### Appendix B – Initiatives and Resources Required for Each Recommendation

**Recommendations Related to Time, Opportunities and Funding**

Recommendation #1
Strategically market the importance of EMS research to other agencies, health groups and the public.

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| **Median Score** **(IQR)** | **Initiatives (Planned or Ongoing)** | **Resources Required** |
| **Impact**4(3-5) | **Feasibility**3 (3-3) | * Research poster presentations are given during Annual General Meeting of our College of Paramedics.
* Individual researchers market the importance of their study to frontline staff, allied services and the public.
 | * We work with public relations staff in EMS agencies and the university.
* Individuals are needed to educate the community on EMS research.
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Recommendation #2
Strengthen research partnerships between EMS academic centres, systems, regulators, educators and national associations.

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| **Median Score** **(IQR)** | **Initiatives (Planned or Ongoing)** | **Resources Required** |
| **Impact**5 (4-5) | **Feasibility**3 (3-4) | * Formed a provincial EMS research committee.
* Engaged interested EMS providers in studies.
* The base hospital collaborates with educational institutions and the university EMS research division.
* EMS is fully integrated in research, which allows for both clinical and education research opportunities.
* We are planning a collaborative project related to community paramedicine.
* Our service is working with local academic centres to allow access to full text articles.
* Increased national level partnerships have increased funding opportunities for paramedic research.
* Increased partnerships with research centres have increased the quality of research.
* The EMS system partners with the medical school to promote and develop EMS research opportunities.
 | * Requires a gradual and collaborative process.
* Buy-in is needed from regulators.
* Buy-in is needed from other stakeholders.
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Recommendation #3
Increase funding opportunities for EMS research infrastructure and studies.

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| **Median Score** **(IQR)** | **Initiatives (Planned or Ongoing)** | **Resources Required** |
| **Impact**5 (4-5) | **Feasibility**3 (2-3) | * Our university Division of EMS awards small grants for EMS studies.
 | * Applications for funding from external agencies need to be located and completed.
* Funding of research should be a standing reporting item on existing operational and strategic planning agendas.
* Executive support is required/senior management must allocate funds.
* Provincial funding is required.
* National funding opportunities for EMS studies are required.
* Graduate degrees required for applicants to be eligible for funding.
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Recommendation #4
Universities should consider EMS providers with graduate training for academic appointments, so they can engage in academic EMS research.

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| **Median Score** **(IQR)** | **Initiatives (Planned or Ongoing)** | **Resources Required** |
| **Impact**5 (3.50-5) | **Feasibility**3 (2-3) | * Our university Division of EMS has advocated for paramedics with graduate degrees who are academically active to have lecturer status.
 | * Graduate funding opportunities are needed from external agencies.
* This should be a standing item on strategic planning agendas.
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Recommendation #5
Create opportunities for EMS providers to work in research positions. Review collective agreements if necessary.

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| **Median Score** **(IQR)** | **Initiatives (Planned or Ongoing)** | **Resources Required** |
| **Impact**5 (4-5) | **Feasibility**3 (2-3) | * There are temporary opportunities that occur within my service for research related positions.
* There is one paramedic who works full time as a researcher for EMS management.
* We have paramedics working in research positions funded by EMS systems.
* We have a research coordinator who coordinates the EMS agency and the affiliated hospital to conduct research projects.
* We are promoting dedicated time for research within the collective agreement.
* Our base hospital has a dedicated research position but no secure funding.
* Our local paramedic service is seconding employees to work with us in our research unit.
* We have used research grant money to hire paramedics as research assistants.
 | * Funding and support is required from employers.
* Funding and support is required from universities.
* Changes in collective agreements are required to allow EMS providers to work in research roles.
* National advocacy.
* Recognize research as a mandate at the level of the Ministry of Health.
* EMS providers require academic credentials to work in research.
* EMS providers who are working on light-duties can be engaged to help with research.
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**Recommendations Related to Education and Mentorship**

Recommendation #6

Integrate research literacy and research competencies into EMS providers', managers' and EMS physicians' foundational and continuing education.

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| **Median Score** **(IQR)** | **Initiatives (Planned or Ongoing)** | **Resources Required** |
| **Impact**5 (4-5) | **Feasibility**3 (3-4) | * There has been some integration of research into continuing education in my service.
* Our university Division of EMS offers a 1-day paramedic evidence-based medicine (EBM) course to paramedic staff and students.
* We are planning a curriculum to match the competencies in research for dissemination to all college paramedic programs.
* EBM now exists in most Paramedic curricula.
 | * Funding is required, including salary support.
* Stakeholder buy-in.
* Provider buy-in.
* Paramedic educators need to be dedicated to delivering research curriculum to students.
* A nationally available course is required.
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Recommendation #7
Provide scholarships for EMS providers, managers and physicians to take research-based graduate degrees.

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| **Median Score** **(IQR)** | **Initiatives (Planned or Ongoing)** | **Resources Required** |
| **Impact**4 (3-5) | **Feasibility**3 (2-3) | * We are helping one of our paramedics to apply for the MSc in Epidemiology program.
* Our service will consider educational bursaries in the near future for paramedics who want to pursue research-related post-graduate education.
* Our university Division of EMS supports paramedics do to masters and PhD degrees by awarding graduate bursaries.
 | * Funding sources are required to create the scholarships. Donations can be sought from charitable organizations/foundations.
* An account is needed to hold the funds.
* Administrative staff is needed to administer the scholarships (managing the applications, etc.).
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Recommendation #8
Information should be purposefully disseminated to EMS providers about EMS research activities occurring in Canada.

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| **Median Score** **(IQR)** | **Initiatives (Planned or Ongoing)** | **Resources Required** |
| **Impact**4 (3-5) | **Feasibility**4 (3-5) | * A national research committee and its working groups have increased the amount of EMS research work done, and awareness about these projects.
* Provincial research days have increased awareness.
* The creation of this agenda is an excellent example of increasing awareness.
* Engagement of field staff in research initiatives, poster presentations at conferences and annual meetings.
* The *Canadian Paramedicine* magazine provides a venue to get research to paramedics.
* Results of previous research has been shared with paramedics in educational activities to support change or reinforce current practice.
* EMSCC is working to spread this information.
* We communicate inside our organization about research using a journal and kiosks.
 | * Provide paramedics with information in mediums they will utilize, such as websites, education days, etc.
* Funding is needed to support dissemination activities.
* Subscriptions for staff to *JEMS* or *Canadian Paramedicine.*
* A National EMS Research Day.
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Recommendations Related to the Culture of Research and Research Collaboration in EMS

Recommendation #9
Increase multidisciplinary strategic partnerships to broaden the topics studied in EMS research.

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| **Median Score** **(IQR)** | **Initiatives (Planned or Ongoing)** | **Resources Required** |
| **Impact**4 (3-5) | **Feasibility**3 (3-4) | * Increased partnerships with EMSCC, PAC, CAEP, and tri-services to apply for funding opportunities.
* We have been conducting more studies with researchers from other departments.
* Our service has a variety of partnerships with departments at the local university
* We are beginning a multi-centre drug study, partnered with Cardiology.
* Our trauma program has several interdisciplinary sub-committees.
 | * Partnerships for research must be made attractive to private industry.
* Think broadly of expertise that could be of value and reach out and ask for help.
* More academic research can be done that is not necessarily linked to the EMS service itself.
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Recommendation #10
Engage EMS providers and managers early in the research process and include them on study teams.

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| **Median Score** **(IQR)** | **Initiatives (Planned or Ongoing)** | **Resources Required** |
| **Impact**4 (3-5) | **Feasibility**3 (3-4) | * Proposed EMS research studies are reviewed by EMS management, which helps engage them.
* Paramedics are included as part of the implementation process for ROC trials.
* We have had great success including our paramedic research partners early in the process of protocol planning and implementation.
* Engaging EMS providers and managers early on has really helped us with buy-in.
* Attempting to promote this with our provincial EMS Research Committee.
 | * Requires interest of management and EMS provider staff.
* Consider research earlier as soon as a new intervention or program is proposed by management or medical direction.
* A commitment by the organization is needed to be involved in studies.
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Recommendation #11
EMS systems administrators should budget for research projects during annual strategic planning.

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| **Median Score** **(IQR)** | **Initiatives (Planned or Ongoing)** | **Resources Required** |
| **Impact**5 (4-5) | **Feasibility**3 (2-3) | * Our service has some money set aside that can/is used for research initiatives.
* EMS operations support research studies, but a separate budget for research does not exist.
* Discussion occurs at the senior management level on how to financially support studies
 | * Funding research must be part of system mandate.
* Organizational willingness is necessary.
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Recommendation #12
EMS researchers must undertake comprehensive knowledge translation initiatives, including delivering research results to EMS providers and administrators.

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| **Median Score** **(IQR)** | **Initiatives (Planned or Ongoing)** | **Resources Required** |
| **Impact**4(3.75-5) | **Feasibility**3 (3-4) | * We’ve had dissemination sessions where all stakeholders are invited (and fed lunch!).
* This is insisted upon when a research project is approved.
 | * Regular dissemination of local and national initiatives is needed.
* Funding is required for knowledge translation, as it can be costly.
* Personnel are needed to spread this information.
* Make knowledge translation to the EMS system the responsibility of the researcher.
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Recommendation #13
Evidence-based decision-making should be encouraged in EMS systems. If evidence is lacking, further research should be undertaken.

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| **Median Score** **(IQR)** | **Initiatives (Planned or Ongoing)** | **Resources Required** |
| **Impact**5 (4-5) | **Feasibility**3 (3-3.50) | * We have tried to increase the use of evidence-based practice for non-clinical policies.
* Our trauma sub-committees have an interest in research as a means to evidence-based decision making.
* This is promoted within the organization.
 | * EMSCC must lead on encouraging/requiring this.
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Recommendation #14
The network of Canadians interested in EMS research should be formalized, possibly as a national EMS research organization or conferences.

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| **Median Score** **(IQR)** | **Initiatives (Planned or Ongoing)** | **Resources Required** |
| **Impact**4 (3-5) | **Feasibility**3 (3-4) | * The EMS Research Agenda session brought people together in Newfoundland.
* Some EMS research is presented at CAEP.
 | * Capitalize on the network formed by the Agenda and formalize.
* A national network requires funding.
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**Recommendations Related to Structure, Process and Outcomes in EMS Research**

Recommendation #15
EMS researchers and administrators should better inform research ethics boards (REBs) about the nature of EMS research and request EMS experts participate on review committees.

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| **Median Score** **(IQR)** | **Initiatives (Planned or Ongoing)** | **Resources Required** |
| **Impact**4 (3-5) | **Feasibility**3 (3-4) | * Local Principal Investigator met with multiple REBs to better inform them of how a study would be conducted in the EMS setting.
* Our REB requires a letter of support from the EMS regulator and operator before approval is given.
* We have ethics committee with affiliated hospital.
* We have a good working relationship with 3 out of 6 ethics boards.
 | * Approval is required from multiple REBs, which is cumbersome and sometimes impossible. A provincial REB is needed.
* A unified approach to ethics approval for EMS studies is needed.
* Ethics training is needed for EMS folks (providers, managers, physicians) involved in EMS research.
* More EMS representation is needed on REBs.
* REBs require further understanding of the EMS context.
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Recommendation #16
Highlight EMS research in special issues or sections of the *Canadian Journal of Emergency Medicine.*

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| **Median Score** **(IQR)** | **Initiatives (Planned or Ongoing)** | **Resources Required** |
| **Impact**4 (3-5) | **Feasibility**4 (3-4) |  | * CAEP needs to support this (perhaps through the EMS or research committees).
* Advocacy from a network of Canadian EMS research stakeholders is needed.
* *CJEM* editors and staff need to buy-in.
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Recommendation #17
EMS data should be linked with hospital and other datasets.

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| **Median Score** **(IQR)** | **Initiatives (Planned or Ongoing)** | **Resources Required** |
| **Impact**5 (5-5) | **Feasibility**3 (2-3) | * There is an opportunity for a national database project (EMSCC) in which all clinical data across Canada is stored, with an anticipated link to hospital information.
* EMS data is linked with hospital data by data abstraction for specific patients at some prehospital research institutes.
* EMS is part of provincial health, and as a result linking of data sets has begun.
* We connect medic alert information with our prehospital call information.
 | * Collaboration and effort is required.
* National consortium focused on this.
* Federal and provincial funding.
* Understanding that outcome information will be made available to EMS systems.
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Recommendation #18
Create a national EMS data dictionary of operational and clinical terms.

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| **Median Score** **(IQR)** | **Initiatives (Planned or Ongoing)** | **Resources Required** |
| **Impact**4 (3-5) | **Feasibility**3 (3-4) | * EMSCC has established a data dictionary on performance metrics.
* A provincial data dictionary exists.
 | * National consortium with participation from a variety of stakeholders.
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**Recommendation on the Future Directions of the EMS Research Agenda**

Recommendation #19

The EMS Research Agenda needs to be viewed as an ongoing project.
An implementation, evaluation and renewal plan should be designed and this process should include mapping gaps in EMS research.

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| **Median Score** **(IQR)** | **Initiatives (Planned or Ongoing)** | **Resources Required** |
| **Impact**4 (3.75-5) | **Feasibility**3 (3-4) | * We are in the first year of a new EMS research program. Our research coordinator is engaged in this research agenda process.
* We will be ranking priorities in a research program based on the Agenda.
* The development of a Paramedic Community of Practice within the Canadian Security and Safety Program is a very good start.
* Our education department is currently undertaking an environmental scan of research in EMS. The focus of this particular project is to inform and encourage research with an educational focus.
* An implementation meeting is planned and others are in the planning.
 | * A pragmatic patient centered approach is needed for EMS research.
* It would be helpful to compare the results of studies nationally.
* Continue the work of the group that developed the EMS Research Agenda.
* Progress on research agenda recommendations could be monitored by the national network discussed in previous recommendations.
* It's essential that we continue the dialogue.
* Partnership with the tri-services and with the DND-Canadian Security and Safety program will help propel the research agenda.
* Funding is needed to implement changes.
* Access to EMS research stakeholders.
* Implementation meetings need funding and a commitment of time for individuals to work on the details of running such meetings.
* On-going evaluation takes time and resources. National and provincial organizations need to commit to funding future endeavors.
* More support is required for the work of the Canadian Agenda; contribution by others would be useful.
 |