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Introduction

Nature of the Problem

With emergency medical service (EMS) providers having limited pediatric focused education and infrequent encounters with children, particularly with the critically ill, there are gaps in patient care, patient safety, and clinical outcomes. To address these gaps, the 2007 *Emergency Care for Children: Growing Pains* report from the Institute of Medicine (IOM, now the National Academies of Science) recommended that EMS systems appoint a pediatric emergency coordinator to provide oversight to the care of children, to promote the integration of pediatric elements into day-to-day services as well as local and regional disaster planning, and to promote pediatric education across all levels of EMS providers.

In 2017, the Health Resources and Services Administration's (HRSA) EMS for Children (EMSC) program conducted the 2017 Next Generation of EMS for Children Performance Measure Assessment. This was a nationwide assessment to help better understand how pediatric emergency care is integrated in 911 EMS responding agencies. A component of this survey evaluated how many agencies had an individual who coordinated pediatric care. Of the 11,027 EMS agencies contacted, 8,730 responded (79.2%). Of the responding EMS agencies, only 1,874 (22.9%) had an individual who coordinated pediatric care for their agency.

Brief Overview of Relevant Background Literature

EMS responses for pediatric patients represent thirteen percent of total EMS responses in the United States. But, because call volume is highly variable, nearly 40% of all EMS agencies in the United States see fewer than thirteen pediatric patients per year.[1, 2] The pediatric training requirements for EMS provider licensure and re-licensure vary, from 4-9 hours for emergency medical technicians (EMTs) and 7-34 hours for paramedics, often combining pediatrics into a 'special populations' domain (e.g., geriatrics, obstetrics, etc.).[3] The infrequency of seeing pediatric patients in the field means that pediatric care does not become 'hard-wired' into EMS providers' 'muscle memory'. Because many EMS agencies have such a limited chance to exercise their pediatric skills in real-life settings, the responding EMS providers don't feel confident in providing appropriate care.[4] In addition, pediatric educational opportunities and best-practice guidelines are very limited in the prehospital setting, further exacerbating the quality of care gap between high- and low-resource settings.

The IOM's *Emergency Care for Children: Growing Pains* specifically recommended that EMS agencies designate a pediatric emergency coordinator to ensure that training and guidelines are available to field providers to maintain competence in the emergent care of children.[5] This role is now commonly referred to as a pediatric emergency care coordinator (PECC). The IOM report suggests the individual(s) filling this role would: serve as a resource to oversee any pediatric care quality improvement (QI) initiatives in the agency; provide skills based training to agency staff; and assure that all medications, equipment and supplies needed for a child are stocked and available in all responding vehicles. As described in the report, potential benefits of having a PECC are:

- Identifying gaps and ensuring that resources to care for children are available.
- Maintaining a relationship with the state EMS for Children infrastructure.

- Working with state and local authorities and regional coalitions to develop strategies for addressing pediatric needs in the event of a disaster.
- Establishing and maintaining offline and online pediatric EMS protocols.
- Establishing QI plans with pediatric-specific indicators.
- Coordinating with dispatch to provide evidence–based, pre-arrival instructions for children and/or caretakers.
- Reviewing on a regular basis the medications and devices available for prehospital care of children.
- Liaising with hospitals to improve pediatric readiness of emergency departments.
- Assisting in education and training of EMS providers in the care of children and principles of family centered care.[6]

In the resource document, *Coordination of Pediatric Emergency Care in EMS Systems*, Remick et al. point out that emergency departments that have a nurse or physician PECC have a higher rate of compliance with national guidelines for the care of children than those that do not.[7] It is expected that EMS agencies who have a PECC would have similar results. In addition to these findings, and acting on the recommendations from the IOM report, HRSA has set a PECC-specific performance measure for the EMSC State Partnership (SP) Program. The goal for this measure is that 90% of all EMS agencies in the state or territory will have a PECC by 2026.

Purpose

The purpose of this project was to form a cohort of EMSC State Partnership Grant recipients to participate in a learning collaborative to demonstrate effective, replicable strategies to increase the number of local EMS agencies with a PECC. Results will inform and advance efforts within all 58 EMSC State Partnership recipient sites to increase the adoption of a PECC within local EMS agencies.

Focused Aim

By March 31, 2019, nine participating states will have established a PECC in >50% of local EMS agencies that indicated an interest in adding this role on the 2017-2018 National EMSC Survey.

Why Does This Matter?

Having a designated PECC can help ensure the highest quality of prehospital emergency care for all children by enhancing EMS providers pediatric knowledge, skills, and confidence. The PECC can also help ensure EMS agencies have the appropriate equipment, medications, and are continuously working to improve quality and safety metrics.

Collaborative Design

Administrative Team

An administrative team was identified to work with participating states to coordinate the planning, implementation, and evaluation of the learning collaborative through targeted technical assistance, the provision of tools and resources, and sharing of best practices (**Table 1)**.

For project planning purposes, the team met once per week throughout the duration of the learning collaborative (through March 2019). For the months of April thru June 2019, meetings were reduced to once every other week.

Table 1. Administrative Team Members

Name	Affiliation
Sarah O'Donnell, MPH	*PECC Learning Collaborative Project Officer* Public Health Analyst/Project Officer **Emergency Medical Services for Children Program, Health Resources and Services Administration, Maternal Child Health Bureau**
Sam Vance, MHA, LP	*PECC Learning Collaborative Project Director* Lead Project Manager, Prehospital Domain Lead **EMSC Innovation and Improvement Center**
Charles G. Macias, MD, MPH	*PECC Learning Collaborative Principal Investigator* Executive Director, EMSC Innovation and Improvement Center Chief Clinical Systems Integration Officer Associate Professor, Section of Emergency Medicine **Baylor College of Medicine/Texas Children's Hospital**
Terry Fisher, MPH, PMP	Operations Director **EMSC Innovation and Improvement Center**
Rachael Alter, BA, QAS	Prehospital Domain Project Specialist **EMSC Innovation and Improvement Center**
Cassidy Penn, MEd	Project Analyst and Health Education Specialist **Texas Children's Hospital/EMSC Innovation and Improvement Center**
Marc Auerbach, MD, FAAP, MSc	Associate Professor of Pediatrics and Emergency Medicine Co-chair INSPIRE Director, Pediatric Simulation Medical Director, Connecticut EMSC SP Grant Associate Pediatric Trauma Medical Director **Yale School of Medicine**

Advisory Committee

A committee was identified to advise the administrative team throughout the learning collaborative; members are listed in **Table 2**. The advisory committee met a total of seven times over the course of the collaborative.

Table 2. Advisory Committee

Name	Affiliation
Tracy Cleary	National Association of State EMS Officials
Ann Dietrich, MD	National Association of EMTs
Joseph Ferraro	International Association of Fire Chiefs
Matthew Harris, MD	National Association of EMS Physicians
Megan Hollern, MA, NRP	National Registry of EMTs
Margo Knefelkamp, MBA	EMS for Children State Partnership Grant
John Lyng, MD, FAEMS, FACEP, NRP	National Association of EMS Physicians
Brian Moore, MD	American Academy of Pediatrics
Kate Remick, MD, FAAP, FACEP, FAEMS	EMS for Children Innovation and Improvement Center
Manish Shah, MD, MS	EMS for Children Innovation and Improvement Center
Joelle Simpson, MD, MPH	American College of Emergency Physicians
Joe Stack	EMS for Children State Partnership Grant
Belinda Waters, RN, CEN, CCRN	Emergency Nurses Association

During these meetings, advisory committee members provided input and feedback on the agendas of the learning session webinars, as well as the in-person learning session held in Austin, Texas. Input and feedback were also received on the agendas for state partnership team site visits, monthly pulse checks, and sustainability of the project within states.

Subject Matter Experts

Subject matter experts (SMEs) were identified to advise the administrative team throughout the learning collaborative's development; members are listed in **Table 3**. The SMEs met a total of nine times over the course of the collaborative.

Table 3. Subject Matter Experts

Name	Affiliation
Kathleen Adelgais, MD, MPH	Principal Investigator, Colorado EMSC State Partnership Program Associate Professor, Pediatrics Emergency Medicine **University of Colorado School of Medicine**

Name	Affiliation
Kathleen Brown, MD	Emergency Medicine Specialist **Children's National**
Lorin R. Browne, DO, FAAP	Associate Professor **Medical College of Wisconsin, Children's Hospital of Wisconsin**
Greg Faris, MD	Assistant Professor of Clinical Emergency Medicine Deputy Medical Director, Indianapolis EMS **Indiana University School of Medicine**
Toni Gross, MD	Medical Director, Emergency Department **Children's Hospital of New Orleans**
Julie Leonard, MD, MPH	Associate Professor of Pediatrics **Nationwide Children's Hospital and the Ohio State University College of Medicine**
Brian Moore, MD, FAAP	Associate Professor of Emergency Medicine, Division of Pediatric Emergency Medicine **University of New Mexico Health Sciences Center**
Travis Adams, NRP, CCRN	Pediatric Emergency Care Coordinator **Gaston County EMS, North Carolina**

During these meetings, SMEs provided input and feedback on the agendas of the learning session webinars, as well as the in-person learning session held in Austin, Texas. Input and feedback were also received on the agendas for state partnership team site visits, monthly pulse checks, and sustainability of the project within states. Additionally, SMEs attended the in-person learning session in Austin, Texas as presenters and coordinators. Many of the SMEs also attended the monthly pulse checks, as well as the state partnership team site visits either in person, or virtually. This was to assist with topics such as dissemination and sustainability, and providing more in-depth education on QI methodologies such as the development of SMART goals and objectives, and PDSA cycles.

A requirement of the State Partnership's notice of funding opportunity was to collect qualitative feedback from local EMS agencies on the usability, ease of adoption, and impact experienced as a result of having a PECC at the local agency level. As the teams had challenges meeting this requirement within the time frame allotted, the EMSC for Children Innovation & Improvement Center (EIIC) asked the SMEs to help conduct these qualitative interviews.

State Partnership Teams

As a collaborative, State Partnership (SP) teams worked together on developing methods and results, collectively reflecting on lessons learned, and providing social support and encouragement for making further changes. Teams benefited from access to each other through regular conference calls and online dialogue.

The collaborative consisted of the nine state project teams listed below. The teams were comprised of the state EMSC program manager, at least one PECC, and other state and local partners. Participating states represent 10% of EMS agencies in the United States.

- Connecticut
- Kentucky
- Montana
- New Mexico
- New York
- Ohio
- Pennsylvania
- Rhode Island
- Wisconsin

The nine state teams were organized into three groups, with an EIIC representative and SMEs assigned to each **(Figure 1)**. These groups met monthly to share ideas and lessons learned. These monthly meetings were termed "pulse checks."

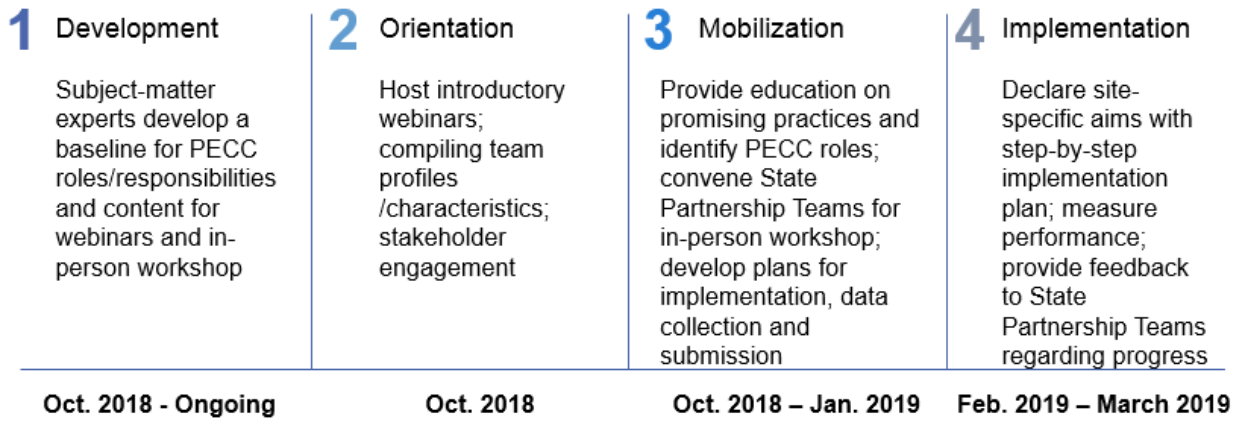
Figure 1. Collaborative Groups

Group 1	Group 2	Group 3
•Connecticut •New York •Rhode Island •EIIC: Terry Fisher •SMEs: Travis Adams, Greg Faris, Kathleen Adelgais	•Kentucky •Ohio •Pennsylvania •EIIC: Sam Vance •SMEs: Kathleen Brown, Toni Gross, Julie Leonard	•Montana •New Mexico •Wisconsin •EIIC: Rachael Alter •SMEs: Kathleen Adelgais, Brian Moore, Lorin Browne

Phases of the PECC Learning Collaborative

The design for this project is outlined for the learning collaborative budget period, October 1, 2018 – March 31, 2019 **(Figure 2).** The EIIC provided ongoing technical support through June 2019 (EIIC budget year) and will continue with maintenance of resources and virtual learning modules housed on the EIIC website beyond that period.

Figure 2. Phases of the PECC Learning Collaborative



Project Objectives and Accomplishments

Objective I

Provide national baseline data to describe the current percentages of EMS agencies that report: having a designated PECC; having plans to add a PECC; having an interest in a PECC; and the proportion that do not have a PECC.

The national baseline data for the nine participating states was received from the National EMSC Data Analysis Resource Center (NEDARC) and can be found in **Table 4**. This data was collected from the 2017 Next Generation of EMS for Children Performance Measure Assessment (Assessment). This Assessment was conducted nationwide to help the EMSC program better understand how pediatric emergency care is integrated into EMS agencies specific to EMSC Performance Measure (PM) 02 and PM 03. The PECC Learning Collaborative (PECCLC) and the data in **Table 4** is specific to PM 02: *The percentage of EMS agencies in the state or territory that have a designated individual who coordinates pediatric emergency care*.

Combined, the nine participating states had 2,115 EMS agencies respond to the Assessment. Of these, 404 (19%) reported having a PECC, 95 (4.5%) indicated they plan to add a PECC, 525 (25%) reported they are interested in adding a PECC, and 973 (46%) indicated their agency does not have a PECC. One-hundred and nineteen agencies (6%) did not respond to the question.

The nine State Partnership (SP) Team Leads were asked to contact those agencies who reported that they have a PECC in the 2017 Assessment, in order to verify that they actually have one.

Table 4. National Baseline Data

	TOTAL AGENCIES					
STATE TEAM	**Responded to the Assessment**	**"Have a PECC"**	**"Plan to add a PECC"**	**Interested in a PECC"**	**"No PECC"**	**"No Survey Response"**
Connecticut	156	22	3	26	96	9
Kentucky	168	35	8	57	65	3
Montana	198	43	16	56	78	5
New Mexico	224	49	10	54	95	16
New York	379	44	14	115	192	14
Ohio	299	83	15	61	127	13
Pennsylvania	304	49	17	79	117	42
Rhode Island	60	13	4	14	26	3
Wisconsin	327	66	8	62	177	14
TOTAL	**2115**	**404**	**95**	**524**	**973**	**119**

Of the 404 EMS agencies that reported having a PECC, the SP Team Leads were able to verify that 198 (49%) have a PECC. Team Leads contacted agencies an average of 2.3 times before being able to verify the agency's Assessment response. The average number of times contact was

attempted but never made was three. The most frequent method of contact was by email at 2.6 attempts. However, four of the teams did not track this data. Fourteen agencies (6.6%), who indicated in the 2017 Assessment that they had a PECC, reported that they did not actually have a PECC.

Challenges encountered by the SP Team Leads in trying to contact these agencies were:

- Not enough time allotted to accomplish the work of the collaborative with other obligations.
- Work taking longer than expected; not enough time allotted for collaborative tasks.
- Unforeseen issues (i.e., medical leave).
- Four states hired contract employees to be the SP Team Lead, and this process took longer than anticipated in three of the states. As such, their efforts did not start until as late as January 2019.
- EMS agency administrators were busy with end of year obligations (i.e., program and financial reports).
- EMS agency administrators not returning email or phone calls.
- Turnover of the agency PECC (the individual listed as the PECC no longer works for the agency and has not been replaced, making contact even more challenging).

Method 1a

Utilizing the EMS survey and qualitative study facilitated by NEDARC and the EIIC, identify barriers to establishing a PECC. Identify best practices in establishing a PECC.

Barriers to establishing PECCs within EMS agencies identified by the state partnership teams:

- Too much competition for time from other EMS issues.
- Budget issues:
    - Not enough money available to hire staff to make project successful.
    - Some agencies see this as an unfunded mandate.
    - Additional workload without financial incentive.
    - No money for additional education, community outreach, etc.
- There is no clear incentive for EMS agencies to create the position.
- There is no requirement for EMS agencies to establish a PECC.

Best practices identified in establishing PECCs within EMS agencies are:

- Include the role as part of a statewide EMS recognition program.
- Develop provider recognition programs to increase the readiness of EMS agencies to care for pediatric patients.
- All providers can be a PECC, including EMTs. Many EMS agencies are managed by volunteers, with the highest level of certification being an emergency medical responder (EMR). If the individual has the desire to be a PECC, they can be trained to become the pediatric expert within the department.
- Lots of creativity can be used in providing a PECC and broadening the scope. An agency does not have to have a single person performing the functions of a PECC. The responsibilities can be fulfilled by two or more people, such as the medical director, EMS chief, training officer, or other prehospital professional. Additionally, there could be a

region-wide individual(s) that performs the responsibilities as a PECC for EMS agencies within a region. Regional recruiting has been shown to be effective by the state partnership teams.
- Develop train-the-trainer courses for PECCs.
- Include in licensure and credentialing requirements.
    - Rhode Island has established in their state EMS rule that all agencies must have a PECC. Indiana and Los Angeles County, California have also made this a requirement in their state/local EMS rule.
    - Kentucky, New York and Pennsylvania have included PECC designation as part of their state EMS agency licensing database.
    - Kentucky's state EMS inspectors recruit and confirm PECCs when conducting agency site visits.

Additional information can be found in **Appendix A**.

Method 1b

Define existing characteristics of a PECC. Standardize the PECC qualifications and roles. Disseminate the shared baseline to participants.

The definition and roles and responsibilities of a PECC were developed by HRSA EMSC, NEDARC, and the EIIC. To ensure that the EMS for Children program is delivering a consistent message to our stakeholders, this definition was disseminated to all state partnership grantees and stakeholders in February 2019 for use in their messaging.

> **Definition of a Prehospital PECC:** An individual(s) who is responsible for coordinating pediatric specific activities. A designated individual(s) who coordinates pediatric emergency care need not be dedicated solely to this role; it can be an individual(s) already in place who assumes this role as part of their existing duties. The individual(s) may be a member of your agency, or work at a county or regional level and serve more than one agency.

The intent of designating and developing the role of a PECC is to ensure that there is a dedicated individual(s) identified at the local EMS agency that represents pediatric interest and performs the roles listed below. An agency does not have to have a single person performing the functions of a PECC. The responsibilities can be fulfilled by two or more people, such as the medical director, EMS chief, training officer, or other prehospital professional. Additionally, there could be a region wide individual(s) that performs the responsibilities as a PECC for EMS agencies within a region.

Some certifications of the individual(s) who might fulfill the PECC role include, but are not limited to:

- Emergency Medical Technician (EMT)
- Paramedic
- Registered Nurse (RN)
- Advanced Practice Nurse (APN)
- Physician Assistant (PA)
- Medical Doctor (MD)

Some responsibilities of the individual(s) who might fulfill the PECC role include, but are not limited to:

- Ensures that the pediatric perspective is included in the development of EMS protocols.
- Ensures that fellow EMS providers follow pediatric clinical practice guidelines.
- Promotes pediatric continuing-education opportunities.
- Oversees the pediatric-process improvement.
- Ensures the availability of pediatric medications, equipment, and supplies.
- Promotes agency participation in pediatric-prevention programs.
- Promotes agency participation in pediatric-research efforts.
- Liaises with the emergency department pediatric emergency care coordinator.
- Promotes family-centered care at the agency.

Objective II

Proposed collaborative efforts with existing HRSA recipients designated by HRSA for this collaborative and other federal and non-federal entities to support the QI collaborative, as well as the states in their efforts to establish and train EMS PECCs.

Method IIa

EIIC will collaborate on education regarding PECC standards by developing an advisory committee including representatives from national organizations. This advisory committee will meet monthly to support content development and evaluation.

The Advisory Committee was developed and included representatives from 12 different national organizations (**Table 2**). With the exception of December, February, and May, the advisory committee met monthly throughout the collaborative. During these meetings, advisory committee members provided input and feedback on the agendas of the learning session webinars, as well as the in-person learning session held in Austin, Texas. Input and feedback was also received on the agendas for state partnership team site visits, monthly pulse checks, and sustainability of the project within states.

Method IIb

EIIC will collaborate on education regarding PECC standards by developing a committee of subject matter experts (SMEs) to include up to six (6) authors recognized as experts in this field, two (2) EMSC State Partnership Program managers, and one (1) currently employed PECC from an EMS agency identified in the EIIC qualitative study. The subject matter experts will meet monthly to support content development and evaluation.

A committee of eight SMEs was formed and included seven authors recognized as experts in this field. The eighth member is a PECC with Gaston County EMS in North Carolina (**Table 3**). With the exception of December and February, the SMEs met monthly during the collaborative (two meetings were held in January). During these meetings, SME provided input and feedback on the agendas of the learning session webinars, as well as the in-person learning session held in Austin, Texas. Input and feedback was also received on the agendas for state partnership team site visits, monthly pulse checks, and sustainability of the project within states. Additionally,

SME attended the in-person learning session in Austin, Texas as presenters and coordinators. They also attended the monthly pulse checks, as well as the state partnership team site visits either in person, or virtually. The purpose of the site visits was to assist the collaborative team with topics such as dissemination and sustainability, and to provide more in-depth education on quality improvement methodologies such as the development of SMART (specific, measurable, achievable, relevant, time-bound) goals and objectives, and PDSA (plan, study, do act) cycles.

Method IIc

An introductory webinar for the Health Resources and Services Administration (HRSA), NEDARC, Atlas Research, and the EIIC take place in October 2018.

Personnel from HRSA, NEDARC, Atlas Research, and the EIIC participated in the introductory webinar for the SMEs and Advisory Committee on September 27, 2018.

Objective III

Description of training activities and the types of technical assistance that will be provided to state teams in the QI collaborative and other states after the collaborative has concluded.

Method IIIa

Create a collaborative learning forum for new and established PECCs designated by HRSA as part of this QI collaborative (not to exceed 10 states). Create a peer mentorship program. These resources will continue to be available virtually after the collaborative has concluded. Conduct monthly webinars and conference calls regarding barriers, concerns, and initiatives for PECCs for the participating state partnerships engaged in the PECC collaborative. Aid participants in the development of an action plan for their state defined by best practices within the work of the collaborative.

The collaborative consisted of the nine states, grouped as outlined in **Figure 1**. The EIIC representatives and SMEs conducted monthly pulse checks to identify what the teams were doing to recruit new PECCs, identify gaps in what worked and what did not, assisted in mapping out successes and failures, and the creation of next steps.

The EIIC representatives and SMEs conducted site visits with our SP teams to give additional assistance with topics such as dissemination and sustainability, as well as providing more in-depth education on QI methodologies such as the development of SMART goals and objectives, and PDSA cycles.

Method IIIb

QI technical support team will identify or create QI tools to be utilized by a PECC. The EIIC will coordinate with the CCIT to develop an EMS PECC webpage and portal to disseminate tools, products, findings, and best practices for PECCs. These resources will continue to be available electronically after the collaborative has concluded.

QI tools were identified through the Institute for Healthcare Improvement (IHI), which is recognized as the leader in quality improvement in healthcare education. The EIIC has an annual

subscription to the IHI Open School. A large number of seats were made available to collaborative participants, providing them an opportunity to earn a Basic Certificate in Quality and Safety at no cost. The curriculum is broken into the three main categories:

- 100-level courses = Introductory concepts for all health care audiences
- 200-level courses = Intermediate concepts and specialized topic areas
- 300-level courses = Project-based learning

In order to receive the Basic Certificate in Quality and Safety, the 13 essential courses need to be taken. Participants had until June 30, 2019 to complete the course.

Of the 40 SP team members and SMEs this opportunity was made available to, three have started the course, but none had completed it as of May 31, 2019.

The EIIC developed a webpage specific to the PECC Learning Collaborative. Tools, products, findings, and best practices have been gathered from the collaborative and are available to all participants. This resource page was made available to all 58 SP grantees, as well as the general public, on May 7, 2019. It is designed to be a single repository for PECC resources for all EMSC SP grantees and prehospital PECCs. The EIIC has begun gathering and posting resources from all grantees to the webpage, and will continue to post additional resources as they become available.

Method IIIc

Education on pediatric prehospital care, pediatric equipment skills, and quality improvement methodologies to take place throughout the collaborative, with an in-person learning session/workshop at the end of January 2019.

Five virtual learning sessions were held throughout the collaborative. The dates and objectives of each learning sessions were:

- **October 25, 2018: Learning Session 1**
    - Define who/what a Prehospital PECC is.
    - Identify the roles and responsibilities of a Prehospital PECC according to the literature.
    - Understand the Model for Improvement and how it applies to your work in this collaborative and other projects.
    - Understand what an elevator pitch is and how it applies to your recruitment efforts.
- **November 15, 2018: Learning Session 2**
    - Summarize the recruitment efforts used in Massachusetts and how that relates to your recruitment efforts.
    - Discuss the components of an effective communication and dissemination plan.
    - Discuss how these are applicable to your recruitment efforts.

- **December 13, 2018: Learning Session 3**
    - Discuss successes, barriers, and lessons learned from November's recruitment efforts.
    - Be able to present your first PDSA cycle highlighting a timeline which includes dates and results.
- **February 21, 2019: Learning Session 4**
    - Discuss the biggest challenges in achieving your individual state collaborative goal.
    - Present three ways you are going to address these challenges over the next six weeks.
    - Understand the standardized data reporting form and how to use it.
- **March 28, 2019: Learning Session 5**
    - Discuss the biggest lesson learned from the collaborative.
    - Present your sustainability plan for the next six months.

An in-person learning session was held in Austin, Texas January 31 – February 1, 2019. Each SP team reported on their current status and progress using electronic storyboards. Brainstorming sessions were held to identify what the teams learned since October 1, 2018 regarding PECC roles and responsibilities, education, how they have been performing outreach to recruit new PECCs, and resources developed and needed. "How to Develop and Deliver an Elevator Pitch" was presented by guest speaker Tina Snider, who is the Public Relations Director for Ronald McDonald House in Austin. Breakout sessions covered scenario development, skills check sheet development, simulation, social media use, and dissemination. The meeting concluded with a presentation on sustainability of their programs.

Method IIId

Work with the EIIC Education Domain to provided CEUs for webinars and in-person education/training sessions. The EIIC will leverage the Health Stream Learning Management System (LMS) to coordinate and implement just in time learning modules.

Due to the lengthy wait time for processing of applications from the Commission on Accreditation for Prehospital Continuing Education (CAPCE), an application was not made for continuing education units for the virtual learning sessions.

EMS continuing education units (6.5) were awarded through CAPCE for the in-person learning session in Austin, Texas. Eleven people applied for and received the credits offered.

Additionally, the EIIC has applied to be an accredited organization through CAPCE. Once complete, the EIIC will be able to offer EMS CEUs through Texas Children's Hospital without the current wait time and individual application process.

Support services have been purchased for the Moodle Learning Management System by the Baylor College of Medicine (BCM) Section of Pediatric Emergency Medicine in March 2019, as the financial process and other organizational processes took longer than anticipated. EIIC staff

completed training on the software at the end of May 2019. The EIIC can begin use of the product through BCM to enhance support of all SP grantees post-collaborative.

Objective IV

A plan for assessing progress in expanding the reach of the QI collaborative through focused QI methods.

Method IVa

Data collection portal will be created and maintained by the EIIC linking to data kept by NEDARC in their current work. This portion of the project will require early coordination with NEDARC to develop and facilitate. In addition, working with NEDARC and utilizing the data collection portal for survey data, an end of project assessment will measure the number of newly reported PECCs within participating states. This will take place at the end of the collaborative through a portal established by the EIIC. The portal will be similar in structure to that established for other regional and national collaboratives by Macias and others within the EIIC (e.g. Pediatric Septic Shock Collaborative, Children's Hospital Association of Texas Asthma Collaborative).

After the grant narrative was written, the EIIC discovered that NEDARC would not be participating in the Prehospital PECC Learning Collaborative. As such, the collaborative effort with NEDARC did not take place. For future quality improvement collaboratives, the data collection, analysis, and dissemination center should be an active participant in order to help facilitate this piece of collaborative work.

The EIIC was informed by HRSA EMSC in February 2019 that an end of project assessment of the SP teams could not be conducted due to the Paperwork Reduction Act of 1980. As such, the EIIC collected monthly data and end of project data on the number of new PECCs established in states using a concordant spreadsheet provided to the SP team leads.

Method IVb

Coordinate with the Center for Collaborative and Integrative Technologies (currently under work plan contracts to support the EIIC's website) to develop a website or webpages, and develop data fields regarding participant education, certifications, experience, skills, and roles and responsibilities. Will also track addition of new PECCs implemented in participating states.

The webpage has been developed and resources continue to be added as they are made available. Data fields to gather information regarding participant education, certifications, experience, skills, and roles and responsibilities still need to be developed.

Method IVc

Track number of "hits" or uses of the website and tools developed.

The Prehospital PECC Learning Collaborative webpage had 904 visits from October 1, 2018 – June 14, 2019. There were 509 unique, or individual, visits within the same time period.

Method IVd

Track number of participants in webinars. Record webinars to be available for participants unable to attend and have as a resource for future use.

All of the virtual learning sessions were recorded and are available for viewing on the PECC Learning Collaborative webpage of the EIIC website.

The number of participants for each learning session can be found in **Table 5**.

Table 5. Learning Session Participants

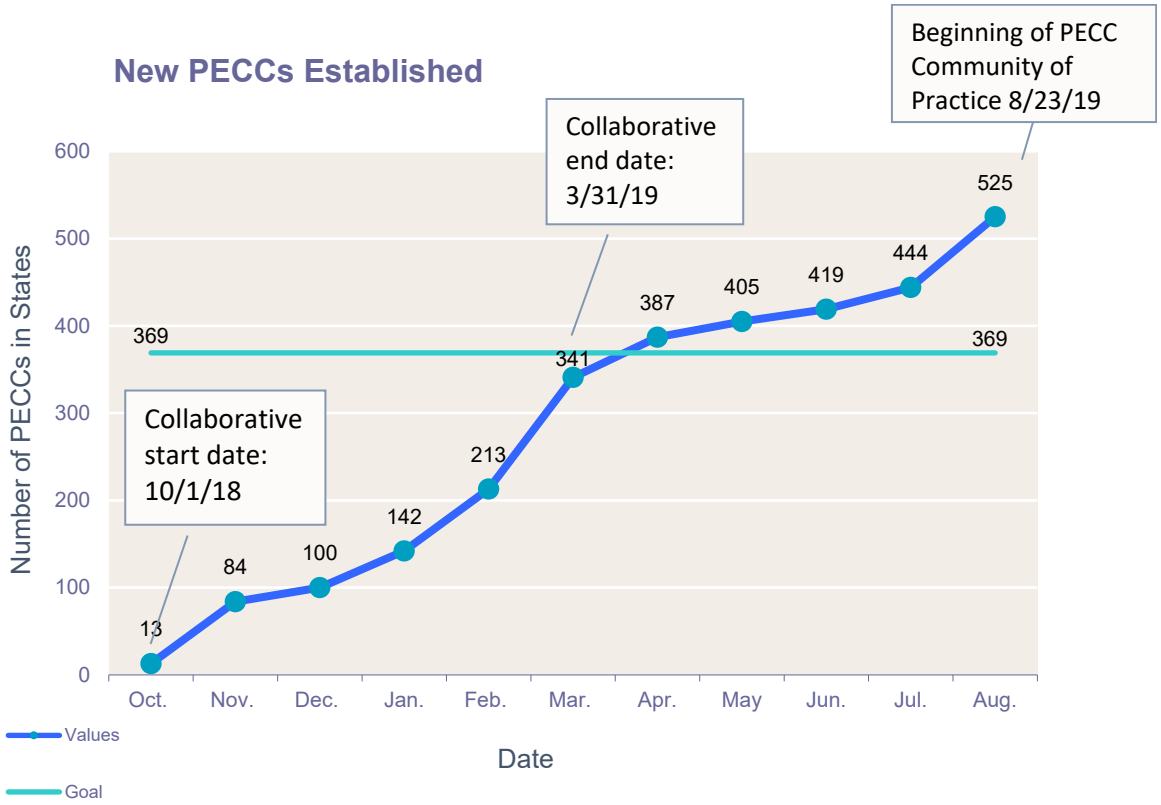
Date	Title	# of Attendees
10/10/2018	PECCLC Introductory Webinar for State Partners	45
10/25/2018	Learning Session 1	25
11/15/2018	Learning Session 2	25
12/13/2018	Learning Session 3	25
2/21/2019	Learning Session 4	25
3/28/2019	Learning Session 5	25

Method IVe

Provide a report at the end of the collaborative that includes process measures (improvement in numbers and percentages of agencies with PECCs in participating states) and an assessment on the effectiveness of EMS PECCs as an intervention to improving the delivery and quality of pediatric emergency care through qualitative self-reporting surveys.

Each state was required to establish a target number of EMS agencies that will establish new PECCs across the project duration. At a minimum, this target was to include a majority of state EMS agencies that reported an interest in adding a PECC role in the 2017 Assessment. The total goal submitted by the states was 369. Despite the challenge of having an aggressive timeline, the nine participating states were able to increase the number of PECCs within their respective agencies. As of March 31, 2019 a total of 340 new PECCs, or 92% of the overall goal, were recruited **(Figure 3).** The EIIC, in collaboration with the HRSA EMSC program, began a Prehospital PECC Community of Practice on August 23, 2019. As of this date, a total of 529 new PECCs, or 142% of the overall goal, have been recruited **(Figure 3).**

Figure 3. New PECCs Established



Individual state goals and total PECCs recruited are shown in **Table 6**.

Table 6. Individual State Goals and Totals.

STATE TEAM	Total	Goal	Percentage
Connecticut	53	26	204%
Kentucky	58	48	121%
Montana	57	72	79%
New Mexico	14	5	280%
New York	139	60	232%
Ohio	64	38	168%
Pennsylvania	51	40	128%
Rhode Island	40	44	91%
Wisconsin	49	36	136%
TOTAL	**525**	**369**	**142.28%**

Monthly totals and running totals are shown in **Table 7** and **Appendix B**. Ohio and Pennsylvania did not track their monthly totals for April through July. Those months are totaled with the August results.

Table 7. Monthly Totals.

STATE	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	TOTAL	GOAL	%
CT	12	6	3	10	4	15	2	0	1	0	0	53	26	204
KY	0	29	6	0	2	4	1	2	0	11	3	58	48	121
MT	1	1	0	21	9	22	0	0	0	0	3	57	72	79
NM	0	0	0	0	12	2	0	0	0	0	0	14	5	280
NY	0	0	0	1	22	32	40	14	10	11	9	139	60	232
OH	0	0	0	0	12	18	-	-	-	-	34	64	38	168
PA	0	0	7	7	2	4	-	-	-	-	31	51	40	128
RI	0	35	0	1	0	4	0	0	0	0	0	40	44	91
WI	0	0	0	2	8	27	3	2	3	3	1	49	36	136
TOTAL	**13**	**71**	**16**	**42**	**71**	**128**	**46**	**18**	**14**	**25**	**81**	**525**	**369**	**142.3**
Running Total	**13**	**84**	**100**	**142**	**213**	**341**	**387**	**405**	**419**	**444**	**525**			

From the new PECCs recruited, we wanted to determine how their agency responded on the 2017 Next Generation of EMS for Children Performance Measure Assessment as to whether they were interested in adding a PECC, planning to add a PECC, had no PECC, or did not respond to the question **(Table 8)**. Of the 340 new PECCs, 21 (6%) of agencies responded that they planned to add a PECC; 102 (30%) were interested in adding a PECC; 128 (38%) responded as not having a PECC; 89 (26%) of agencies did not respond to the question.

Table 8. Responses to 2017 Next Generation of EMS for Children Performance Measure Assessment

TOTAL AGENCIES

STATE TEAM	"Plans to add a PECC"	"Interested in a PECC"	"No PECC"	No Survey Response	New Agencies with a PECC
Connecticut	2	15	17	16	**50**
Kentucky	1	14	25	0	**40**
Montana	5	19	26	4	**54**
New Mexico	2	1	12	0	**15**
New York	1	5	11	37	**54**
Ohio	3	6	2	19	**30**
Pennsylvania	0	10	1	9	**20**
Rhode Island	3	13	24	0	**40**
Wisconsin	4	19	10	4	**37**
TOTAL	**21**	**102**	**128**	**89**	**340**

A requirement of the SP team's notice of funding opportunity was to collect qualitative feedback from local EMS agencies on the usability, ease of adoption, and impact experienced as a result of having a PECC at the local agency level. The EIIC was to help facilitate that process. As the teams had challenges meeting this requirement within the time frame allotted, the EIIC asked the SMEs to help conduct these qualitative interviews.

The SP team leads were asked to identify three EMS agency PECCs within their state who were willing to conduct an interview and forward those names to the PECC Learning Collaborative Project Lead, Sam Vance by May 24, 2018. A total of 15 names were identified from the states of Connecticut, Pennsylvania, Kentucky, Wisconsin, Rhode Island, New York, and Montana. Those 15 PECCs were divided amongst the SMEs to contact and schedule an interview. Eleven interviews were completed, and all have been transcribed. Using constant comparison analysis, an initial framework of themes from interview responses will be assigned. Duplicate responses will be consolidated as much as possible. When this is complete, an addendum will be added to this report.

Resources Developed

Resources developed from the PECC Learning Collaborative:

- PECC Learning Collaborative Logo **(Appendix C)**
- Introductory packet
- Definition of a Prehospital PECC
- Roles and Responsibilities defined
- Prehospital PECC "Fast Facts" infographic created
    - Tailored to each of the nine participating states
    - Generic version for use by all EMSC State Partnership programs
- Online toolkit
    - Clinical Practice Guidelines
    - Patient Safety
    - Education, Simulation, Checklists
    - Equipment, Supplies, Medication
    - Family Centered Care
    - Injury Prevention
    - Performance Measures
- Best Practices Identified **(Appendix A)**
- Online forum
- Qualitative assessment

State Partnership Team Evaluations

The EIIC, in collaboration with the HRSA EMSC program, conducted an evaluation of all the participating SP teams to obtain their overall thoughts on the collaborative, as well as the in-person learning session in Austin, Texas **(Appendix D)**. The SP team leads were asked to forward this evaluation to their team members who travelled to the in-person learning session in Austin. Of the nine SP teams, the six teams (Connecticut, Kentucky, Montana, New York, Ohio, and Rhode Island) responded. No response was received from New Mexico, Pennsylvania, or Wisconsin. There was a total of 13 respondents, with three incomplete evaluations.

Overall, 58.3% agreed that the learning collaborative meetings were beneficial to achieving their goals, while 33.3% strongly agreed. One-hundred percent (100%) of the participants felt they were provided the necessary training to be successful. Having the opportunity to network with the other SP teams seems was felt to be the most useful part of the collaborative experience.

Additionally, teams were asked to list the most challenging part of their collaborative experience. As we know time constraints were a challenge, we asked to exclude that from their response. However, the majority of the responses relate to time constraints in some form. Additional suggestions included not doing an additional data collection in conjunction with the primary data being collected, as it "slowed down momentum and shifted focus." The EIIC administrative team agrees that this did cause confusion and additional workload for some of the teams and could have been planned and implemented better.

Future Strategies

The EIIC, in collaboration with the HRSA EMSC program, will be developing a Prehospital PECC Community of Practice, open to all 58 SP grantees. The first meeting was be conducted at the 2019 EMSC All Grantee Meeting: A Journey to Improve Pediatric Emergency Care on August 23, 2019. This was an opportunity for the collaborative teams to share with other states their successes, challenges and solutions. Breakout sessions brainstormed areas SP Program managers would like to focus on in future learning sessions. Future collaborative learning sessions will be conducted once per quarter.

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4. Cushman JT, Fairbanks RJ, O'Gara KG, et al. Ambulance personnel perceptions of near misses and adverse events in pediatric patients. *Prehospital Emergency Care.* 2010;14(4):477-484.

5. Institute of Medicine. 2007. *Emergency Care for Children: Growing Pains*. Washington, DC: The National Academies Press. https://doi.org/10.17226/11655.

6. Gausche-Hill M, Ely M, Schmuhl P, et al. A national assessment of pediatric readiness of emergency departments. *JAMA Pediatr*. 2015; 169(6):527-534.

7. Remick K, Gross T, Adelgais K, Shah MI, Leonard JC, Gausche-Hill M. Resource document: Coordination of pediatric emergency care in EMS systems. *Prehosp Emerg Care*. 2017;21(3):399-407.

Appendix A: Best Practices Identified

Prehospital PECC Learning Collaborative Brainstorming Session: What Have We Learned Since Oct. 1, 2019. This list of ideas was gathered on January 31, 2019 during the in-person Austin learning session.

Roles and Responsibilities

New Ideas Identified	● Pediatric Expert ● Liaison ● Educator ● Quality Improvement
Resources Currently Available	● Education Simulation Presentation (Austin In-Person Meeting) Simulation Resources ● EMSC Program ● EMS Recognition Programs
Additional Resources Needed	● Funding ● QI Education ● Pediatric Education ● Needs from the EMSC Program
Stakeholders Already Engaged and Stakeholders Needed	● National and State Organizations ● Pediatric Experts ● Advocacy Groups

Education

New Ideas Identified	● Size of State Matters ● Education of PECCs ● Education of the EMS Community
Resources Currently Available	● Curricula ● Support Services
Additional Resources Needed	● Standardized Education ● Recognition Programs ● Clear Objectives ● Funding ● Networking

Stakeholders Already Engaged and Stakeholders Needed	● National and State Organizations ● Educational Organizations and Tools ● Other Healthcare Needed

How Do We Perform Outreach to Recruit New PECCs?

New Ideas Identified	● Recognition Programs ● Dissemination ● Education ● Incentives ● EMTs Can Be a PECC
Resources Currently Available	● None Identified
Additional Resources Needed	● A Standardized Job Description
Stakeholders Already Engaged and Stakeholders Needed	● None Identified

Resources

New Ideas Identified	● Education ● QI Tools ● Communication
Resources Currently Available	● Equipment ● Education ● Subject Matter Experts ● Social Media
Additional Resources Needed	● Funding ● Quality Improvement Education and Data ● Advocacy ● Sustainability

Stakeholders Already Engaged and Stakeholders Needed	● Advocacy Groups Needed ● Education and Equipment Needed

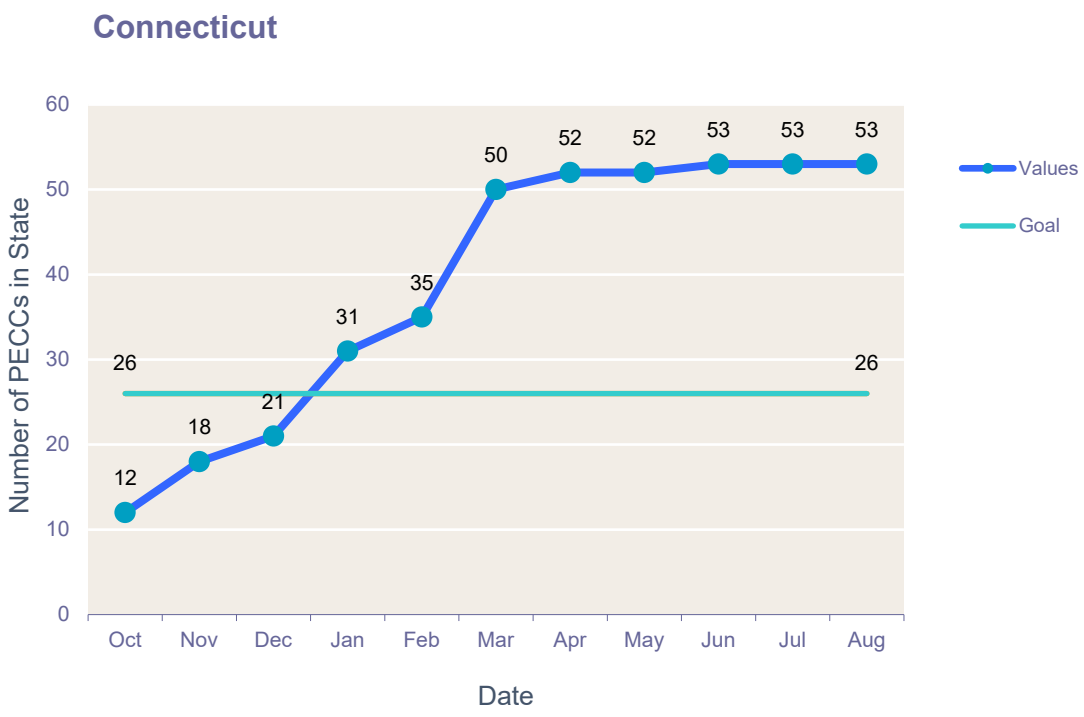
Lessons Learned

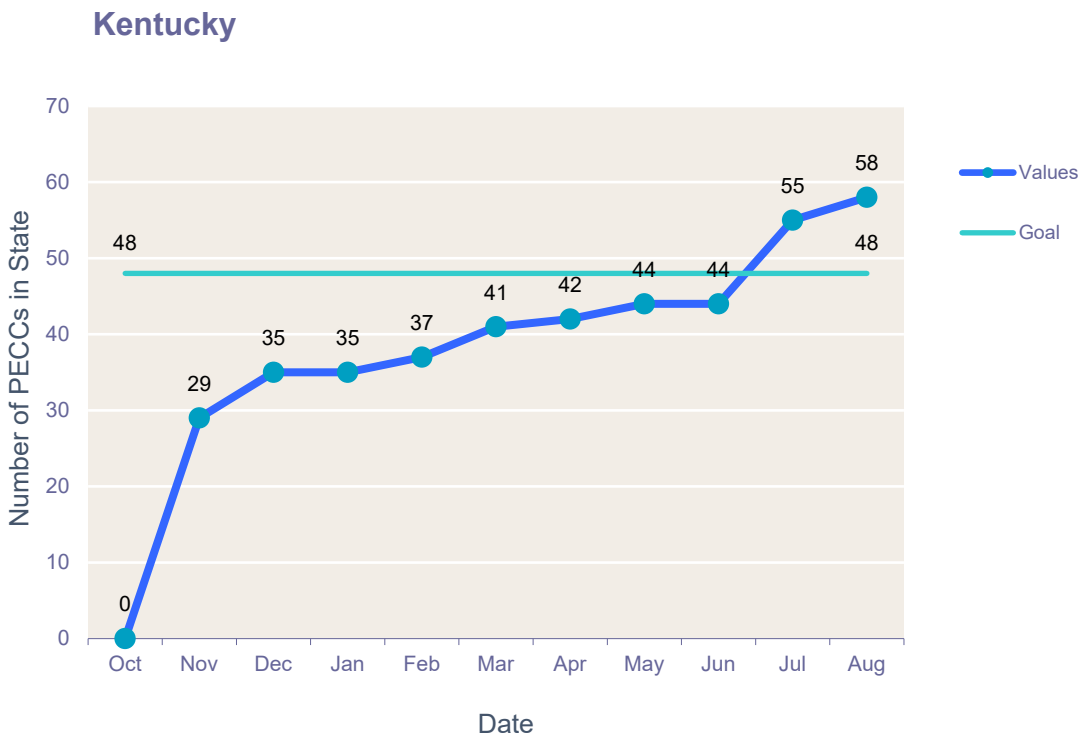
- Change the idea that pediatrics is a minority
- Integrate the fire service into pediatric care – similar to fire prevention activities
- All providers can be a PECC – including EMTs
- Use the learning collaborative as a resource
- There is a shared mental model for the collaborative
- There are many commonalities across the collaborative no matter the size of the state
- Need to focus on sustainability
- Shared ideas regarding communication – multimedia, videos, web interfaces
- Learned ideas for getting the project off the ground
- PECC does not need to be an "all-in-one": Start with easy items to get the PECC in place, then increase their responsibilities
- Implement EMS recognition programs and in hospitals: different levels of pediatric readiness
- Agencies are doing more than they realize. Recognize and improve.
- Common ideas are emerging; locally and amongst states
- Use "off the shelf" resources without reinventing the wheel
- Regional recruiting is effective

Main Ideas Learned

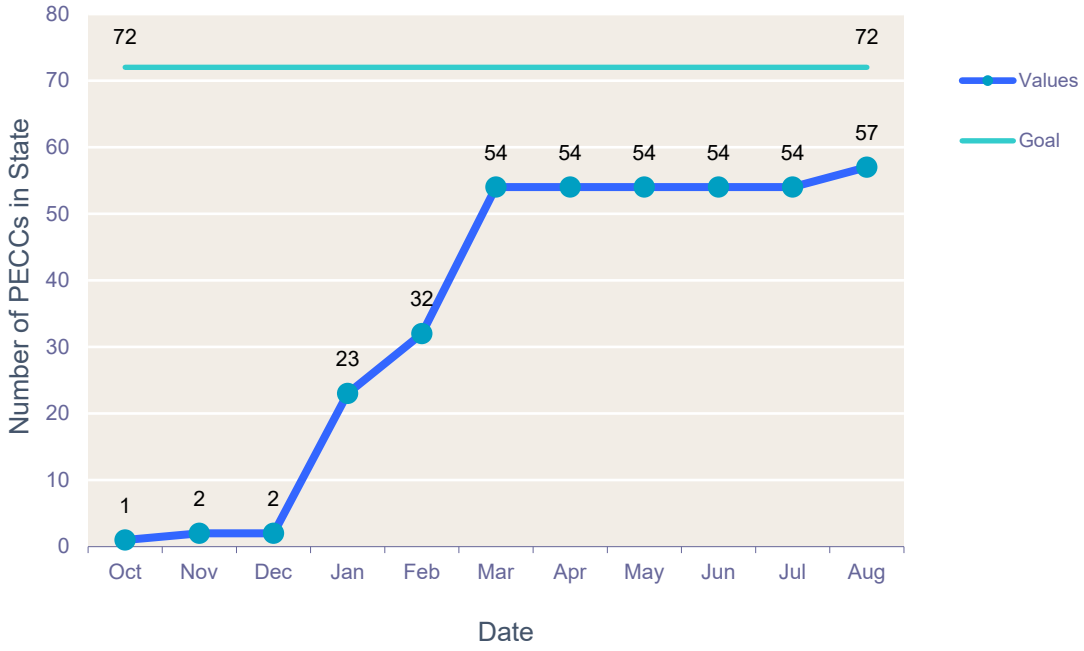
- Need robust, well developed tool kit: educational resources, assemble project templates, QI/PI templates – core measures to match with performance measures and pediatric protocols
- PECCs should be partners across the continuum and at the leadership level
- PECC role – can be accomplished by any level of care, including the volunteer level. As long as they have an interest in improving pediatric care
- Dissemination involves the EMSC program managers: social media, recognition programs, and public relations

Appendix B: New PECCs Established, Monthly Totals by State

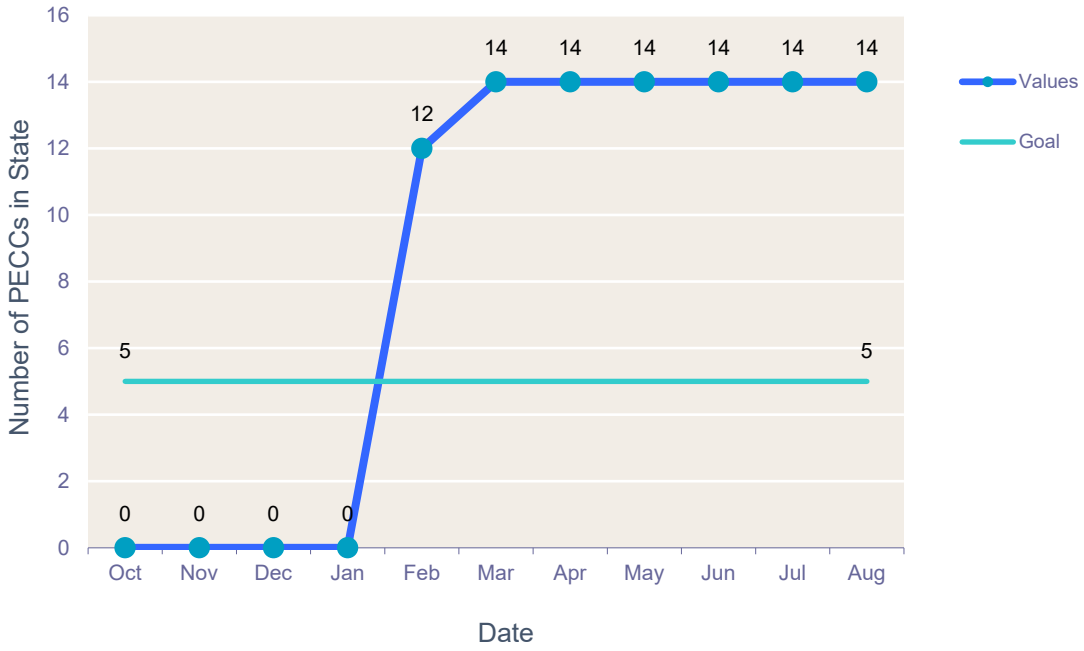




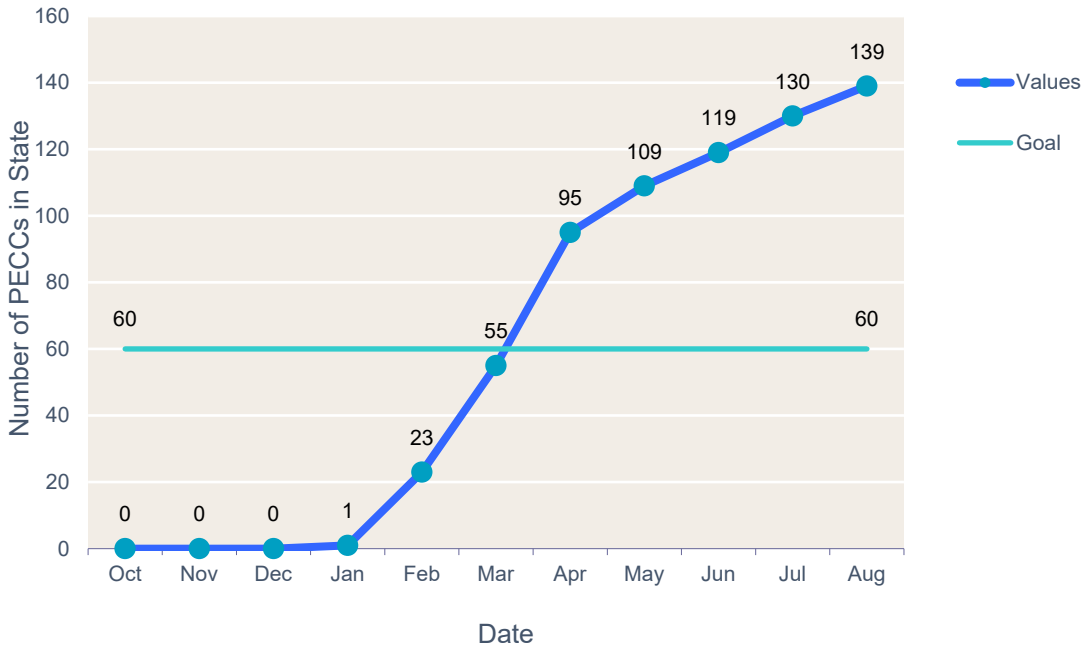
Montana



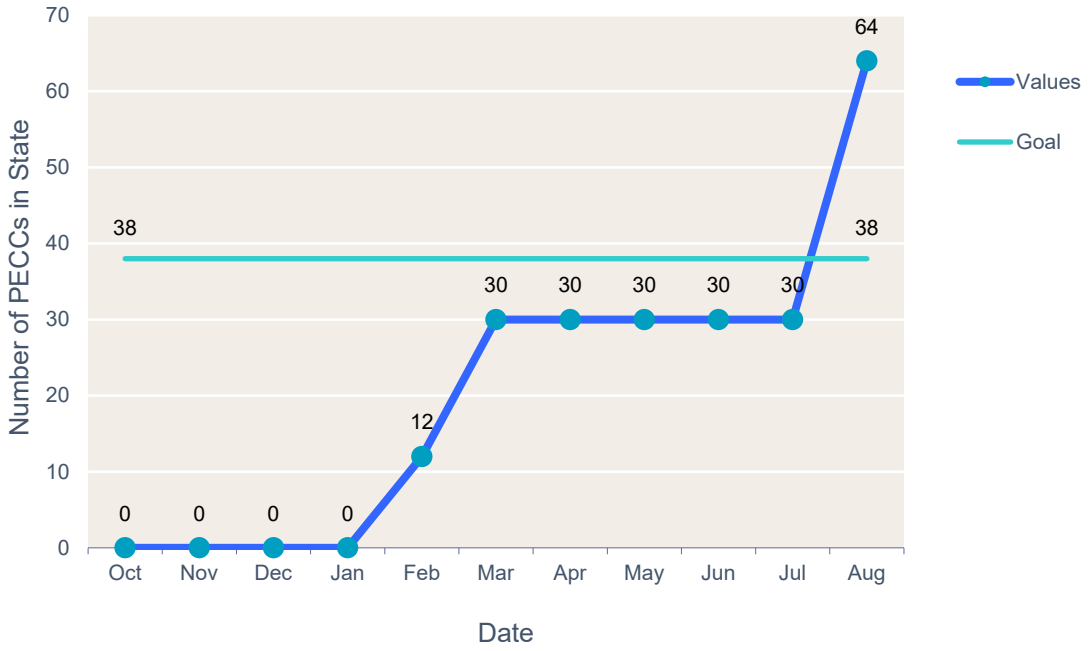
New Mexico



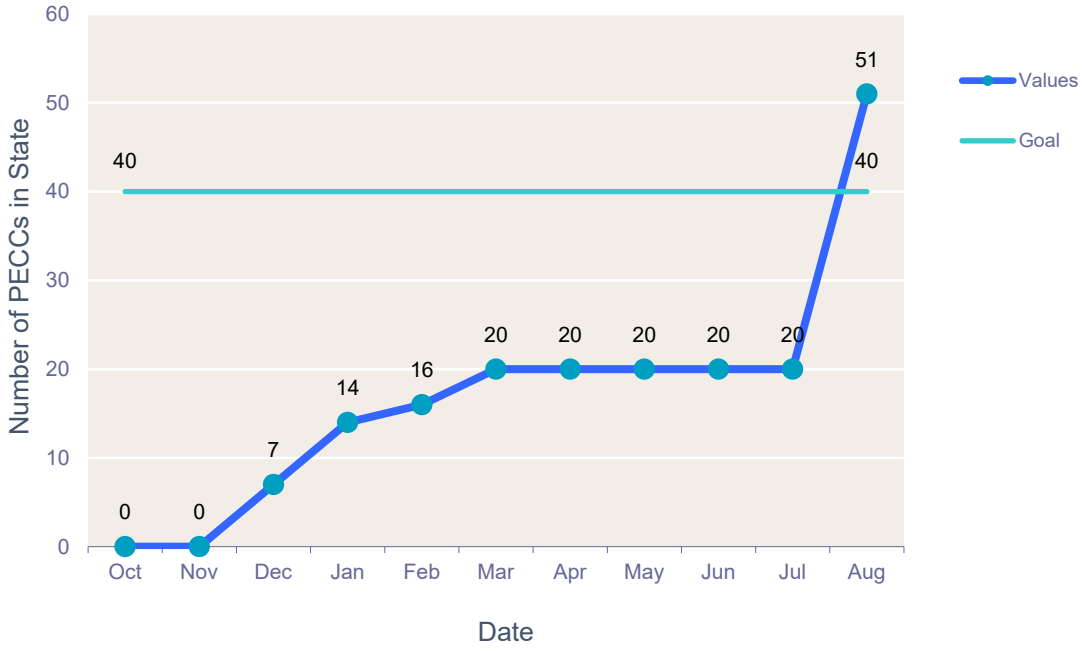
New York



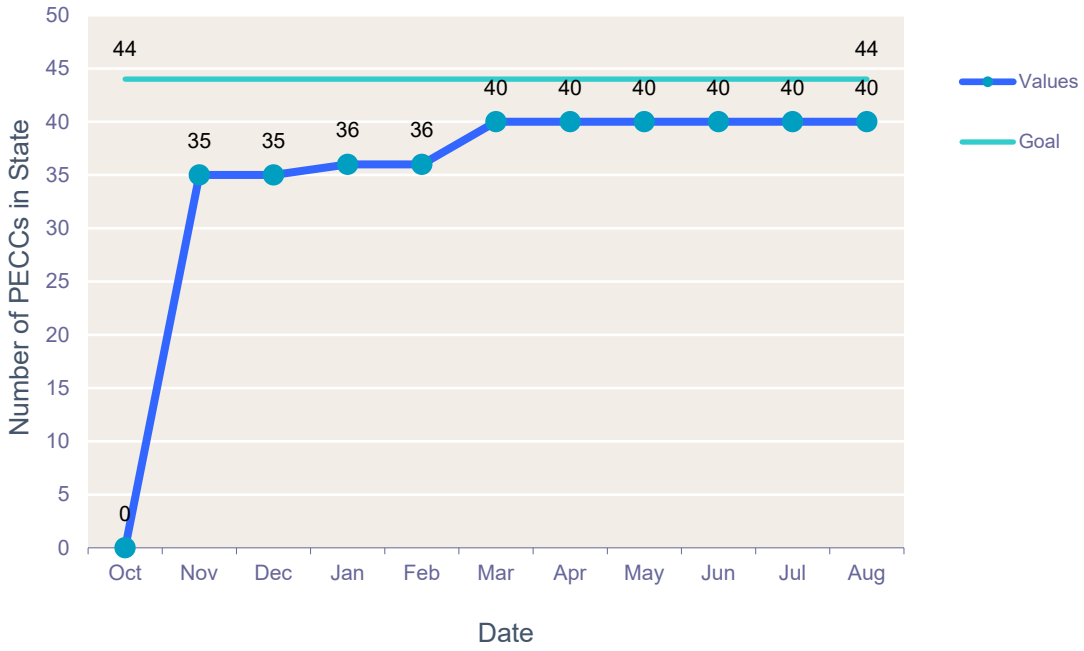
Ohio

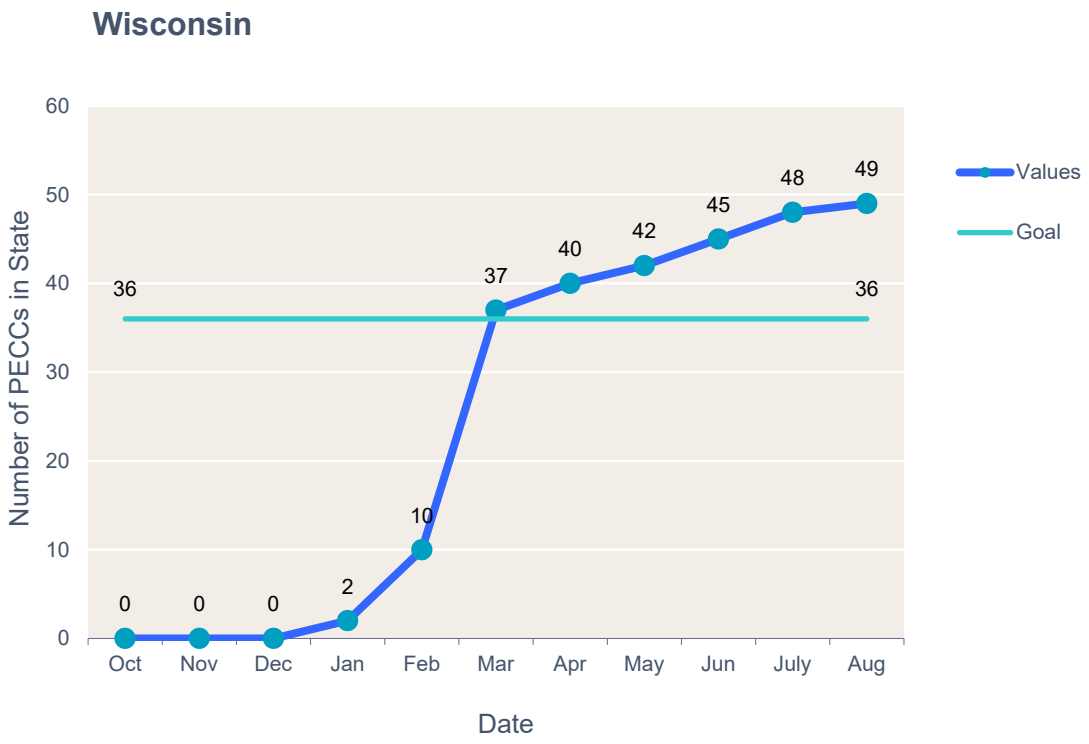


Pennsylvania



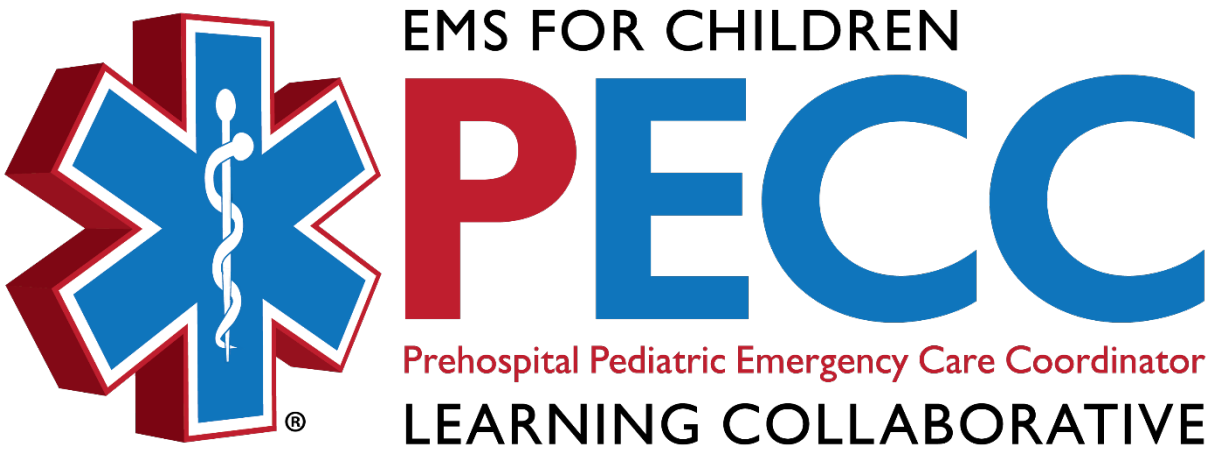
Rhode Island




Wisconsin
60
50
40
30
20
10
0
Number of PECCs in State
36
36
0
0
0
2
10
37
40
42
45
48
49
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
July
Aug
Date
Values
Goal

Appendix C: Logo

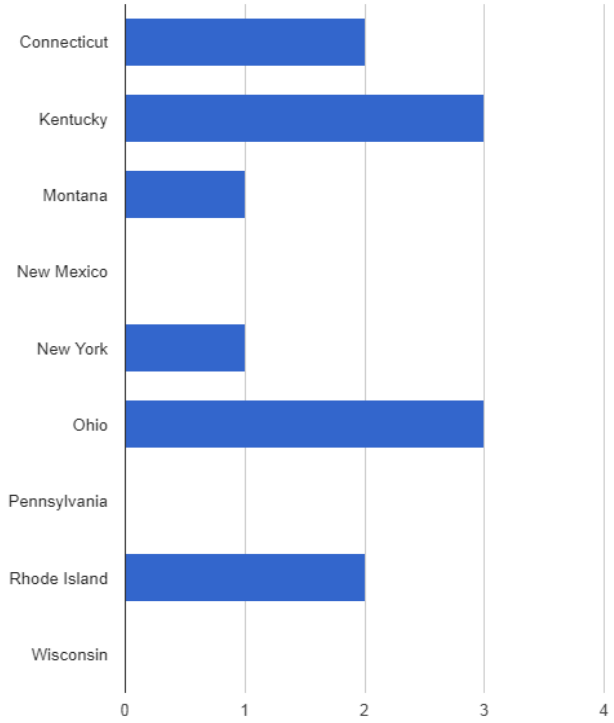
The following logo was for using during the learning collaborative.



The following logo was for state use post-learning collaborative.

Appendix D: State Partnership Team Evaluations

Question #1: *Please select your PECCLC state.*



Question #2: *In this section, please rate the monthly Learning Session structure for the PECC Learning Collaborative*

	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
The meeting frequency was helpful in keeping my recruitment goals on track	0.0%	0.0%	0.0%	66.7%	33.3%
The meetings were held at a convenient time	0.0%	8.3%	8.3%	66.7%	16.7%
WebEx was easy to use and the login instructions were clear	0.0%	0.0%	8.3%	50.0%	41.7%
I was informed about meetings in a timely manner	0.0%	0.0%	8.3%	41.7%	50.0%
Overall, the PECCLC meetings were beneficial to achieving my goals	0.0%	0.0%	8.3%	58.3%	33.3%

Question #3: *In this section, please rate the monthly Learning Session topics*

	Not Helpful	Somewhat Helpful	Very Helpful	No Opinion
The Model for Improvement, Cassidy Penn *(10/25/2018)*	0.0%	41.7%	50.0%	8.3%
Creating an elevator speech, Cassidy Penn *(10/25/2018)*	0.0%	25.0%	66.7%	8.3%
Overview of the Resource Document: Coordination of PEC care in EMS Systems and Physician Oversight of Pediatric Care in EMS, Dr. Toni Gross *(10/25/2018)*	0.0%	25.0%	58.3%	16.7%
From a PECC's Perspective, Travis Adams *(10/25/2018)*	8.3%	25.0%	50.0%	16.7%
Group Discussion on Barriers and Opportunities, Dr. Auerbach *(multiple dates)*	0.0%	16.7%	66.7%	16.7%
Overview of Grassroots Intervention to Increase Appointment of PECCs in Massachusetts ED, Dr. Petrack and Krislyn Boggs *(11/15/2018)*	0.0%	25.0%	58.3%	16.7%
Ohio's Project Plan on How to Engage Partners for PECC Recruitment, Dr. Leonard *(11/15/2018)*	0.0%	33.3%	50.0%	16.7%
Resource: Project Charter, Cassidy Penn *(11/15/2018)*	0.0%	25.0%	58.3%	16.7%
State specific "report-out" opportunities, ALL STATES (various times)	8.3%	25.0%	50.0%	16.7%
Uniform Data Collection Tool, Rachael Alter *(02/21/2019)*	0.0%	41.7%	50.0%	8.3%
State of the Collaborative, Sam Vance (various times)	0.0%	41.7%	41.7%	16.7%
Qualitative Assessment, Sam Vance and Sarah O'Donnell *(03/28/2019)*	0.0%	41.7%	50.0%	8.3%

Question #4: *Do you feel like you were provided the necessary training to be successful in recruiting PECCs? If yes, what was most useful/if no, what other topics would have been helpful to accomplish your recruitment goals?*

100% Yes, 0% No

Comments:

- All of Cassidy Penn's
- Overview of the Resource Document: Coordination of PEC care in EMS Systems and Physician Oversight of Pediatric Care in EMS, Dr. Toni Gross
- Didn't attend all. Hard to say
- Discussions with other states
- In person meeting
- The meeting in Austin was awesome. Being able to talk to other states and see what they were doing was very helpful.
- Any training that included updates or information on how other members of the collaborative were doing was helpful.
- Sharing of information and challenges
- Group discussion on barriers, report outs
- Qualitative Assessment and Uniform Data Collection Tool
- Overview of the resource document, coordination, physician oversight

Question #5: *In this section, please rate the learning session topics that were discussed during the PECCLC in-person Austin Conference:*

	Not Helpful	Somewhat Helpful	Very Helpful	No Opinion
Team Updates	7.7%	30.8%	53.8%	7.7%
Breakout: Roles and Responsibilities	7.7%	15.4%	69.2%	7.7%
Breakout: Education	0.0%	15.4%	76.9%	7.7%
Breakout: How do we perform outreach to recruit PECCs?	0.0%	38.5%	53.8%	7.7%
Breakout: Resources	0.0%	23.1%	69.2%	7.7%
Pulling Together Best Practices	0.0%	15.4%	69.2%	15.4%
Elevator Pitch: The Importance of Telling your Story	7.7%	30.8%	46.2%	15.4%
Skills Testing Breakout: Scenario's	0.0%	30.8%	53.8%	15.4%
Skills Testing Breakout: Scenario "Check-Off" Sheets	0.0%	30.8%	53.8%	15.4%
Skills Testing Breakout: Simulation	0.0%	30.8%	53.8%	15.4%
Outreach Strategies Breakout: Creating and Elevator Pitch	7.7%	30.8%	38.5%	23.1%
Outreach Strategies Breakout: Social Media	16.7%	33.3%	41.7%	8.3%
Outreach Strategies Breakout: Dissemination	7.7%	23.1%	46.2%	23.1%
Sustainability	0.0%	15.4%	69.2%	15.4%

Question #6: *Do you feel the in-person conference was helpful in your PECC recruitment efforts? If yes, what conference training was the most beneficial/if no, please tell us what we could have included to help you reach your recruitment goals?*

100% Yes, 0% No

Comments:

- Gave some nuts and bolts suggestions
- Elevator Pitch: The Importance of Telling your Story
- Hearing other states programs and opportunity to network
- All of the discussions
- Meeting others and networking
- Helpful seeing what others were doing. And being able to take home new ideas
- My team benefit from it. They were able to connect dots and learn from others.
- Discussions
- Roles and Responsibilities
- All of the Skills Testing Breakouts
- Team updates
- Sharing of documents/ideas including examples of giveaways allowed opportunities to use some resources that proved to be valuable in our state also.

Question #7: *What was the most useful part of your collaborative experience?*

Comments:

- Having a network of collaborators
- Networking
- Hearing other states programs and opportunity to network
- To see the challenges and resources
- Shared experiences and learning- guidance from central leadership/Sam
- Hearing others ideas about recruitment of PECC
- Report outs and learning from others.
- Sharing of information
- Team building
- Putting our heads together to come up with different ideas.
- Networking
- The opportunity to have the extra money to move this performance measure forward.

Question #8: *Excluding time, what was the most challenging part of your collaborative experience?*

Comments:

- Travel
- Limited time frame

- Follow up with EMS Agencies
- Developing/implementing strategy and plan
- Scheduling
- Ability to contact agencies directly
- The feeling of frustration at our state for not having a way to force every EMS to have a PECC whether it is a local or regional one.
- Prioritizing this in my professional life. There are so many things to work on.
- Finding EMS providers who were potentially willing to continue this project after the funding ends. We feel like the engaged providers will continue this effort and that the services will realize that it is an important part of their normal job.

Question #9: *If you have any comments, suggestions or feedback regarding your experience in the PECC collaborative, we would appreciate your thoughts!*

Comments:

- Didn't like having to do an additional data collection in the middle of the Collaborative, I feel it slowed down momentum and shifted focus. Would like to see more on building regional and state teams for this type of project.
- Although this is a children's specific effort, you would be glad to know that at least one of our services is making providers apply for this job and is also creating a PECC for STEMI, STROKE, Trauma.