Karthikesalingam et al[32] cohort B) that potentially included duplicate patients



**eFigure 8**. Funnel plots of log odds ratios for mortality after elective surgery on Friday relative to Monday (A) and after admission for urgent/emergent surgery admission on the weekend relative to weekdays (B)