



CRITICAL CARE IN THE AIR

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BRISBANE CONVENTION AND EXHIBITION CENTRE

Central Australia's new remote aeromedical retrieval and GP consultation systems: efficient and effective

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BACKGROUND

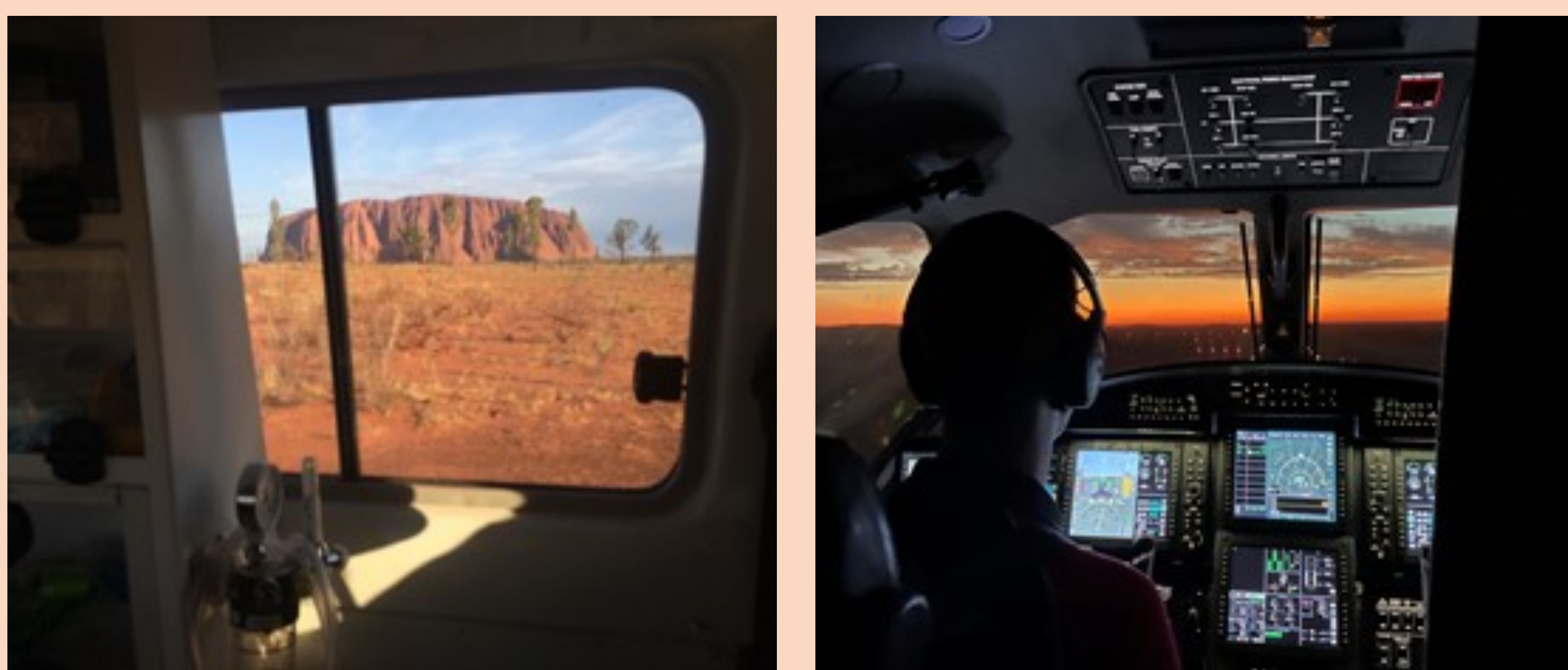
Australians living in remote locations have lower life expectancy, higher preventable hospitalisation rates, higher total burden of disease and less access to health services than populations in regional and metropolitan areas. In addition to the provision of effective Primary Health Care (PHC), high quality, timely, emergency care for remote Australians has been an area of both need and innovation. Aero-medical retrieval services provide an essential link to acute, emergency and critical care.

The Central Australian Retrieval Service (CARS) covers an area of 1.4 million square kilometres from Alice Springs (Northern Territory, Australia) and undertakes approximately 2000 retrievals per year, ranging from pre-hospital primary missions to long distance interstate critical care secondary (inter-hospital) transfers. 82% of patients retrieved are Aboriginal and live in communities that are amongst the most remote in Australia. The combination of pathology and geography provide a unique challenge.

The Royal Flying Doctor Service (RFDS) is contracted to provide aviation assets (single engine turbo-prop Pilatus PC-12s), logistical support, pilots and flight nurses for aeromedical retrievals within the Central Australia and Barkly regions of the Northern Territory.

INTERVENTION: MEDICAL AND RETRIEVAL CENTRE (MRaCC) AND REMOTE OUTREACH AND CONSULTATION CENTRE (ROCC)

In February 2018 the Remote Medical Practitioner (RMP)-led telehealth model for providing all advice and medical retrieval co-ordination in Central Australia was replaced by MRaCC and ROCC. In this new model, retrieval specialists with advanced critical care skills co-ordinate medical retrievals, provide telehealth consultations for emergencies 24/7 and afterhours primary care advice (MRaCC) while RMPs (general practitioners) provide primary care telehealth advice in business hours via the separate ROCC.

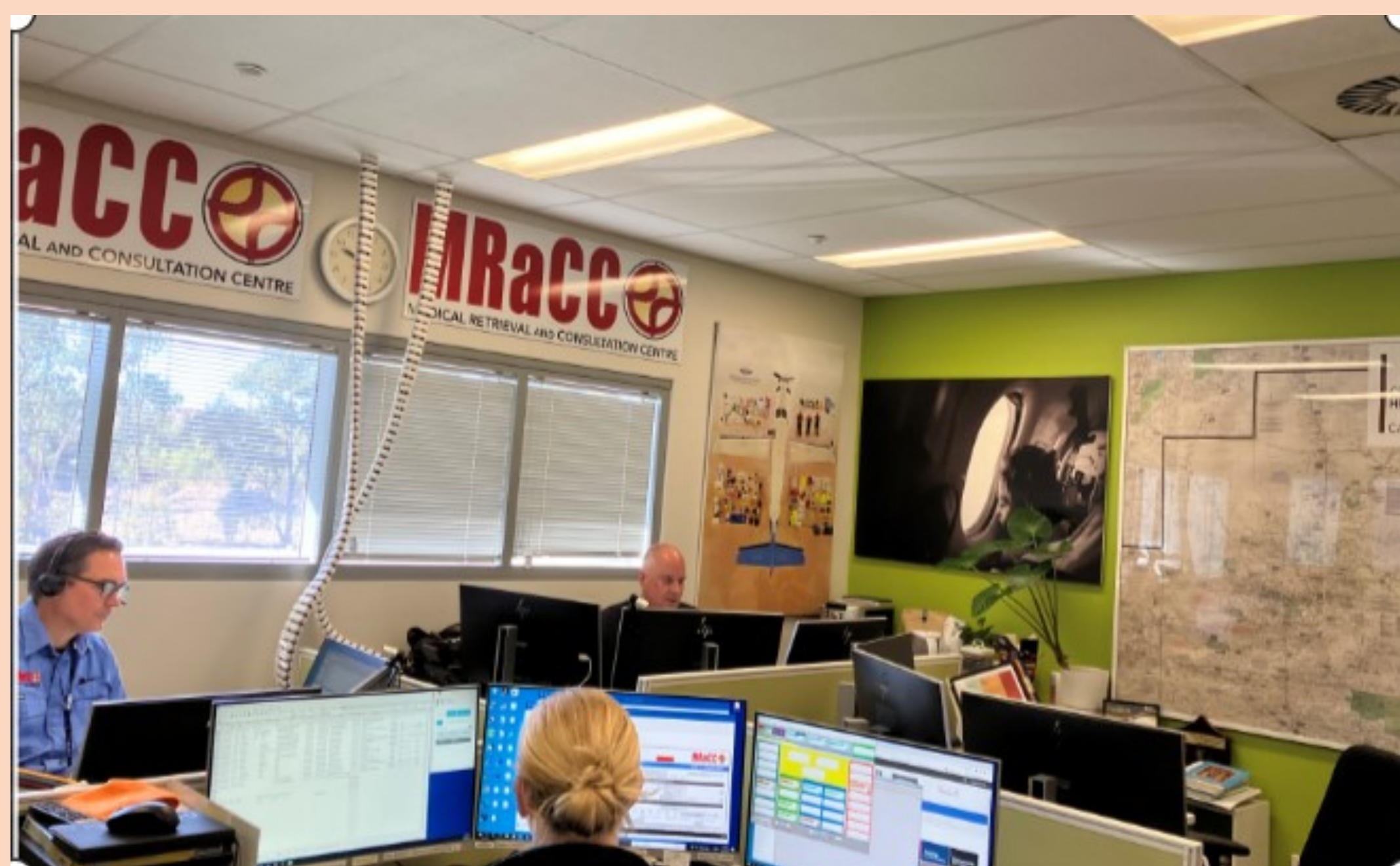


AIM TO EVALUATE:

1. **Timeliness** of specialist emergency advice and retrieval
2. **Efficiency** for remote clinicians and emergency physicians
3. **Patient outcomes**; retrieval, hospital length of stay, need for ICU, mortality
4. **Cost-effectiveness** of the new model

METHODS

Mixed methods including: pre- (103 staff) and post-implementation (72) surveys of health professionals; analyses of NT health and retrieval services' consultation, patient outcome and cost data for 1138 days prior and 748 days following the new model implementation. Thematic analysis of interviews with health professionals involved in referral to and receipt of patients from the retrieval service, ROCC, MRaCC, RFDS and ambulance staff. Post-implementation patient outcome and cost data collection was ceased early due to the onset of COVID and impacts on service delivery and patient presentations



RESULTS

1. Timeliness

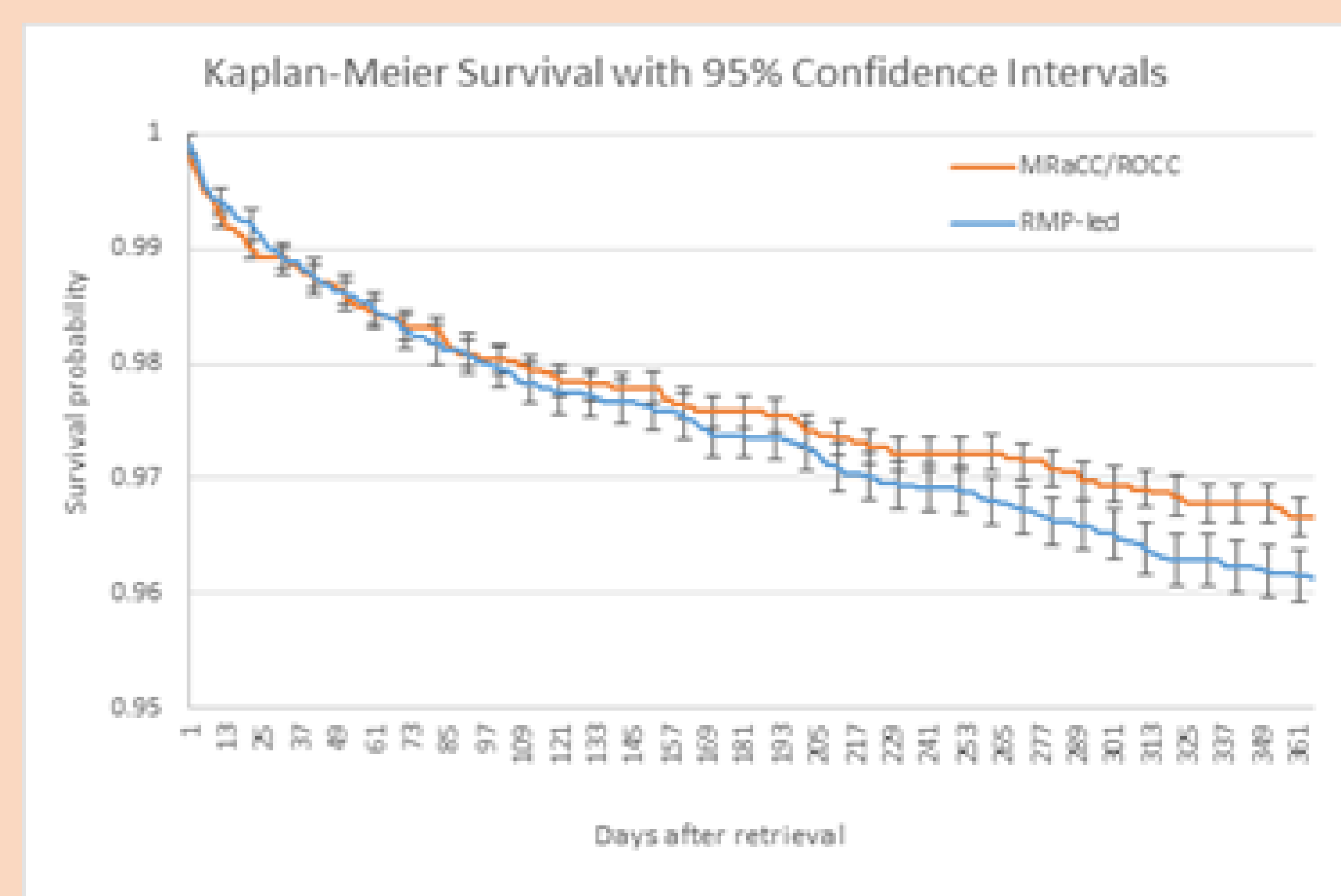
- Improved response time for acute consultations; OR 3.64, $p < 0.05$
- Improved time to retrieval activation; OR 2.97, $p < 0.05$
- Improved timeliness of primary care advice; OR 3.3, $p < 0.05$ and follow-up/continuity of care; OR 3.54, $p < 0.05$
- Reduced time from consultation to aeromedical departure by 18 minutes, $p = 0.0066$

2. Efficiency

- Improved perception of remote and acute care staff to get work done efficiently $\chi^2 16.23$, $p < 0.001$

3. Patient Outcomes

- 10% reduction in rates of aeromedical retrievals, emergency presentations and hospitalisations, all $p < 0.001$
- 19% reduction in preventable hospitalisations $p < 0.001$
- 17% reduction in both hospital bed days and ICU hours $p < 0.001$
- Probability of survival was significantly higher under the new model 8.5 months post-consultation although Hazard Ratio 0.912, 96%CI 0.743-1.12 did not reach significance
- Mean years of life lost was reduced by 30% but did not reach significance, $p = 0.069$



4. Cost-effectiveness

- Reduction in hospitalisation costs saved approximately \$744,528
- Point estimate of cost per year of life saved is \$3051 (cf Australian standard of \$212000) but CI was wide so did not reach significance

Central Australia Retrieval Evaluation (CARE) survey

Thematic analysis of interviews credited improved processes and patient outcomes with changes to clinical governance, streamlining communication procedures and the critical care skill level of clinicians responding to emergencies

CONCLUSION

MRaCC/ROCC resulted in significantly less patients being dislocated from their community and being treated on country. There were clear efficiency and cost savings to both primary and acute care, with an improvement in survival probabilities. Staff from all craft groups reported a broad range of perceived benefits from the change.

Other remote regions in Australia and internationally that have comparable GP-led retrieval systems should strongly consider the benefits of transitioning to a system which separates emergency and primary care referrals with each type of referral being directed to the health professional with the most appropriate skills

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