RAPID EVIDENCE SUMMARY

DELIVER
Research for better healthcare closer to home

Residential-in-Reach Programs for Aged Care Facilities

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Background

Residential In-Reach (RIR) programs are designed to provide specialist consultative care for residents in residential aged care facilities (RACFs) with the aim of avoiding unnecessary hospital transfers and providing post hospitalisation support. RIR programs are one of the priority funding areas for the Victorian Department of Health. There is also support from Safer Care Victoria to engage different stakeholders to inform health service partnerships that plan to undertake clinical redesign for RIR programs.

The Grampians Region Health Service Partnership and its RIR Redesign Committee are interested in examining the evidence base for potential RIR programs in the region. The following questions were asked:

- *What models of residential in-reach are described in the literature?*
- *What are the reported strengths & weaknesses of these models?*

Literature search

Initial searching led to the discovery of several systematic reviews covering this topic. The latest and most comprehensive review was published in late 2023 and covers multiple areas of RIR programs and their implementation.[1] Therefore, for this rapid evidence summary we extracted relevant studies within this review (n=11) and additionally captured more recent publications not included in the review (n=7). Exact search terms and inclusion / exclusion criteria are detailed in Appendix 1.

Quality of the evidence

Included in this summary:

- **1 systematic review** about reducing unplanned hospital admissions from RACFs (Chambers 2023[1]; 11 studies were extracted from this review).
- **1 randomised controlled trial** with concurrent qualitative study about augmenting an existing RIR program with video telehealth, compared with RIR without telehealth (Sunner 2023[2,3]).
- **1 prospective cohort study** comparing face-to-face with telemedicine delivery of a RIR program (Huang 2023[6]).
- **1 retrospective quasi-experimental study** with concurrent qualitative component about outcomes of a hospital avoidance program for RACF residents (Testa 2021a[4] & 2021b[5]).
- **1 case study with pre & post-test outcomes** about the impact of a Finnish acute outreach unit for RACFs (Maki 2023[7]).
- **1 qualitative study** exploring factors which influence RACF use of hospital avoidance programs (Rayner & Fetherstonhaugh 2022[8]).
- **2 case studies,** one reporting on health outcomes of residents referred to a hospital outreach service post-fall (Venaglia 2024[9]), and another describing a UK-based multidisciplinary RIR program (Waldon 2021[10]).

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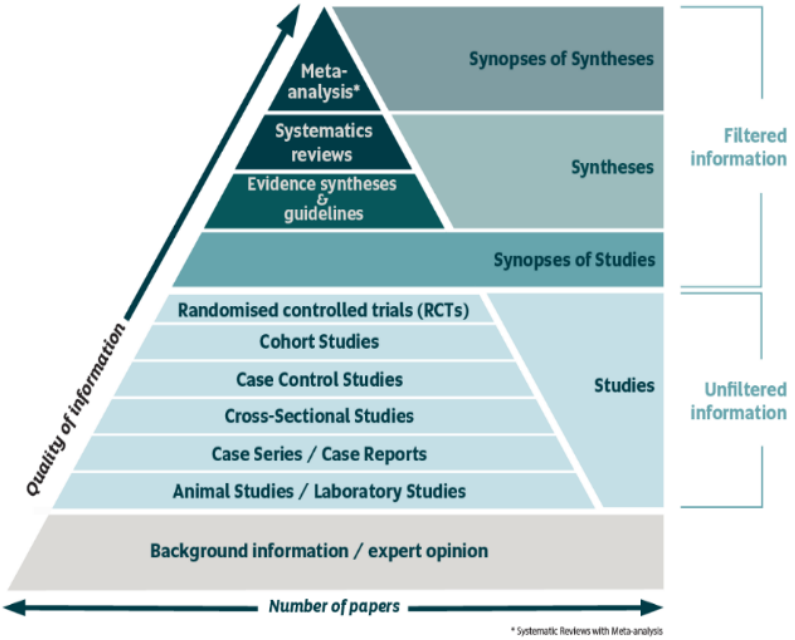

'Hierarchy of Evidence Pyramid' adapted from *EBP & the Medical Librarian training manual*, Duke University 2019 (CC-BY-NC) and Online EBM Page Generator, Dartmouth College and Yale University.

Findings

Most RIR programs identified were Australian, with the exception of one based in Finland and another in the UK. The majority were located in urban areas (11 studies), though three programs were run out of multiple areas of mixed density, and four were based exclusively in rural or regional areas. Studies generally included multiple RACFs in their samples (median of 16.5, range 1-85). Findings have been summarised by intervention components (Table 1) and reported outcomes (Table 2). An overview of model strengths and weaknesses, including those related to implementation, are synthesised in Table 3.

Table 1 Summary of models described in included studies

Study (location)	Who delivers the program	Hours of operation	Program services and modalities
Dwyer 2017[12] (Regional Australia)	Mobile team of 2X f/t NPs, 2.5 f/t RNs; broad team: other nursing staff, GPs, allied health	Mon-Fri (NPs), after hours (1 RN)	Call from RACF Responsive mobile triage service NP follows each episode of care for 3 days
O'Neill 2018[13] (Rural/Regional Australia)	Hospital in-reach team is not described, but can work with the clinical lead RN, geriatrician, wound specialist, and clinical champions.	Unclear	Clinical decision tool to decide if referral is needed In-reach team has equipment for assessments Programme also trained RACF staff
Craswell 2020[16] (Regional Australia)	NP consultants, GP	3 days/week @ central site, 2 days/week drive to visit other sites as needed	RN triaged, assessed, diagnosed and provided primary care Active monitoring of residents during regular visits and liaising with care staff RN leads care coordination with primary care (GP) and ED
Hullick 2016[19] (Urban Australia)	ED advanced practice RN with aged care skills, 4X ED RNs	12 hours/day, 7 days/week	Phone consult between RACF staff and RN Algorithms for management of common problems RACF staff education RN decide if ED transfer needed Coordinate handover if ED transfer needed
Hullick 2021[20] (Mixed Australia)			
Hullick 2022[21] (Regional Australia)		8am-4pm, 7 days/week	Same as above + video telehealth for real-time consult between RACF resident and ED RN
Hutchinson 2015[11] (Urban Australia)	Geriatrician, aged care RN specialist, multidisciplinary team	Unclear	Referral by staff from hospital or RACF or primary care Triage RACF visit by geriatrician/RN Refer to hospital or manage on-site
Amadoru 2018[14] (Urban Australia)	Geriatrician-led, RN	7 days/week, 9am-5pm	Phone consult Geriatrician or nursing review On-site treatments and referrals/care coordination
Kwa 2021[15] (Urban Australia)	Consultant geriatrician, RACF liaison RN	Unclear - related to Amadoru 2018 above	Phone consult Geriatrician or nursing review On-site treatments and referrals/care coordination
Chan 2018[17] (Urban Australia)	2X p/t geriatricians, RN, advanced trainee in geriatric medicine (inconsistently)	Mon-Fri, 9am-5pm	RACFs in local area refer to service Service members assess and manage acute conditions
Dai 2021[18] (Urban Australia)	Geriatrician, aged care clinical RN specialist, geriatric resident physician	Weekdays (f2f): 8:30am-5pm, weekends (telemedicine): 8:30am-4pm	Phone referral Weekday f2f: geriatrician + RN triage and conduct on-site assessment Weekend: Geriatrician triage, RN conduct on-site assessment with tele-support from geriatrician Medical history records accessed from RACF RN + geriatrician: hospital transfer or on-site care
Huang 2023[6] (Urban Australia)			

Testa 2021a[4]/ Testa 2021b[5] **(Urban Australia)**	Hospital-based geriatrician, aged care community registrar, 2X CNCs	Mon-Fri, 8am-4:30pm	Home-based and RACF-based outreach Phone referral: 1) general line, 2) urgent referral to RN/registrar directly RACF visit within 24 hours to assess and treat Program also trains RACF staff and promotes advance care directives
Rayner & Fetherstonhaugh 2021[8] **(Urban Australia)**	Model 1: Geriatrician-led, review with nursing and medical Model 2: clinical RN specialist-led	Model 1: 5 days/week Model 2: 7 days/week	Phone-advice for both models. Model 1: Diagnostics and management; may refer to other specialists Model 2: Assess and treat. Referral to HITH or other specialists
Waldon 2021[10] **(Urban UK)**	MDT: geriatrician, GP, advanced NP, specialist rapid response RN, registered mental health RN, healthcare assistant, OT, PT, SLP, pharmacists (and admin: service manager and admin team)	365 days/year, 9am-7pm; geriatrician: Mon-Fri; GP: out of hours + weekends	Rapid response team integrated with MD homecare team to form RIR Residents referred centrally Daily review by rapid response RN Weekly MDT meeting: allied health intervention planned GP-led decision making and management plans
Sunner 2023a[2]/ Sunner 2023b[3] **(Mixed Australia)**	ED RNs	ED: Mon-Fri 8am-4pm, non-ED: after hours	Phone consultations between RACF RN and ED RN Visual telehealth later added Decision-making based on advanced aged care knowledge and algorithm
Maki 2023[7] **(Mixed Finland)**	RNs trained in emergency assessment, physician (RACF based doctor, HITH doctor, or ED physician)	All year service, no info on daily hours	RACF staff phone referral to RN RN advises staff or visits on-site to treat RN visits with equipment and can consult physicians
Venaglia 2024[9] **(Urban Australia)**	Hospital-based geriatricians, emergency specialists, NPs, CNCs, nurse navigators, RN, pharmacists	9am-9pm 7 days/week, referrals accepted from 7am	Initial referral call triaged by nurse navigator Resident case discussed with clinician on duty (medical or NP) Clinicians perform a head-to-toe physical assessment f2f or via telehealth (using onsite paramedic or RN at the RACF) Management plan established, continued care handed over to GP and RACF RN

Abbreviations: RN=registered nurse; RACF=residential aged care facility; NP=nurse practitioner; GP=general practitioner; MDT=multidisciplinary team; ED=emergency department; HITH=Hospital In The Home; CNC=clinical nurse consultant; f2f=face-to-face; f/t=full-time; p/t=part-time; OT=occupational therapist; PT=physiotherapist; SLP=speech language pathologist

The main outcome measures reported in included studies were ED presentations,[2,6,15–17,19–21] cost-benefits,[4-6,12,14–18] hospital admissions,[5,11,18–21] ED or hospital re-admissions,[9,15,19,20] and hospital length-of-stay.[5,11,19] Table 2 provides a high-level overview of reported outcomes. Due to differences in study designs, measures, and analyses used, study outcomes could not be directly compared between RIR models.

Table 2 Summary of reported outcomes

Model type	Reported outcomes
RN-led **[2,3,7,8,12,16,19–21]**	↓ ED LOS[12,16,19-21] ↓ ED presentations (4 studies),[2,3,12,16] / no change in ED presentations (1 study)[19] ↓ hospital admissions[19-21] ↓ hospital LOS[11-13] ✓ cost-benefits[12,16] ↓ ambulance attendance[7]
Geriatrician-led[14,15]	↓ ED presentations[14-15] ↓ ED representation[14-15] ✓ cost-benefits[14-15]
RN and Geriatrician-led (or other MDT) **[4–6,10,11,13,14,17,18]**	↓ hospital admissions[11,13,17,18] ✓ cost-benefits[4-6,17,18] ↓ reduction in ambulance presentation[6,17,18] ↓ ED presentations[6,17,18] ↓ hospital LOS[4,5,11]

Abbreviations: ED=emergency department; LOS=length-of-stay; MDT=multidisciplinary team; RN=registered nurse; RACF=residential aged care facility

Factors influencing RIR program implementation were discussed in approximately two thirds of studies. These have been condensed into themes and reported in Table 3 within program strengths and weaknesses.

Table 3 Overview of RiR programs' strengths & weaknesses by model type

Model type	Strengths	Weaknesses	Telehealth-specific considerations
RN-led [2,3,7,8,12,16,19–21]	**Reported benefits**: Facilitate person-centred care,[2,3] increased trust in RNs,[2,3] smoother transition of care when transfer needed,[2,3] increased completion of advanced care plans,[12,16] valued by all.[8] **Implementation-related strengths**: RACF staff's willingness and motivation to utilise the RIR service,[2,3] coordinated community of practice with regular meetings linking each of the EDs with their RACFs,[20] resident awareness & interest in RIR program,[12] use of collaborative approach to developing, testing, and refining intervention components,[19] designated leadership and change management during implementation period,[20] train-the-trainer strategies,[20] governance committee meeting regularly representing the health service, primary care organization, RACFs, and ambulance,[20] regular project meetings with stakeholders.[21]	**Reported weaknesses:** RNs must travel with equipment,[12] unclear roles and responsibilities within care team,[12] lack of after-hours service,[8] sub-optimal referral.[7] **Implementation-related limitations**: RACF RNs needing further assistant to use RIR service,[2,3] use of agency RNs who were not familiar with the procedure or the residents, RACF RNs who were unable to attend training, poorly skilled staff, insufficient RACF staffing,[2,3,8] lack of incentives for implementation of leadership and availability of appropriate champions to influence successful implementation and outcomes,[2,3] lack of ongoing funding to scale up the intervention.[2,3]	Evidence not clear if there is additional benefit of videocall over phone consults,[19-21] phone and videocall telehealth dependent on technology, extra time needed for videocall.[2,3] Models using TH were facilitated by having TH support personnel available by phone,[21] allowing for staff discretion in choosing to use video-TH component during the RIR call,[2,3] staff training in TH.[21] TH-specific barriers included poor internet capacity at RACFs, uncharged devices or no compatible device available, absence of streamlined connectivity,[2,3] limited staff capabilities around TH.[2,3]
Geriatrician-led[14,15]	R**eported benefits**: RACF staff, residents, family valued program[14,15] **Implementation-related strengths**: Credibility/trustworthiness of RIR team when advising families about decisions to transfer residents,[14] providing capability building & education for RACF staff.[14]	**Reported weaknesses:** Some issues perceived by RACF staff as out of scope of RIR leading to sub-optimal referrals,[14] response not always timely,[14] lack of awareness among residents, family and staff of the RIR program and its purpose.[14] **Implementation-related limitations**: Facility protocols mandating hospital transfers for certain situations, e.g. fracture, falls with head-strike[14]	--

RN and Geriatrician-led (or other MDT) **4–6,10,11,13,17,18**	**Reported benefits**: Increase in confidence and better teamwork at RACF,[13] person-centred care.[10] **Implementation-related strengths**: Ready access to resident medical records from RACF staff,[6] provision of diagnostic equipment,[13] clear delineation of roles and responsibilities,[13] RIR program having staff with relevant skills,[4,5] providing capability building and education for RACF staff,[4,5] adapting already-established RIR programs,[6] coordination of care between services and providers,[4,5] utilisation of TH,[4,5] RIR team having relationship with other services.[4,5]	**Reported weaknesses:** Shortage of trained RACF staff,[11] small number of staff employed by RIR program seen to create restriction in terms of achievement,[4,5] lack of support after hours and on weekends,[4,5] potential for tension between providing RACF-based treatment for the resident and respecting the family's wishes for hospital treatment.[4,5]	RN present in person and videocalls geriatrician for assessment: number of follow-ups after these sessions were higher than in-person assessments only.[6,17,18]

Abbreviations: RACF=residential aged care facility; TH=telehealth; RIR=residential in-reach.

What does this mean for health services and clinicians?

Based on the evidence included in this rapid synthesis, the following insights were formed for consideration when designing and implementing RIR programs:

- Three types of RIR programs (RN- or geriatrician-led, or with a multidisciplinary organisation) have been evaluated and all have the potential to decrease ED presentations of acutely unwell residents living in care facilities compared to usual care without RIR support.
- There is some evidence that implementing a RIR model of care leads to cost benefits for health services (9/18 studies).
- There is limited evidence on the implementation of RIR in regional and rural settings (only 4/18 included studies). Adoption of RIR models implemented in urban settings may need adapting for the rural and regional context where there are unique challenges including access to healthcare, workforce shortages, barriers to the use of IT and telehealth, and long distances between health services and RACFs. Health services could partner with experienced implementers who can draw on implementation science to plan for tailored implementation.

Strengths and Limitations of the evidence summary

Strengths: Timely access to research information for health services to support the redesign process in real-time. This was a health service-academic partnership with the academic team skilled in evidence synthesis. A defined protocol was followed.

Limitations: The information presented here is a rapid evidence summary of selected papers to provide quick insights to health services engaging with redesign of services. This approach does not enable an assessment of the effectiveness of interventions – if this level of knowledge is needed, a systematic review is recommended.

This document has been prepared specifically to address the evidence need identified of the Grampians Region Health Service Partnership's RIR Redesign Committee relating to RIR programs. The recommendations and considerations for practice are intended to be read in conjunction with policies and guidelines relating to the delivery of care to residents of RACFs.

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Appendix 1

Criteria	Included	Excluded
Population	Acutely unwell residents living in residential aged care facilities (RACF).	Older adults living at home/in the community. Admitted older adults (acute settings).
Intervention/exposure	Intervention by an external team with expertise in geriatrics, usually hospital based. Can be telehealth, telephone, and/or in-person for mode of service delivery. Health care professionals in the team may be registered RNs, RN practitioners, geriatricians, or other experts in geriatrics.	Illness specific interventions, e.g. for COPD patients living in RACFs only. Paramedic interventions. Pharmacist-led interventions.
Comparator/Context	N/A	Interventions that only include RACF-based staff, e.g. RACF RNs or resident general practitioners. "Usual RACF care"
Outcome	Prevention of hospital admission. Prevention of transfer to the emergency department.	N/A
Publication types	Any review type. Any original study.	N/A
Publication date	Any original study published from 2020 to now.	Original studies published prior to 2020 (2013-2019 inclusive).

Search terms:

Concept 1	Concept 2
prehospital	"nursing home*"
"emergency medical service*"	"care home*"
"mobile integrated healthcare"	"assisted living"
Outreach	"aged care"
"hospital avoidance"	"long-term care"
"acute care substitution"	"long term care"
"in reach"	"nursing facilit*"
"in-reach"	Residential
"hosp* avoidance"	
"hosp* prevention"	
"prev* hosp*"	
"mobile hospital"	