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## **Perception of Pediatric Readiness Across a Health System's Emergency Departments**

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**Title:** Perception of Pediatric Readiness Across a Health System's Emergency Departments

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**Structured Abstract:**

The recent pandemic and pediatric respiratory syncytial virus surge have reinvigorated pediatric care readiness conversations. National strategies and associations exist to guide health systems in improving the quality of emergency care offered to pediatric populations by first assessing readiness for care. These research strategies center on survey implementation and staff engagement in general emergency departments with the goal to improve staff readiness to care for pediatric patients that may present for treatment. What impact would developing a consolidated pediatric readiness program that includes: pediatric emergency care coordinator designation for each emergency department, pediatric readiness education and committee engagement have on health system emergency department staff's perception of pediatric readiness in their hospitals? Evidence strongly supported a multi-faceted implementation plan to address challenges of varied emergency departments and relationship with higher pediatric care center hospital within the health system. Using researched pediatric readiness quality improvement initiatives, a consolidated pediatric readiness program was defined for the health system to include pediatric emergency care coordinator designation for each emergency department, pediatric readiness education, and corporate level pediatric readiness committee structure. Analysis focused on staff perceptions through a quality improvement study method with pre-survey, implementation of quality improvement initiatives across the organization, and post-survey to evaluate system changes. Evaluating emergency departments across a health system provided for varied geographic, patient volume, and other considerations, and results allowed for conversation around pediatric readiness program implementation in other health systems framed by the analysis of emergency department staff perceptions. Implementing a consolidated pediatric readiness program customized to the health system allowed for the opportunity to impact the perception of readiness across the health system.

**Keywords:** pediatric readiness, emergency nursing, pediatric emergency care

**Clinical Relevance:** This project explored pediatric readiness from the perception of the emergency department staff involved in pediatric readiness work. Implementing a consolidated pediatric readiness program customized to the health system allowed for the opportunity to impact the perception of readiness across the health system. Evaluating each aspect of the pediatric readiness program allowed leadership to understand priorities for resource allocation and next step initiatives.

## **Main Body:**

### **Introduction**

Pediatric patients will most likely seek care at the closest geographic emergency department regardless of the organization's weighted pediatric readiness survey scores (Brumme et al., 2022). Emergency departments receiving these children for care represent hospitals and healthcare organizations with varied resources and education level for the pediatric patient population. A literature review was conducted with the purpose of identifying evidence to support pediatric readiness surveys, explore pediatric care readiness interventions, and collaborative model implementation and the impact on pediatric readiness in emergency departments. A rapid literature review was utilized by following a number of systematic review steps, but simplifying to follow a quicker timeline (Tricco et al., 2015). This involved identifying search terms, choosing databases, and synthesizing findings through themes (Moran et al., 2020). Key words were identified, CINAHL and PubMed data bases were searched and results were analyzed by following a Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) framework for tracking article identification, eliminating non-applicable studies, and discovered the highest level for research articles on the topic (Moher et al., 2009). Following the PRISMA flow, four duplicates were removed for a final record result of n=55 (see Figure 1). Those were screened by reviewing the abstracts and titles for research content direction, and studies excluded that focused on pediatric septic shock, surgery/other specialty care areas, discharge surveys in emergency settings, and pediatric access to care facilities. After screening titles and abstracts, 23 records were excluded leaving 32 articles for full-text review (see Figure 1). After full-text review, all 32 records were assessed for eligibility, and those articles that addressed pre-hospital pediatric readiness, pre-hospital education, and policy review articles were excluded. This resulted in a selected number of 18 final articles included in the literature review.

Pediatric readiness assessment surveys were established before the 2020 pandemic to engage general emergency department staff in pediatric care preparedness through identifying necessary competencies, certifications, equipment functions, and supply needs (Remick et al., 2018). Multiple agencies and associations have partnered to create and fund research around pediatric care and preparedness forming the National Pediatric Readiness Project (NPRP). The NPRP has used and researched the pediatric readiness survey assessment introducing the Weighted Pediatric Readiness Scores (wPRS) as an evaluation tool (Remick et al., 2023) with higher scores associated with higher pediatric survival rates (Ames et al., 2019; Brumme et al., 2022; Whitfill et al., 2020). Those hospitals that voluntarily participated in the assessment and recorded high pediatric readiness had a 76% lower mortality rate in ill children and 60% lower mortality rate in injured children (EMSC, 2023).

The NPRP collaborative exists to guide health systems to increase the quality of emergency care offered to pediatric populations by first assessing readiness for care (EMSC, 2021). Emergency departments with higher weighted pediatric readiness scores (wPRS) were not only associated with higher pediatric survival rates (Ames et al., 2019; Brumme et al., 2022; Remick et al., 2023; Whitfill et al., 2020), but also lower inappropriate transfers to higher levels of pediatric care (Lieng et al., 2021). Pediatric readiness interventions center on a multifaceted approach such as

survey implementation (Fung et al., 2022; Genovese et al., 2021), pediatric emergency care coordinator designation (Abulebda et al., 2021b), pediatric readiness education (Abdulebda et al., 2021a; Abdulebda et al., 2021b; Abdulebda et al., 2022), and pediatric care coordinator engagement in pediatric readiness initiatives within the health system and community (Barata et al., 2018).

The results of the literature review findings supported a multi-faceted implementation plan to address challenges of varied emergency departments and their relationship with the higher pediatric care center hospital within the health systems through evidence-based initiatives. The pediatric readiness assessment survey provides a comprehensive evaluation of pediatric specific equipment and education opportunities (EMSC, 2021). Beyond the readiness score, there is opportunity to explore those interventions that could improve this score and elevate emergency pediatric care in health systems. National strategies and associations support health systems to increase quality of emergency care offered to pediatric populations by first assessing readiness for care (EMSC, 2021). NPRP evidence-based interventions center on survey implementation and staff engagement in general emergency departments with the goal to improve staff readiness to care for pediatric patients that may present for treatment. What impact would developing a consolidated pediatric readiness program that includes: pediatric emergency care coordinator designation for each emergency department, pediatric readiness education, and committee engagement have on health system emergency department staff's perception of pediatric readiness in their hospitals?

## **Design**

According to Moran et al. (2020) quality improvement study's use data to evaluate evidence-based interventions that seek to improve healthcare within a health system. Quality improvement initiatives focused on engaging key stakeholders with specific goals for interventions and evaluation of outcomes (Habis & Cieslak, 2019; Iyer & Stone, 2018). The health system institutional review board designated the project as quality improvement and granted approval for completion.

The project explored the staff's perceptions of current pediatric readiness and subsequent perception after implementation of interventions to improve quality of pediatric emergency care services in the health system (Goldman et al., 2018). Study setting was limited to the health system and focused on emergency room staff with pediatric emergency care coordinator designation and/or readiness experience. This included those who may have completed the pediatric readiness survey in the past or recently entered the health system and expressed interest in pediatric readiness.

Quality improvement initiatives were evaluated on a Likert scale with implementation of initiatives through pediatric emergency care coordinator designation, committee involvement, and pediatric readiness education offerings. Project implementation methods followed the framework from the Institute for Healthcare Improvement and the Model for Improvement (Langley et al., 2009). This model illustrates well quality improvement within a healthcare

system and has been studied extensively for use in healthcare systems. Following the Plan-Do-Study-Act process allows for building upon initial results and adapting to meet challenges or barriers that emerge (IHI, 2023a). One illustration used with the model of improvement is the key driver diagram and cause and effect diagram. The key driver diagram outlined the aims and goals and mapped drivers to key interventions. Using the intervention of the pediatric emergency care coordinator role and engagement in a committee can potentially impact the driver of staff comfortability in caring for the pediatric population or the dissemination of evidence-based solutions (See Figure 3). In a similar way the cause-and-effect diagram views categories along with key interventions and the effect each intervention could have on the outcome. For this project the cause-and-effect diagram outlines which interventions could affect staff perceptions of pediatric readiness (see Figure 4).

Pediatric emergency care coordinator (PECC) and/or pediatric champions and their leadership in each emergency department were recruited through the health system's email to introduce the project and outline expectations for participation. Recruitment was based on job role and designation as the pediatric care coordinator for the emergency department represented or previous pediatric readiness survey experience. The following staff members were excluded: emergency room staff focused on adult care primarily, staff members working as inpatient pediatric care personnel, and healthcare personnel that were not licensed as a registered nurse (RN), nurse practitioner (NP), physician assistant (PA), or physician (MD/DO).

Sample size was determined by the size of the health system using a non-probability convenience sampling of at least one representative for each emergency department in the health system. The health system had 24 emergency departments with a range of 1-6 pediatric emergency care coordinators in each department. The initial convenience sample produced an estimated sample group of 24-57 based on health system contacts. Statistical and survey plans focused on calculating data from an n=24 sample group with a goal to get surveys from at least one staff member per emergency department.

The project used a prospective approach and gathered data from the initial survey, implemented evidence-based interventions, and evaluated post-intervention impact. Initial data collection began by dissemination of the Likert survey (see Figure 5) to PECCs/sample group. The Likert scale spanned from "not at all prepared" to "extremely prepared." The first three questions asked how prepared the staff member perceived the health system, hospital, and emergency department were prepared to provide pediatric care respectively. The last question asked how prepared the department was to hold and manage a pediatric patient. These questions were designed to assess the perception of how comfortable staff felt their department and health system are prepared to manage a pediatric surge.

Following the pre-survey, interventions were implemented across the system: PECC designation, pediatric readiness education, and pediatric readiness committee engagement. PECC designation was the first intervention implemented and communication establishing or designating the role included leadership in each emergency department. Pediatric system-level committee engagement was the second intervention implemented with participation by all identified PECCs in the organization. The final intervention was the release of a pediatric readiness education

module which established a baseline for pediatric readiness work definitions, PECC responsibilities, and NPRP resources.

The post-intervention survey was issued to evaluate the impact of quality improvement initiatives 4 months after the initial survey. The post-survey included the first 4 questions of the Likert survey along with an additional question (see Figure 5) to evaluate staff perception of interventions. This provided a comparison between the intervention factors to seek to understand staff's perception of how helpful they found the pediatric readiness program.

Survey dissemination and data collection utilized RedCap software. The Likert survey was designed with a 5-point approach for answers creating a progression between "not at all" and "extremely." By creating a ratio of numbers, statistical analysis was used to evaluate the interval/ratio between the pre and post survey data (Harpe, 2015). All data was assessed for normal distributions and parametric statistical analysis remained the preferred method to obtain statistical significance (Sullivan & Artino, 2013). The pre- and post-survey questions were assessed for normality of distribution and ultimately the Cochran-Mantel-Haenszel statistical test was used to assess statistical significance in the presence of similar distributions between data sets (Rayner & Livingston, 2022). The post-survey additional question (evaluating interventions in the study) was analyzed separately by comparing percentages of respondent's choices and by a parametric approach utilizing 1-way measure analysis of variance (ANOVA) with a covariant. All statistical calculations were evaluated against statistical significance of  $p < 0.05$ .

## Results

Results from the pre- and post-surveys were gathered to analyze demographic data, direct pre- and post-preparedness scores, and intervention analysis through perception of how helpful staff found each intervention. As survey completions were not de-identified, a direct comparison of scores was attainable through the unique survey code and participant's email addresses. Statistical analysis processing was completed by utilizing the SAS software platform.

The sample group consisted of at least one contact from each emergency department across the health system with the initial survey sample size ( $n=57$ ) and pre-survey completion rate of 74% with 42 completed pre-surveys. As the project progressed, the sample group was monitored for participation in the three pediatric readiness interventions and for workforce turnover. This led to a final sample group ( $n=37$ ) for the post-survey comprised of those staff members who completed the pre-survey, participated in pediatric readiness program interventions, and remained in the same roles within the organization. Survey results from the final sample group ( $n=37$ ) were processed through RedCap with a final completion rate of 73% and 27 completed post-surveys for statistical analysis.

Demographic survey results provided information on the sample groups construct through education background and years of experience. Of the final sample group, education background was distributed across RN to MD/DO representation (see Table 1). The largest group by percentage are those staff members identifying with bachelor of nursing (BSN), RN education background at 38% and the smallest group at 3% were those identifying as doctor of nursing

practice (DNP), RN. Years of experience covered a distribution range of 5-36 years of experience with the largest group between 11-15 years at 35% (see Table 1).

The pre- and post-survey analysis used the Cochran-Mantel-Haenszel statistical test. The row means scores differ statistic was calculated through a direct comparison of the pre- and post-Likert survey scores. Question one comparison reflected a p-value of 0.7815, question two reflected a p-value of 0.4913, question three comparison reflected a p-value of 0.7963, and the fourth question reflected a p-value of 0.2850. While small variation was seen in the p-values, statistical significance could not be established between the perception of readiness between the pre-survey and post-survey responses. In looking at the 27 survey responses in a direct comparison table, differences between pre- and post-responses were explored (see Table 2). Difference counts were compared for questions 1-4 of the survey. For each question aside from question 2, many respondents perceived no change in the preparedness of their health system, emergency department, or department's ability to hold and manage pediatric patients in the event of pediatric emergencies (see Table 2). Question 2 found 30% of respondents either perceived no change or one value increase in their perception of preparedness for their hospital in pediatric emergency readiness (see Table 2).

The post-survey asked one additional section of questions on exploring staff's perception of interventions in the consolidated pediatric readiness program. The survey found that 38% of participants found the pediatric care coordinator designation intervention to be "somewhat helpful" and 35% found it to be "very helpful" with the remaining percentages falling on the "slightly and extremely" options (see Table 3). Pediatric readiness education was found to be "very helpful" by 35% of the survey respondents with only 23% finding the intervention "extremely helpful." The intervention with the highest percentage at 46% of respondents finding it "very helpful" was the system-level pediatric readiness committee engagement (see Table 3). The second highest option for this intervention was 31% selecting "somewhat helpful" and only 12% of respondents selecting "extremely helpful" (see Table 3). Further statistical analysis was performed on the interventions survey data using a one-way ANOVA with a covariant from the demographic data for number of years of clinical experience and number of years with the organization respectively. The number of years of clinical experience comparison found marginal statistical significance with a p-value of 0.0916, and the number of years of experience with the organization found a high statistical significance with a p-value of 0.0254. Data reflected a potential impact that number of years of experience either of clinical experience or experience in the organization had on survey responses.

## **Discussion**

The project represented an implementation of evidence-based strategies around pediatric readiness within a large health system by evaluating the perception of staff members within emergency departments from various sized hospitals. Survey results were represented by a broad range of clinical backgrounds from participants as well as varied years of experience. The sample group further remained responsive and engaged with a greater than 70% completion rate on both pre- and post-surveys. This provided a perception of pediatric readiness and evaluation of the



consolidated pediatric readiness program implementation that allowed for a balanced assessment of quality improvement initiatives and future resource focus.

The comparison between the pre- and post- Likert survey questions did not reflect statistical significance but does have clinical and process significance. In the process of implementing the consolidated pediatric readiness program, the standard for evaluating pediatric readiness was established across the health system. Through education and committee involvement, staff members may have changed their perception of pediatric readiness within the health system, hospital, or their department. Further, pediatric emergencies occurring during the implementation timeline of the project may have impacted post-survey perceptions as these showed resource challenges and opportunities for certain sites.

Another factor that may have affected the pre- and post-survey data was the implementation timeline. The timeline was four months between the first survey, implementation of interventions, and post-survey. Additional time with staff members completing additional pediatric readiness education, attending additional system-level committee meetings, and leadership engagement could lead to a change in perception and perhaps more statistical significance between readiness survey scores.

An additional question in the post-survey evaluated the program initiatives. By evaluating each intervention individually, the perception of its help to the staff members should provide opportunities for strategic planning by the steering committee or senior leadership. Survey results showed a greater percentage of those participants found the system-level committee engagement to be the most helpful of the three interventions. The system-level committee allowed for representatives from each emergency department regardless of geographic location or size to learn about pediatric readiness and engage future initiatives for this program. Further statistical analysis provided additional considerations on the impact years of experience in a clinical setting or with the organization might have on the perception of pediatric readiness program interventions. Those staff members with a greater number of years of experience perceived interventions to be more helpful than those with fewer years of experience in the clinical setting or in the organization, with the importance of statistical significance falling on those with a greater number of years with the organization. This factor provided a unique discovery in the impact experience plays in the perception of quality improvement interventions and that additional experience could create an improved perception of the consolidated pediatric readiness program within the organization.

## **Conclusion**

Pediatric readiness encompasses both timely emergency treatment and appropriate care strategies. Using evidence-based interventions within a health care system with multiple emergency department sites can establish collaborative relationships, build empowerment for quality improvement changes, and ultimately improve pediatric quality of care. This project explored pediatric readiness from the perception of the emergency department staff involved in pediatric readiness work. Implementing a consolidated pediatric readiness program customized

to the health system allowed for the opportunity to impact the perception of readiness across the health system. Evaluating each aspect of the pediatric readiness program allows leadership to understand priorities for resource allocation and future initiatives. The consolidated pediatric readiness program framework combined PECC designation, education, and committee engagement to create the platform for this resource allocation and continued quality improvement within a health system.

**Clinical Resources:** No resources used identified for this category.

### References:

- Abulebda, K., Whitfill, T., Mustafa, M., Montgomery, E. E., Lutfi, R., Abu-Sultaneh, S., Nitu, M. E., & Auerbach, M. A. (2022). Improving pediatric readiness and clinical care in general emergency departments: A multicenter retrospective cohort study. *The Journal of Pediatrics*, 240, 241-248. <https://doi.org/10.1016/j.jpeds.2021.08.084>
- Abulebda, K., Whitfill, T., Montgomery, E. E., Thomas, A., Dudas, R. A., Leung, J. S., Scherzer, D. J., Aebersold, M., Van Ittersum, W. L., Kant, S., Walls, T. A., Sessa, A. K., Janofsky, S., Fenster, D. B., Kessler, D. O., Chatfield, J., Okada, P., Arteaga, G. M., Berg, M. D., & Tay, K.-Y. (2021a). Improving pediatric readiness in general emergency departments: A prospective interventional study. *The Journal of Pediatrics*, 230, 230-237. <https://doi.org/10.1016/j.jpeds.2020.10.040>
- Abulebda, K., Lutfi, R., Petras, E. A., Berrens, Z. J., Mustafa, M., Pearson, K. J., Kirby, M. L., Abu-Sultaneh, S., & Montgomery, E. E. (2021b). Evaluation of a nurse pediatric emergency care coordinator-facilitated program on pediatric readiness and process of care in community emergency departments after collaboration with a pediatric academic medical center. *Journal of Emergency Nursing*, 47(1), 167-180. <https://doi.org/10.1016/j.jen.2020.06.006>
- Ames, S. G., Davis, B. S., Marin, J. R., Fink, E. L., Olson, L. M., Gausche-Hill, M., & Kahn, J. M. (2019). Emergency department pediatric readiness and mortality in critically ill children. *Pediatrics*, 144(3), e20190568. <https://doi.org/10.1542/peds.2019-0568>
- Barata, I., Auerbach, M., Badaki-Makun, O., Benjamin, L., Joseph, M. M., Lee, M. O., Mears, K., Petrack, E., Wallin, D., Ishimine, P., & Denninghoff, K. R. (2018). A research agenda to advance pediatric emergency care through enhanced collaboration across emergency departments. *Academic Emergency Medicine: Official Journal of the Society for Academic Emergency Medicine*, 25(12), 1415-1426. <https://doi.org/10.1111/acem.13642>
- Brumme, K., Hewes, H. A., Richards, R., Gausche-Hill, M., Remick, K., & Donofrio-Odmann, J. (2022). Assessing proximity effect of high-acuity pediatric emergency departments on the pediatric readiness scores in neighboring general emergency departments. *Journal of the American College of Emergency Physicians Open*, 3(6), e12850. <https://doi.org/10.1002/emp2.12850>
- Emergency Medical Services for Children (EMSC, 2021). EMSC Innovation and Improvement Center national pediatric readiness project. Retrieved on March 5, 2023. <https://emscimprovement.center/domains/pediatric-readiness-project/>
- Emergency Medical Services for Children Innovation and Improvement Center (EMSC, 2023a) Infographic on pediatric readiness and outcomes. Retrieved September 5, 2023. [https://media.emscimprovement.center/documents/Pediatric\\_Readiness\\_Outcomes\\_-\\_2023\\_Q5q8cow.pdf](https://media.emscimprovement.center/documents/Pediatric_Readiness_Outcomes_-_2023_Q5q8cow.pdf)

- Fung, J. S. T., Hwang, B., Dunsmuir, D., Suiyven, E., Nwankwor, O., Tagoola, A., Trawin, J., Ansermino, J. M., & Kisson, N. (2022). A 2-Phase Survey to assess a facility's readiness for pediatric essential emergency and critical care in resource-limited settings: A literature review and survey development. *Pediatric Emergency Care*, 38(10), 532–539. <https://doi.org/10.1097/PEC.0000000000002826>
- Genovese, T. J., Roberts-Santana, C., & Wills, H. (2021). Pediatric trauma readiness: A trauma-specific assessment to complement the national pediatric readiness project. *Pediatric Emergency Care*, 37(12), e1646–e1651. <https://doi.org/10.1097/PEC.0000000000002144>
- Goldman, M. P., Wong, A. H., Bhatnagar, A., Emerson, B. L., Brown, L. L., & Auerbach, M. A. (2018). Providers' perceptions of caring for pediatric patients in community hospital emergency departments: a mixed-methods analysis. *Academic Emergency Medicine*, 25(12), 1385–1395. <https://doi.org/10.1111/acem.13509>
- Habis, A., & Cieslak, K. (2019). Development of a QI program within a community pediatric emergency department. *Clinical Pediatric Emergency Medicine*, 20(3). <https://doi.org/10.1016/j.cpem.2019.100725>
- Harpe, S. E. (2015). How to analyze Likert and other rating scale data. *Currents in Pharmacy Teaching and Learning*, 7(6), 836–850. <https://doi.org/10.1016/j.cptl.2015.08.001>
- Institute for Healthcare Improvement (IHI) (2023a) Model for Improvement. Retrieved September 5, 2023. <https://www.ihl.org/resources/Pages/HowtoImprove/default.aspx>
- Institute for Healthcare Improvement (IHI) (2023b) Key driver diagram. Retrieved September 5, 2023. <https://www.ihl.org/resources/Pages/Tools/Driver-Diagram.aspx>
- Institute for Healthcare Improvement (IHI) (2023c) Cause and effect diagram. Retrieved September 5, 2023. <https://www.ihl.org/resources/Pages/Tools/CauseandEffectDiagram.aspx#:~:text=A%20cause%20and%20effect%20diagram,Equipment%2C%20Environment%2C%20and%20People>
- Iyer, S., & Stone, E. (2018). Pediatric quality improvement in the prehospital and emergency department worlds: Tools and examples to guide change. *Clinical Pediatric Emergency Medicine*, 19(3), 199–205. <https://doi.org/10.1016/j.cpem.2018.09.002>
- Langley GL, Moen R, Nolan KM, Nolan TW, Norman CL, Provost LP. (2009) *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance (2nd edition)*. San Francisco: Jossey-Bass Publishers
- Lieng, M. K., Marcin, J. P., Sigal, I. S., Haynes, S. C., Dayal, P., Tancredi, D. J., Gausche-Hill, M., Mouzoon, J. L., Romano, P. S., & Rosenthal, J. L. (2021). Association between emergency department pediatric readiness and transfer of non-injured children in small rural hospitals. *The Journal of Rural Health*, 38(1), 293–302. <https://doi.org/10.1111/jrh.12566>
- Mills, T., Lawton, R., & Sheard, L. (2019). Advancing complexity science in healthcare research: The logic of logic models. *BMC Medical Research Methodology*, 19(1), 55. <https://doi.org/10.1186/s12874-019-0701-4>
- Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & PRISMA Group. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Medicine*, 6(7). <https://doi.org/10.1371/journal.pmed.1000097>

- Moran, K., Burson, R., & Conrad, D. (2020). *The doctor of nursing practice project: A framework for success (3rd ed.)* Burlington, MA: Jones & Bartlett Learning, LLC.
- Rayner, J.C.W. & Livingston, G.C. (2022). Ordinal Cochran-Mantel-Haenszel testing and nonparametric analysis of variance: Competing methodologies stats. *Stats*, 5(4), 970-976. <https://doi.org/10.3390/stats5040056>
- Remick, K., Gausche-Hill, M., Joseph, M. M., Brown, K., Snow, S. K., Wright, J. L., Wright, J., Adirim, T., Agus, M. S. D., Callahan, J., Gross, T., Lane, N., Lee, L., Mazor, S., Mahajan, P., Timm, N., Joseph, M. M., Alade, K., Amato, C., Nelson, N. (2018). Pediatric readiness in the emergency department. *Annals of Emergency Medicine*, 72(6), e123–e136. <https://doi.org/10.1016/j.annemergmed.2018.08.431>
- Remick, K., Smith, M., Newgard, C. D., Lin, A., Hewes, H., Jensen, A. R., Glass, N., Ford, R., Ames, S., Cook, J., Malveau, S., Dai, M., Auerbach, M., Jenkins, P., Gausche-Hill, M., Fallat, M., Kuppermann, N., & Mann, N. C. (2023). Impact of individual components of emergency department pediatric readiness on pediatric mortality in US trauma centers. *Journal of Trauma and Acute Care Surgery*, 94(3), 417–424. <https://doi.org/10.1097/TA.0000000000003779>
- Sullivan, G. M., & Artino, A. R. (2013). Analyzing and interpreting data from Likert-type scales. *Journal of Graduate Medical Education*, 5(4), 541–542. <https://doi.org/10.4300/JGME-5-4-18>
- Tricco, A. C., Antony, J., Zarin, W., Striffler, L., Ghassemi, M., Ivory, J., Perrier, L., Hutton, B., Moher, D., & Straus, S. E. (2015). A scoping review of rapid review methods. *BMC Medicine*, 13(1), 224. <https://doi.org/10.1186/s12916-015-0465-6>
- Whitfill, T. M., Remick, K. E., Olson, L. M., Richards, R., Brown, K. M., Auerbach, M. A., & Gausche-Hill, M. (2020). Statewide pediatric facility recognition programs and their association with pediatric readiness in emergency departments in the United States. *Journal of Pediatrics*, 218, 210–210. <https://doi.org/10.1016/j.jpeds.2019.10.017>

**Tables:****Table 1:** Demographics Table

Survey Sample Demographics					
Educational Background		Years of Clinical Experience		Years with the Organization	
Education	Percent	Number of Years	Percent	Number of Years	Percent
1. RN	8%	5-10 years	22%	1-5 years	19%
2. BSN, RN	38%	11-15 years	35%	5-10 years	32%
3. MSN, RN	30%	16-20 years	16%	11-15 years	14%
4. DNP, RN	3%	21-25 years	16%	16-20 years	22%
6. MD/DO	21%	greater than 25 years	11%	21-25 years	8%
<b>Total</b>	<b>100.00%</b>	<b>Total</b>	<b>100.00%</b>	greater than 25 years	5%
				<b>Total</b>	<b>100.00%</b>

**Table 2:** Direct Difference Comparison between Pre- & Post Survey Questions 1-4

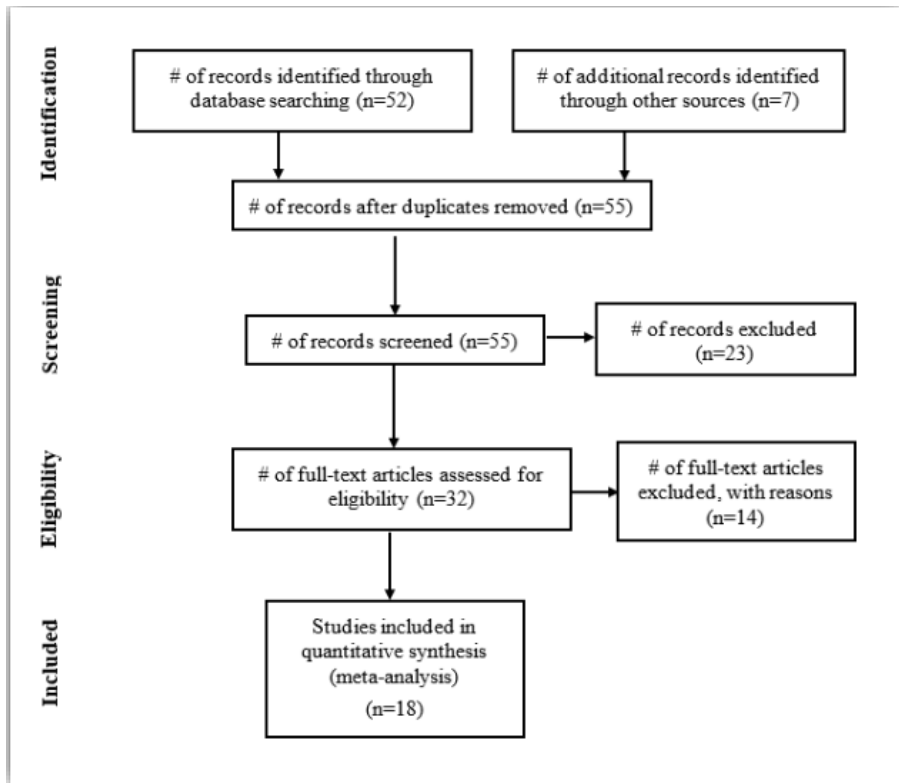
<b>Direct Difference Comparison Pre- &amp; Post-Survey Questions</b>					
<b>How prepared do you feel your <u>health system</u> is for a pediatric emergency response and managing pediatric care in surge situations?</b>			<b>How prepared do you feel your <u>emergency department</u> is for a pediatric emergency?</b>		
<b>difference between pre-&amp;post-survey</b>	<b>Number</b>	<b>Percent</b>	<b>difference between pre-&amp;post-survey</b>	<b>Number</b>	<b>Percent</b>
-2	2	7%	-2	2	7%
-1	4	15%	-1	5	19%
0	14	<b>52%</b>	0	12	<b>44%</b>
1	5	19%	1	8	30%
2	2	7%		Total	<b>100.00%</b>
	Total	<b>100.00%</b>			
<b>How prepared do you feel your <u>hospital</u> is for a pediatric emergency response and managing pediatric care in surge situations?</b>			<b>How prepared do you feel your emergency department is to <u>hold and manage care for a pediatric patient</u>?</b>		
<b>difference between pre-&amp;post-survey</b>	<b>Number</b>	<b>Percent</b>	<b>difference between pre-&amp;post-survey</b>	<b>Number</b>	<b>Percent</b>
-2	2	7%	-3	1	4%
-1	6	22%	-2	2	7%
0	8	<b>30%</b>	-1	6	23%
1	8	<b>30%</b>	0	13	<b>48%</b>
2	2	7%	1	3	11%
3	1	4%	2	2	7%
	Total	<b>100.00%</b>	Total		<b>100.00%</b>

**Table 3:** Post-Survey: Interventions Likert Survey Analysis Table

<b>Post-Survey: Implementations Likert Survey Analysis</b>	
<b>Pediatric care coordinator designation</b>	
	<b>Percent</b>
<b>2. Slightly Helpful</b>	15%
<b>3. Somewhat Helpful</b>	<b>38%</b>
<b>4. Very Helpful</b>	35%
<b>5. Extremely Helpful</b>	12%
	<b>100.00%</b>
<b>Pediatric readiness education</b>	
	<b>Percent</b>
<b>1. Not at All Helpful</b>	8%
<b>2. Slightly Helpful</b>	8%
<b>3. Somewhat Helpful</b>	26%
<b>4. Very Helpful</b>	<b>35%</b>
<b>5. Extremely Helpful</b>	23%
	<b>100.00%</b>
<b>Pediatric readiness system-level committee engagement</b>	
	<b>Percent</b>
<b>1. Not at All Helpful</b>	4%
<b>2. Slightly Helpful</b>	8%
<b>3. Somewhat Helpful</b>	30%
<b>4. Very Helpful</b>	<b>46%</b>
<b>5. Extremely Helpful</b>	12%
	<b>100.00%</b>

**Figure Legends:**

**Figure 1: PRISMA (Moher et al., 2009)**



**Figure 2: PARiHS model graphic as cited in (Mills, 2019)**

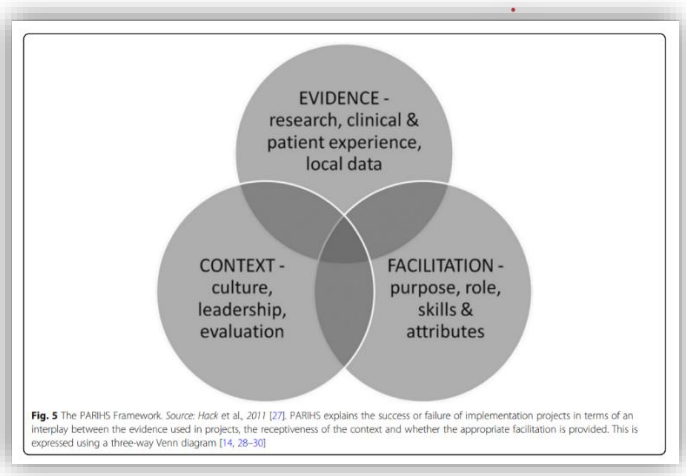




Figure 3: Key Driver Diagram (IHI, 2023b)

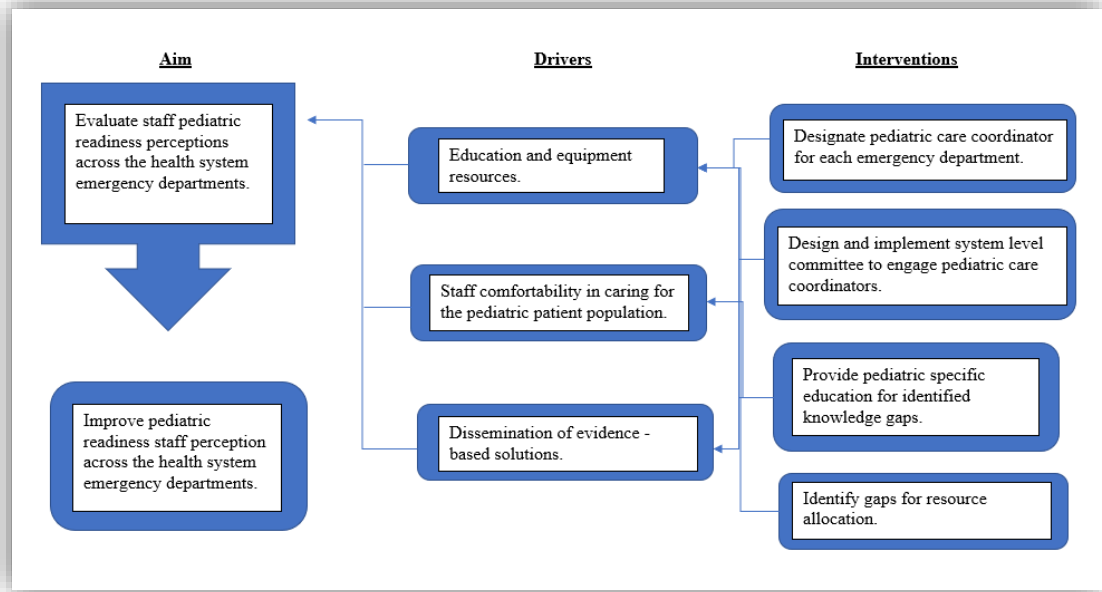
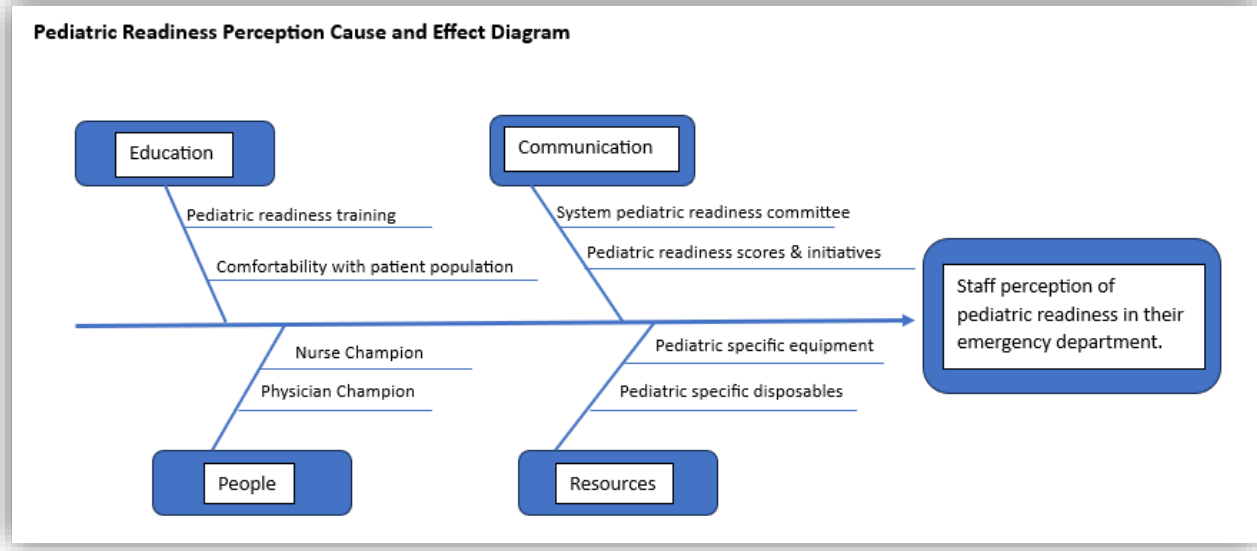


Figure 4: Cause and Effect Diagram (IHI, 2023c)



**Figure 5: Pediatric Care Coordinator Likert Pre- & Post- Survey Questions**

<p><b>Pediatric Care Coordinator Likert Survey:</b></p> <p><b>Question 1:</b> How prepared do you feel your health system is for a pediatric emergency response and managing pediatric care in surge situations?</p> <ul style="list-style-type: none"> <li>• 1-not at all prepared</li> <li>• 2-somewhat prepared</li> <li>• 3-prepared</li> <li>• 4-very prepared</li> <li>• 5-extremely prepared</li> </ul> <p><b>Question 2:</b> How prepared do you feel your hospital is for a pediatric emergency response and managing pediatric care in surge situations?</p> <ul style="list-style-type: none"> <li>• 1-not at all prepared</li> <li>• 2-somewhat prepared</li> <li>• 3-prepared</li> <li>• 4-very prepared</li> <li>• 5-extremely prepared</li> </ul> <p><b>Question 3:</b> How prepared do you feel your emergency department is for a pediatric emergency?</p> <ul style="list-style-type: none"> <li>• 1-not at all prepared</li> <li>• 2-somewhat prepared</li> <li>• 3-prepared</li> <li>• 4-very prepared</li> <li>• 5-extremely prepared</li> </ul> <p><b>Question 4:</b> How prepared do you feel your emergency department is to hold and manage care for a pediatric patient?</p> <ul style="list-style-type: none"> <li>• 1-not at all prepared</li> <li>• 2-somewhat prepared</li> <li>• 3-prepared</li> <li>• 4-very prepared</li> <li>• 5-extremely prepared</li> </ul>	<p><b>Post Survey Additional Question(s):</b></p> <p><b>Question 5:</b> How well do you feel the following pediatric readiness initiatives are helping to answer your department's pediatric preparedness needs to improve comfort in managing pediatric emergencies:</p> <p>Pediatric care coordinator designation</p> <ul style="list-style-type: none"> <li>• 1-Not at all helpful</li> <li>• 2- slightly helpful</li> <li>• 3- somewhat helpful</li> <li>• 4- very helpful</li> <li>• 5-extremely helpful</li> </ul> <p>Pediatric readiness education</p> <ul style="list-style-type: none"> <li>• 1-Not at all helpful</li> <li>• 2- slightly helpful</li> <li>• 3- somewhat helpful</li> <li>• 4- very helpful</li> <li>• 5-extremely helpful</li> </ul> <p>Pediatric readiness system-level committee engagement</p> <ul style="list-style-type: none"> <li>• 1-Not at all helpful</li> <li>• 2- slightly helpful</li> <li>• 3- somewhat helpful</li> <li>• 4- very helpful</li> <li>• 5-extremely helpful</li> </ul>
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# Perceptions of Pediatric Readiness Across a Health System's Emergency Departments



# Perceptions of Pediatric Readiness Across a Health System's Emergency Departments

Rebekah Sabo, BSN, RN

DNP Project Final Defense

April 5, 2024

# Acknowledgements

- Site Advisor – Julie Bulson, DNP, MPA, RN, NE-BC
- Faculty Advisory Team
  - Sylvia Simons, DNP, MSN, RN
  - Marie Vanderkooi, DNP, MSN, RN-BC

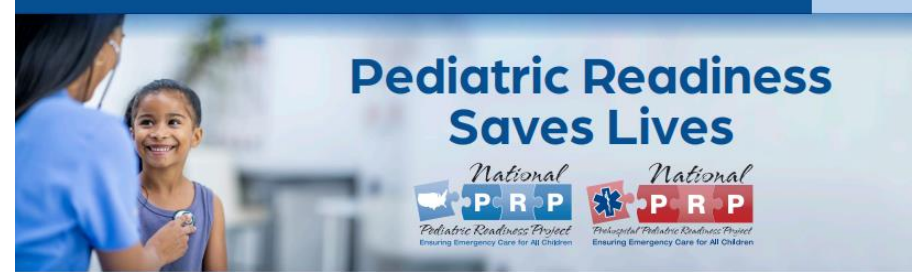
# Objectives for Presentation

1. Explain clinical problem within the healthcare organization
2. Summarize background, literature review methods, and findings
3. Outline project plan, theory, methods, measurements and survey tools
4. Analyze survey results and statistical conclusions
5. Discuss project results and clinical implications

# Introduction and Background

## National Pediatric Readiness Project (NPRP)

(EMSC, 2023)



Research has shown high pediatric readiness in emergency departments (EDs)—or scoring > 87 points on the National Pediatric Readiness Project Assessment—improves outcomes for children. While prehospital research is ongoing, a similar impact is anticipated in EMS settings.

**High pediatric readiness in EDs is associated with:**

**76%**  
lower mortality rate in ill children<sup>12</sup>

**60%**  
lower mortality rate in injured children<sup>2</sup>

**AT LEAST 1,400**  
children's lives saved across the US each year<sup>2</sup>

1. "Emergency Department Pediatric Readiness and Mortality in Critically Ill Children"  
*Pediatrics*, 2019, Ames et al.

2. "Emergency Department Pediatric Readiness and Short-term and Long-term Mortality Among Children Receiving Emergency Care"  
*JAMA Network Open*, 2023, Newgard et al.



### The Power of PECCs:

Designating an individual to serve as a pediatric champion at an ED or EMS agency (also known as a pediatric emergency care coordinator or PECC) is one of the best ways to increase readiness for children.



Research on the impact of prehospital pediatric readiness will be supported by the launch of the Prehospital Pediatric Readiness Project Assessment in 2024.



You can help save children's lives.  
[www.pediatricreadiness.org](http://www.pediatricreadiness.org)

# Introduction and Background

- National strategies and associations exist guiding health systems (EMSC, 2021).
- Researchers explored interventions centered on a multifaceted pediatric readiness approach within the health system and community such as:
  - Survey implementation (Fung et al., 2022; Genovese et al., 2021)
  - Pediatric care coordinator designation (Abulebda et al., 2021b; Remick et al., 2023)
    - Pediatric Emergency Care Coordinator (PECC) or Peds Champion
  - Pediatric readiness education (Abdulebda et al., 2021a; Abdulebda et al., 2021b; Abdulebda et al., 2022)
  - Pediatric care coordinator engagement (Barata et al., 2020)



# Assessment of Organization with the Burke-Litwin Organizational Performance & Change Model

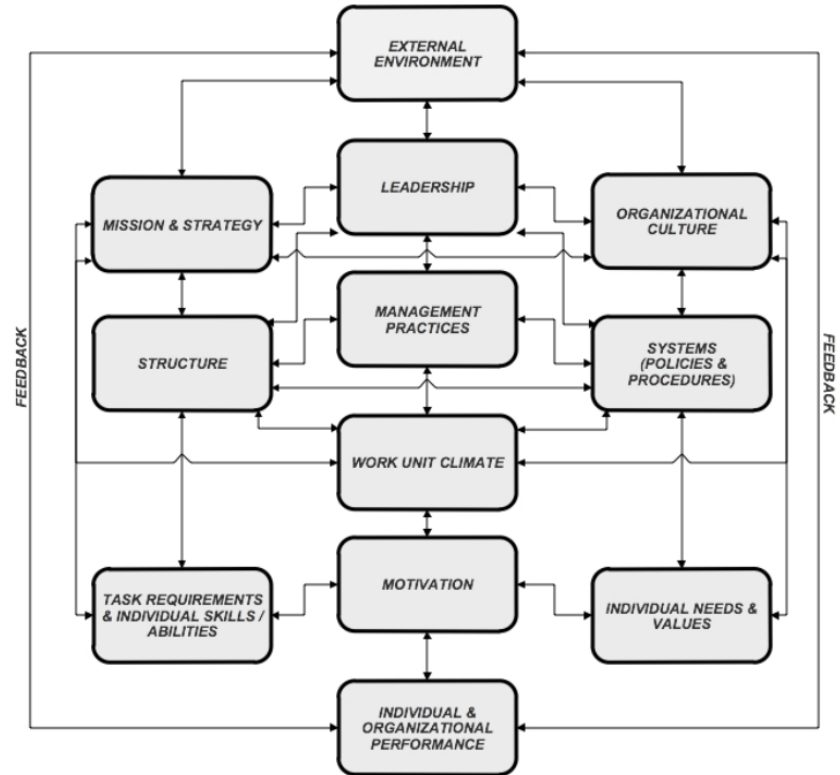


Figure 3: Burke-Litwin model graphic as cited in Stone, 2015

# Current State of Health System

- Health system goal to improve pediatric readiness across the health system after recent pediatric care surge in fall of 2022
- Corporate department design allows for communication flow to designated pediatric care coordinators
- Health System participation in research collaboration shows momentum toward best practice use and integration
- Health system locations offering care to varied geographic regions of the state
- Focus on efficiency and high-quality communication staff
- Magnet status nursing ladder to incentivize continued learning and organizational involvement

# Organization SWOT Analysis

Strengths	Weaknesses
<ul style="list-style-type: none"><li>• Corporate departments for business assurance, QI &amp; research</li><li>• Previous success with corporate-wide project implementation</li><li>• IT support for technology solutions</li></ul>	<ul style="list-style-type: none"><li>• Corporate level depth</li><li>• Communication and information dissemination across 24 emergency department sites</li><li>• Project maintenance</li></ul>
Opportunities	Threats
<ul style="list-style-type: none"><li>• Improving care offered at outlying hospitals</li><li>• Decreasing demand on children's hospital resources during times of surge</li></ul>	<ul style="list-style-type: none"><li>• Outlying hospital staff engagement</li><li>• Competitive healthcare staffing environment</li><li>• Additional care choices for pediatric services</li></ul>



# Clinical Question

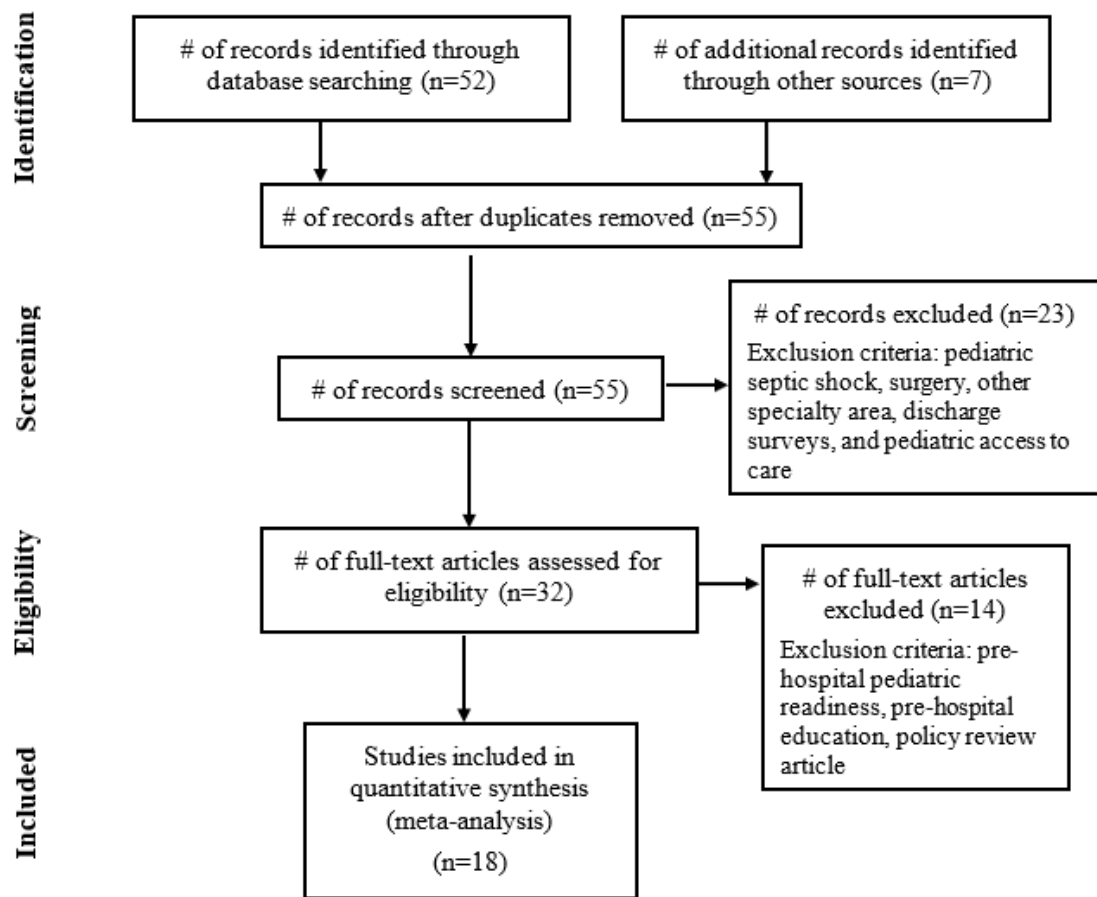
## PICOT Statement:

What impact would developing a consolidated pediatric readiness program that includes: pediatric emergency care coordinator designation for each emergency department, pediatric readiness education, and committee engagement have on health system emergency department staff's perception of pediatric readiness in their hospitals?

# Literature Review Aims & Purpose

- Identify evidence supporting pediatric readiness surveys
- Explore pediatric care readiness interventions
- Collaborative model implementation and the impacts on pediatric readiness in emergency departments
- Seek to understand the relationship between general emergency departments and higher-level pediatric care facilities
- Explore intervention types and effectiveness in improving pediatric quality of care and how these interventions might align with health system goals

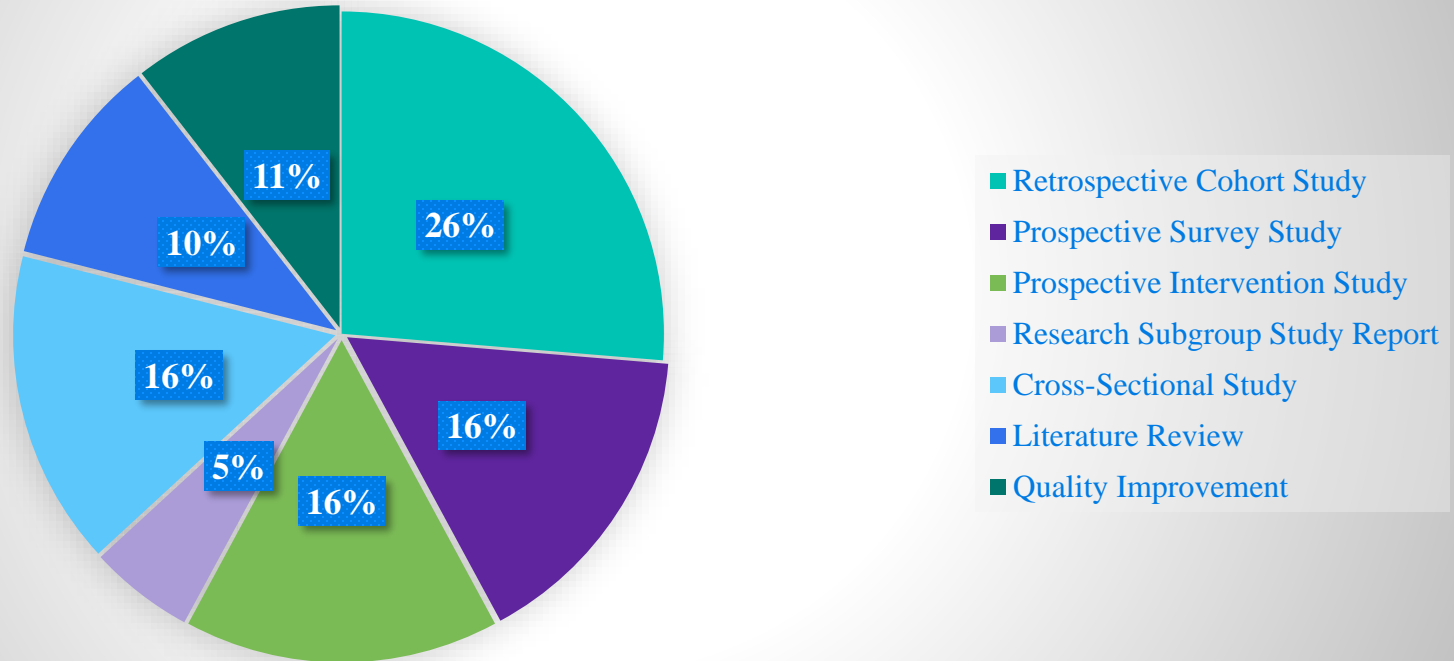
# PRISMA Figure



Moher et al., 2009

# Summary of Results

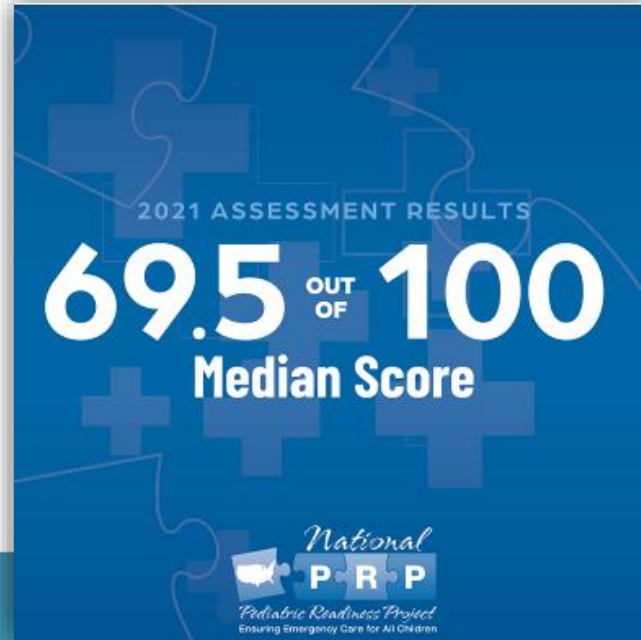
## Literature Review Research Study Types





# Summary of Results

In 2021, the National Pediatric Readiness Project reassessed 5,150 EDs nationwide; 3,647 responded with 3,557 available for full analysis.

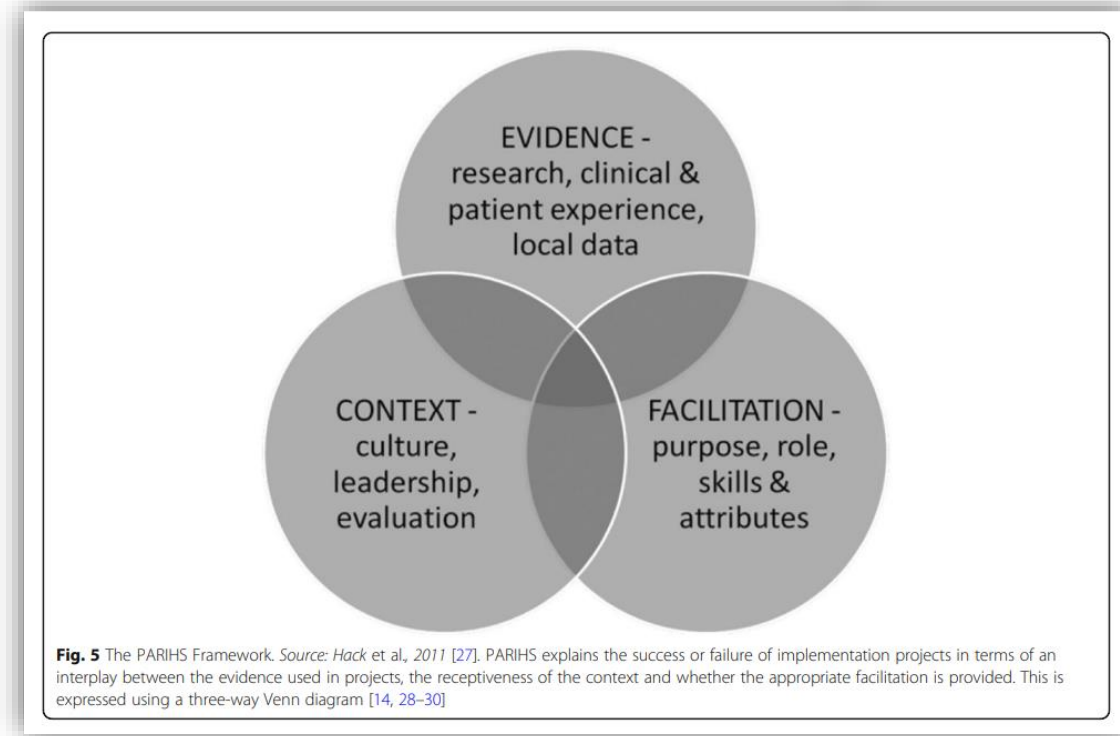


EMSC, 2021

# Evidence for Project

- Multi-faceted pediatric preparedness interventions:
  - Survey implementation (Fung et al., 2022; Genovese et al., 2021)
  - Pediatric care coordinator designation (Abulebda et al., 2021b; Remick et al., 2023)
  - Pediatric readiness education (Abdulebda et al., 2021a; Abdulebda et al., 2021b; Abdulebda et al., 2022)
  - Pediatric care coordinator engagement in pediatric readiness initiatives within the community and health system (Barata et al., 2020)

# Phenomenon Model



**Figure 4:** PARIHS model graphic as cited in Mills, 2019

## Project Purpose

Assess current pediatric readiness perspectives of emergency department staff, lead implementation of a consolidated pediatric readiness program, and evaluate perception of system level program implementation.

# Project Objectives/Implementation Initiatives

- To determine the current staff perception of pediatric readiness for each emergency department across the health system
- To evaluate implementation of a system-level committee to engage pediatric care coordinators and further pediatric readiness initiatives
- To designate pediatric emergency care coordinator roles for each emergency department across the health system
- To identify and collaborate on pediatric readiness education to answer existing education gaps

# Project Design

## Quality Improvement

- The project will seek to understand the current staff perceptions of pediatric readiness and subsequent perception after implementation of interventions to improve quality of emergency pediatric care services in the health system (Goldman et al., 2018).
- Setting will be limited to the health system and focus on emergency department staff with emergency pediatric care experience.
- Quality improvement initiatives were evaluated through a Likert survey.
- IRB approval issued under a quality improvement status through the health system research department for project implementation across the health system emergency departments

# Setting & Participants

- Project Corporate Department Sponsor
  - Design committee structure and meeting cadence for pediatric readiness committee
  - Maintain primary communication hub for pediatric emergency preparedness coordinators (PECC) through email and committee meeting engagement
  - Identify and design pediatric readiness education
- Health System Departments Participating in Study
  - All emergency departments across the health system
- Department Staff Participating in Study
  - Pediatric emergency care coordinators or staff who previously completed 2021 state pediatric readiness surveys
    - At least one per emergency department

# Methods Data Collection

- Survey Eligibility
  - Emergency department staff with pediatric experience and/or previous pediatric survey completion
  - Initial statistical analysis plan based on a n=24-57 sample size from convenience sampling in the organization
- Likert Survey
  - Pre & Post Survey
  - 5-point approach creating a progression between “not at all” and “extremely”
- RedCap software disseminates survey and collects survey data
  - Utilize health system email to send links to staff members
- Data reporting retrieved from software



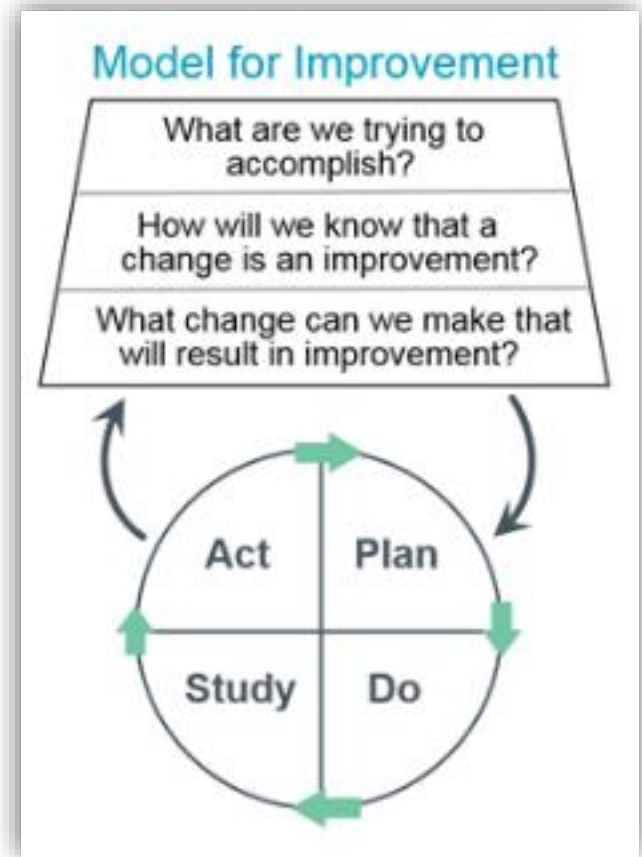
# Model for Project Implementation

## Institute for Healthcare Improvement

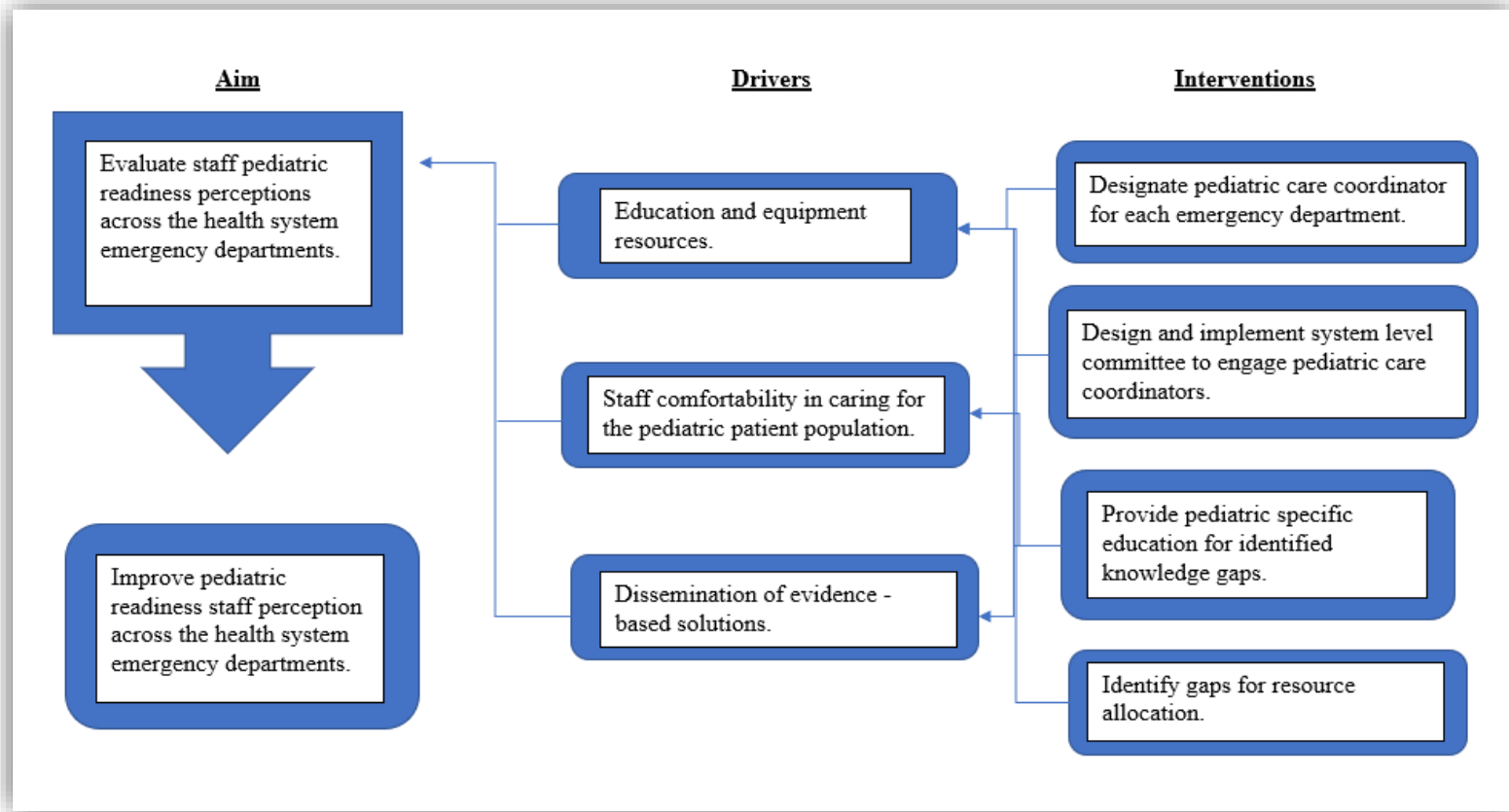
### Model for Improvement (Langley et al., 2009)

- Forming the team
- Setting the Aims
- Establishing Measures
- Selecting Changes
- Testing Changes
  - Plan, Do, Study, Act (PDSA)
- Implementing Changes
  - Continue PDSA
- Spreading Changes
  - Expand scope of implementation

(IHI, 2023a)

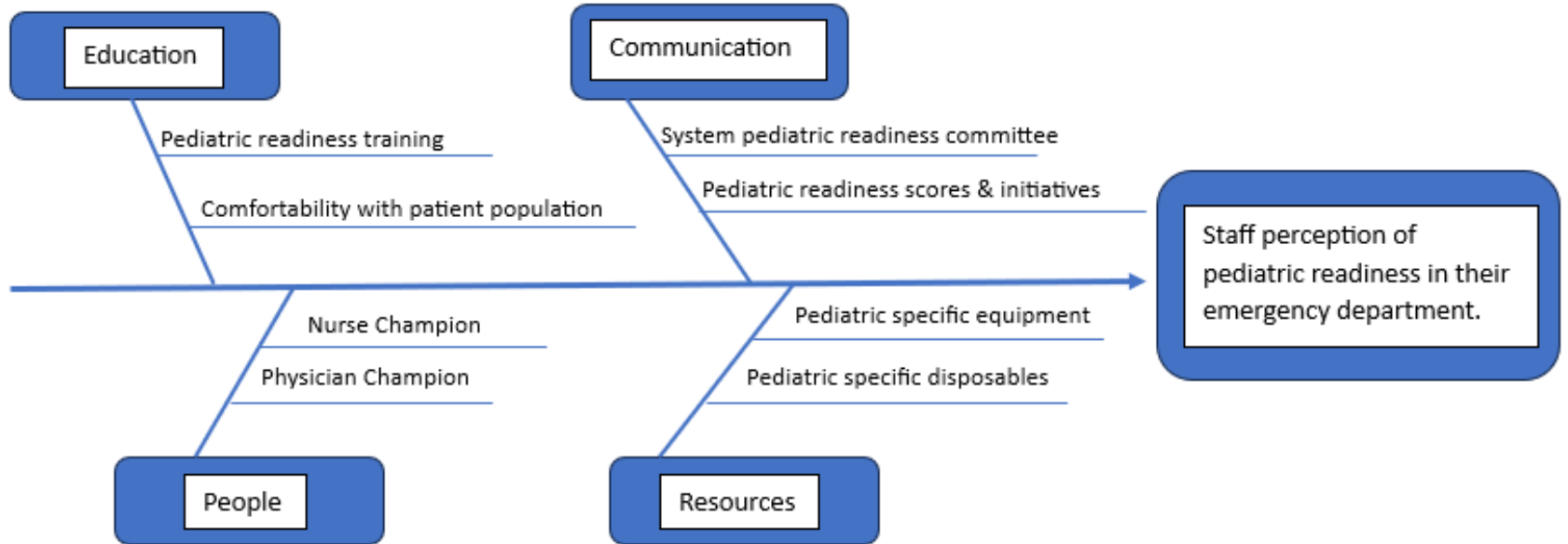


# Implementation Strategy & Elements



# Implementation Strategy & Elements

**Pediatric Readiness Perception Cause and Effect Diagram**



# Evaluation & Measures

Topic	Concept	How Measured	When Measured	Who Measures	Guiding Framework
Implementation Strategies	Assess for change readiness	Discussion, organization assessment	Pre-Implementation	Student and Site Mentor	Burke-Litwin Organizational Assessment Model
	Engage Stakeholders	Discussion, email communication	Pre-Implementation	Student and Site Mentor, and Pediatric committee leader/specialist	Burke-Litwin Organizational Assessment Model
	Develop/use perception survey, design system-level pediatric readiness committee, designate pediatric care coordinators, and collaborate to design pediatric readiness education	Pre-survey completion/attendance	Pre-Implementation & Implementation	Student, Pediatric Committee Leader/Specialist, and Site Mentor	PARiHS Framework
Department Outcomes	Pediatric Readiness Education completed	Attendance/module completion	Implementation	Student, Pediatric Readiness Educator	PARiHS Framework & IHI Model for Improvement
	Pediatric Care Coordinator engagement in system-level pediatric readiness committee	Attendance	Implementation	Student, Pediatric Committee Leader/Specialist	IHI Model for Improvement
System Outcomes	Establishment of pediatric readiness committee and completion of quarterly meetings	Attendance	Implementation	Student, Pediatric committee leader/specialist	IHI Model for Improvement
	Feedback: Staff perception of quality improvement implementation and effectiveness of interventions	Survey	Post-implementation	Student	IHI Model for Improvement
	Sustainability plan in place to continue PDSA cycles	Attendance/RedCap software use	Post-implementation	Student, Site Mentor	IHI Model for Improvement

# Evaluation & Measures

Staff perception pre-implementation survey conducted via RedCap software system

## Pediatric Care Coordinator Likert Survey:

**Question 1:** How prepared do you feel your health system is for a pediatric emergency response and managing pediatric care in surge situations?

- 1-not at all prepared
- 2-somewhat prepared
- 3-prepared
- 4-very prepared
- 5-extremely prepared

**Question 2:** How prepared do you feel your hospital is for a pediatric emergency response and managing pediatric care in surge situations?

- 1-not at all prepared
- 2-somewhat prepared
- 3-prepared
- 4-very prepared
- 5-extremely prepared

**Question 3:** How prepared do you feel your emergency department is for a pediatric emergency?

- 1-not at all prepared
- 2-somewhat prepared
- 3-prepared
- 4-very prepared
- 5-extremely prepared

**Question 4:** How prepared do you feel your emergency department is to hold and manage care for a pediatric patient?

- 1 – not at all prepared
- 2-somewhat prepared
- 3-prepared
- 4-very prepared
- 5-extremely prepared

# Evaluation & Measures

Staff perception post-intervention survey conducted via RedCap software system with this additional question

## ***Post Survey Additional Question(s):***

**Question 5:** How well do you feel the following pediatric readiness initiatives are helping to answer your department's pediatric preparedness needs to improve comfort in managing pediatric emergencies:

### Pediatric care coordinator designation

- 1-Not at all helpful
- 2- slightly helpful
- 3- somewhat helpful
- 4- very helpful
- 5-extremely helpful

### Pediatric readiness education

- 1-Not at all helpful
- 2- slightly helpful
- 3- somewhat helpful
- 4- very helpful
- 5-extremely helpful

### Pediatric readiness system-level committee engagement

- 1-Not at all helpful
- 2- slightly helpful
- 3- somewhat helpful
- 4- very helpful
- 5-extremely helpful

# Implementation Steps

## Implementation Steps:

### Month 1

Pediatric Emergency Care Coordinator designated through communication with emergency department leadership and creation of responsibility document.

### Month 2-3

Pediatric Readiness Committees structure designed, and key stakeholders engaged.

### Month 3-4

Pediatric Readiness Education created and disseminated as video module.

# Analysis Plan

- Likert survey created a ratio of numbers for statistical analysis to evaluate the interval/ratio between the pre and post survey data (Harpe, 2015).
- Data was assessed for normal distributions and parametric statistical analysis preferred to obtain statistical significance (Sullivan & Artino, 2013).
  - Pre- & Post-Survey question direct comparison
    - Distribution assessed
    - Cochran-Mantel-Haenszel statistical test used (Rayner & Livingston, 2022)
  - Post-survey additional question – Intervention Strategy perception
    - Parametric approach for post-survey additional question with 1-way measure analysis of variance (ANOVA) with a covariant



# Results

- Survey Completion rate 73%
  - Final post-survey sample size 37 with 27 completed surveys
- Demographic analysis
  - Education background
  - Years of Clinical Experience
- Pre-Post survey direct analysis
  - Direct comparison through unique identifier and email address with no de-identification of data
- Post-Intervention analysis of consolidated pediatric readiness program initiatives
  - Evaluated perception of how helpful staff found each intervention

## Results: Participant Characteristics

Survey Sample Demographics					
Educational Background		Years of Clinical Experience		Years with the Organization	
Education	Percent	Number of Years	Percent	Number of Years	Percent
1. RN	8%	5-10 years	22%	1-5 years	19%
2. BSN, RN	38%	11-15 years	35%	5-10 years	32%
3. MSN, RN	30%	16-20 years	16%	11-15 years	14%
4. DNP, RN	3%	21-25 years	16%	16-20 years	22%
6. MD/DO	21%	greater than 25 years	11%	21-25 years	8%
<b>Total</b>	<b>100.00%</b>	<b>Total</b>	<b>100.00%</b>	greater than 25 years	5%
				<b>Total</b>	<b>100.00%</b>

# Results: Pre/Post Implementation Survey

## Pediatric Readiness Perception Likert Survey:

**Question 1:** How prepared do you feel your health system is for a pediatric emergency response and managing pediatric care in surge situations?

- 1 – not at all prepared
- 2-slightly prepared
- 3-prepared
- 4-very prepared
- 5-extremely prepared

**Question 2:** How prepared do you feel your hospital is for a pediatric emergency response and managing pediatric care in surge situations?

- 1 – not at all prepared
- 2-slightly prepared
- 3-prepared
- 4-very prepared
- 5-extremely prepared

**Question 3:** How prepared do you feel your emergency department is for a pediatric emergency?

- 1 – not at all prepared
- 2-slightly prepared
- 3-prepared
- 4-very prepared
- 5-extremely prepared

**Question 4:** How prepared do you feel your emergency department is to hold and manage care for a pediatric patient?

- 1 – not at all prepared
- 2-slightly prepared
- 3-prepared
- 4-very prepared
- 5-extremely prepared

## Post Survey Additional Question(s):

**Question 5:** How well do you feel the following pediatric readiness initiatives are helping to answer your department's pediatric preparedness needs to improve comfort in managing pediatric emergencies:

### Pediatric care coordinator designation

- 1-Not at all helpful
- 2- slightly helpful
- 3- somewhat helpful
- 4- very helpful
- 5-extremely helpful

### Pediatric readiness education

- 1-Not at all helpful
- 2- slightly helpful
- 3- somewhat helpful
- 4- very helpful
- 5-extremely helpful

### Pediatric readiness system-level committee engagement

- 1-Not at all helpful
- 2- slightly helpful
- 3- somewhat helpful
- 4- very helpful
- 5-extremely helpful

# Results: Pre/Post Implementation Survey

- Row means scores differ statistic found no statistical significance in the p-value
- Difference counts table compared pre- and post-survey responses directly to identify the difference in response whether higher, lower, or stationary

Direct Difference Comparison Pre- & Post-Survey Questions					
How prepared do you feel your <u>health system</u> is for a pediatric emergency response and managing pediatric care in surge situations?			How prepared do you feel your <u>emergency department</u> is for a pediatric emergency?		
difference between pre-&post-survey	Number	Percent	difference between pre-&post-survey	Number	Percent
-2	2	7%	-2	2	7%
-1	4	15%	-1	5	19%
0	14	52%	0	12	44%
1	5	19%	1	8	30%
2	2	7%		Total	100.00%
	Total	100.00%			
How prepared do you feel your <u>hospital</u> is for a pediatric emergency response and managing pediatric care in surge situations?			How prepared do you feel your emergency department is to <u>hold and manage care for a pediatric patient</u> ?		
difference between pre-&post-survey	Number	Percent	difference between pre-&post-survey	Number	Percent
-2	2	7%	-3	1	4%
-1	6	22%	-2	2	7%
0	8	30%	-1	6	23%
1	8	30%	0	13	48%
2	2	7%	1	3	11%
3	1	4%	2	2	7%
	Total	100.00%	Total	Total	100.00%

# Results: Pediatric Readiness Implementation Strategies Analysis

12 out of 26 of the participants found the system-level committee engagement to be “Very Helpful”

Post-Survey: Implementations Likert Survey Analysis	
Pediatric care coordinator designation	
	Percent
2. Slightly Helpful	15%
3. Somewhat Helpful	38%
4. Very Helpful	35%
5. Extremely Helpful	12%
	100.00%
Pediatric readiness education	
	Percent
1. Not at All Helpful	8%
2. Slightly Helpful	8%
3. Somewhat Helpful	27%
4. Very Helpful	35%
5. Extremely Helpful	23%
	100.00%
Pediatric readiness system-level committee engagement	
	Percent
1. Not at All Helpful	4%
2. Slightly Helpful	8%
3. Somewhat Helpful	31%
4. Very Helpful	46%
5. Extremely Helpful	12%
	100.00%

# Results: Pediatric Readiness Implementation Strategies Analysis

- Comparison of the number of clinical years of experience and its effect on how helpful quality improvement interventions were perceived
  - Marginal statistical significance was noted ( $p$ -value = 0.0916)
- Comparison of the number of years with the organization and its effect on how helpful quality improvement interventions were perceived
  - High statistical significance was noted ( $p$ -value = 0.0254)

# Discussion

- Project Sample Group
  - Broad range of clinical backgrounds
  - Varied number of years of experience
- Perception Survey Pre- Post- Analysis
  - Through implementation the standard for measuring pediatric readiness established
  - Pediatric emergencies occurred during implementation potentially affecting perception
  - Four-month implementation timeline and the affect a longer timeline might have on statistical significance
- Implementation Strategies Analysis
  - Established priorities for leadership in resource allocation and initiative priority
  - Greater number of years with clinical experience or years with the organization improved the perception of how helpful interventions were perceived

# Implications for Practice

- Corporate Department Project Sponsor
- Corporate level resource teams – Research, Quality Improvement
- System-level committee structure – steering committee with PECC subcommittee
- Leadership support
- Responsive Sample Group



# Conclusions

Pediatric readiness encompasses both timely emergency treatment and appropriate care strategies:

- Evidence-based interventions
- Health system empowered for quality improvement changes
- Collaborative relationships available between outlying hospitals and children's hospital

The project explored:

- Emergency room staff's perspectives of pediatric readiness
- Implementation of a consolidated pediatric readiness program
- Post-evaluation of staff's perception of the quality improvement initiatives and perceived impact on pediatric readiness

The project concluded:

- Staff's perceptions can assist leadership in resource allocation
- Consolidated pediatric readiness programs provide quality improvement opportunities across the health system
- System-level committee engagement allowed for resource sharing, education, and collaboration

# Sustainability Plan

- Continued Corporate Department Sponsorship
  - Maintaining PECC contact list for health system emergency departments
  - Hand-off committee meeting held
- Committee Structure
  - Steering committee – medical provider & administrative support and engagement
  - PECC committee – one representative from each emergency department
- Pediatric Readiness Education
  - Continuing through grant sponsorship of pediatric readiness educator
  - Education modules saved on health system's education software

# Dissemination

- DNP Defense Presentation
- ScholarWorks publication
- Grand Valley State University Graduate Student 2024 Showcase
- Health System Graduate Student Poster Presentation Symposium
- Apply for publication in the “Journal of Nursing Scholarship”
- Apply for presentation at the “National Healthcare Coalition Preparedness Conference”

# DNP Essentials Reflection

- Essential I: Scientific Underpinnings for Practice
  - NPRP, PARIHS, Burke-Litwin, and IHI Model for Improvement
- Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking
  - Project implementation at a corporate level with systems impact
- Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice
  - Statistical analysis of project results and dissemination through multiple sources
- Essential IV: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care
  - Utilized RedCap software for survey dissemination and statistical software for analysis
  - Project implementation through virtual meetings, webpage, and email communication

# DNP Essentials Reflection

- Essential V: Health Care Policy for Advocacy in Health Care
  - Attendance at state and FEMA region meetings for pediatric readiness
- Essential VI: Interprofessional Collaboration for Improving Patient and Population Health Outcomes
  - Practicum and project work with varied health professionals, state and regional partners, as well as completion of FEMA preparedness training
- Essential VII: Clinical Prevention and Population Health for Improving the Nation's Health
  - Project work directly pertaining to pediatric population and gap identification for care improvement
- Essential VIII: Advanced Nursing Practice
  - Project implementation required administrative and leadership skills consistent with advanced nursing practice in hospital administration

# References

- Abulebda, K., Whitfill, T., Mustafa, M., Montgomery, E. E., Lutfi, R., Abu-Sultaneh, S., Nitu, M. E., & Auerbach, M. A. (2022). Improving pediatric readiness and clinical care in general emergency departments: A multicenter retrospective cohort study. *The Journal of Pediatrics*, 240, 241-248. <https://doi.org/10.1016/j.jpeds.2021.08.084>
- Abulebda, K., Whitfill, T., Montgomery, E. E., Thomas, A., Dudas, R. A., Leung, J. S., Scherzer, D. J., Aebersold, M., Van Ittersum, W. L., Kant, S., Walls, T. A., Sessa, A. K., Janofsky, S., Fenster, D. B., Kessler, D. O., Chatfield, J., Okada, P., Arteaga, G. M., Berg, M. D., & Tay, K.-Y. (2021a). Improving pediatric readiness in general emergency departments: A prospective interventional study. *The Journal of Pediatrics*, 230, 230- 237. <https://doi.org/10.1016/j.jpeds.2020.10.040>
- Abulebda, K., Lutfi, R., Petras, E. A., Berrens, Z. J., Mustafa, M., Pearson, K. J., Kirby, M. L., Abu-Sultaneh, S., & Montgomery, E. E. (2021b). Evaluation of a nurse pediatric emergency care coordinator–facilitated program on pediatric readiness and process of care in community emergency departments after collaboration with a pediatric academic medical center. *Journal of Emergency Nursing*, 47(1), 167–180. <https://doi.org/10.1016/j.jen.2020.06.006>
- Barata, I., Auerbach, M., Badaki-Makun, O., Benjamin, L., Joseph, M. M., Lee, M. O., Mears, K., Petrack, E., Wallin, D., Ishimine, P., & Denninghoff, K. R. (2018). A research agenda to advance pediatric emergency care through enhanced collaboration across emergency departments. *Academic Emergency Medicine: Official Journal of the Society for Academic Emergency Medicine*, 25(12), 1415–1426. <https://doi.org/10.1111/acem.13642>
- Brumme, K., Hewes, H. A., Richards, R., Gausche-Hill, M., Remick, K., & Donofrio-Odmann, J. (2022). Assessing proximity effect of high-acuity pediatric emergency departments on the pediatric readiness scores in neighboring general emergency departments. *Journal of the American College of Emergency Physicians Open*, 3(6), e12850. <https://doi.org/10.1002/emp2.12850>
- Burke, W. W., & Litwin, G. H. (1992). A causal model of organizational performance and change. *Journal of Management*, 18(3), 523- 545. doi:0.1177/014920639201800306

# References

- Emergency Medical Services for Children (EMSC, 2021). EMSC Innovation and Improvement Center national pediatric readiness project. Retrieved on March 5, 2023. <https://emscimprovement.center/domains/pediatric-readiness-project/>
- Emergency Medical Services for Children Innovation and Improvement Center (EMSC, 2023) Infographic on pediatric readiness and outcomes. Retrieved September 5, 2023. [https://media.emscimprovement.center/documents/Pediatric\\_Readiness\\_Outcomes\\_-\\_2023\\_Q5q8cow.pdf](https://media.emscimprovement.center/documents/Pediatric_Readiness_Outcomes_-_2023_Q5q8cow.pdf)
- Fung, J. S. T., Hwang, B., Dunsmuir, D., Suiyven, E., Nwankwor, O., Tagoola, A., Trawin, J., Ansermino, J. M., & Kissoon, N. (2022). A 2-Phase Survey to assess a facility's readiness for pediatric essential emergency and critical care in resource-limited settings: A literature review and survey development. *Pediatric Emergency Care, 38*(10), 532– 539. <https://doi.org/10.1097/PEC.0000000000002826>
- Genovese, T. J., Roberts-Santana, C., & Wills, H. (2021). Pediatric trauma readiness: A trauma-specific assessment to complement the national pediatric readiness project. *Pediatric Emergency Care, 37*(12), e1646–e1651. <https://doi.org/10.1097/PEC.0000000000002144>
- Goldman, M. P., Wong, A. H., Bhatnagar, A., Emerson, B. L., Brown, L. L., & Auerbach, M. A. (2018). Providers' perceptions of caring for pediatric patients in community hospital emergency departments: a mixed-methods analysis. *Academic Emergency Medicine, 25*(12), 1385–1395. <https://doi.org/10.1111/acem.13509>
- Harpe, S. E. (2015). How to analyze Likert and other rating scale data. *Currents in Pharmacy Teaching and Learning, 7*(6), 836–850. <https://doi.org/10.1016/j.cptl.2015.08.001>
- Institute for Healthcare Improvement (IHI) (2023a) Model for Improvement. Retrieved September 5, 2023. <https://www.ihi.org/resources/Pages/HowtoImprove/default.aspx>
- Institute for Healthcare Improvement (IHI) (2023b) Key driver diagram. Retrieved September 5, 2023. <https://www.ihi.org/resources/Pages/Tools/Driver-Diagram.aspx>
- Institute for Healthcare Improvement (IHI) (2023c) Cause and effect diagram. Retrieved September 5, 2023. <https://www.ihi.org/resources/Pages/Tools/CauseandEffectDiagram.aspx#:~:text=A%20cause%20and%20effect%20diagram,Equipment%2C%20Environment%2C%20and%20People>
- Langley GL, Moen R, Nolan KM, Nolan TW, Norman CL, Provost LP. (2009) *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance (2nd edition)*. San Francisco: Jossey-Bass Publishers

# References

- Mills, T., Lawton, R., & Sheard, L. (2019). Advancing complexity science in healthcare research: The logic of logic models. *BMC Medical Research Methodology*, 19(1), 55. <https://doi.org/10.1186/s12874-019-0701-4>
- Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & PRISMA Group. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Medicine*, 6(7). <https://doi.org/10.1371/journal.pmed.1000097>
- Remick, K., Smith, M., Newgard, C. D., Lin, A., Hewes, H., Jensen, A. R., Glass, N., Ford, R., Ames, S., Cook, J., Malveau, S., Dai, M., Auerbach, M., Jenkins, P., Gausche-Hill, M., Fallat, M., Kuppermann, N., & Mann, N. C. (2023). Impact of individual components of emergency department pediatric readiness on pediatric mortality in US trauma centers. *Journal of Trauma and Acute Care Surgery*, 94(3), 417–424. <https://doi.org/10.1097/TA.0000000000003779>
- Rayner, J.C.W. & Livingston, G.C. (2022). Ordinal Cochran-Mantel-Haenszel testing and nonparametric analysis of variance: Competing methodologies stats. *Stats*, 5(4), 970-976. <https://doi.org/10.3390/stats5040056>
- Rycroft-Malone, J., Harvey, G., Seers, K., Kitson, A., McCormack, B., & Titchen, A. (2004a). An exploration of the factors that influence the implementation of evidence into practice. *Journal of Clinical Nursing*, 13(8), 913–924. <https://doi.org/10.1111/j.1365-2702.2004.01007.x>
- Rycroft-Malone J. (2004b). The PARIHS framework—A framework for guiding the implementation of evidence-based practice...Promoting action on research implementation in health services. *Journal of Nursing Care Quality*, 19(4), 297–304.
- Stone, K. B. (2015). Burke-Litwin organizational assessment survey: Reliability and validity. *Organizational Development Journal*, 33(2), 33-50
- Sullivan, G. M., & Artino, A. R. (2013). Analyzing and interpreting data from Likert-type scales. *Journal of Graduate Medical Education*, 5(4), 541–542. <https://doi.org/10.4300/JGME-5-4-18>
- Whitfill, T. M., Remick, K. E., Olson, L. M., Richards, R., Brown, K. M., Auerbach, M. A., & Gausche-Hill, M. (2020). Statewide pediatric facility recognition programs and their association with pediatric readiness in emergency departments in the United States. *Journal of Pediatrics*, 218, 210–210. <https://doi.org/10.1016/j.jpeds.2019.10.017>





# Q & A

Thank you for attending by DNP Project Defense!