

Summary

- Transferring older adults residing in long-term care (LTC) facilities to hospitals for diagnostic services is resource intensive, often requiring an ambulance with two paramedics and, if available, a care home staff member.
- Ambulance transfer can also be frightening, particularly for seniors with a cognitive impairment.
- Additionally, seniors often have to wait long hours after their appointments to be returned to their nursing or special care homes.
- To increase access to diagnostic services for seniors in their nursing home, the “Loch Lomond Villa” nursing home led the piloting of the Radiology on Wheels (ROW) project in LTC facilities across Saint John over a period of 11 months (mid-May 2022 until the end of March 2023).
- If an eligible resident required an X-ray, the service could be offered in the nursing home instead of the hospital.
- Seniors who were not suitable for an X-ray with the mobile services due to the severity of their conditions or seniors who declined the service were transferred to the hospitals for appropriate care.
- 378 older adults (aged 65+) from 13 nursing homes (NHs) and 3 special care homes (SCHs) received the mobile services through the ROW.

HSPP Focus Area	Developing innovative care pathways
Project Start & End Date	March 2, 2022 – March 31, 2024
Organization/Agency	Loch Lomond Villa and University of New Brunswick
Location	Greater Saint John area
Principal Investigator(s)	Dr. Rose McCloskey and Cindy Donovan

Indicator	Impact / Outcome / Result	Quote
Access and utilization of mobile services	553 X-rays were performed on total of 378 residents, exceeding the anticipated 300 exams. Majority of the X-rays included chest(n=170), hip(n=83) and knee(n=47).	<i>“[There were] times that [the nurse practitioner] would have hesitated if we had to send [a resident to] hospital, but where we can just get [the mobile X-ray] to come here, [the nurse practitioner] definitely has ordered the X-ray.”</i>
Program acceptability	99% of LTC residents (378 out of 380) who were offered the mobile XR chose to use the mobile service while only 2(1%) declined. Based on focus group discussions (FGDs) with nursing home staff and residents (or caregivers), the intervention was deemed patient-centered and supported resident well-being. For instance, avoiding hospital transport helped improve the emotional well-being of residents with cognitive impairment.	<i>“[It] saved me four trips in an ambulance [and] saved me hours of waiting in [the] hospital.”; “I would just prefer everything done [in my home] if possible.”</i> <i>“it's so quick and easy that it really doesn't impact their everyday life”;</i> <i>“[some residents] probably would have required sedation if they were going to go [to the hospital]”</i>
Health care resource utilization	89% of LTC residents (378 out of 425) requiring diagnostic imaging were able to avoid hospital transfers and received X-ray in their NH or SCH using the ROW mobile services. 47 hospital transfers were recorded in the 11-month intervention period mostly involving emergency cases (n=16) and after-hours visits(n=9).	<i>Residents not “tying up [paramedics] for extended periods of time” or “keeping an ambulance tied up because they're waiting in [the ED] for our resident.”</i>

Indicator	Impact / Outcome / Result	Quote
Health care resource utilization	Wait times for residents to receive treatment following X-ray diagnosis in the ROW was 13 minutes, lower than 300 minutes recorded in a previous study in the Saint John area (Plant et al., 2023).	<i>"We can start the medication or the treatment rapidly. We ... find that it works a lot quicker."</i>
	During FGDs, home care staff reported service timeliness and reductions in staff workload as key themes for mobile service efficiency. According to staff, the use of mobile X-ray services increased capacity of the care homes and reduced their resource allocation.	<i>The mobile X-ray service helps "diminish the amount of preparation and work" and "keeps staff in the building when we're so short staffed to begin with."</i>
Return on Investment (ROI)	Based on a Cost Benefit Analysis (CBA), the difference in costs for mobile and hospital radiography was estimated at \$1,992.47 per visit: <ul style="list-style-type: none"> The average cost per visit for a mobile X-ray with the ROW = \$ 461.36 The average cost per visit for an X-ray done at the hospital = \$2,453.82 Further potential savings are anticipated if the mobile X-ray technologist performs multiple exams at the same LTC home, which reduces transportation cost.	

Methods and Comparison

The effectiveness of the mobile radiology services was assessed using:

- Administrative data on health care use (X-ray and hospital forms completed by the home care staff and radiologists each time a resident had an X-ray done with the mobile device or at the hospital)
- Focus group discussions with home care staff (n=110), residents (n=5) and family caregivers (n=2)

Data from a previous study was used to give context to findings where applicable (Plant et al., 2023).

Conclusions and Lessons Learned

Evaluation findings suggest significant benefits for long-term care (LTC) residents and the healthcare system.

- Program data shows that use of the mobile services surpassed anticipated numbers highlighting the demand for patient centered care in the care for seniors.
- Findings showed that mobile services were beneficial to residents with cognitive impairments for which hospital transfers could worsen their already fragile mental health.
- Reductions in wait times facilitated early treatment initiation for patients. This could equally reduce the health care burden of dealing with worsening outcomes due to delays.
- Majority of seniors using mobile services instead of hospital transfers implies more ambulances are readily available to respond to more pressing needs, thus reducing the strain on emergency care and the health care system.
- The reduction in workloads, reported by home care staff highlights the mobile service operational benefits. This could play a role in reducing staff burnout and promoting quality of care for patients.
- The use of a Steering Committee with diverse backgrounds, such as an ER physician, Radiologist, Extra-Mural Program, family/residents, and others allowed for a robust design and increased advocacy for the program expansion.

Recommendations

The following recommendations are identified to improve program delivery and uptake:

- Implement mandatory EHR training as part of the mobile X-ray service onboarding process to reduce the long waiting periods to receive the X-ray results.
- Provide registration and ordering privileges to the mobile X-ray team to permit them to request/order tests allowing examinations to be done in a timely manner.
- Consider extending hours of services to ensure access to care for seniors with sudden needs (i.e. weekends, after work hours).
- Consider expanding services to capture additional mobile services such as bladder scanners, electrocardiography, ultrasounds, and casting services.

Next Steps

The Government of New Brunswick has announced funding for the project and province wide scale up through the New Brunswick Extra-Mural Program.

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Financial contribution from



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