

Comparing the quality of care received in patients with *Staphylococcus aureus* bacteremia at a tertiary care centre over two time periods without a structured quality improvement initiative: a retrospective cohort study

Paul Greidanus¹, Mark McAllister², Tanis Dingle^{3,4}, Sarah Mansour⁵, Arienne King⁶, Stephanie W Smith⁵, Justin Z Chen⁵
¹Core Internal Medicine, Faculty of Medicine and Dentistry, University of Alberta, Edmonton, Alberta, Canada. ²Undergraduate Medical Education, University of Alberta, Edmonton, Alberta, Canada. ³Department of Pathology and Laboratory Medicine, Cumming School of Medicine, University of Calgary, Calgary, Alberta, Canada. ⁴Alberta Precision Laboratory - Public Health Laboratory, Alberta, Canada. ⁵Division of Infectious Diseases, Faculty of Medicine and Dentistry, University of Alberta, Edmonton, Alberta, Canada

BACKGROUND

- *Staphylococcus aureus* bacteremia (SAB) is associated with substantial morbidity and mortality
- Quality of care indicators (QCI) associated with improved outcomes include:
 - repeat blood cultures to document clearance
 - infectious disease (ID) consultation
 - echocardiography
 - appropriate antimicrobial therapy
- **Primary objective:** evaluate QCI adherence in patients with SAB between two time periods with no particular intervention
- Secondary objectives are to:
 - assess the association between QCI adherence and 30d mortality in an adjusted analysis
 - assess QCI adherence in patients without ID involvement

METHODS

- Retrospective chart review
- Inclusion criteria: admitted patients over 18 who had incident SAB in 2010–2012 and 2020–2022 at the University of Alberta Hospital, Edmonton
- Exclusion criteria: patients receiving palliative care or who died within 48 hours.
- QCI adherence was defined as the proportion of eligible QCIs met per patient and compared between time periods using the Mann–Whitney U test, secondary analysis with multiple logistic regression
- Uncomplicated SAB required exclusion of IE, no implanted prosthesis, follow-up blood cultures negative within 72h of initial SAB, afebrile within 72h of effective therapy, and no metastatic infection
- Ethics approved (Pro00152863).

CONCLUSIONS

- QCI adherence in SAB improved over the past decade in the absence of a structured SAB QI initiative, even in cases where ID consultation did not occur
 - Caution must be used to interpret AMS studies using pre- vs post-intervention quasi-experimental study design
- Higher adherence was independently associated with improved short-term mortality

RESULTS

Figure 1. Comparison of QCI Adherence between two time periods (mean with 95% confidence interval)

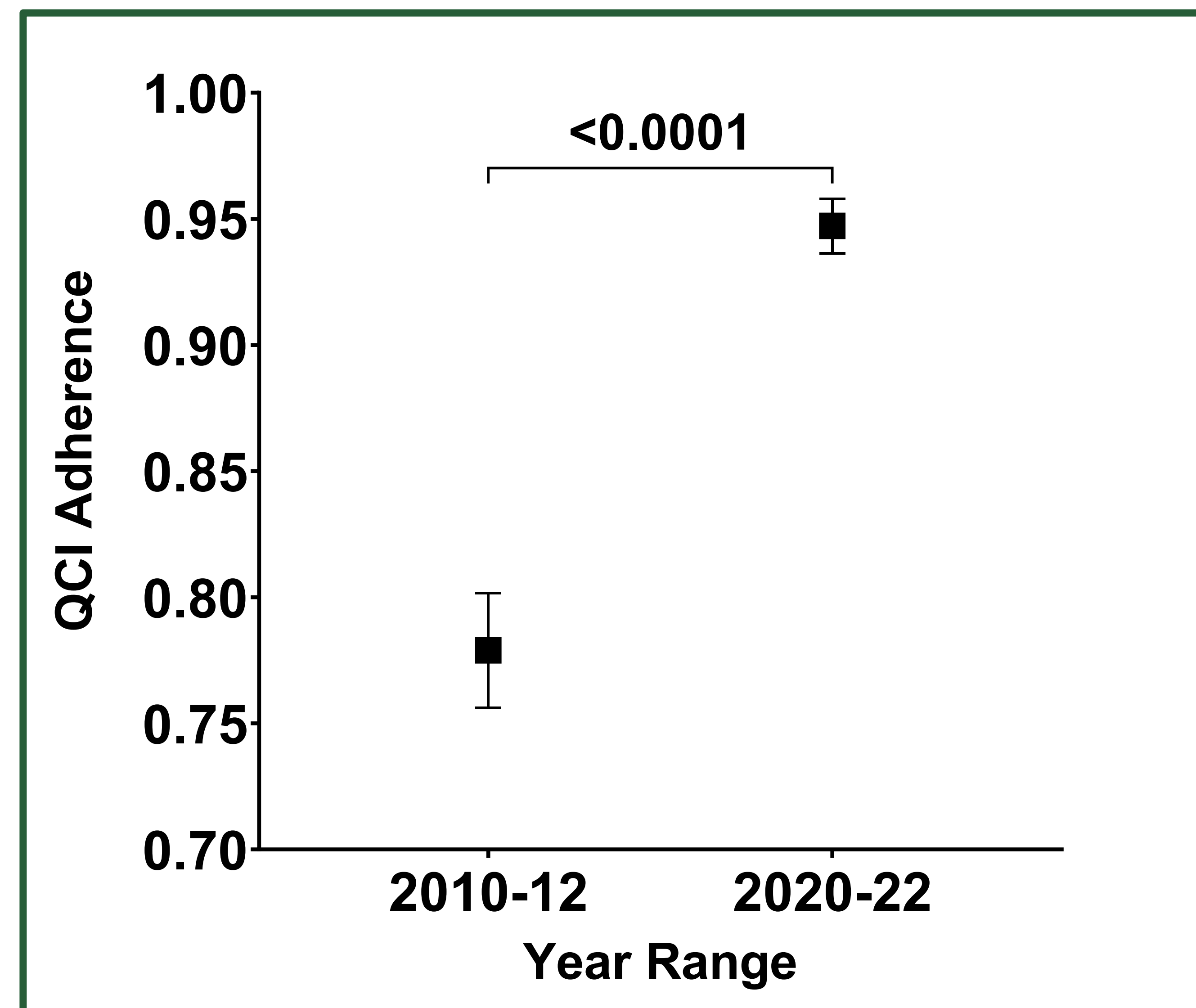


Table 1. Patient characteristics

	2010-12	2020-22
n	325	483
Age (years, median)	62	61
Male sex	224 (68.9%)	327 (62.7%)
Admitting Service		
Medicine	179 (55.1%)	298 (61.6%)
Surgery	100 (30.8%)	108 (22.4%)
ICU	46 (14.2%)	77 (15.9%)
30d Mortality	48 (14.8%)	90 (18.6%)
Uncomplicated	190 (58.4%)	146 (30.2%)
MRSA	43 (13.2%)	97 (20.1%)
3+ Comorbidities (%)	157 (48.3%)	207 (42.8%)

Figure 2. Odds ratios of independent variables on 30d mortality

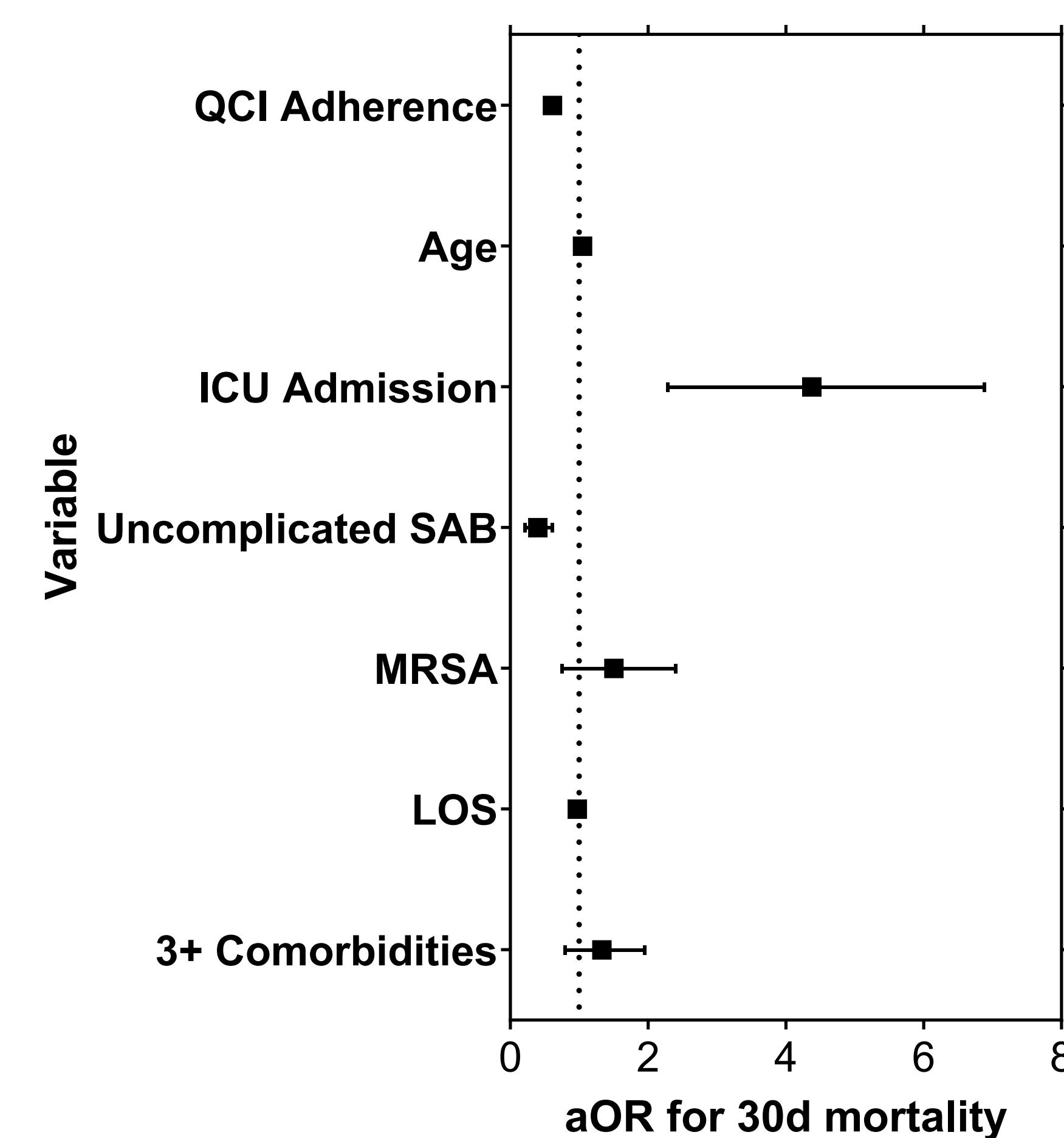
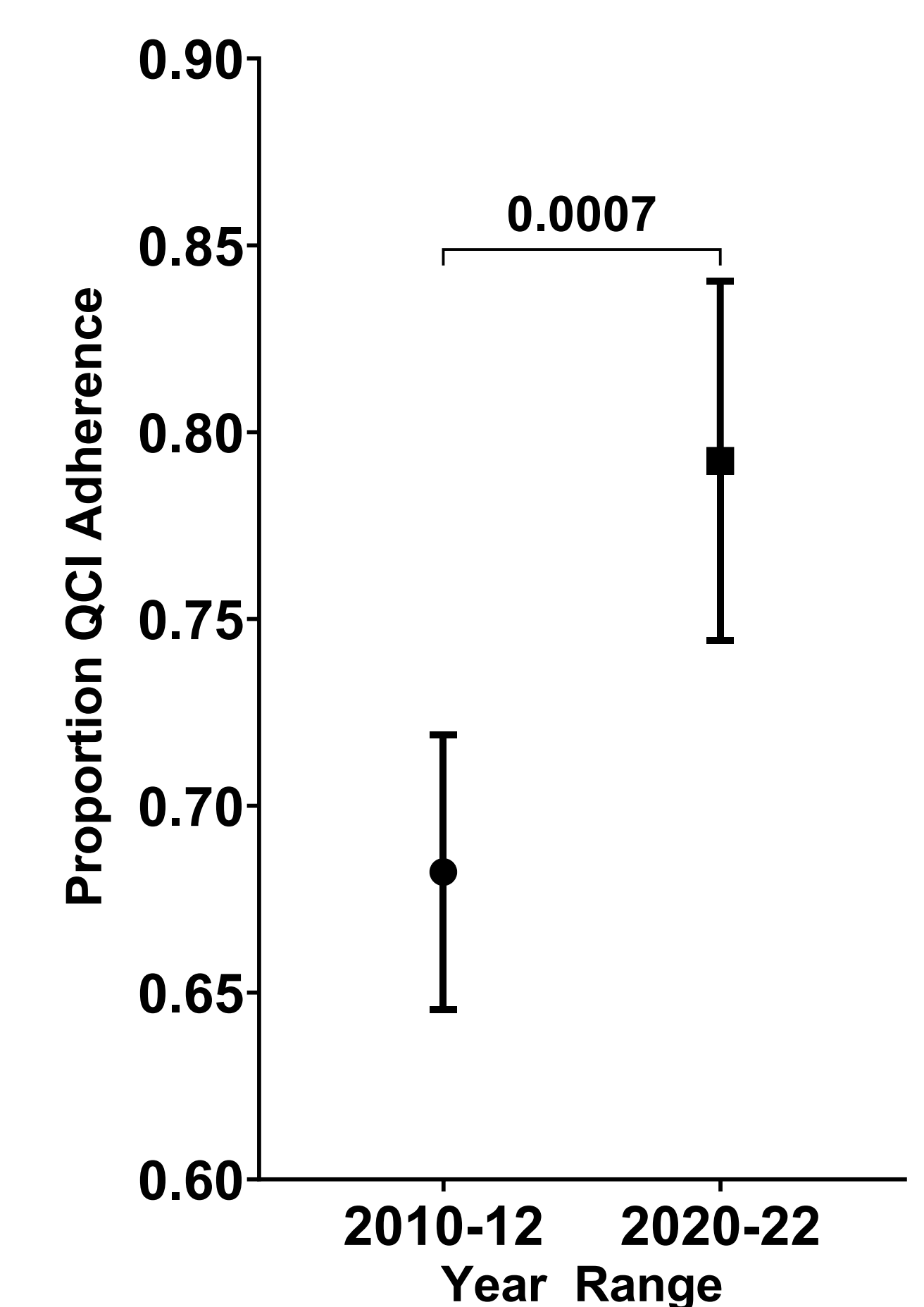


Figure 3. Comparison of QCI adherence in patients without ID involvement.



FUTURE DIRECTIONS

- Replication in other centres may advise on generalizability
- Unclear which factors contributed to improved practice over the last decade – further studies locally could be valuable
- Comparison of which QCI are most important towards improved mortality would be beneficial
- More broadly, clarification on how QI interventions improve outcomes is needed given this positive result in the absence of intervention