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Original Contributions

EARLY INVOLVEMENT OF THE CHILD PROTECTION TEAM IN THE CARE OF INJURED INFANTS IN A PEDIATRIC EMERGENCY DEPARTMENT

Emily Powers, MD, MHS, Gunjan Tiyyagura, MD, Andrea G. Asnes, MD, MSW, John M. Leventhal, MD, Rebecca Moles, MD,[1] Emily Christison-Lagay, MD, Shaina Groisberg, MD,[2] and Marc Auerbach, MD, FAAP, MSC

Department of Pediatrics, Yale University School of Medicine, New Haven, Connecticut

Reprint Address: Emily Powers, MD, MHS, Department of Pediatrics, Yale University School of Medicine, 330 Cedar Street, Suite LMP 4085, New Haven, CT 06511

☐ **Abstract—Background: Physical abuse is a significant cause of infant morbidity and mortality. Early detection in the emergency department (ED) is crucial. Objective: We describe the impact of a clinical pathway focused on early involvement of the child protection team (CPT) and social work (SW) team for infants presenting to a pediatric emergency department with an injury concerning for abuse. Methods: The pathway lists 10 injuries associated with abuse in infants and directs consultation of the CPT and SW. It was implemented at a single site on April 1, 2014. Seasonally matched data were collected 12 months before and after implementation on all children < 12 months of age with a qualifying injury. Demographics, CPT and SW consults, referral to Child Protective Services, diagnostic studies, and ultimate determination of abuse by the CPT were collected. Results: Implementation of the pathway was associated with an increase in consultation of the CPT from 17% to 47% ($p < 0.001$) and SW from 33% to 52% ($p < 0.001$). CPT and SW consultations were obtained more frequently for those on public compared to private insurance prior to implementation but not after (CPT: odds ratio [OR] 4.32; $p = 0.046$; 95% confidence interval [CI] 1.03–18.15; SW: OR 3.23, $p = 0.034$; 95% CI 1.09–9.74). Diagnostic testing increased in the post-pathway period. There was no difference in the detection of abusive injury or number of missed cases. Conclusions: These findings suggest that this clinical pathway was successful in increasing involvement of the CPT and SW teams and reducing socioeconomic disparity in the evaluation of infants with injuries concerning for abuse.** © 2019 Elsevier Inc. All rights reserved.

☐ **Keywords—physical child abuse; injury; non-accidental trauma; emergency department; clinical pathway**

INTRODUCTION

Physical abuse is a significant cause of childhood morbidity and mortality, with infants at especially high risk (1). Because early recognition of abusive injuries can prevent further injuries that may be more severe or even fatal, front-line clinicians, such as those working in emergency departments (EDs), are in an important position to identify the early signs of abusive injuries. Such injuries, however, are frequently missed in this setting (2–4).

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[1] Current Affiliation: Connecticut Children's Specialty Group, Connecticut Children's Medical Center, Hartford, CT.

[2] Current Affiliation: Department of Pediatrics, Division of Child Protection Pediatrics, University of Texas Medical School at Houston, Houston, TX.

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Implicit bias—the influence of race/ethnicity or socioeconomic status of the parents on a clinician's judgment about whether to consider the problem of abuse—may be a contributing factor in such missed cases. Earlier suspicion for abusive injury and increased reporting to Child Protective Services (CPS) have been associated with minority race and poverty in injured children, even when accounting for the type of injury (4–6). Similarly, providers report reluctance to involve child abuse experts or to report to CPS on behalf of wealthy or white children and missed cases of abuse may be more common in this population as a result (4–6).

Existing ED screening methods for child physical abuse are heterogeneous in content and process. Several identify high-risk elements in the history and, if found, direct discussion of the workup with a senior emergency physician or discussion of the case with CPS, but with little guidance on diagnostic workup or management (7–10). Others focus on specific injuries and describe explicit interventions, but do not necessarily result in an increase in detection of abuse (11).

In response to several missed cases of physical abuse in infants at our institution, cases in which implicit bias may have played a role, we developed a novel clinical pathway to standardize the approach to injuries in children younger than age 1 year. In a departure from previous screening tools, our pathway calls for a real-time consultation with the hospital's child protection team (CPT) and social work team (SW) for infants presenting with any of 10 high-risk injuries to help determine the likelihood of an abusive injury and develop a plan for an appropriate evaluation while the infant is still in the ED. No specific diagnostic workup is specified. Because CPT teams are known to increase recognition of abuse, we hypothesized that this approach would reduce any racial or socioeconomic disparity that previously existed in our utilization of these consulting services while increasing detection of abuse (12,13).

In this initial study of the intervention, our primary outcome was adherence to the pathway measured by utilization of the CPT and SW teams for infants with a qualifying injury. Our secondary outcomes included racial and economic disparity in the utilization of the CPT and SW and in reporting to CPS, as well as frequency of diagnostic testing. Despite the relatively rare prevalence of abusive injury in infants and the likelihood that our study would be underpowered to detect a difference, we believed it was important to investigate the relevant clinical outcomes and so chose to include as additional secondary outcomes the detection of abusive injury and the frequency of missed cases (1).

MATERIALS AND METHODS

Study Design

We conducted an observational pre–post study in which we compared outcomes before and after implementation of a clinical pathway. This study was approved by the study site's Institutional Review Board (MODCR00003089).

Study Setting and Population

This study was carried out at a single urban academic teaching hospital's pediatric ED in a Level I trauma center with approximately 32,000 total visits and 4500 infant visits annually. The pathway was implemented on April 1, 2014. Data were collected for 1 year prior (April 1, 2013 to March 20, 2014) and, following a 3-month washout period, 1 year after implementation (July 1, 2014 to June 30, 2015). A review of the electronic health record (EHR) was performed by a pediatrician on all children aged < 12 months who were evaluated in the ED during the study period with a chief complaint or diagnosis suggestive of injury to determine if a diagnosis of any of the 10 injuries listed on the pathway was made during that visit. Only infants with 1 of these 10 injuries were included in the study. Infants who sustained injuries resulting from a motor vehicle collision were excluded.

Development of the Pathway

A task force consisting of two senior child abuse pediatricians, two pediatric emergency physicians with a focus in child abuse, two pediatric trauma surgeons, and a social worker developed the intervention using available literature and expert experience in an iterative process over 6 months. The result was a clinical pathway for detection of physical child abuse in children < 12 months of age (Figure 1). The pathway directs frontline providers in the ED to call the CPT for a phone consultation and SW for an in-person evaluation if any of the following 10 high-risk injuries are discovered during the course of the ED visit: 1) long bone fracture; 2) skull fracture, 3) rib fracture; 4) intracranial injury; 5) burn; 6) solid organ injury (laboratory or imaging evidence); 7) bruising of the ear, head, neck, or torso; 8) subconjunctival hemorrhage; 9) frenulum tear; and 10) hemotympanum or if any other concern for abuse arises. Solid organ injury was defined as injury to the liver, spleen, or pancreas identified by any of the following: aspartate aminotransferase (AST) >80 units/L, alanine aminotransferase (ALT) >80 units/L, lipase above normal for age, amylase above normal for age, or imaging results of any modality

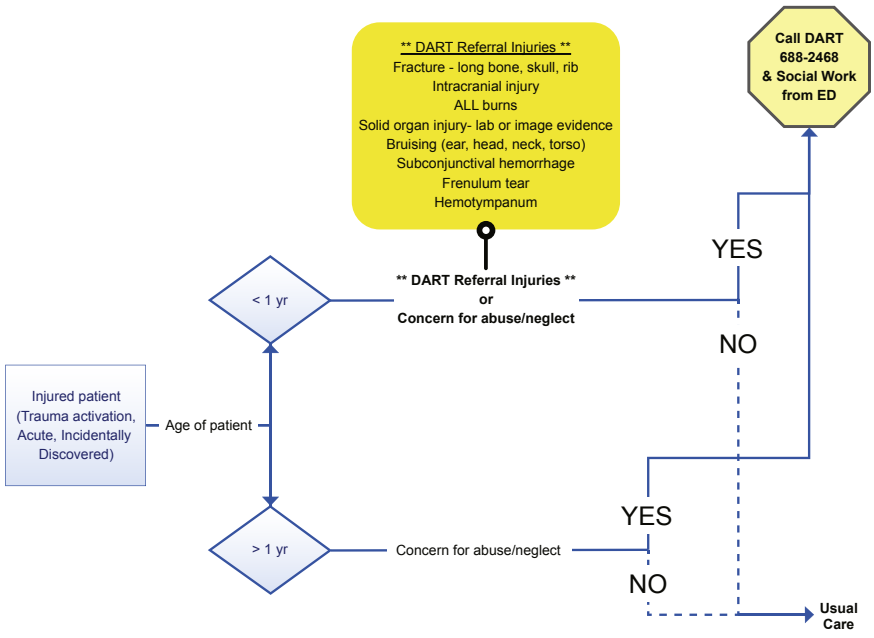

Figure 1. Clinical pathway diagram as posted in the pediatric emergency department. DART = diagnosis assessment reporting treatment. This is the institution-specific name for the hospital's child protection team. ED = emergency department.

consistent with injury. No specific diagnostic studies are specified by the pathway. Instead, a case-specific diagnostic evaluation is developed in conjunction with expertise provided by the CPT. In-person evaluation by the CPT either in the ED or after admission is performed at the discretion of the child abuse pediatrician on call based on the case specifics and is not required as part of the pathway.

The pathway was implemented on April 1, 2014 and made available to all ED providers, surgeons, and general pediatricians caring for injured children at our hospital. Implementation involved an initial training program consisting of presentations to the emergency medicine, social work, pediatric surgery, and trauma section meetings; department-wide e-mail notification; and posting of the pathway in the pediatric ED. Ongoing education continued with periodic e-mail reminders and training on the pathway was included in the resident orientation at the beginning of each rotation.

Measures

Demographic characteristics, including age and insurer at time of the ED visit, race, ethnicity, and sex, were obtained from the EHR. Insurers were then categorized into public insurers (Medicaid and Tricare) versus private insurers. This categorization was used as a proxy for socioeconomic status. Race and ethnicity are patient-reported and recorded by registration personnel into the EHR. Race was dichotomized into white and non-white.

The primary outcome was adherence to the pathway measured by the proportion of qualifying cases in which CPT and SW were consulted. A CPT consult was considered present if an ED provider note documented a phone conversation with the CPT or if a telephone note from a CPT physician was recorded in the EHR for that visit. An SW consult was considered present if documentation was provided by the ED social worker in the EHR for that visit. Although not necessary for a CPT consultation to be considered present, in-person CPT consultations were also examined and were considered present if a formal consultation note from a CPT physician was recorded in the EHR during the ED visit or subsequent hospitalization.

Secondary outcomes included racial and economic disparity in the utilization of the CPT and SW and in the reporting of cases to CPS, frequency of diagnostic testing, detection of abusive injury, and frequency of missed cases. A CPS report was considered positive if a referral was noted in at least one of the SW, CPT, or ED providers' notes. Frequency and outcomes of the following diagnostic tests performed during the ED encounter or subsequent hospitalization were obtained from the EHR: computed tomography (CT) of the head, magnetic resonance imaging of the brain, skeletal survey, AST, ALT, amylase, lipase, prothrombin time, international normalized ratio, and partial thromboplastin time. Final determination of abuse was based on the CPT consult notes written by the child abuse pediatrician assigned to the case and was categorized as abusive, accidental, or undetermined. We defined a missed case of abuse as one

in which an infant in the study with a diagnosis of abusive injury by the CPT team had previously sought care anywhere in our health system for related injuries, as documented in the EHR. Additionally, the EHR was reviewed for all infants through December 31, 2016 for a diagnosis of abusive injury made after the infant's ED visit, potentially implicating the original injury as an early sign of abuse.

Data Analysis

Chi-square, Fisher's exact test, and Student's *t*-test were used to compare demographics, injury distribution, and diagnostic testing before and after implementation of the pathway. Multiple logistic regression was used to determine the effects of race and type of insurance on the likelihood of CPT and SW consults and on likelihood of a report to CPS before and after implementation of the pathway. Statistical significance was defined as $p < 0.05$. The statistical package Stata/SE 14.2 (StatCorp LLC, College Station, TX) was used for analysis.

RESULTS

During the 2-year study period, 8,725 children < 12 months of age presented to the ED; 682 of these had an injury; 299 were excluded because the injury was not 1 of the 10 injuries listed on the pathway; the remaining 383 patients (191 before and 192 after implementation of the pathway) were included in the study. Demographic and injury characteristics between the two groups were similar, other than a significantly higher number of skull fractures in the post-pathway group (Table 1).

Primary Outcome: Pathway Adherence

The pathway was associated with an increase in CPT and SW consultations in infants with a qualifying injury (Table 2). CPT consultations increased from 17% to 47% ($p < 0.001$) and SW consultations from 33% to 52% ($p < 0.001$). To account for possible confounding from the increased number of skull fractures in the post-pathway group, results were stratified into skull fracture injury and non–skull fracture injury types. The increase in CPT and SW consults remained significant for both groups. Of the 122 initial phone CPT consultations performed in the ED (either before or after implementation of the pathway), 101 (82.8%) were followed-up with an in-person CPT consultation either in the ED or after admission. Of the 17.2% (21 of 122) that were performed telephonically only, sufficient information was provided on discussion with ED personnel to rule the injury accidental and preclude an in-person consult.

Secondary Outcome: Racial and Economic Disparity in the Utilization of CPT and SW, and in Reporting to CPS

Prior to implementation, patients with public insurance were at increased odds of receiving a CPT consult (odds ratio [OR] 4.32; 95% confidence interval [CI] 1.03–18.15; $p = 0.046$), an SW consult (OR 3.25; 95% CI 1.09–9.74; $p = 0.034$), and a report to CPS (OR 9.46; $p = 0.001$; 95% CI 2.38–37.80) compared to

Table 1. Demographics and Injury Characteristics

Characteristics	Pre-Implementation of Clinical Pathway (n = 191)	Post-Implementation of Clinical Pathway (n = 192)	*p* Value
Mean age, mo	6.44	6.06	0.12
Sex (male), n (%)	92 (48)	93 (48)	0.96
Race, n (%)			0.37
White	78 (41)	77 (40)	
Black	49 (26)	40 (21)	
Asian	8 (4)	5 (3)	
Other	56 (29)	70 (36)	
Hispanic, n (%)	59 (31)	72 (37)	0.17
Public insurance, n (%)	126 (66)	123 (64)	0.80
Injury, n (%)			
Long bone fracture	21 (11)	20 (10)	0.85
Rib fracture	0 (0)	1 (1)	0.32
Skull fracture	19 (10)	38 (20)	0.007
Intracranial injury	16 (8)	25 (13)	0.14
Burn	12 (6)	12 (6)	0.99
Solid organ injury	3 (1.6)	5 (2.6)	0.48
Bruising of the head, neck, ear, or torso	124 (65)	119 (62)	0.55
Subconjunctival hemorrhage	3 (2)	3 (2)	1.00
Frenulum tear	9 (5)	11 (6)	0.65
Hemotympanum	0 (0)	0 (0)	—

Table 2. Clinical Pathway Adherence

Variable	Pre-Implementation of Clinical Pathway	Post-Implementation of Clinical Pathway	*p* Value
All injuries			
n	191	192	
CPT, n (%)	32 (17)	90 (47)	<0.001
SW, n (%)	63 (33)	99 (52)	<0.001
Skull fractures			
n	19	38	
CPT, n (%)	10 (53)	35 (92)	0.001
SW, n (%)	14 (74)	35 (92)	0.059
Non-skull fracture injuries			
n	172	154	
CPT, n (%)	22 (13)	55 (36)	<0.001
SW, n (%)	49 (29)	64 (42)	0.013

CPT = child protection team; SW = social work.

patients on private insurance, even when controlling for differences in age, race, sex, and type of injury (Table 3). This relationship was no longer present after implementation of the pathway for all three outcomes. Racial bias was also examined, but patients of non-white race were not at increased odds of any of the three outcomes before or after implementation of the pathway compared to white patients.

Secondary Outcome: Frequency of Diagnostic Testing

All tests, with the exception of brain magnetic resonance imaging, were performed more frequently after implementation of the pathway (Table 4).

Secondary Outcome: Detection of Abusive Injuries and Frequency of Missed Cases

Although this study was not powered to detect an increase in recognition of true cases of abuse, as an exploratory aim, we compared the detection of abusive injuries and missed cases before and after implementation of the pathway. There was no statistically significant difference in the number of abusive injuries detected or number of missed cases after implementation of the pathway compared to before (Table 5). Only one missed case occurred prior to implementation of the pathway, wherein 1 of 13 patients diagnosed with an abusive injury pre-pathway was seen in the week prior to diagnosis for related injuries and was discharged home without a diagnosis of abuse. None of the nine cases diagnosed with abusive injuries post-pathway had a prior presentation for concerning injuries within our health system, nor were any children in the study population newly identified as victims of child abuse after their index ED visit.

DISCUSSION

To our knowledge, this is the first ED screening method to involve the expertise of child abuse pediatricians and social workers for all children aged < 1 year with high-risk injuries as a means of identifying and thus preventing further abusive injury. Our findings are similar to what has been found in studies using other screening methods.

Table 3. Adjusted Odds of Receiving a Child Protection Team Consult, Social Work Consult, or Report to Child Protective Services before and after Pathway Implementation by Race and Insurance

	Pre-Implementation of Clinical Pathway			Post-Implementation of Clinical Pathway		
Variable	OR	95% CI	*p* Value*	OR	95% CI	*p* Value*
CPT consults by race, insurance status						
Non-white vs. white	0.42	0.21–2.55	0.616	1.44	0.61–3.42	0.407
Public vs. private insurance	4.32	1.03–18.15	0.046	1.19	0.48–2.94	0.482
SW consults by race, insurance status						
Non-white vs. white	0.42	0.15–1.17	0.097	1.18	0.52–2.66	0.692
Public vs. private insurance	3.26	1.09–9.74	0.034	1.60	0.68–3.75	0.282
Report to CPS by race, insurance status						
Non-white vs. white	0.80	0.27–2.37	0.687	1.59	0.71–3.56	0.265
Public vs. private insurance	9.46	2.38–37.80	0.001	2.25	0.94–5.42	0.070

CI = confidence interval; CPS = Child Protective Services; CPT = Child Protection Team; OR = odds ratio; SW = social work.
* Derived from multiple logistic regression adjusted for age, sex, and injury type.

Table 4. Use of Child Protective Services Referral and Diagnostic Testing Pre- and Post-implementation of the Clinical Pathway

Variable	Pre-Implementation of Clinical Pathway, n (%) (n = 191)	Post-Implementation of Clinical Pathway, n (%) (n = 192)	*p* Value
CPS reports	35 (18)	68 (35)	<0.001
CT head	46 (24)	69 (36)	0.016
MRI brain	27 (14)	40 (21)	0.112
Skeletal survey	27 (14)	57 (30)	<0.001
AST/ALT	38 (20)	72 (38)	<0.001
Amylase	27 (14)	46 (24)	0.021
Lipase	29 (15)	63 (33)	<0.001
PT/INR/PTT	23 (12)	42 (22)	0.015

ALT = alanine aminotransferase; AST = aspartate aminotransferase; CPS = Child Protective Services; CT = computed tomography; INR = international normalized ratio; MRI = magnetic resonance imaging; PT = prothrombin time; PTT = partial thromboplastin time.

We were able to demonstrate moderate success in adherence to the pathway following the educational program and dissemination of the pathway with an increase in involvement of CPT from 17% to 47% and SW from 33% to 52%. Informal conversations with providers regarding barriers to adherence revealed provider reluctance to involve CPT and SW for isolated minor injuries to the head and face in older mobile infants. The majority of cases (74%, 59 of 80) for which neither CPT nor SW was involved in the post-intervention period met this criterion. Studies of bruising in small children suggest that this type of injury is less predictive of abuse, indicating clinicians were appropriate in their management (14,15). Newer iterations of the clinical pathway will refine the list of injuries to adequately reflect the bruising patterns of the head and face that should be considered at higher risk of abuse and will likely result in improved adherence.

We also demonstrated both evidence of implicit bias in the referral patterns prior to the implementation of the clinical pathway and a reduction of that bias after implementation, with poorer children being more likely to have had a consultation by the CPT or SW and more likely to be reported to CPS, even when controlling for age, sex, race, and type of injury before implementation but not after. These findings are similar to those reported by Higginbotham et al., in which the role of socioeconomic status in the decision to screen for abuse was diminished after implementation of a guideline requiring an ED evaluation for abuse in children aged < 1 year with skeletal fracture, and support the growing body of literature demonstrating a reduction in racial and economic treatment disparities in association with standardization of care (11,16–18). The role of poverty, however, in the risk assessment of abusive injuries is more complex than it might be in other conditions. Studies show that poverty is a risk factor for abuse, but also that wealth does not exclude the possibility of abuse (19,20). Thus, we have chosen to cast a wider net with this clinical pathway in order to avoid missed cases of abuse based on implicit bias, but also recognize the difficulty of finding an appropriate balance on this issue.

Despite the absence of prescribed diagnostic testing on the clinical pathway, nearly all diagnostic testing typically associated with the evaluation of abusive injuries increased. This may be due to anticipatory ordering of frequently requested tests by the CPT prior to communication with the CPT or due to increased requests for testing on the part of the CPT. Of note, however, the increase in head CT usage seems to have resulted in an increase in detection of skull fractures in the post-intervention group. More than twice the number of skull fractures were detected in the post-intervention group, despite no significant differences in age, sex, race, ethnicity insurance status, mechanism of injury, or examination findings in those with head injuries between the

Table 5. Final Determination of Abuse by the Child Protection Team

Variable	Pre-Implementation of Clinical Pathway, n (%) (n = 191)	Post-Implementation of Clinical Pathway, n (%) (n = 192)	*p* Value
Abusive	13 (6.8)	9 (4.6)	0.373
Missed	1 (0.5)	0 (0)	0.315
Undetermined	7 (3.7)	10 (5.2)	0.463
Accidental	18 (9.4)	75 (39.1)	<0.001
Presumed accidental*	171 (89.5)	173 (90.1)	0.739

CPT = Child Protection Team.
* Cases with a CPT consult determination of accidental and cases without a CPT consult.

two groups (Supplementary Appendixes A and B). This was an unexpected but clinically significant outcome. We are, however, cognizant of the need to limit unnecessary testing for medical, psychological, and economic reasons, and will seek to highlight the role the CPT can play in developing a targeted and appropriately limited workup for these children in future iterations of the pathway.

We did not expect to find an increase in the detection of abuse or a reduction in the number of missed cases in our study because of the relatively small sample size and the low prevalence of abusive injury (4 in 1000 infants are victims of physical abuse), but felt strongly that relevant clinical outcomes must be included in the evaluation of health care interventions and so chose to investigate these outcomes as an important part of the study (1). Many prior studies that have evaluated approaches to screening for physical child abuse have likewise failed to detect an increase in the identification of abusive injuries or a reduction in missed cases (8–11,21,22). In fact, only one ED screening method for abuse has been able to show a modest increase in the detection of confirmed abuse when applied to an entire national cohort (n = 104,028), supporting the conclusion that our study was underpowered to detect a difference in confirmed cases of abuse, but that screening can be effective when applied to a large population (7). In the absence of an increase in the detection of abuse, it can be difficult to justify increases in diagnostic testing and additional referrals that can accompany implementation of a clinical pathway. The impact of an increase in false positives associated with such a tool is not insignificant, but it is likewise difficult to tolerate any missed cases when such false negatives may result in death for the injured child. Ways of systematically identifying abuse must be studied in order to arrive at a useful approach to prevent missed cases and death.

Limitations

Our study has at least three limitations. First, we could not confirm the diagnosis of abuse through CPS and so relied on the expert opinion of the child abuse pediatricians who provided consultation. Second, because of the pre–post design, we cannot exclude the possibility that temporal trends might explain some of the increases in rates of consultation and diagnostic testing. Third, the generalizability may be limited because this study was conducted in a pediatric ED, and in the United States, the majority of children are seen in general EDs, many of which may not have access to CPTs and pediatric SW teams. However, because initial contact with the CPT in this study was by phone, it may be possible for general EDs to apply this clinical pathway by establishing a remote relationship with a regional CPT to seek advice on such cases.

CONCLUSIONS

A clinical pathway focusing on early involvement of the child protection team and social work team in the detection of physical abuse in infants aged < 12 months was successfully implemented and resulted in a significant increase in the utilization of available expertise in child physical abuse. The clinical pathway was associated with a reduction in socioeconomic disparity in the use of these consulting services, as well as an increase in reports to CPS and diagnostic testing. No increase in detection of abusive injury or decrease in number of missed cases was associated with the pathway. With further refinement, this pathway may be a promising approach to improve overall and timely use of child abuse expertise and to enhance objectivity in the evaluation and care of injured infants in the ED.

SUPPLEMENTARY DATA

Supplementary data related to this article can be found at https://doi.org/10.1016/j.jemermed.2019.01.030.

REFERENCES

1. US Department of Health and Human Services Administration for Children and Families Administration on Children YAFCB. Child Maltreatment 2015. 2017. Available at: https://www.acf.hhs.gov/sites/default/files/cb/cm2015.pdf. Accessed February 5, 2018.
2. Sheets LK, Leach ME, Koszewski IJ, Lessmeier AM, Nugent M, Simpson P. Sentinel injuries in infants evaluated for child physical abuse. Pediatrics 2013;131:701–7.
3. King WK, Kiesel EL, Simon HK. Child abuse fatalities: are we missing opportunities for intervention? Pediatr Emerg Care 2006;22:211–4.
4. Jenny C, Hymel KP, Ritzen A, Reinert SE, Hay TC. Analysis of missed cases of abusive head trauma. JAMA 1999;281:621–6.
5. Hampton RL, Newberger EH. Child abuse incidence and reporting by hospitals: significance of severity, class, and race. Am J Public Health 1985;75:56–60.
6. Lane WG, Rubin DM, Monteith R, Christian CW. Racial differences in the evaluation of pediatric fractures for physical abuse. JAMA 2002;288:1603–9.
7. Louwers EC, Korfage IJ, Affourtit MJ, et al. Effects of systematic screening and detection of child abuse in emergency departments. Pediatrics 2012;130:457–64.
8. Pless IB, Sibald AD, Smith MA, Russell MD. A reappraisal of the frequency of child abuse seen in pediatric emergency rooms. Child Abuse Negl 1987;11:193–200.
9. Sidebotham PD, Pearce AV. Audit of child protection procedures in accident and emergency department to identify children at risk of abuse. BMJ 1997;315(7112):855–6.
10. Benger JR, Pearce V. Simple intervention to improve detection of child abuse in emergency departments. BMJ 2002;324(7340):780.
11. Higginbotham N, Lawson KA, Gettig K, et al. Utility of a child abuse screening guideline in an urban pediatric emergency department. J Trauma Acute Care Surg 2014;76:871–7.
12. Tien I, Bauchner H, Reece RM. What is the system of care for abused and neglected children in children's institutions? Pediatrics 2002;110:1226–31.
13. Wallace GH, Makoroff KL, Malott HA, Shapiro RA. Hospital-based multidisciplinary teams can prevent unnecessary child abuse

reports and out-of-home placements. Child Abuse Negl 2007;31:623–9.
14. Maguire S, Mann MK, Sibert J, Kemp A. Are there patterns of bruising in childhood which are diagnostic or suggestive of abuse? A systematic review. Arch Dis Child 2005;90:182–6.
15. American Academy of Pediatrics, Pierce MC, Kaczor K, Aldridge S, O'Flynn J, Lorenz DJ. Bruising characteristics discriminating physical child abuse from accidental trauma. Pediatrics 2010;125:67–74. Erratum in: Pediatrics. 2010;125:861.
16. Kurtin P, Stucky E. Standardize to excellence: improving the quality and safety of care with clinical pathways. Pediatr Clin North Am 2009;56:893–904.
17. López L, Green AR, Tan-McGrory A, King R, Betancourt JR. Bridging the digital divide in health care: the role of health information technology in addressing racial and ethnic disparities. Jt Comm J Qual Patient Saf 2011;37:437–45.
18. Misky GJ, Carlson T, Thompson E, Trujillo T, Nordenholz K. Implementation of an acute venous thromboembolism clinical pathway reduces healthcare utilization and mitigates health disparities. J Hosp Med 2014;9:430–5.
19. Freisthler B, Merritt DH, LaScala EA. Understanding the ecology of child maltreatment: a review of the literature and directions for future research. Child Maltreat 2006;11:263–80.
20. Eckenrode J, Smith EG, McCarthy ME, Dineen M. Income inequality and child maltreatment in the United States. Pediatrics 2014;133:454–61.
21. Louwers ECFM, Affourtit MJ, Moll HA, de Koning HJ, Korfage IJ. Screening for child abuse at emergency departments: a systematic review. Arch Dis Child 2010;95:214–8.
22. Woodman J, Pitt M, Wentz R, Taylor B, Hodes D, Gilbert RE. Performance of screening tests for child physical abuse in accident and emergency departments. Health Technol Assess 2008;12(33):iii. xi–xiii 1–95.

ARTICLE SUMMARY

1. Why is this topic important?

Physical abuse is a significant cause of childhood morbidity and mortality with infants at especially high risk. Emergency department (ED) clinicians play a crucial role in early detection of these injuries but such injuries are often missed in the ED setting.

2. What does this study attempt to show?

The impact of a clinical pathway focused on early involvement of the child protection team and social work team for infants presenting to a pediatric ED with an injury concerning for abuse.

3. What are the key findings?

The pathway was associated with an increase in the utilization of the child protection team and social work team, a decrease in socioeconomic bias in utilization of the two teams, and an increase in diagnostic testing.

4. How is patient care impacted?

This pathway may provide a useful tool for ED clinicians to approach the evaluation of injuries in infants.