

BMJ Open

BMJ Open is committed to open peer review. As part of this commitment we make the peer review history of every article we publish publicly available.

When an article is published we post the peer reviewers' comments and the authors' responses online. We also post the versions of the paper that were used during peer review. These are the versions that the peer review comments apply to.

The versions of the paper that follow are the versions that were submitted during the peer review process. They are not the versions of record or the final published versions. They should not be cited or distributed as the published version of this manuscript.

BMJ Open is an open access journal and the full, final, typeset and author-corrected version of record of the manuscript is available on our site with no access controls, subscription charges or pay-per-view fees (<http://bmjopen.bmj.com>).

If you have any questions on BMJ Open's open peer review process please email info.bmjopen@bmj.com

BMJ Open

Examining Consensus for a Standardized Patient Assessment in Community Paramedicine Home Visits: a RAND/UCLA modified Delphi Study

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2019-031956
Article Type:	Research
Date Submitted by the Author:	27-May-2019
Complete List of Authors:	Leyenaar, Matthew; McMaster University, Health Research Methods, Evidence, and Impact Strum, Ryan; McMaster University, Health Research Methods, Evidence, and Impact Batt, Alan; Fanshawe College, School of Public Safety; Monash University, Community Emergency Health and Paramedic Practice Sinha, Samir; Mount Sinai Hospital Nolan, Michael; County of Renfrew, Paramedic Service Agarwal, Gina; McMaster University, Family Medicine Tavares, Walter; University of Toronto Faculty of Medicine, The Wilson Centre and Post MD Education; University of Toronto Faculty of Medicine, Institute of Health Policy Management & Evaluation Costa, Andrew P ; McMaster University, Health Research Methods, Evidence, and Impact
Keywords:	ACCIDENT & EMERGENCY MEDICINE, Quality in health care < HEALTH SERVICES ADMINISTRATION & MANAGEMENT, HEALTH SERVICES ADMINISTRATION & MANAGEMENT

SCHOLARONE™
Manuscripts

Title of Manuscript:**Examining Consensus for a Standardized Patient Assessment in Community Paramedicine Home Visits: a RAND/UCLA modified Delphi Study****Author List:** first name, last name, credentials

Matthew Leyenaar, MA

Ryan Strum, HBSc

Alan M. Batt, MSc

Samir Sinha, MD DPhil

Michael Nolan, MA

Gina Agarwal, MBBS PhD

Walter Tavares, PhD

Andrew P Costa, PhD

Author Affiliations:

ML, AC, GA, RS: Department of Health Research Methods, Evidence, and Impact, McMaster University

ML, SS, MN: The Ontario Community Paramedicine Secretariat

AB: School of Public Safety, Fanshawe College AND Paramedic Science Discipline, Central Queensland University AND Department of Community Emergency Health and Paramedic Practice, Monash University

MN: County of Renfrew Paramedic Service

GA: Department of Family Medicine, McMaster University

WT: The Wilson Centre and Post MD Education, Institute of Health Policy, Management and Evaluation, University of Toronto and University Health Network. York Region Paramedic and Senior Services

WT, SS: Department of Medicine, University of Toronto

Corresponding Author:

Matthew Leyenaar

Running Title:**Consensus for a Standardized Patient Assessment in Community Paramedicine****Keywords:** Emergency Medical Services, Community Paramedic, Care planning, Modified Delphi method**Word Count: 2359****Funding Sources/Disclosures:**

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors. ML has received funding for research drawing on this study from the Canadian Frailty Network, Mitacs Accelerate Internship Program, CIHR, and the Hamilton Niagara Haldimand Brant Local Health Integration Network (formerly the Hamilton Niagara Haldimand Brant Community Care Access Centre).

Author Contributions:

ML and AC conceived the study. ML and AC developed the surveys, hosted the meeting, and consolidated the findings. ML prepared the first draft of the manuscript. All authors contributed to the design and methodology of this study and to the writing and critical editing of this manuscript.

Conflict of Interests:

The authors declare no conflicts of interest

For peer review only

Examining Consensus for a Standardized Patient Assessment in Community Paramedicine Home Visits: a RAND/UCLA modified Delphi Study

ABSTRACT

OBJECTIVE

Community paramedicine programs are often designed to address repeated and non-urgent use of paramedic services by providing patients with alternatives to the traditional “treat and transport” ambulance model of care. We sought to investigate the level of consensus that could be found by a panel of experts regarding appropriate health, social, and environmental domains that should be assessed in community paramedicine home visit programs.

DESIGN

We applied the RAND/UCLA appropriateness method in a modified Delphi method to investigate the level of consensus on assessment domains for use in community paramedicine home visit programs.

SETTING & PARTICIPANTS

We included a multi-national panel of experts on community paramedicine and in-home assessment from multiple settings (paramedicine, primary care, mental health, home and community care, geriatric care).

MEASURES

A list of potential assessment categories was established after a targeted literature review and confirmed by panel members. Over multiple rounds, panel members scored the appropriateness of 48 assessment domains on a Likert scale from 0 (not appropriate) to 5 (very appropriate). Scores were then reviewed at an in-person meeting and a finalized list of assessment domains was generated.

RESULTS

After the preliminary round of scoring, all 48 assessment domains had scores that demonstrated consensus. Nine assessment domains (18.8%) demonstrated a wider range of rated appropriateness. The in-person meeting resulted in re-grouping assessment domains and adding an additional domain about urinary continence.

CONCLUSION

An international panel of experts with knowledge about in-home assessment by community paramedics demonstrated a high level of agreement on appropriate patient assessment domains for community paramedicine home visit programs. Community paramedicine home visit programs are likely to have similar patient populations. A standardized assessment instrument may be viable in multiple settings.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- An international panel with expertise in paramedicine and/or assessment practices participated in a multi-round process to find consensus.
- The assessment domains that were examined covered social, functional, cognitive, and medical assessment categories.
- The study process could be applied to find common approaches to assessment in community paramedicine in spite of localized differences in community paramedicine program design.
- The assessment domains that we presented did not provide detail with respect to the number of assessment items that could be included in a domain or the depth of detail.
- An investigation of what assessment items are aligned with the assessment domains that have been described in this study would address the uncertainty about the amount of detail community paramedicine programs are including in their patient assessments.

Examining Consensus for a Standardized Patient Assessment in Community Paramedicine Home Visits: a RAND/UCLA modified Delphi Study

INTRODUCTION

Community paramedicine programs are often designed to address repeated and non-urgent use of paramedic services by providing patients with alternatives to the traditional “treat and transport” ambulance model of care (1–8). For example, some community paramedicine programs partner with primary care providers to assist patients with chronic disease management strategies through home visit programs that integrate patient coaching, patient monitoring processes, and point of care diagnostics (2,5). Community paramedicine programs are in the early stages of development and it is not clear whether or not community paramedics are establishing consistent care plans or providing the evidence-based treatment. In order to provide safe, consistent and evidence-based care, paramedics must complete a patient assessment to guide their decision making (9–11). If such an assessment is valid and reliable, then the paramedic is supported in their care planning and provision of treatments. Providing safe, consistent and evidence-based care should improve patient outcomes, but it is also an indicator of a health system that is working well. Standardized assessment instruments play an important role by demonstrating that consistent approaches are followed and by generating the data necessary to establish the evidence-base (12–19).

Community paramedicine home visit programs commonly combine a variety of discrete assessment scales to create comprehensive patient assessment forms (5,20). In this way, the focus of community paramedicine assessments are tailored to suite local clinical decision-making needs, and reflect the goals and target populations for individual community paramedicine home visit programs (21,22). Yet, standardized assessment instruments are used across multiple healthcare settings as a valuable tool for promoting information continuity across the continuum of care (12,19,21,23–25). Other studies have investigated assessment domains in traditional emergency paramedic settings to inform clinical guidelines for paramedics (26). Without further investigation of the viability for community paramedicine assessment practices, it is difficult to determine whether or not pertinent assessment domains are being included in the community paramedic decision making processes for interventions and care planning in different community paramedicine home visit programs. A standardized assessment or minimum assessment standard might clarify common scopes of practice, facilitate clinical training, and improve patient care, health system utilization, and clinical communication in community paramedicine. To our knowledge no study has examined the viability of standardized patient assessment across community paramedicine home visit programs.

We sought to investigate the level of consensus that could be achieved for standardized assessment content in community paramedicine home visit programs by an international panel of relevant experts. We expected that consensus could be achieved on the relevance of some assessment domains in the community paramedicine setting despite assumed differences in program design between settings because common assessment domains in emergency settings were identified from an international sample of paramedic assessments (26). Should such a consensus be achieved, it would provide an opportunity for future testing of a standardized assessment instrument in community paramedicine.

METHODS

Design

We applied the RAND/UCLA Appropriateness Method (RAM) (developed by the RAND Corporation and the University of California Los Angeles) within a modified Delphi method (27). Multiple rounds of surveys were used to ask a panel of experts to rate the appropriateness of assessment domains for community paramedicine home visit programs. An in-person consensus meeting was held to report on survey results to panel members and discuss the consensus amongst the group. Formal research ethics review was not required for this study based on non-experimental design and low risk to the panel participants. Panel members were under no obligation (real or perceived) to contribute to the work outlined in this paper and their participation was voluntary. Patients and members of the public were not involved in this study.

Establishing expert panel

Our panel of experts represented key backgrounds in paramedic services, primary care, geriatric care, home care, assessment development, and health services research. The panel coordination process involved national and international networks of professionals and researchers with known interests in community paramedicine or patient assessment practices. A panel coordinator sent invitations to individuals who had participated in the International Roundtable on Community Paramedicine, the Canadian EMS Research Network, the Canadian Standards Association Group Technical Committee on Community Paramedicine, the Ontario Community Paramedicine Forum, interRAI, the Canadian Frailty Network, and the Ontario Association of Community Care Access Centres. Panelist selection was based on insuring representation from multiple Canadian and international jurisdictions, multiple research settings, multiple allied health care sectors, and multiple paramedic services

Literature search & identification of assessment domains

We used a targeted literature review to identify assessment domains for consideration in our Delphi process. We included literature about assessment in community paramedicine programs by drawing on a previously conducted scoping review study on case management and care planning in community paramedicine home visit programs (6). Herein, the structure of an assessment was conceptualized to be made up of assessment items pertaining to assessment domains within assessment categories. Any assessment domains described in the studies were compiled into a list and grouped into assessment categories based on broad themes such as social factors, functional abilities, or ongoing health conditions. Where articles named a specific assessment instrument, the domains included in it were added to the respective categories. Given the lack of published research on the topic, panel members were invited to confirm the relevance of the assessment categories and provide suggestions for any other categories that they felt may warrant inclusion. A final list of assessment domains was generated based on the targeted literature review and any input regarding assessment categories that we received. We used this list of assessment domains for the first Delphi questionnaire.

Finding consensus (Delphi rounds)

The Delphi questionnaire presented panel members with each assessment domain in randomized order with a scale ranging from 0 (not appropriate) to 5 (very appropriate). A 6-point scale was used instead of the traditional 9-point scale in order to promote reproducibility (better differentiation between scale choices) and to avoid ambiguity that can result from having

1
2
3 a midpoint in a Likert scale (28). Instructions to panel members were to consider the
4 appropriateness of each domain with respect to the context of where, when, and how patients
5 might be assessed, what other care providers might be involved in care planning or in providing
6 treatment, and what the aims of the community paramedicine program specific to their individual
7 experiences. Results from the preliminary rounds of scoring were compiled and revised surveys
8 were distributed to members where lack of consensus (median scores of two or less on the Likert
9 scale) was found. Two authors (ML & AC) acted as co-chairs for the in-person meeting where
10 consensus was finalized. At the in-person meeting the domains were grouped into assessment
11 categories, as they had been prior to distribution of the first Delphi questionnaire in order to
12 facilitate discussion.
13
14

15 RESULTS

16 *Panel Characteristics*

17 Fifteen individuals agreed to participate in the panel (see Table 1). Many participants
18 were affiliated with multiple professional networks or associations. Experts who had a
19 background in paramedicine included individuals involved nationally or internationally in
20 paramedic service management, community paramedicine programs, or paramedic education or
21 research. Experts who were familiar with assessment practices in care settings other than
22 community paramedicine had portfolios of primary care, geriatric care, mental health care, and
23 home and community care.
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Table 1: Distribution of panelists by affiliations and by areas of expertise.

	<i>n</i>	<i>Affiliation with professional network/association</i>						
		International Roundtable on Community Paramedicine	Canadian EMS Research Network	CSA Group Technical Committee on Community Paramedicine	Ontario Community Paramedicine Forum (Ontario Association of Paramedic Chiefs)	interRAI*	Canadian Frailty Network	Ontario Association of Community Care Access Centres**
<i>Expertise in Paramedicine</i>								
Paramedic Service Management (Chief or Deputy Chief)	3	2	1	1	3	0	0	0
Community Paramedicine (Supervisor or Paramedic)	6	4	3	2	3	0	0	0
Paramedic Educator/Researcher	4	2	3	0	1	0	1	0
<i>Expertise in Assessment</i>								
In Primary Care Settings	1	1	0	1	1	0	0	0
In Acute Geriatric Care Settings	1	0	0	0	1	1	1	0
In Home and Community Care Settings	1	0	0	0	0	0	1	1
In Mental Health/Emergency Psychiatric Settings	1	0	0	0	0	1	0	0
Total	17	9	7	4	9	2	3	1
* interRAI is a network of clinicians and researchers who develop standardized assessment instruments. ** The Ontario Associations of Community Care Access Centres was an organization that coordinated provincial agencies who provided home and community care prior to local level restructuring.								

Survey creation

Assessment categories reflected in the literature search included lifestyle, dietary, and sleeping habits (29), mobility and social needs (30), home safety (8), and fall risk (31). Physical exam and reported symptoms of chronic diseases were common (2,5,8,29–32). Two studies mentioned specific assessment instruments; the CANRISK tool for diabetes (31) and the EQ-5D-3L for quality of life (2). The nine categories presented to panel members prior to distribution of the Delphi questionnaire were living arrangement, psychosocial well-being, cognition, functional ability, nutrition, past medical history, ongoing health conditions, existing use of health services, and mental health. Panel members confirmed these categories and warranted their responses by indicating that the programs that they were involved with were designed to provide care to community dwelling older adults, palliative care patients, long-term care patients, residents of assisted living, patients with identified mental health issues, or members of the general population. The nine assessment categories were then used to formulate a final list of 48 assessment domains for scoring appropriateness (see Table 2).

Delphi Results

Thirteen members of the panel participated in the preliminary round of scoring. All assessment domains had median scores of four or higher indicating that panel members considered them to be appropriate. No item was considered to not be appropriate by the panel and only nine domains (18.8%) had a range of responses greater than or equal to three. Some domains had isolated responses by individual panelists that they were not considered to be appropriate. The three domains (6.3%) that had responses that were lower than two (indicating a degree of inappropriateness) by more than one respondent pertained to marital status, involvement of police in episodes of mental health crisis, and making financial trade-offs. Preventative health measures, urinary continence, driving, social activities, and time spent alone were other domains (n=5, 10.4%) that had one respondent indicate as not being appropriate. Overall, the high scores for appropriateness of assessment domains achieved on the first round of scoring negated the need for distribution of subsequent rounds of scoring prior to the in-person meeting.

Eight members of the panel were able to attend the in-person meeting. Distance and time-zone differences were factors that prevented attendance by other panelists. Discussion about pre-meeting scoring during the meeting resulted in re-grouping questions about social relationships and activities and adding an additional domain to improve context about the assessment of urinary continence. Assessment domains about making financial trade-offs, preventative health measures, and driving were determined to merit inclusion for testing by sites willing to do so. Table 2 has been re-grouped according to the feedback from panel members at the in-person meeting about assessment categories.

Table 2: Summary of respondent scores reflecting the appropriateness of assessment domains. Domains were ranked from 0 (inappropriate) to 5 (highly appropriate)

	Question	Median	Max	Min	Range	
<i>Living arrangements and social status</i>	Patients should be asked an open-ended question allowing them to express their personal goals for care.	5	5	4	1	
	Patients should be asked about their marital status.	4	5	1	4	
	Patients should be asked about their living arrangement (alone, with spouse, with family, etc.).	5	5	4	1	
	Patients should be asked about changes in their living arrangement.	5	5	3	2	
	Patients should be asked about their social relationships.	4	5	2	3	
	Patients should be asked about feeling lonely.	5	5	4	1	
	Patients should be asked about changes in their social activities.	5	5	2	3	
	Patients should be asked about the amount of time they are alone during the day.	5	5	3	2	
	Patients should be asked about the amount of time they are alone during the night.	5	5	2	3	
	Patients should be asked about major stressors (severe illness, loss of income, victim of crime, loss of license, illness of family, etc).	5	5	3	2	
	Patients should be asked whether family or close friends feel overwhelmed by their condition.	4.5	5	3	2	
	Patients should be asked about their home environment (disrepair, safety, inadequate heating or cooling, etc.)	5	5	3	2	
	Patients should be asked about making trade-offs due to finances (food vs shelter, shelter vs clothing, clothing vs medications, etc).	4	5	0	5	
	Patients should be asked whether they have supportive family or close friends.	5	5	4	1	
	<i>Function and abilities</i>	Patients should be asked about activities of daily living (ADL) (bathing, dressing, hygiene, walking etc).	5	5	4	1
		Patients should be asked about mobility (how they move about).	5	5	4	1
Patients should be asked about physical activity (exercise).		5	5	4	1	
Patients should be asked about recent changes in ability to perform activities of daily living (ADL) (bathing, dressing, hygiene, walking etc)..		5	5	4	1	
Patients should be asked whether or not they drive.		4.5	5	2	3	
Patients should be asked about changes in their ability to drive.		4	5	2	3	
Patients should be asked about their ability to communicate with others.		4.5	5	3	2	
Patients should be asked about their hearing and vision.		5	5	3	2	

Table 2: continued

	<i>Question</i>	<i>Median</i>	<i>Max</i>	<i>Min</i>	<i>Range</i>
<i>Cognition, mood, and mental health</i>	Patients should be asked about their memory/recall ability.	5	5	4	1
	Patients should be asked about changes to their mental status.	5	5	3	2
	Patients should be asked about their mood (feeling depressed, anxious, or sad).	5	5	4	1
	Patients should be asked about disordered thought (irritability, inappropriate behaviours, drug or alcohol intoxication).	4.5	5	3	2
	Patients should be asked about insight into their mental health problems (when applicable).	5	5	4	1
	Patients should be asked about police involvement in mental health crisis (when applicable).	4	5	2	3
	Patients should be asked about ideation for harm to self or others (when applicable).	5	5	3	2
<i>Medical history, medications, and ongoing health conditions</i>	Patients should be asked whether they experience medical problems (signs or symptoms of medical conditions that have or have not been diagnosed) (dizziness, fatigue, dyspnea, hallucinations, diarrhea, etc).	5	5	4	1
	Patients should be asked about pain symptoms.	5	5	4	1
	Patients should be asked about the stability of their medical conditions.	5	5	3	2
	Patients should be asked to self-rate their health.	5	5	3	2
	Patients should be asked about tobacco and alcohol use.	5	5	3	2
	Patients should be asked about their diet.	5	5	3	2
	Patients should be asked about weight loss.	5	5	4	1
	Patients should be asked about the prescription medications that they take.	5	5	3	2
	Patients should be asked about adherence to prescription medications.	5	5	4	1
	Patients should be asked about preventative treatments or procedures (eye exam, dental exam, vaccines, mammography, colonoscopy, etc).	4.5	5	2	3
	Patients should be asked about ongoing treatments or procedures (radiation, transfusions, dialysis, etc).	5	5	3	2
	Patients should be asked about their continence (urinary).	5	5	2	3
	Patients should be asked about their medical history (disease diagnoses).	5	5	5	0
	Patients should be asked whether they have recently fallen.	5	5	5	0
<i>Use of health services</i>	Patients should be asked about ongoing formal care (home health aides, homemaking, physical therapy, occupational therapy, etc).	5	5	3	2
	Patients should be asked about use of hospital services (inpatient, outpatient, emergency department visit, etc).	5	5	3	2
	Patients should be asked about use of paramedic services (transport, non-transport, other).	4.5	5	3	2
	Patients should be asked about use of community services (public health, social services, etc.).	5	5	4	1

DISCUSSION

This study conducted a Delphi consensus technique to examine which assessment domains were appropriate areas of inquiry in CP home visit programs. A panel of experts familiar with community paramedicine assessment had a high level of agreement on appropriate patient assessment domains for community paramedicine home visit programs. The high level of agreement was achieved in spite of differences in backgrounds of panel members, designs of community paramedicine programs that they were familiar with, or areas of assessment expertise. Although paramedic training and education (and subsequent certification) varies between jurisdictions, their assessment practices in emergency settings are very similar (11,26). Community paramedicine programs represent a new context for assessment that apply paramedic assessment skills outside of traditional emergency settings and care paradigms. Our findings suggest that similar to emergency settings, the community paramedicine setting requires that paramedics bring together details about medical history, medications, and social factors so that they can identify circumstances where patients may be at risk.

Implications

A feature of community paramedicine is to include community engagement in adapting program operationalization to local needs (3,33). While this is likely a key component of program success, it has also led to uncertainty about the role community paramedics may play (34,35). Our findings illustrate that common approaches to assessment in community paramedicine likely exists and may be realized in spite of differences between settings. Conceptually, paramedics must assess patients before they can determine suitable care planning and interventions that may be beneficial (36). Finding that an international panel of experts found a high level of agreement about the appropriateness of assessment domains can inform both the future standardization of community paramedic education and training as well as the operationalization of common assessment practices. In turn, improved evaluation of community paramedicine programs may be possible because commonly assessed domains would likely reflect the results of interventions and care plans. Such evaluation would also provide clarity to the community paramedic role in patient care (35).

Strengths and weaknesses

The high level of agreement between experts made it difficult to determine which assessment domains were more important than others. While we purposely included clinicians and researchers with experience in primary care, geriatrics, home care, and mental health care, as well as paramedics with experience in community paramedicine from multiple regions, our expert panel was assembled through a convenience sample and participation was voluntary for each stage of the process. Assembling a panel through other means would likely mean that dissenting views on which domains are appropriate for paramedics to assess in home visit programs would emerge. In turn, this could have created more debate and a longer and more challenging process of finding consensus. However, even if dissenting views had emerged through an alternate strategy for gathering a panel of experts, employing Delphi methods has had demonstrated success when consensus has not been reached immediately due to such evidence of dissent (10,37).

The assessment domains that we presented did not provide detail with respect to the number of assessment items that could be included in a domain or the depth of detail. For example, one of the domains that we asked panel members to rate for appropriateness was pain symptoms. All

1
2
3 panel members indicated that this was an appropriate domain to assess (minimum score of 4).
4 However, pain is a very complex condition that can affect different patients in different ways.
5 Community paramedics might be expected to follow the same style of pain mnemonic adapted
6 from emergency practice (26), but the detail involved in determining intensity, duration,
7 frequency, and severity of pain was not explicitly described in the questionnaire provided.
8 Similar exploration of depth and detail could be ascribed to nearly all of the assessment domains
9 included in the questionnaire.
10
11

12 *Future work*

13 Future work should test specific assessment items within the domains evaluated in this study.
14 Such work should consider the role that specific items might have in different community
15 paramedicine settings. An investigation of what assessment items are aligned with the
16 assessment domains that have been described in this study would address the uncertainty about
17 the amount of detail community paramedicine programs are including in their patient
18 assessments and contribute to the development of a validated assessment instrument for
19 community paramedicine.
20
21

22 CONCLUSION

23 A diverse expert panel (in terms of geographical region, experience, and clinical
24 background) achieved consensus on domains to be included in the assessment of patients in
25 community paramedicine home visit programs. This consensus suggests that similar assessment
26 practices occur in diverse community paramedicine home visit programs in spite of operational
27 differences. Questions remain about the amount of detail and degree of depth that should be
28 included in each assessment domain.
29
30
31

32 ACKNOWLEDGEMENTS

33 We are grateful for the support and participation of panel members; Mike Adair, CAN; Dr. Gina
34 Agarwal, CAN; Alan Batt, IRE; Jane Blums, CAN; Kristy Campbell, CAN; Dr. Judah Goldstein,
35 CAN; Dr. Ron Hoffman, CAN; Ryan Kozicky, CAN; Justin Lammers, CAN; Brent McLeod,
36 CAN; Michael Nolan, CAN; Dr. Peter O'Meara, AUS; Duncan Roberston, UK; Michael Roffey,
37 CAN; Dr. Samir Sinha, CAN; Dr. Walter Tavares, CAN; and Gary Wingrove, USA. Some panle
38 members were assisted at different parts of the process by their colleagues; Jane Blums thanks
39 Galina Grinchenko, Justin Lammers thanks Jen Miner and Cathie Hedges, Michael Nolan thanks
40 J.D. Heffern, and Gary Wingrove thanks Luke Myers.
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

REFERENCES

1. Dainty KN, Seaton MB, Drennan IR, Morrison LJ. Home Visit-Based Community Paramedicine and Its Potential Role in Improving Patient-Centered Primary Care : A Grounded Theory Study and Framework. *Health Serv Res*. 2018;1–16.
2. Drennan IR, Dainty KN, Hoogeveen P, Atzema CL, Barrette N, Hawker G, et al. Expanding Paramedicine in the Community (EPIC): study protocol for a randomized controlled trial. *Trials* [Internet]. 2014;15(473):1–10. Available from: <http://www.trialsjournal.com/content/15/1/473>
3. Meara PO, Stirling C, Ruest M. Community paramedicine model of care: an observational, ethnographic case study. *BMC Health Serv Res* [Internet]. 2016 Dec 2 [cited 2016 Oct 26];16(1):39. Available from: <http://www.biomedcentral.com/1472-6963/16/39>
4. Munjal K, Chapin H, Miller T, Kahn C, Richardson L, Dunford J. Promoting Innovation in Emergency Medical Services. 2019.
5. Abrashkin KA, Washko J, Zhang J, Poku A, Kim H, Smith KL. Providing Acute Care at Home : Community Paramedics Enhance an Advanced Illness Management Program — Preliminary Data. *J Am Geriatr Soc* [Internet]. 2016 Dec [cited 2016 Dec 28];64(12):2572–6. Available from: <http://doi.wiley.com/10.1111/jgs.14484>
6. Leyenaar M, Mcleod B, Chan J, Tavares W, Costa A, Agarwal G. A scoping study and qualitative assessment of care planning and case management in community paramedicine. *Irish J Paramed*. 2018;3(July):1–15.
7. Crockett BM, Jasiak KD, Walroth TA, Degenkolb KE, Stevens AC, Jung CM. Pharmacist Involvement in a Community Paramedicine Team. *J Pharm Pract* [Internet]. 2016 Mar 21 [cited 2016 Dec 28]; Available from: <http://jpp.sagepub.com/cgi/doi/10.1177/0897190016631893>
8. Ruest M, Stichman A, Day C. Evaluating the impact on 911 calls by an in-home programme with a multidisciplinary team. *Int Paramed Pract*. 2012;1(4):125–32.
9. Jensen JL, Croskerry P, Travers AH. Paramedic clinical decision making during high acuity emergency calls: Design and methodology of a Delphi study. *BMC Emerg Med*. 2009;9:17.
10. Jensen JL, Croskerry P, Travers AH. Consensus on paramedic clinical decisions during high-acuity emergency calls: Results of a Canadian Delphi study. *Can J Emerg Med*. 2011;13(5):310–8.
11. Perona M, Rahman MA, O’Meara P. Review Paramedic judgement , decision-making and cognitive processing : a review of the literature. *Australas J Paramed*. 2019;16:1–12.
12. Dash D, Heckman GA, Boscart VM, Costa AP, Killingbeck J, d’Avernas JR. Using powerful data from the interRAI MDS to support care and a learning health system: A case study from long-term care. *Healthc Manag Forum* [Internet]. 2018;31(4):153–9. Available from: <http://journals.sagepub.com/doi/10.1177/0840470417743989>
13. Costa AP, Hirdes JP, Bell CM, Bronskill SE, Heckman GA, Mitchell L, et al. Derivation and validation of the detection of indicators and vulnerabilities for emergency room trips scale for classifying the risk of emergency department use in frail community-dwelling older adults. *J Am Geriatr Soc*. 2015;63(4):763–9.
14. Salam-White L, Hirdes JP, Poss JW, Blums J. Predictors of emergency room visits or acute hospital admissions prior to death among hospice palliative care clients in Ontario: a retrospective cohort study. *BMC Palliat Care* [Internet]. 2014;13(1):35. Available from:

- <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=4106206&tool=pmcentrez&rendertype=abstract>
15. Gray LC, Peel NM, Costa AP, Burkett E, Dey AB, Jonsson P V., et al. Profiles of older patients in the emergency department: Findings from the interRAI multinational emergency department study. *Ann Emerg Med* [Internet]. 2013;62(5):467–74. Available from: <http://dx.doi.org/10.1016/j.annemergmed.2013.05.008>
 16. Sinn C-LJ, Betini RSD, Wright J, Eckler L, Chang BW, Hogeveen S, et al. Adverse Events in Home Care: Identifying and Responding with interRAI Scales and Clinical Assessment Protocols*. *Can J Aging / La Rev Can du Vieil* [Internet]. 2018 [cited 2018 Nov 7];37(1):60–9. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5851050/pdf/S0714980817000538a.pdf>
 17. Wellens NIH, Deschodt M, Boonen S, Flamaing J, Gray L, Moons P, et al. Validity of the interRAI Acute Care based on test content : a multi-center study. *Aging Clin Exp Res* [Internet]. 2011 Oct 31 [cited 2018 Sep 6];23(5–6):476–86. Available from: <http://link.springer.com/10.1007/BF03325244>
 18. Wellens NIH, Verbeke G, Flamaing J, Moons P, Boonen S, Tournoy J, et al. Clinical changes in older adults during hospitalization: Responsiveness of the interRAI Acute Care instrument. *J Am Geriatr Soc*. 2013;61(5):799–804.
 19. Heckman G, Gray L, Hirdes J. Addressing health care needs for frail seniors in Canada: the role of interRAI instruments. *Can Geriatr J*. 2013;3(1):8–16.
 20. Agarwal G, Angeles R, Pirrie M, McLeod B, Marzanek F, Parascandolo J, et al. Reducing 9-1-1 emergency medical service calls by implementing a community paramedicine program for vulnerable older adults in public housing in Canada: A multi-site cluster randomized controlled trial. *Prehospital Emerg Care* [Internet]. 2019;0(0):1–16. Available from: <https://www.tandfonline.com/doi/full/10.1080/10903127.2019.1566421>
 21. Gray LC, Berg K, Fries BE, Henrard J-C, Hirdes JP, Steel K, et al. Sharing clinical information across care settings: the birth of an integrated assessment system. *BMC Health Serv Res* [Internet]. 2009;9(1):71. Available from: <http://bmchealthservres.biomedcentral.com/articles/10.1186/1472-6963-9-71>
 22. Wellens NIH, Deschodt M, Flamaing J, Moons P, Boonen S, Boman X, et al. First-generation versus third-generation comprehensive geriatric assessment instruments in the acute hospital setting: A comparison of the Minimum Geriatric Screening Tools (MGST) and the interRAI Acute Care (interRAI AC). *J Nutr Health Aging* [Internet]. 2011 Oct 10;15(8):638–44. Available from: <http://link.springer.com/10.1007/s12603-011-0109-2>
 23. Hirdes JP, Ljunggren G, Morris JN, Frijters DH, Finne Soveri H, Gray L, et al. Reliability of the interRAI suite of assessment instruments: A 12-country study of an integrated health information system. *BMC Health Serv Res*. 2008;8:1–11.
 24. Morris JN, Fries BE, Steel K, Ikegami N, Bernabei R, Carpenter GI, et al. Comprehensive Clinical Assessment in Community Setting: Applicability of the MDS-HC. *J Am Geriatr Soc* [Internet]. 1997 Aug 1 [cited 2018 Sep 12];45(8):1017–24. Available from: <http://doi.wiley.com/10.1111/j.1532-5415.1997.tb02975.x>
 25. Berg K, Finne-Soveri H, Gray L, Henrard JC, Hirdes J, Ikegami N, et al. Relationship between interRAI HC and the ICF: opportunity for operationalizing the ICF. *BMC Health Serv Res* [Internet]. 2009 Dec 17 [cited 2018 Sep 12];9(1):47. Available from: <http://bmchealthservres.biomedcentral.com/articles/10.1186/1472-6963-9-47>
 26. Colbeck MA, Maria S, Eaton G, Campbell C, Batt AM, Caffey MR. International

- 1
2
3 Examination and Synthesis of the Primary and Secondary Surveys in Paramedicine. *Irish J*
4 *Paramed.* 2018;3(2):1–9.
- 5
6 27. Fitch K, Bernstein SJ, Aguilar MD, Burnand B, LaCalle JR, Lazaro P, et al. The RAND /
7 UCLA Appropriateness Method User ' s Manual. Santa Monica: RAND; 2001.
- 8 28. Cox III EP. The Optimal Number of Response Alternatives for a Scale: A Review. *J Mark*
9 *Res* [Internet]. 1980;17(4):407. Available from:
10 <http://www.jstor.org/stable/3150495?origin=crossref>
- 11 29. Crockett BM, Jasiak KD, Walroth TA, Degenkolb KE, Stevens AC, Jung CM. Pharmacist
12 Involvement in a Community Paramedicine Team. *J Pharm Pract* [Internet]. 2016 Mar 21
13 [cited 2016 Dec 28];30(2):223–8. Available from:
14 <http://www.ncbi.nlm.nih.gov/pubmed/27000138>
- 15 30. Mason S, Knowles E, Colwell B, Dixon S, Wardrope J, Gorringer R, et al. Effectiveness of
16 paramedic practitioners in attending 999 calls from elderly people in the community:
17 cluster randomised controlled trial. *BMJ.* 2007;335(7626):1–6.
- 18 31. Agarwal G, McDonough B, Angeles R, Pirrie M, Marzanek F, Mcleod B, et al. Rationale
19 and methods of a multicentre randomised controlled trial of the effectiveness of a
20 Community Health Assessment Programme with Emergency Medical Services (CHAP-
21 EMS) implemented on residents aged 55 years and older in subsidised seniors' housing b.
22 *BMJ Open* [Internet]. 2015;5(6):e008110–e008110. Available from:
23 [http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=4466604&tool=pmcentrez&re](http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=4466604&tool=pmcentrez&rendertype=abstract)
24 [ndertype=abstract](http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=4466604&tool=pmcentrez&rendertype=abstract)
- 25 32. Swain AH, Hoyle SR, Long AW. The changing face of prehospital care in New Zealand:
26 the role of extended care paramedics. *J New Zeal Med Assoc NZMJ* [Internet].
27 2010;19(123):11–4. Available from: <http://www.nzma.org.nz/journal/123-1309/3985/>
- 28 33. O'Meara PF, Tourle V, Stirling C, Walker J, Pedler D. Extending the paramedic role in
29 rural Australia: A story of flexibility and innovation. *Rural Remote Health.* 2012;12(2).
- 30 34. Bigham BL, Kennedy SM, Drennan I, Morrison LJ. Expanding Paramedic Scope of
31 Practice in the Community: A Systematic Review of the Literature. *Prehospital Emerg*
32 *Care.* 2013;17(3):361–72.
- 33 35. O'Meara P. Community paramedics : a scoping review of their emergence and potential
34 impact. *Int Paramed Pract.* 2014;4(1):5–12.
- 35 36. Carter H, Thompson J. Defining the paramedic process. *Aust J Prim Health.*
36 2015;21(1):22–6.
- 37 37. Van Grootven B, McNicoll L, Mendelson DA, Friedman SM, Fagard K, Milisen K, et al.
38 Quality indicators for in-hospital geriatric co-management programmes: A systematic
39 literature review and international Delphi study. *BMJ Open.* 2018;8(3):1–11.
- 40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

BMJ Open

Examining Consensus for a Standardized Patient Assessment in Community Paramedicine Home Visits: a RAND/UCLA modified Delphi Study

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2019-031956.R1
Article Type:	Original research
Date Submitted by the Author:	02-Aug-2019
Complete List of Authors:	Leyenaar, Matthew; McMaster University, Health Research Methods, Evidence, and Impact Strum, Ryan; McMaster University, Health Research Methods, Evidence, and Impact Batt, Alan; Fanshawe College, School of Public Safety; Monash University, Community Emergency Health and Paramedic Practice Sinha, Samir; Mount Sinai Hospital Nolan, Michael; County of Renfrew, Paramedic Service Agarwal, Gina; McMaster University, Family Medicine Tavares, Walter; University of Toronto Faculty of Medicine, The Wilson Centre and Post MD Education; University of Toronto Faculty of Medicine, Institute of Health Policy Management & Evaluation Costa, Andrew P ; McMaster University, Health Research Methods, Evidence, and Impact
Primary Subject Heading:	Evidence based practice
Secondary Subject Heading:	Health services research
Keywords:	ACCIDENT & EMERGENCY MEDICINE, Quality in health care < HEALTH SERVICES ADMINISTRATION & MANAGEMENT, HEALTH SERVICES ADMINISTRATION & MANAGEMENT, Emergency Medical Services, Community paramedicine, Assessment

SCHOLARONE™
Manuscripts

Title of Manuscript:**Examining Consensus for a Standardized Patient Assessment in Community Paramedicine Home Visits: a RAND/UCLA modified Delphi Study****Author List:** first name, last name, credentials, email

Matthew S Leyenaar, MA, leyenam@mcmaster.ca

Ryan P Strum, HBS, strumr@mcmaster.ca

Alan Batt, MSc, alan@batt.me

Samir Sinha, MD DPhil, samir.sinha@sinaihealthsystem.ca

Michael Nolan, MA, mnolan@countyofrenfrew.on.ca

Gina Agarwal, MBBS PhD, gina.agarwal@gmail.com

Walter Tavares, PhD, walter.tavares@utoronto.ca

Andrew P Costa, PhD, acosta@mcmaster.ca

Author Affiliations:

ML, AC, GA, RS: Department of Health Research Methods, Evidence, and Impact, McMaster University, CAN

ML, SS, MN: The Ontario Community Paramedicine Secretariat, CAN

AB: School of Public Safety, Fanshawe College, CAN AND Paramedic Science Discipline, Central Queensland University, AUS AND Department of Community Emergency Health and Paramedic Practice, Monash University, AUS

MN: County of Renfrew Paramedic Service, CAN

GA: Department of Family Medicine, McMaster University, CAN

WT: The Wilson Centre and Post MD Education, Institute of Health Policy, Management and Evaluation, University of Toronto and University Health Network. York Region Paramedic and Senior Services, CAN

WT, SS: Department of Medicine, University of Toronto, CAN

Corresponding Author:

Matthew Leyenaar

Running Title:**Consensus for a Standardized Patient Assessment in Community Paramedicine****Keywords:** Emergency Medical Services, Community Paramedic, Care planning, Modified Delphi method**Word Count: 2359****Funding Sources/Disclosures:**

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors. ML has received funding for research drawing on this study from the Canadian Frailty Network, Mitacs Accelerate Internship Program, CIHR, and the Hamilton Niagara Haldimand Brant Local Health Integration Network (formerly the Hamilton Niagara Haldimand Brant Community Care Access Centre).

Author Contributions:

ML and AC conceived the study. ML and AC developed the surveys, hosted the meeting, and consolidated the findings. ML prepared the first draft of the manuscript. All authors (ML, RS, AB, SS, MN, GA, WT, & AC) contributed to the design and methodology of this study and to the writing and critical editing of this manuscript.

Conflict of Interests:

The authors declare no conflicts of interest

Data sharing statement:

Anonymized individual survey responses are included as a supplementary file.

For peer review only

Examining Consensus for a Standardized Patient Assessment in Community Paramedicine Home Visits: a RAND/UCLA modified Delphi Study

ABSTRACT

OBJECTIVE

Community paramedicine programs are often designed to address repeated and non-urgent use of paramedic services by providing patients with alternatives to the traditional “treat and transport” ambulance model of care. We sought to investigate the level of consensus that could be found by a panel of experts regarding appropriate health, social, and environmental domains that should be assessed in community paramedicine home visit programs.

DESIGN

We applied the RAND/UCLA appropriateness method in a modified Delphi method to investigate the level of consensus on assessment domains for use in community paramedicine home visit programs.

SETTING & PARTICIPANTS

We included a multi-national panel of 17 experts on community paramedicine and in-home assessment from multiple settings (paramedicine, primary care, mental health, home and community care, geriatric care).

MEASURES

A list of potential assessment categories was established after a targeted literature review and confirmed by panel members. Over multiple rounds, panel members scored the appropriateness of 48 assessment domains on a Likert scale from 0 (not appropriate) to 5 (very appropriate). Scores were then reviewed at an in-person meeting and a finalized list of assessment domains was generated.

RESULTS

After the preliminary round of scoring, all 48 assessment domains had scores that demonstrated consensus. Nine assessment domains (18.8%) demonstrated a wider range of rated appropriateness. No domains were found to be not appropriate. Achieving consensus about the appropriateness of assessment domains on the first round of scoring negated the need for subsequent rounds of scoring. The in-person meeting resulted in re-grouping assessment domains and adding an additional domain about urinary continence.

CONCLUSION

An international panel of experts with knowledge about in-home assessment by community paramedics demonstrated a high level of agreement on appropriate patient assessment domains for community paramedicine home visit programs. Community paramedicine home visit programs are likely to have similar patient populations. A standardized assessment instrument may be viable in multiple settings.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- An international panel with expertise in paramedicine and/or assessment practices participated in a multi-round process to find consensus.
- The assessment domains that were examined covered social, functional, cognitive, and medical assessment categories.
- The study process could be applied to find common approaches to assessment in community paramedicine in spite of localized differences in community paramedicine program design.
- The assessment domains that we presented did not provide detail with respect to the number of assessment items that could be included in a domain or the depth of detail.
- An investigation of what assessment items are aligned with the assessment domains that have been described in this study would address the uncertainty about the amount of detail community paramedicine programs are including in their patient assessments.

Examining Consensus for a Standardized Patient Assessment in Community Paramedicine Home Visits: a RAND/UCLA modified Delphi Study

INTRODUCTION

Increasing demands on the health system by an aging population have contributed to novel approaches to service delivery in paramedicine (1–5). Community paramedicine programs are often designed to address repeated and non-urgent use of paramedic services by providing patients with alternatives to the traditional “treat and transport” ambulance model of care (5–12). For example, some community paramedicine programs partner with primary care providers to assist patients with chronic disease management strategies through home visit programs that integrate patient coaching, patient monitoring processes, and point of care diagnostics through scheduled, non-emergency visits (7,10). Community paramedicine programs are in the early stages of development meaning that many components of program delivery are unclear, including the role of the paramedic in providing integrated non-emergency care. For example, it is unclear how community paramedics identify or prioritize patients, whether they are establishing consistent care plans, or if their training is sufficient to provide evidence-based treatments. In order to provide safe, consistent and evidence-based care, paramedics must complete a patient assessment to guide their decision making (13–15). If such an assessment is valid and reliable, then the paramedic is supported in their care planning and provision of treatments. Providing safe, consistent and evidence-based care should improve patient outcomes, but it is also an indicator of a health system that is working well. Standardized assessment instruments play an important role by ensuring that consistent approaches are followed and by generating the data necessary to establish the evidence-base (16–23).

Community paramedicine home visit programs commonly combine a variety of discrete assessment scales to create comprehensive patient assessment forms (10,24). In this way, the focus of community paramedicine assessments are tailored to suit local clinical decision-making needs, and reflect the goals and target populations for individual community paramedicine home visit programs (25,26). Yet, standardized assessment instruments are used across multiple healthcare settings as a valuable tool for promoting information continuity across the continuum of care (16,23,25,27–29). Other studies have investigated assessment domains in traditional emergency paramedic settings to inform clinical guidelines for paramedics (30). Without further investigation of the viability for community paramedicine assessment practices, it is difficult to determine whether or not pertinent assessment domains are being included in the community paramedic decision making processes for interventions and care planning in different community paramedicine home visit programs. A standardized assessment or minimum assessment standard might clarify common scopes of practice, facilitate clinical training, and improve patient care, health system utilization, and clinical communication in community paramedicine. To our knowledge no study has examined the viability of standardized patient assessment across community paramedicine home visit programs.

We sought to investigate the level of consensus that could be achieved for standardized assessment content in community paramedicine home visit programs by an international panel of relevant experts. We expected that consensus could be achieved on the relevance of some assessment domains in the community paramedicine setting despite assumed differences in program design between settings because common assessment domains in emergency settings

1
2
3 were identified from an international sample of paramedic assessments (30). Should such a
4 consensus be achieved, it would provide an opportunity for future testing of a standardized
5 assessment instrument in community paramedicine.
6

7 8 METHODS

9 *Design*

10 We applied the RAND/UCLA Appropriateness Method (RAM) (developed by the RAND
11 Corporation and the University of California Los Angeles) within a modified Delphi method
12 (31). Multiple rounds of surveys were used to ask a panel of experts to rate the appropriateness
13 of assessment domains for community paramedicine home visit programs. An in-person
14 consensus meeting was held to report on survey results to panel members and discuss the
15 consensus amongst the group.
16

17 18 *Ethics*

19 Formal research ethics review was not required for this study based on non-experimental
20 design and low risk to the panel participants. Panel members were under no obligation (real or
21 perceived) to contribute to the work outlined in this paper and their participation was voluntary.
22

23 24 *Patient and public involvement*

25 Patients and members of the public were not involved in this study.
26

27 28 *Establishing expert panel*

29 Our panel of experts represented key backgrounds in paramedic services, primary care,
30 geriatric care, home care, assessment development, and health services research. The panel
31 coordination process involved national and international networks of professionals and
32 researchers with known interests in community paramedicine or patient assessment practices. A
33 panel coordinator sent invitations to individuals who had participated in the International
34 Roundtable on Community Paramedicine, the Canadian EMS Research Network, the Canadian
35 Standards Association Group Technical Committee on Community Paramedicine, the Ontario
36 Community Paramedicine Forum, interRAI, the Canadian Frailty Network, and the Ontario
37 Association of Community Care Access Centres. Panelist selection was based on ensuring
38 representation from multiple Canadian and international jurisdictions, multiple research settings,
39 multiple allied health care sectors, and multiple paramedic services
40
41

42 43 *Literature search & identification of assessment domains*

44 Throughout this study, the structure of an assessment was conceptualized to be made up of
45 assessment items pertaining to assessment domains within assessment categories. We used a
46 targeted literature review to identify assessment domains for consideration in our Delphi process.
47 We included literature about assessment in community paramedicine programs by drawing on a
48 previously conducted scoping review study on case management and care planning in
49 community paramedicine home visit programs (5). A total of 26 articles about community
50 paramedicine were reviewed for any assessment domains described, either generally or through
51 explicitly named assessment instruments. A list of assessment domains was generated and
52 grouped into assessment categories based on broad themes such as social factors, functional
53 abilities, or ongoing health conditions. When articles named a specific assessment instrument,
54 the domains included in it were added to the respective categories. Grouping was done
55
56
57
58
59

1
2
3 concurrently by consensus between two reviewers (ML & AC). Given the lack of published
4 research on the topic, panel members were invited to confirm the relevance of the assessment
5 categories and provide suggestions for any other categories that they felt may warrant inclusion.
6 A final list of assessment domains was generated based on the targeted literature review and any
7 input regarding assessment categories that we received. We used this list of assessment domains
8 for the first Delphi questionnaire.
9

10 11 *Finding consensus (Delphi rounds)*

12 The Delphi questionnaire presented panel members with each assessment domain in
13 randomized order with a scale ranging from 0 (not appropriate) to 5 (very appropriate). A 6-
14 point scale was used instead of the traditional 9-point scale in order to promote reproducibility
15 (better differentiation between scale choices) and to avoid ambiguity that can result from having
16 a midpoint in a Likert scale (32). Instructions to panel members were to consider the
17 appropriateness of each domain with respect to the context of where, when, and how patients
18 might be assessed, what other care providers might be involved in care planning or in providing
19 treatment, and what the aims of the community paramedicine program specific to their individual
20 experiences. Results from the preliminary rounds of scoring were compiled and revised surveys
21 were distributed to members where lack of consensus (median scores of two or less on the Likert
22 scale) was found. Two authors (ML & AC) acted as co-chairs for the in-person meeting where
23 consensus was finalized. To facilitate discussion at the in-person meeting, assessment domains
24 were grouped into the same assessment categories from the first Delphi questionnaire.
25
26
27

28 RESULTS

29 *Panel Characteristics*

30
31 Seventeen individuals agreed to participate in the panel (see Table 1). Many participants
32 were affiliated with multiple professional networks or associations. Experts who had a
33 background in paramedicine included individuals involved nationally or internationally in
34 paramedic service management, community paramedicine programs, or paramedic education or
35 research. Experts who were familiar with assessment practices in care settings other than
36 community paramedicine had portfolios of primary care, geriatric care, mental health care, and
37 home and community care.
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Table 1: Distribution of panelists by affiliations and by areas of expertise.

	<i>n</i>	<i>Affiliation with professional network/association</i>						
		International Roundtable on Community Paramedicine	Canadian EMS Research Network	CSA Group Technical Committee on Community Paramedicine	Ontario Community Paramedicine Forum (Ontario Association of Paramedic Chiefs)	interRAI*	Canadian Frailty Network	Ontario Association of Community Care Access Centres**
<i>Expertise in Paramedicine</i>								
Paramedic Service Management (Chief or Deputy Chief)	3	2	1	1	3	0	0	0
Community Paramedicine (Supervisor or Paramedic)	6	4	3	2	3	0	0	0
Paramedic Educator/Researcher	4	2	3	0	1	0	1	0
<i>Expertise in Assessment</i>								
In Primary Care Settings	1	1	0	1	1	0	0	0
In Acute Geriatric Care Settings	1	0	0	0	1	1	1	0
In Home and Community Care Settings	1	0	0	0	0	0	1	1
In Mental Health/Emergency Psychiatric Settings	1	0	0	0	0	1	0	0
Total	17	9	7	4	9	2	3	1
* interRAI is a network of clinicians and researchers who develop standardized assessment instruments.								
** The Ontario Associations of Community Care Access Centres was an organization that coordinated provincial agencies who provided home and community care prior to local level restructuring.								

Survey creation

Assessment categories reflected in the literature search included lifestyle, dietary, and sleeping habits (33), mobility and social needs (34), home safety (12), and fall risk (35). Physical exam and reported symptoms of chronic diseases were common (7,10,12,33–36). Two studies mentioned specific assessment instruments; the CANRISK tool for diabetes (35) and the EQ-5D-3L for quality of life (7). The nine categories presented to panel members prior to distribution of the Delphi questionnaire were living arrangement, psychosocial well-being, cognition, functional ability, nutrition, past medical history, ongoing health conditions, existing use of health services, and mental health. Panel members confirmed these categories and warranted their responses by indicating that the programs that they were involved with were designed to provide care to community dwelling older adults, palliative care patients, long-term care patients, residents of assisted living, patients with identified mental health issues, or members of the general population. The nine assessment categories were then used to formulate a final list of 48 assessment domains for scoring appropriateness (see Table 2).

Delphi Results

Thirteen members of the panel participated in the preliminary round of scoring. All assessment domains had median scores of four or higher indicating that panel members considered them to be appropriate. No item was considered to not be appropriate by the panel and only nine domains (18.8%) had a range of responses greater than or equal to three. Some domains had isolated responses by individual panelists that they were not considered to be appropriate. The three domains (6.3%) that had responses that were lower than two (indicating a degree of inappropriateness) by more than one respondent pertained to marital status, involvement of police in episodes of mental health crisis, and making financial trade-offs. Preventative health measures, urinary continence, driving, social activities, and time spent alone were other domains (n=5, 10.4%) that had one respondent indicate as not being appropriate. Overall, the high scores for appropriateness of assessment domains achieved on the first round of scoring negated the need for distribution of subsequent rounds of scoring prior to the in-person meeting.

Eight members of the panel were able to attend the in-person meeting. Distance and time-zone differences were factors that prevented attendance by other panelists. Discussion about pre-meeting scoring during the meeting resulted in re-grouping questions about social relationships and activities and adding an additional domain to improve context about the assessment of urinary continence. Assessment domains about making financial trade-offs, preventative health measures, and driving were determined to merit inclusion for testing by sites willing to do so. Table 2 has been re-grouped according to the feedback from panel members at the in-person meeting about assessment categories. All data relevant to the study are included in Tables 1 and 2. Anonymized individual survey responses are available as a supplementary file.

Table 2: Summary of respondent scores reflecting the appropriateness of assessment domains. Domains were ranked from 0 (inappropriate) to 5 (highly appropriate)

	Question	Median	Max	Min	Range	
<i>Living arrangements and social status</i>	Patients should be asked an open-ended question allowing them to express their personal goals for care.	5	5	4	1	
	Patients should be asked about their marital status.	4	5	1	4	
	Patients should be asked about their living arrangement (alone, with spouse, with family, etc.).	5	5	4	1	
	Patients should be asked about changes in their living arrangement.	5	5	3	2	
	Patients should be asked about their social relationships.	4	5	2	3	
	Patients should be asked about feeling lonely.	5	5	4	1	
	Patients should be asked about changes in their social activities.	5	5	2	3	
	Patients should be asked about the amount of time they are alone during the day.	5	5	3	2	
	Patients should be asked about the amount of time they are alone during the night.	5	5	2	3	
	Patients should be asked about major stressors (severe illness, loss of income, victim of crime, loss of license, illness of family, etc).	5	5	3	2	
	Patients should be asked whether family or close friends feel overwhelmed by their condition.	4.5	5	3	2	
	Patients should be asked about their home environment (disrepair, safety, inadequate heating or cooling, etc.)	5	5	3	2	
	Patients should be asked about making trade-offs due to finances (food vs shelter, shelter vs clothing, clothing vs medications, etc).	4	5	0	5	
	Patients should be asked whether they have supportive family or close friends.	5	5	4	1	
	<i>Function and abilities</i>	Patients should be asked about activities of daily living (ADL) (bathing, dressing, hygiene, walking etc).	5	5	4	1
		Patients should be asked about mobility (how they move about).	5	5	4	1
Patients should be asked about physical activity (exercise).		5	5	4	1	
Patients should be asked about recent changes in ability to perform activities of daily living (ADL) (bathing, dressing, hygiene, walking etc)..		5	5	4	1	
Patients should be asked whether or not they drive.		4.5	5	2	3	
Patients should be asked about changes in their ability to drive.		4	5	2	3	
Patients should be asked about their ability to communicate with others.		4.5	5	3	2	
Patients should be asked about their hearing and vision.		5	5	3	2	

Table 2: continued

	<i>Question</i>	<i>Median</i>	<i>Max</i>	<i>Min</i>	<i>Range</i>
<i>Cognition, mood, and mental health</i>	Patients should be asked about their memory/recall ability.	5	5	4	1
	Patients should be asked about changes to their mental status.	5	5	3	2
	Patients should be asked about their mood (feeling depressed, anxious, or sad).	5	5	4	1
	Patients should be asked about disordered thought (irritability, inappropriate behaviours, drug or alcohol intoxication).	4.5	5	3	2
	Patients should be asked about insight into their mental health problems (when applicable).	5	5	4	1
	Patients should be asked about police involvement in mental health crisis (when applicable).	4	5	2	3
	Patients should be asked about ideation for harm to self or others (when applicable).	5	5	3	2
<i>Medical history, medications, and ongoing health conditions</i>	Patients should be asked whether they experience medical problems (signs or symptoms of medical conditions that have or have not been diagnosed) (dizziness, fatigue, dyspnea, hallucinations, diarrhea, etc).	5	5	4	1
	Patients should be asked about pain symptoms.	5	5	4	1
	Patients should be asked about the stability of their medical conditions.	5	5	3	2
	Patients should be asked to self-rate their health.	5	5	3	2
	Patients should be asked about tobacco and alcohol use.	5	5	3	2
	Patients should be asked about their diet.	5	5	3	2
	Patients should be asked about weight loss.	5	5	4	1
	Patients should be asked about the prescription medications that they take.	5	5	3	2
	Patients should be asked about adherence to prescription medications.	5	5	4	1
	Patients should be asked about preventative treatments or procedures (eye exam, dental exam, vaccines, mammography, colonoscopy, etc).	4.5	5	2	3
	Patients should be asked about ongoing treatments or procedures (radiation, transfusions, dialysis, etc).	5	5	3	2
	Patients should be asked about their continence (urinary).	5	5	2	3
	Patients should be asked about their medical history (disease diagnoses).	5	5	5	0
	Patients should be asked whether they have recently fallen.	5	5	5	0
<i>Use of health services</i>	Patients should be asked about ongoing formal care (home health aides, homemaking, physical therapy, occupational therapy, etc).	5	5	3	2
	Patients should be asked about use of hospital services (inpatient, outpatient, emergency department visit, etc).	5	5	3	2
	Patients should be asked about use of paramedic services (transport, non-transport, other).	4.5	5	3	2
	Patients should be asked about use of community services (public health, social services, etc.).	5	5	4	1

DISCUSSION

This study conducted a Delphi consensus technique to examine which assessment domains were appropriate areas of inquiry in CP home visit programs. A panel of experts familiar with community paramedicine assessment had a high level of agreement on appropriate patient assessment domains for community paramedicine home visit programs. The high level of agreement was achieved in spite of differences in backgrounds of panel members, designs of community paramedicine programs that they were familiar with, or areas of assessment expertise. Although paramedic training and education (and subsequent certification) varies between jurisdictions, their assessment practices in emergency settings are very similar (15,30). Community paramedicine programs represent a new context for assessment that apply paramedic assessment skills outside of traditional emergency settings and care paradigms. Our findings suggest that similar to emergency settings, the community paramedicine setting requires that paramedics bring together details about medical history, medications, and social factors so that they can identify circumstances where patients may be at risk.

Implications

A feature of community paramedicine is to include community engagement in adapting program operationalization to local needs (8,37). While this is likely a key component of program success, it has also led to uncertainty about the role community paramedics may play (1,4). Our findings illustrate that common approaches to assessment in community paramedicine likely exist and may be realized in spite of differences between settings. Conceptually, paramedics must assess patients before they can determine suitable care planning and interventions that may be beneficial (38). Future standardization of community paramedic education and training as well as the operationalization of common assessment practices can draw from the high level of agreement about the appropriateness of assessment domains that was achieved by an international panel of experts. In turn, improved evaluation of community paramedicine programs may be possible because commonly assessed domains would likely reflect the results of interventions and care plans. Such evaluation would also provide clarity to the community paramedic role in patient care (4).

Strengths and weaknesses

The high level of agreement between experts made it difficult to determine which assessment domains were more important than others. While we purposely included clinicians and researchers with experience in primary care, geriatrics, home care, and mental health care, as well as paramedics with experience in community paramedicine from multiple regions, our expert panel was assembled through a convenience sample and participation was voluntary for each stage of the process. Assembling a panel through other means would likely mean that dissenting views on which domains are appropriate for paramedics to assess in home visit programs would emerge. In turn, this could have created more debate and a longer and more challenging process of achieving consensus. However, even if dissenting views had emerged through an alternate strategy for gathering a panel of experts, employing Delphi methods has had demonstrated success when consensus has not been reached immediately due to such evidence of dissent (14,39).

The assessment domains that we presented did not provide detail with respect to the number of assessment items that could be included in a domain or the depth of detail. For example, one of the domains that we asked panel members to rate for appropriateness was pain symptoms. All

1
2
3 panel members indicated that this was an appropriate domain to assess (minimum score of 4).
4 However, pain is a very complex condition that can affect different patients in different ways.
5 Community paramedics might be expected to follow the same style of pain mnemonic adapted
6 from emergency practice (30), but the detail involved in determining intensity, duration,
7 frequency, and severity of pain was not explicitly described in the questionnaire provided.
8 Similar exploration of depth and detail could be ascribed to nearly all of the assessment domains
9 included in the questionnaire.
10
11

12 *Future work*

13 Testing specific assessment items within the domains evaluated in this study will be the focus
14 of future work. A comprehensive, multi-domain, standardized assessment instrument will be
15 pilot tested in multiple community paramedicine home visit programs. Such work will consider
16 the role that specific assessment items might have in different community paramedicine settings
17 and may also investigate the implications for emergency low-acuity paramedic response. An
18 investigation of what assessment items are aligned with the assessment domains that have been
19 described in this study will address the uncertainty about the amount of detail community
20 paramedicine programs are including in their patient assessments and contribute to the
21 development of a validated assessment instrument for community paramedicine. Following
22 uptake of a standardized assessment instrument, future work can explore if adding new
23 assessment domains to existing assessment practices improves patient care or patient outcomes
24 and address the uncertainty about case finding in community paramedicine.
25
26
27

28 CONCLUSION

29 A diverse expert panel (in terms of geographical region, experience, and clinical
30 background) achieved consensus on domains to be included in the assessment of patients in
31 community paramedicine home visit programs. This consensus suggests that similar assessment
32 practices occur in diverse community paramedicine home visit programs in spite of operational
33 differences. Questions remain about the amount of detail and degree of depth that should be
34 included in each assessment domain.
35
36
37

38 ACKNOWLEDGEMENTS

39 We are grateful for the support and participation of panel members; Mike Adair, CAN; Dr. Gina
40 Agarwal, CAN; Alan Batt, IRE; Jane Blums, CAN; Kristy Campbell, CAN; Dr. Judah Goldstein,
41 CAN; Dr. Ron Hoffman, CAN; Ryan Kozicky, CAN; Justin Lammers, CAN; Brent McLeod,
42 CAN; Michael Nolan, CAN; Dr. Peter O'Meara, AUS; Duncan Roberston, UK; Michael Roffey,
43 CAN; Dr. Samir Sinha, CAN; Dr. Walter Tavares, CAN; and Gary Wingrove, USA. Some panel
44 members were assisted at different parts of the process by their colleagues; Jane Blums thanks
45 Galina Grinchenko, Justin Lammers thanks Jen Miner and Cathie Hedges, Michael Nolan thanks
46 J.D. Heffern, and Gary Wingrove thanks Luke Myers.
47
48
49
50
51
52
53
54
55
56
57
58
59
60

REFERENCES

1. Bigham BL, Kennedy SM, Drennan I, Morrison LJ. Expanding Paramedic Scope of Practice in the Community: A Systematic Review of the Literature. *Prehospital Emerg Care*. 2013;17(3):361–72.
2. Choi BY, Blumberg C, Williams K. Mobile Integrated Health Care and Community Paramedicine : An Emerging Emergency Medical Services Concept. *Ann Emerg Med* [Internet]. 2016;67(3):361–6. Available from: <http://dx.doi.org/10.1016/j.annemergmed.2015.06.005>
3. Jensen JL, Carter AJE, Rose J, Visintini S, Bourdon E, Brown R, et al. Alternatives to Traditional EMS Dispatch and Transport: A Scoping Review of Reported Outcomes. *Can J Emerg Med*. 2015;17(5):532–50.
4. O’Meara P. Community paramedics : a scoping review of their emergence and potential impact. *Int Paramed Pract*. 2014;4(1):5–12.
5. Leyenaar M, Mcleod B, Chan J, Tavares W, Costa A, Agarwal G. A scoping study and qualitative assessment of care planning and case management in community paramedicine. *Irish J Paramed*. 2018;3(July):1–15.
6. Dainty KN, Seaton MB, Drennan IR, Morrison LJ. Home Visit-Based Community Paramedicine and Its Potential Role in Improving Patient-Centered Primary Care : A Grounded Theory Study and Framework. *Health Serv Res*. 2018;1–16.
7. Drennan IR, Dainty KN, Hooegeveen P, Atzema CL, Barrette N, Hawker G, et al. Expanding Paramedicine in the Community (EPIC): study protocol for a randomized controlled trial. *Trials* [Internet]. 2014;15(473):1–10. Available from: <http://www.trialsjournal.com/content/15/1/473>
8. Meara PO, Stirling C, Ruest M. Community paramedicine model of care: an observational, ethnographic case study. *BMC Health Serv Res* [Internet]. 2016 Dec 2 [cited 2016 Oct 26];16(1):39. Available from: <http://www.biomedcentral.com/1472-6963/16/39>
9. Munjal K, Chapin H, Miller T, Kahn C, Richardson L, Dunford J. Promoting Innovation in Emergency Medical Services. 2019.
10. Abrashkin KA, Washko J, Zhang J, Poku A, Kim H, Smith KL. Providing Acute Care at Home : Community Paramedics Enhance an Advanced Illness Management Program — Preliminary Data. *J Am Geriatr Soc* [Internet]. 2016 Dec [cited 2016 Dec 28];64(12):2572–6. Available from: <http://doi.wiley.com/10.1111/jgs.14484>
11. Crockett BM, Jasiak KD, Walroth TA, Degenkolb KE, Stevens AC, Jung CM. Pharmacist Involvement in a Community Paramedicine Team. *J Pharm Pract* [Internet]. 2016 Mar 21 [cited 2016 Dec 28]; Available from: <http://jpp.sagepub.com/cgi/doi/10.1177/0897190016631893>
12. Ruest M, Stichman A, Day C. Evaluating the impact on 911 calls by an in-home programme with a multidisciplinary team. *Int Paramed Pract*. 2012;1(4):125–32.
13. Jensen JL, Croskerry P, Travers AH. Paramedic clinical decision making during high acuity emergency calls: Design and methodology of a Delphi study. *BMC Emerg Med*. 2009;9:17.
14. Jensen JL, Croskerry P, Travers AH. Consensus on paramedic clinical decisions during high-acuity emergency calls: Results of a Canadian Delphi study. *Can J Emerg Med*. 2011;13(5):310–8.
15. Perona M, Rahman MA, O’Meara P. Review Paramedic judgement , decision-making and

- cognitive processing : a review of the literature. *Australas J Paramed*. 2019;16:1–12.
16. Dash D, Heckman GA, Boscart VM, Costa AP, Killingbeck J, d'Avernas JR. Using powerful data from the interRAI MDS to support care and a learning health system: A case study from long-term care. *Healthc Manag Forum [Internet]*. 2018;31(4):153–9. Available from: <http://journals.sagepub.com/doi/10.1177/0840470417743989>
 17. Costa AP, Hirdes JP, Bell CM, Bronskill SE, Heckman GA, Mitchell L, et al. Derivation and validation of the detection of indicators and vulnerabilities for emergency room trips scale for classifying the risk of emergency department use in frail community-dwelling older adults. *J Am Geriatr Soc*. 2015;63(4):763–9.
 18. Salam-White L, Hirdes JP, Poss JW, Blums J. Predictors of emergency room visits or acute hospital admissions prior to death among hospice palliative care clients in Ontario: a retrospective cohort study. *BMC Palliat Care [Internet]*. 2014;13(1):35. Available from: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=4106206&tool=pmcentrez&rendertype=abstract>
 19. Gray LC, Peel NM, Costa AP, Burkett E, Dey AB, Jonsson P V., et al. Profiles of older patients in the emergency department: Findings from the interRAI multinational emergency department study. *Ann Emerg Med [Internet]*. 2013;62(5):467–74. Available from: <http://dx.doi.org/10.1016/j.annemergmed.2013.05.008>
 20. Sinn C-LJ, Betini RSD, Wright J, Eckler L, Chang BW, Hogeveen S, et al. Adverse Events in Home Care: Identifying and Responding with interRAI Scales and Clinical Assessment Protocols*. *Can J Aging / La Rev Can du Vieil [Internet]*. 2018 [cited 2018 Nov 7];37(1):60–9. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5851050/pdf/S0714980817000538a.pdf>
 21. Wellens NIH, Deschodt M, Boonen S, Flamaing J, Gray L, Moons P, et al. Validity of the interRAI Acute Care based on test content : a multi-center study. *Aging Clin Exp Res [Internet]*. 2011 Oct 31 [cited 2018 Sep 6];23(5–6):476–86. Available from: <http://link.springer.com/10.1007/BF03325244>
 22. Wellens NIH, Verbeke G, Flamaing J, Moons P, Boonen S, Tournoy J, et al. Clinical changes in older adults during hospitalization: Responsiveness of the interRAI Acute Care instrument. *J Am Geriatr Soc*. 2013;61(5):799–804.
 23. Heckman G, Gray L, Hirdes J. Addressing health care needs for frail seniors in Canada: the role of interRAI instruments. *Can Geriatr J*. 2013;3(1):8–16.
 24. Agarwal G, Angeles R, Pirrie M, McLeod B, Marzanek F, Parascandalo J, et al. Reducing 9-1-1 emergency medical service calls by implementing a community paramedicine program for vulnerable older adults in public housing in Canada: A multi-site cluster randomized controlled trial. *Prehospital Emerg Care [Internet]*. 2019;0(0):1–16. Available from: <https://www.tandfonline.com/doi/full/10.1080/10903127.2019.1566421>
 25. Gray LC, Berg K, Fries BE, Henrard J-C, Hirdes JP, Steel K, et al. Sharing clinical information across care settings: the birth of an integrated assessment system. *BMC Health Serv Res [Internet]*. 2009;9(1):71. Available from: <http://bmchealthservres.biomedcentral.com/articles/10.1186/1472-6963-9-71>
 26. Wellens NIH, Deschodt M, Flamaing J, Moons P, Boonen S, Boman X, et al. First-generation versus third-generation comprehensive geriatric assessment instruments in the acute hospital setting: A comparison of the Minimum Geriatric Screening Tools (MGST) and the interRAI Acute Care (interRAI AC). *J Nutr Health Aging [Internet]*. 2011 Oct 10;15(8):638–44. Available from: <http://link.springer.com/10.1007/s12603-011-0109-2>

27. Hirdes JP, Ljunggren G, Morris JN, Frijters DH, Finne Soveri H, Gray L, et al. Reliability of the interRAI suite of assessment instruments: A 12-country study of an integrated health information system. *BMC Health Serv Res*. 2008;8:1–11.
28. Morris JN, Fries BE, Steel K, Ikegami N, Bernabei R, Carpenter GI, et al. Comprehensive Clinical Assessment in Community Setting: Applicability of the MDS-HC. *J Am Geriatr Soc* [Internet]. 1997 Aug 1 [cited 2018 Sep 12];45(8):1017–24. Available from: <http://doi.wiley.com/10.1111/j.1532-5415.1997.tb02975.x>
29. Berg K, Finne-Soveri H, Gray L, Henrard JC, Hirdes J, Ikegami N, et al. Relationship between interRAI HC and the ICF: opportunity for operationalizing the ICF. *BMC Health Serv Res* [Internet]. 2009 Dec 17 [cited 2018 Sep 12];9(1):47. Available from: <http://bmchealthservres.biomedcentral.com/articles/10.1186/1472-6963-9-47>
30. Colbeck MA, Maria S, Eaton G, Campbell C, Batt AM, Caffey MR. International Examination and Synthesis of the Primary and Secondary Surveys in Paramedicine. *Irish J Paramed*. 2018;3(2):1–9.
31. Fitch K, Bernstein SJ, Aguilar MD, Burnand B, LaCalle JR, Lazaro P, et al. The RAND / UCLA Appropriateness Method User ' s Manual. Santa Monica: RAND; 2001.
32. Cox III EP. The Optimal Number of Response Alternatives for a Scale: A Review. *J Mark Res* [Internet]. 1980;17(4):407. Available from: <http://www.jstor.org/stable/3150495?origin=crossref>
33. Crockett BM, Jasiak KD, Walroth TA, Degenkolb KE, Stevens AC, Jung CM. Pharmacist Involvement in a Community Paramedicine Team. *J Pharm Pract* [Internet]. 2016 Mar 21 [cited 2016 Dec 28];30(2):223–8. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27000138>
34. Mason S, Knowles E, Colwell B, Dixon S, Wardrope J, Gorringer R, et al. Effectiveness of paramedic practitioners in attending 999 calls from elderly people in the community: cluster randomised controlled trial. *BMJ*. 2007;335(7626):1–6.
35. Agarwal G, McDonough B, Angeles R, Pirrie M, Marzanek F, Mcleod B, et al. Rationale and methods of a multicentre randomised controlled trial of the effectiveness of a Community Health Assessment Programme with Emergency Medical Services (CHAP-EMS) implemented on residents aged 55 years and older in subsidised seniors' housing b. *BMJ Open* [Internet]. 2015;5(6):e008110–e008110. Available from: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=4466604&tool=pmcentrez&rendertype=abstract>
36. Swain AH, Hoyle SR, Long AW. The changing face of prehospital care in New Zealand: the role of extended care paramedics. *J New Zeal Med Assoc NZMJ* [Internet]. 2010;19(123):11–4. Available from: <http://www.nzma.org.nz/journal/123-1309/3985/>
37. O'Meara PF, Tourle V, Stirling C, Walker J, Pedler D. Extending the paramedic role in rural Australia: A story of flexibility and innovation. *Rural Remote Health*. 2012;12(2).
38. Carter H, Thompson J. Defining the paramedic process. *Aust J Prim Health*. 2015;21(1):22–6.
39. Van Grootven B, McNicoll L, Mendelson DA, Friedman SM, Fagard K, Milisen K, et al. Quality indicators for in-hospital geriatric co-management programmes: A systematic literature review and international Delphi study. *BMJ Open*. 2018;8(3):1–11.

	Respondent	an open ended question	about their marital status.	about their living	
1					
2					
3	A	5	3	5	
4	B	5	4	5	
5	C	5	5	5	
6	D	4	3	4	
7	E	5	5	5	
8	F	5	1	4	
9	G	4	3	4	
10	H	4	2	5	
11	I	5	5	5	
12	J	5	3	5	
13	K	5	4	5	
14	L	5	5	5	
15	M	5	4	4	
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					
43					
44					
45					
46					
47					
48					
49					
50					
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					

For peer review only

BMJ Open: first published as 10.1136/bmjopen-2019-031956 on 7 October 2019. Downloaded from <http://bmjopen.bmj.com/> on August 15, 2022 by guest. Protected by copyright.

	about changes in their	about their memory/recall	about changes to their	about their ability to	
1					
2					
3		5	5	5	4
4		3	5	5	3
5		5	5	5	5
6		5	5	5	5
7		5	4	4	4
8		5	5	5	5
9		4	4	3	5
10		5	4	3	3
11		5	4	3	3
12		3	4	5	3
13		5	5	5	5
14		4	5	4	4
15		4	5	4	4
16		5	5	4	5
17		5	5	5	5
18		4	4	4	4
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					
43					
44					
45					
46					
47					
48					
49					
50					
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					

For peer review only

	about their hearing and	about their mood (feeling	about their social	about feeling lonely.	
1					
2					
3		5	5	2	5
4		5	5	3	5
5		5	5	3	5
6		5	5	3	5
7		5	4	4	5
8		5		5	5
9		4		3	4
10		4	4	3	4
11		5	4	4	5
12		4	4	4	4
13		5	5	5	5
14		4	4	5	5
15		5	5	5	5
16		5	5	5	5
17		5	5	5	5
18		3	4	4	4
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					
43					
44					
45					
46					
47					
48					
49					
50					
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					

For peer review only

BMJ Open: first published as 10.1136/bmjopen-2019-031956 on 7 October 2019. Downloaded from <http://bmjopen.bmj.com/> on August 15, 2022 by guest. Protected by copyright.

	about changes in their	about the amount of time	about the amount of time	about major stressors
1				
2				
3		2	5	5
4		4	3	5
5		5	5	5
6		5	5	5
7		4	4	5
8		5	5	5
9		3	3	3
10		5	5	5
11		3	3	4
12		5	5	5
13		5	4	4
14		5	5	5
15		5	4	4
16		5	5	5
17		5	5	5
18		5	5	5
19		5	4	5
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
49				
50				
51				
52				
53				
54				
55				
56				
57				
58				
59				
60				

	about instrumental	about activities of daily	about mobility (how they	about physical activity
1				
2				
3		5	5	5
4		5	5	5
5		5	5	5
6		5	5	5
7		4	4	5
8		5	5	5
9		5	4	5
10		5	5	4
11		5	5	4
12		3	4	5
13		5	5	5
14		5	4	5
15		5	5	5
16		5	5	5
17		5	5	5
18		4	4	4
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
49				
50				
51				
52				
53				
54				
55				
56				
57				
58				
59				
60				

For peer review only

	about recent changes in	whether or not they drive.	about changes in their	about their continece
3	5	5	5	5
4	5	4	4	4
5	5	5	5	5
6	5	5	5	5
7	5	3	4	5
8	5	5	5	5
9	5	3	3	4
10	5	2	2	5
11	5	2	2	5
12	4	3	3	4
13	5	5	5	5
14	5	5	5	4
15	5	5	5	4
16	5	4	4	4
17	5	5	4	5
18	4	3	3	2

For peer review only

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1				
2	about their medical	whether they have	whether they experience	about pain symptoms.
3		5	5	5
4		5	5	5
5		5	5	5
6		5	5	5
7		5	5	4
8		5	5	5
9		5	5	5
10		5	5	5
11		5	5	5
12		5	5	4
13		5	5	5
14		5	5	5
15		5	5	4
16		5	5	4
17		5	5	5
18		5	5	5
19		5	5	4
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
49				
50				
51				
52				
53				
54				
55				
56				
57				
58				
59				
60				

For peer review only

BMJ Open: first published as 10.1136/bmjopen-2019-031956 on 7 October 2019. Downloaded from <http://bmjopen.bmj.com/> on August 15, 2022 by guest. Protected by copyright.

1				
2	about the stability of their	to self-rate their health.	about tobacco and	about their diet.
3		5	5	5
4		3	5	4
5		5	5	5
6		5	5	5
7		4	5	5
8		5	5	5
9		5	5	4
10		5	5	4
11		4	3	5
12		4	4	3
13		4	4	3
14		5	5	5
15		4	3	4
16		5	5	5
17		5	5	5
18		5	5	5
19		4	4	4

For peer review only

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

	about weight loss.	about the prescription	about adherence to	about preventative	
1					
2					
3		5	5	5	2
4		4	3	4	3
5		5	5	5	5
6		5	5	5	5
7		4	4	5	4
8		5	5	5	5
9		5	5	5	4
10		5	5	4	4
11		5	5	4	4
12		4	5	5	3
13		5	5	5	5
14		4	5	4	5
15		5	5	5	5
16		4	5	5	5
17		5	5	5	5
18		4	5	5	4
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					
43					
44					
45					
46					
47					
48					
49					
50					
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					

For peer review only

	about ongoing treatments	about ongoing formal	about use of hospital	about use of paramedic
1				
2				
3		5	5	4
4		3	3	5
5		5	5	5
6		5	5	5
7		5	4	4
8		5	5	5
9		5	4	3
10		5	5	4
11		4	5	5
12		5	5	5
13		5	4	4
14		5	5	3
15		5	5	5
16		5	4	4
17		5	5	3
18		5	5	5
19		5	4	4
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
49				
50				
51				
52				
53				
54				
55				
56				
57				
58				
59				
60				

	about use of community	whether family or close	whether they have	about their home	
1					
2					
3		4	4	5	5
4		5	5	5	3
5		5	5	5	5
6		5	5	5	5
7		5	3	5	3
8		5	5	5	5
9		4	5	4	4
10		4	4	4	5
11		4	4	4	5
12		5	4	4	5
13		5	5	5	5
14		5	4	4	3
15		5	4	5	5
16		5	4	5	5
17		5	5	5	5
18		5	3	5	4
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					
43					
44					
45					
46					
47					
48					
49					
50					
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					

For peer review only

BMJ Open: first published as 10.1136/bmjopen-2019-031956 on 7 October 2019. Downloaded from <http://bmjopen.bmj.com/> on August 15, 2022 by guest. Protected by copyright.

	about making trade-offs	about disordered thought	about insight into their	about police involvement
3	4	5	5	5
4	4	4	4	2
5	5	5	5	3
6	5	5	5	3
7	0	4	4	3
8	5	5	5	5
9	3	4	4	4
10	3	4	4	4
11	5	4	4	4
12	3	4	5	4
13	5	5	5	5
14	3	3	4	3
15	5	5	5	3
16	2	5	5	5
17	4	4	4	2

For peer review only

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1
2 about ideation for harm to
3 5
4 4
5 5
6 5
7 3
8 5
9 5
10 5
11 4
12 5
13 5
14 4
15 4
16 4
17 5
18 4
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

For peer review only