

RESEARCH REPORTS

THE PAIRED LEARNER MODEL FOR PARAMEDIC PRACTICUM: A TWO-YEAR MIXED METHODS IMPLEMENTATION STUDY IN A CANADIAN PARAMEDIC PROGRAM

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ABSTRACT

Introduction: To address training constraints related to the need to train more paramedics and concurrent limited placement opportunities, as well as enhance learning, the Paired Learner Model (PLM), informed by social and constructivist learning theories, pairs two students with two preceptors in a single ambulance. The PLM maintains a 1:1 preceptor–student ratio. Throughout the practicum an ambulance placement will have two students and two preceptors who complete the practicum together.

Methods: A two-year (2023–2024) quasi-experimental, convergent parallel mixed-methods design compared the PLM with traditional practicum. Data forms were integrated through “narrative weaving” to evaluate learning outcomes, operational feasibility, and participant perceptions.

Results: The study included 33 participants: 12 PLM students, 9 single learners, 10 preceptors, and 2 program coordinators. All groups reported high preparedness for practice and positive overall practicum experiences. Preceptors unanimously reported that students were safe to practice and competent to care for a loved one. Student experiences aligned with social and constructivist learning theories. Preceptors noted reduced workload and increased capacity for student placements. Post-practicum, 9/10 preceptors thought the PLM should continue. No safety issues were reported.

Conclusion: The PLM is a feasible, educationally sound, effective, and acceptable alternative to the traditional practicum model. Interpersonal dynamics challenges can be addressed through planning and preparation. Findings support continued implementation and further multi-institutional research, with a larger sample size beyond the present single-site study, to explore long-term outcomes and refine best practices.

INTRODUCTION

Clinical practicum is a cornerstone of paramedic education (Batt et al., 2024). Diverse models exist, but practicum typically involves a student placed with a paramedicine service in a one-

to-one learner-preceptor pairing (J. Brown et al., 2025; Hanna et al., 2021). The preceptor provides education, guidance, mentorship, and assessment of the student to prepare them for entry to practice (J. Brown et al., 2025; Hanna et al., 2021). Despite its ubiquity, the traditional practicum model has minimal supporting evidence (Carroll et al., 2023; Hanna et al., 2021; Worsfold et al., 2024). System, organizational, and human factors have strained this model, limiting placement opportunities, creating variable experiences, and potentially affecting training quality (J. Brown et al., 2025; Casey, 2023; Hobbs et al., 2025; National Union of Public and General Employees (NUPGE), n.d.; Newton et al., 2024; Sheahan et al., 2025). A major source of this strain is growing student enrollment to address workforce shortages concurrent with those same workforce shortages, high patient loads, unhealthy culture, practitioner burnout, and attrition that impacts the number of clinical sites available to place students (Bellefontaine, 2023; Casey, 2023; Herttuainen & Nordquist, 2023; Newton et al., 2024). These pressures have created a need to explore alternative models to enhance educational quality and support workforce sustainability (J. Brown et al., 2025). A potential alternative model is the Paired Learner Model (PLM), where two students are paired with two preceptors per ambulance.

In other health disciplines, various instructor-to-student ratios are used (Markowski et al., 2021). In medicine, ratios up to 1:5 are considered optimal for teaching rounds (Kumar et al., 2024; Rong et al., 2022), and the Accreditation Council for Graduate Medical Education mandates a 1:3 faculty-to-resident ratio (ACGME, 2025). In nursing, instructor-to-student ratios typically range from 1:6-10 (Nursing Clinicals, 2023), and Occupational Therapy and Physiotherapy may use 1:2 ratios to foster peer learning and collaboration (College of Physiotherapists of Alberta, 2021; Crouch et al., 2002). In paramedicine, PLMs have been used sporadically when placements are limited; however, evidence remains anecdotal.

The PLM is supported by social cognitive theory, which emphasizes observational learning, where learners benefit from observing peers in real-time scenarios, receiving immediate, contextualized feedback (Bandura, 1977). Constructivist theory also supports the PLM through peer-to-peer collaborative learning through sharing, support, and explanation (T. Brown, 2023).

To gather initial evidence for the feasibility, acceptability, and potential effectiveness of the PLM, a two-year implementation study was conducted (2023–2024) to understand if the PLM:

- Can be practically implemented.
- Provides a safe and supportive learning environment for students.
- Affects preparedness and professional competency.
- Could increase practicum placement capacity.
- Affects preceptor workload, fatigue, and feelings of burnout.

METHODS

STUDY DESIGN & MATERIALS

A quasi-experimental convergent parallel mixed-method design was used, including surveys and semi-structured interviews. For each group, questionnaires and interviews were developed de novo with paramedic program administration and independently reviewed by staff with precepting experience (see Supplemental Material). Pre-practicum

surveys examined expectations for practicum, perceived preparedness, interpersonal familiarity, and prior experience. Post-practicum surveys mirrored and expanded on the pre-practicum survey. Semi-structured interviews explored survey constructs in greater depth. Ethics approval was obtained from the Northern Alberta Institute of Technology Research Ethics Board (REB#:2023-10–Amended), all participants provided consent to have their data included in the study at each point of data collection. Four groups were included:

- Intervention: students in the PLM.
- Comparison: students in the 1:1 practicum.
- Preceptor: preceptors in the PLM.
- Practicum coordinators: academic staff responsible for coordinating practicums.

PLM SETTING AND CONTEXT

The PLM was implemented with Primary Care Paramedic (PCP) students. In Canada, PCPs provide context-specific basic life support and patient care in rural/remote, urban/suburban, industrial, air ambulance, and military settings. Controlled or delegated acts in the PCP competency profile include intravenous cannulation and administration of certain medications. PCPs constitute the largest group of paramedics in Canada (Canadian Organization of Paramedic Regulators, 2023; National Occupational Competency Profile for Paramedics, 2011). PCP programs are typically one year or shorter and require an Emergency Medical Responder/Medical First Responder and Basic Life Support CPR certification. Practicum is typically a 4–6 week placement with an urban or rural ambulance service. Students are assigned to a preceptor with primary mentorship and assessment responsibility.

In the PLM, each student is paired with a preceptor, as during a single practicum. However, in the PLM, two student–preceptor dyads are assigned to the same ambulance, resulting in two students and two preceptors working together throughout the practicum. The pairing remains consistent across the placement, barring unforeseen operational circumstances. Before the practicum begins, program coordinators meet with preceptors to discuss the PLM. Coordinators and preceptors discuss considerations around the structure and expectations of the PLM, including how during a call students may take active or observational roles or share a call. Students could run a call solo, together, with a preceptor, or with a preceptor stepping to take over if necessary. Preceptors retain professional discretion to teach and support students as they typically would. The practicum retains standard outcomes, with each student being required to individually attain all competencies to complete the practicum. Each student receives a final assessment from their assigned preceptors.

SAMPLE

Each year, based on the number of placements the program could secure, eight students participated in the PLM. Program coordinators presented information about the PLM and its purpose to all students in the cohort preparing for practicum. Because student participation in the PLM was voluntary, inclusion was on a first to volunteer basis. All students and preceptors in the PLM were invited to participate in the study. To serve as a comparison group to the PLM, eight of the thirty-two students completing a traditional practicum were targeted for participation in the study. Two practicum coordinators were

invited for interviews. The Principal Investigator (PI) sent recruitment emails to students and preceptors. Eligibility criteria included enrollment as a PCP student or precepting in the PLM.

PROCEDURES

Pre-practicum, participants received an email link to the survey hosted on Qualtrics (Qualtrics, 2024). Consent was affirmed before the survey through an online consent form. Post-practicum, participants were contacted to complete the survey (Qualtrics) and semi-structured interviews (video or telephone). Consent was reaffirmed electronically (survey) and verbally (interview) before data collection. The PI conducted interviews which lasted 45-60 minutes. Interviews were audio-recorded, transcribed verbatim, and anonymized (Figure 1).

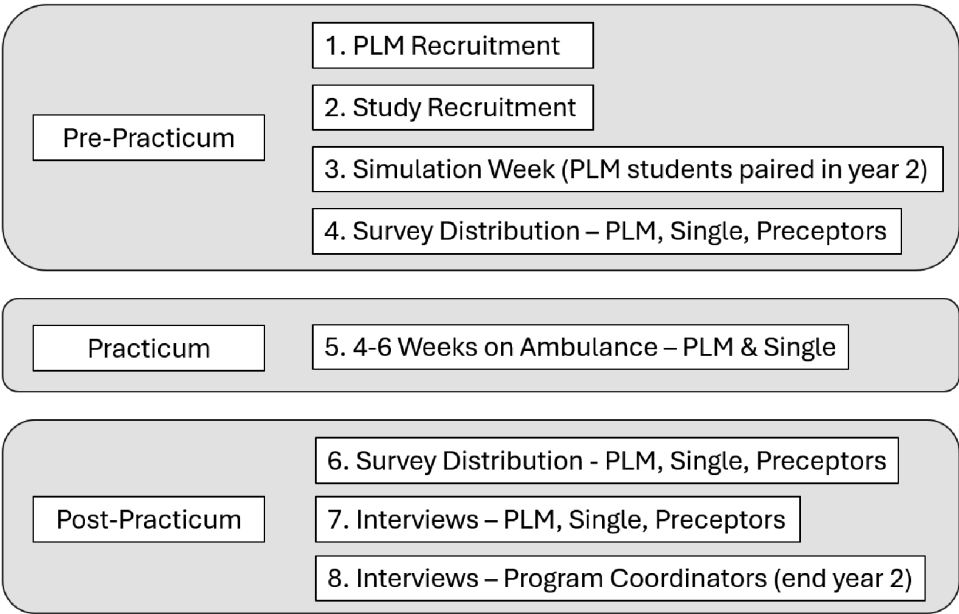


Figure 1. Study flow diagram.

DATA ANALYSIS

Closed-ended items and count data were analyzed using frequentist, descriptive, and inferential statistics (Mann-Whitney U or Chi-Square). Qualitative analysis used a qualitative descriptive approach to provide a comprehensive summary of events that stays close to participants' experiences rather than interpret, explain, or derive themes (Sandelowski, 2000; Villamin et al., 2025). Three authors (SN, JK, CN) independently reviewed transcripts to identify events and experiences before comparing findings. During the comparative process, any differences were re-reviewed and discussed until consensus was attained. If consensus was not attained, a fourth author (EV) reviewed the findings to resolve the discordance. Common experiences were used to produce a description of the practicum.

DATA MIXING

To provide comprehensive insight into the PLM, quantitative and qualitative data were integrated through a process of “narrative weaving,” where quantitative and qualitative findings are linked and embedded and presented jointly on a concept-by-concept basis in a single report (Fetters et al., 2013). To achieve integration, throughout the analysis, quantitative and qualitative data were read and interpreted together in an iterative process with the authors continuously examining where linkages existed between the two data forms and how each data form supported the interpretation of the other. This process was selected to utilize the large amount of rich data and present a complete, coherent, and interpretable understanding of the PLM.

RESULTS

SAMPLE

Responses to data forms varied across years. As recruitment, follow-up, and compensation were identical each year, participation appeared to vary randomly. Across the study, 68 surveys or interviews were completed (Table 1). Some participants enrolled in the study did not participate in all stages of data collection, including some who completed post-practicum measures but did not complete pre-practicum measures; not all participants responded to all survey items. All preceptors had prior experience (Mean=15.3 years; Median=14.5 years; Range=13–19 years), having precepted 2–10 students, and had completed preceptor training.

PRE-PRACTICUM

Program coordinators reported that practicum sites’ interest in the PLM was mixed, with several sites initially skeptical and critical primarily due to a preconception that the PLM was one preceptor supervising two students, and concern about ambulance overcrowding. Site visits were conducted with preceptors and service leadership to discuss the PLM and address concerns.

In the paired and single learner groups, most students (10/13) did not know their preceptor at all; the remainder knew the preceptor to some extent. No responding preceptors knew the student, although they knew their colleague very or extremely well. Students ranged from not knowing their peer at all to knowing them extremely well. Peer pairings were split between self-chosen (45.5%) and assigned (54.5%) pairs. Overall, students ($n=14$) felt ready to practice. PLM learners reported feeling slightly to very well prepared.

Preceptors were prepared for the PLM. Preceptors felt burnout occasionally, though not related to precepting. Preceptors thought the PLM could help reduce burnout and workload while helping train more students.

Data Form	Group	No. of Responses		
		2023	2024	Total
Pre-Survey	Paired	5	2	7
	Single	0	9	9
	Preceptor	4	1	5
Total		9	12	21
Post-Survey	Paired	7	5	12
	Single	1	6	7
	Preceptor	7	3	10
Total		15	14	29
Interview	Paired	4	3	7
	Single	0	6	6
	Preceptor	1	2	3
	Coordinator	0	2	2
Total		5	13	18
Total Complete Data Forms Across All Measures		29	39	68

Table 1. Participant response rate by data form, year, and total.

LOGISTICS

Preceptors reported no major logistical issues due to the PLM. As challenges such as ambulance space or scene management arose, they were dealt with but did not impede care or learning and the standard workflow was maintained. Post-practicum, 6/10 preceptors agreed that PLM reduced workload as there was an extra person to assign tasks to and help with activities, so preceptors could focus on other tasks.

Thirteen students reported completing four or five weeks of practicum, with three PLM students completing six weeks. Reported call volume per shift was similar ($p=.54$, $d = .31$ [95%CI = $-.64 - 1.24$]) between paired (mean = 5.17, SD = 2.08, median = 5) and single learners (mean = 4.57, SD = 1.62, Median = 4) and preceptors (mean = 4.3, SD = 1.42, Median = 4). Most students in both groups, and all preceptors, felt the call volume was low and could be a challenge for learning, but was adequate for preparedness. Preceptors reflected that there were fewer practice opportunities, "fewer reps," and worked with the student to prioritize competencies to ensure attainment. Students in both groups reported challenges meeting competencies. Students in the PLM tended to attribute the challenge to being with a peer, though all students obtained the required competencies. Preceptors described a mix of independent and shared competency demonstrations: one student might perform a competency, and at other times, a call was shared.

EXPERIENCE

All students completed their practicums. No difference ($p = 0.59$, $\phi = .19$) was found in self-perceived preparedness or overall practicum experience ($p = .149$, $\phi = .33$) post-practicum, between PLM and single learners. For paired learners, 75% reported being "very/extremely well" prepared, while for single learners, 67% reported being "very/extremely well" prepared. Preceptors rated readiness for practice for their student and their partner's student from "moderate" to "extremely well" prepared. A positive experience was reported by all single learners (7/7) and most paired learners (9/12). One preceptor thought the PLM was worse than a single practicum for the student and preceptor.

Except for cases of personal conflict, the coordinators reported that students indicated that the PLM was a great experience and enjoyed the emphasis on teamwork with a peer: "All the pairs that went out this last year all said that they really, really appreciated the opportunity to be part of the paired practicum." Coordinators indicated that preceptors and sites liked the PLM because it prepared students for the interpersonal and teamwork aspects of paramedicine. Post-practicum, 9/10 preceptors did not believe the PLM affected burnout, as burnout is complex, personal, and for the current sample, generally not related to precepting. Eight of ten preceptors believed the PLM could help train more students, by requiring fewer ambulances to place students on. Nine of ten preceptors thought the PLM should continue.

INTERPERSONAL

Most students in both practicums reported strong rapport with their preceptors and rated their preceptors as excellent. Reciprocally, preceptors described positive connections with students. In the PLM, two students and one preceptor had a mutually negative relationship and rated each other as poor or terrible. The preceptor described the PLM

as a very negative experience and felt that the PLM amplified the students' "inadequate approach". No overt or escalated conflict was reported, and patient care was not affected.

In the PLM, students experienced non-adversarial, positive competition and pressure to perform that was not instigated by preceptors: "I felt like there was a very healthy level of like pressure but also support." Students who knew each other before the PLM more often discussed beneficial pressure compared to learners who did not know their peer.

Strong negative experiences arose in one dyad due to many interpersonal challenges: "She stole my practicum." Coordinators identified the biggest PLM challenge as student interpersonal issues. Coordinators discussed the importance of anticipating who will work well together and placing those students together. During the second year, PLM pairings were placed together during a pre-practicum simulation week completed by all students. The simulation week consisted of four to five high-fidelity simulations each day that were designed to prepare students for practicum. PLM students completed the simulations together, while other students rotated through different groupings and pairings as usual. Students reported that being paired during simulation helped with familiarization and was beneficial preparation for practicing together: "...we knew how each other acted, we knew how each other worked, and we knew cues that we could pick up on each other."

TEACHING AND LEARNING

Students in both practicums experienced a structured and planned learning environment with clear expectations. Students and preceptors acknowledged the dynamic contingencies of paramedic practice: "So I did feel it was as structured as a paramedic practicum can be." Prior preceptor experience reduced the need for specific planning for the PLM with preceptors using a self-discovery or guided learning approach. Students thought preceptors provided appropriate support, with the level of intervention calibrated to call difficulty. Preceptors discussed how expectations for student performance, responsibility, and autonomy increased with time and ability, and autonomy and responsibility could differ between students depending on ability.

PLM students found that certain calls were difficult to include two students in, though students also reported that the break from providing care and standing back and observing how someone else practiced was beneficial and supported their learning; providing a different perspective and giving space to think about how to act. Seeing different practice approaches modelled was beneficial: "Half my role was standing back when we were together, so I felt like, definitely at some points, yes, it was beneficial to see how another person might approach a situation." PLM students supported each other by reviewing calls, sharing knowledge, studying together, and asking each other questions about calls: "I loved having a paired practicum for sure, like emotionally and learning wise I think it really helped me." Preceptors noted that it was good for the students to have someone to talk to and study with. Students in the single practicum thought observation and peer support were the primary appeal of the PLM.

Participants discussed occasionally leaning on their partner for assistance during calls. While generally seen as positive, in the negative PLM experience, the participant intentionally distanced themselves during calls so that their peer would not rely on them.

Paired learners felt that their partner was ready for practice; only one indicated their peer was not at all prepared and indicated they learned nothing from their peer.

Both groups reported high comfort approaching preceptors for help, including the peer's preceptor in the PLM. In the PLM, both preceptors supported both students with the roles for learning, supervision, discussion, and feedback being highly fluid. Preceptors indicated that group debriefing was most common, though preceptors were conscientious about how feedback was provided; negative or focused feedback was delivered in isolation, instead of in pairs. Students' preference for one-to-one debriefing or a group setting was contingent on the situation, interpersonal relationships, and personal preference. In both groups, students and preceptors indicated that post-call constructive conversations and criticism occurred, with the primary obstacle being fatigue.

No patient safety concerns were reported; all preceptors trusted their students and their partner's students to treat a loved one. All students (n = 12) thought that their preceptor and their peers' preceptor provided a safe or very safe practice and learning environment, and that their peer could practice safely.

SUPPORT

Preceptors and students in both groups felt that the school provided appropriate support during practicum, though PLM students wanted more explanation of the PLM before beginning practicum. Students in the single practicum frequently discussed a desire for more psychological and mental health support; however, no PLM students mentioned a desire for more support. Preceptors noticed having someone to talk with who was sharing the same experience benefited students.

Program coordinators identified that sites participating in the PLM in the first year viewed the PLM as successful and advocated for the PLM "...all of the sites seemed eager to do it again, who had participated in the first round." Preceptors' enjoyment of the PLM was important for sites' willingness to continue participation.

DISCUSSION

Based on the results from multiple integrated data forms, the PLM was practically feasible; call volume was similar to the single practicum, students felt ready for practice and preceptors agreed, all students completed practicum, and no patient safety concerns were reported. Both groups achieved the required competencies to complete practicum, and overall, students and preceptors viewed the PLM positively, with added learning opportunities.

STUDENT EXPERIENCE

Reports of effective peer-to-peer and observational learning in the PLM parallel findings in other professions where collaborative clinical education models have been associated with improved learning outcomes, increased student confidence, and reduced preceptor workload (Markowski et al., 2021).

Interpersonal dynamics and team formation are critical for model success (Markowski et al., 2021). The negative experiences that arose resulted from interpersonal differences, peer familiarity, and assignment method (self-selected vs. assigned), rather than being

structural to the PLM. These challenges are not unique to the PLM; the same issues and negative experiences are reported in 1:1 placements (J. Brown et al., 2025; Hobbs et al., 2025). Modifications through conscientious and intentional pairing after the first year largely addressed interpersonal issues. Careful consideration of interpersonal dynamics, classroom instructor input, simulation before practicum, team-building activities, and, if possible, peer self-selection can enhance peer matching to optimize collaborative learning and pre-emptively identify interpersonal issues. Additionally, the PLM may be viewed as an advanced or alternative learning model for students who are appropriately suited and prepared.

Further support and utility of the PLM model is found in the behavioral and cognitive manifestations of social learning and constructivist theory observed during the PLM. Although PLM students may get “fewer reps,” opportunities to observe and learn from more people can present richer learning opportunities than a single placement. More diverse learning opportunities can strengthen skills, deepen knowledge, and refine mental models/cognitive schemas of paramedic practice. The PLM was described as beneficial educationally and emotionally with students being able to learn with and from each other by reviewing calls, studying together, and supporting each other throughout the practicum. Students also engaged in constructing their learning by seeking help and asking questions of preceptors, and through collaborative call debriefing and discussions. These results align with the preceptors planned self-discovery/guided learning approach. Positive, healthy competition can also provide motivation to improve performance.

In the single practicum, students are members of the team, but an inherent status differential exists between preceptor and student. The PLM may provide more opportunities for teamwork, team-based care, and interprofessional collaboration than the standard practicum, potentially enhancing readiness for entry to practice. PLM students discussed the emotional and personal social support of having a peer; social support and a shared experience are another potential benefit of the PLM that could moderate the need for external mental health support.

PRECEPTOR EXPERIENCE

The reported benefit and lack of burden for PLM preceptors, with no reports of feelings of burnout, differ from other samples (Hobbs et al., 2025). The extra student reduced workload and made workflows more efficient, providing operational advantages over a single practicum which may enhance the precepting experience. To contribute to a positive PLM experience, support, preparation, and training from the school placing students are necessary. The PLM can also be an impetus for preceptor training.

FUTURE RESEARCH

Multi-institute study and longitudinal outcomes of the PLM can help identify if performance differences exist between paired vs. traditional practicum after entry to practice, particularly for patient care quality and collaborative practice competency. A patient-oriented research approach during the PLM would be valuable, though in the context of pre-hospital emergency care, this could be difficult or inappropriate. Further investigation of peer-to-peer and observational learning should examine how learning occurs

and objective outcomes. Potential differences in the desire for support and mental health between the PLM and traditional practicum can be investigated.

LIMITATIONS

Three primary limitations existed.

- Convenience sampling with a relatively small sample size from a single institution and region limits generalizability and power/interpretability of inferential statistics. Alignment of outcomes with the underlying theory indicates that similar results could be replicated in other settings.
- Reliance on self-report measures and qualitative feedback, potentially introduces response bias. Mixed methods and alignment across data types support the validity of the findings, but objective assessment and following learners into practice would strengthen inferences.
- Participation was inconsistent throughout both years, with some participants inconsistently completing data forms. During the first year, no students from the comparison group participated.

CONCLUSION

The PLM is feasible, maintains essential educational outcomes, and provides social and observational learning and operational benefits. Compared with the traditional practicum, the PLM showed no apparent disadvantages, with preceptors endorsing student competence by unanimously trusting students to care for a loved one. Although interpersonal dynamics can be challenging, overall, this initial PLM implementation was a successful positive experience for learners and preceptors. All groups showed near-unanimous support for continuing the PLM, and the model warrants further study and refinement with larger scale research and evaluation beyond this single site implementation study.

REFERENCES

- ACGME. (2025). *Specialty-Specific Program Requirements: Number of Faculty*. https://www.acgme.org/globalassets/pdfs/specialty-specific-requirement-topics/dio-number_of_faculty_2025.pdf
- Bandura, A. (1977). *Social learning theory* (pp. viii, 247). Prentice-Hall.
- Batt, A. M., Lysko, M., Bolster, J. L., Poirier, P., Cassista, D., Austin, M., Cameron, C., Donnelly, E. A., Donelon, B., Dunn, N., Johnston, W., Lanos, C., Lunn, T. M., Mason, P., Teed, S., Vacon, C., & Tavares, W. (2024). Identifying Features of a System of Practice to Inform a Contemporary Competency Framework for Paramedics in Canada. *Health-care*, 12(9), Article 9. <https://doi.org/10.3390/healthcare12090946>
- Bellefontaine, M. (2023, January 22). *High EMS workloads creating problems for paramedic students seeking work placements*. CBC News. <https://www.cbc.ca/news/canada/edmonton/high-ems-workloads-creating-problems-for-paramedic-students-seeking-work-placements-1.6721689>
- Brown, J., Ortega, M., & Whitley, G. A. (2025). Student Paramedic and Practice Educator Experiences of Ambulance Placements. A Rapid Evidence Review. *Health Science Reports*, 8(3), e70552. <https://doi.org/10.1002/hsr2.70552>

- Brown, T. (2023). *The mentoring practices of paramedics: Experiences of paramedic mentors and interns in the Queensland Ambulance Service*. Griffith University. <https://doi.org/10.25904/1912/4997>
- Canadian Organization of Paramedic Regulators. (2023). *Canadian Paramedic Competence Framework for the Primary Care Paramedic*. https://copr.ca/wp-content/uploads/2025/07/PERRS_Framework_PCP_ENG-2024_08.pdf
- Carroll, A. G., Peddle, M. R., & Malik, G. (2023). Undergraduate paramedicine students' experiences of feedback during clinical placement on-road: A scoping review. *Nursing & Health Sciences*, 25(1), 18–29. <https://doi.org/10.1111/nhs.12995>
- Casey, S. (2023). *Addressing Canada's health workforce crisis* (Report of the Standing Committee on Health No. 10th). Canada. Parliament. House of Commons. Standing Committee on Health. <https://publications.gc.ca/site/eng/9.921706/publication.html>
- College of Physiotherapists of Alberta. (2021). *Supervision Guide for Alberta Physiotherapists*. https://www.cpta.ab.ca/docs/64/Supervision_Guide_mtlb2zj.pdf
- Crouch, V., Moore, A., Morris, J., & Martin, M. (2002). Comparison of 1:1, 2:1 and 3:1 Placement Models for Clinical Education in Occupational Therapy and Physiotherapy. *Physiotherapy*, 88, 112–112. [https://doi.org/10.1016/S0031-9406\(05\)60942-X](https://doi.org/10.1016/S0031-9406(05)60942-X)
- Fetters, M. D., Curry, L. A., & Creswell, J. W. (2013). Achieving Integration in Mixed Methods Designs—Principles and Practices. *Health Services Research*, 48(6pt2), 2134–2156. <https://doi.org/10.1111/1475-6773.12117>
- Hanna, H., Jordan, Z., Stern, C., & Pearce, J. (2021). Experiences of learning, development, and preparedness for clinical practice among undergraduate paramedicine students, graduate/intern paramedics, and their preceptors: A qualitative systematic review. *JBI Evidence Synthesis*, 19(9), 2052. <https://doi.org/10.11124/JBIES-20-00297>
- Herttuainen, A., & Nordquist, H. (2023). Recent Paramedic Graduates' Chronic Stress Adds Intentions to Leave the Profession: A Pilot Study Utilizing a Web-Based Survey. *INQUIRY*, 60, 00469580231210706. <https://doi.org/10.1177/00469580231210706>
- Hobbs, L., Latham, J., Westwood, A., Cameron, M., Taylor, J., Devenish, S., & Walker, D. (2025). Australian Paramedic Students' Reports of Clinical Placement Experiences: A Snapshot From two Cohorts. *The Clinical Teacher*, 22(3), e70097. <https://doi.org/10.1111/tct.70097>
- Kumar, C., Miller, A., Marshall, A. M., Thompson, A. R., Lowrie, D. J., Weber, D. E., Kelleher, M., Malosh, L., Martin, C., & Christensen, H. R. (2024). Dynamic Opportunities for Medical Students to Assume the Roles of "Medical Teacher." *Medical Science Educator*, 34(2), 445–454. <https://doi.org/10.1007/s40670-023-01969-8>
- Markowski, M., Bower, H., Essex, R., & Yearley, C. (2021). Peer learning and collaborative placement models in health care: A systematic review and qualitative synthesis of the literature. *Journal of Clinical Nursing*, 30(11–12), 1519–1541. <https://doi.org/10.1111/jocn.15661>
- National Occupational Competency Profile for Paramedics. (2011). Paramedic Association of Canada. <https://paramedic.ca/competencies/nocp/>
- National Union of Public and General Employees (NUPGE). (n.d.). *Paramedics in Crisis: A report on the working conditions of Emergency Medical Services (EMS) Workers*. Retrieved <https://nupge.ca/wp-content/uploads/2023/05/Paramedics-In-Crisis-1.pdf>
- Newton, J., Carpenter, T., & Zwicker, J. (2024). Exploring paramedic perspectives on emergency medical service (EMS) delivery in Alberta: A qualitative study. *BMC Emergency Medicine*, 24(1), 66. <https://doi.org/10.1186/s12873-024-00986-z>

- Nursing Clinicals: What Nursing Students Should Expect*. (2023, November 16). American Nurses Association. <https://www.nursingworld.org/content-hub/resources/becoming-a-nurse/what-to-expect-during-clinicals>
- Qualtrics. (2024). *Qualtrics* [Computer software]. <https://www.qualtrics.com>
- Rong, K., Lee, G., & Herbst, M. (2022). Effectiveness of Near-Peer Versus Faculty Point-of-Care Ultrasound Instruction to Third-Year Medical Students. *POCUS Journal*, 7(2), 239–244. <https://doi.org/10.24908/pocus.v7i2.15746>
- Sandelowski, M. (2000). Whatever happened to qualitative description? *Research in Nursing & Health*, 23(4), 334–340. [https://doi.org/10.1002/1098-240X\(200008\)23:4%3C334::AID-NUR9%3E3.0.CO;2-G](https://doi.org/10.1002/1098-240X(200008)23:4%3C334::AID-NUR9%3E3.0.CO;2-G)
- Sheahan, J., Duffy, R., & Cunningham, C. (2025). The evolving role of paramedicine educators: A scoping review. *African Journal of Emergency Medicine*, 15(2), 595–601. <https://doi.org/10.1016/j.afjem.2025.04.001>
- Villamin, P., Lopez, V., Thapa, D. K., & Cleary, M. (2025). A Worked Example of Qualitative Descriptive Design: A Step-by-Step Guide for Novice and Early Career Researchers. *Journal of Advanced Nursing*, 81(8), 5181–5195. <https://doi.org/10.1111/jan.16481>
- Worsfold, M. E., Jouanny, C., Hamer, E., Mohrsen, S. A., Jadzinski, P., & Harper, M. (2024). “This is how I’m going to do it, but this is not how you’re going to do it”: The expectation gap between student paramedics and mentors in East and Central Scotland. *BMC Medical Education*, 24(1), 368. <https://doi.org/10.1186/s12909-024-05319-z>