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Community Primary Care Provider Preferences for Emergency Department Follow-up Recommendations: A Regional Study

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Abstract

Background—Children who present to Emergency Departments (EDs) for care are frequently advised to follow up with their primary care providers (PCPs) after discharge; little is known about whether PCPs agree that follow-up advised by EDs is appropriate for their patients.

Objective—To determine PCP preferences for follow-up recommendations given to their pediatric patients at the time of ED visits, and to compare these preferences to reported emergency medicine provider (EMP) practice.

Methods—This was an online survey of PCPs and EMPs in a regional health system assessing preferred timing for ED follow-up recommendations for 15 common pediatric conditions, and whether the follow-up should be definite or contingent.

Results—90 PCPs and 36 EMPs responded to the survey. In patients with community acquired pneumonia, probability of recommending follow-up after 5 or more days was 33% in PCPs, 8% in EMPs ($p=0.001$). In all conditions with significant differences, PCPs favored longer follow-up. In upper respiratory infection and acute otitis media, PCPs had a higher probability than EMPs of selecting as-needed vs. definite follow-up ($p=0.0002$ and $p=0.01$ respectively). In asthma, concussion, and pneumonia, PCPs had a significantly lower probability of selecting as-needed follow-up than EMPs.

Conclusion—In this regional survey, PCPs preferred longer times between ED visit and follow-up than EMPs for a number of conditions. Differences were also found in preference for as-needed

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or definite follow-up, varying by condition. These discrepancies could result in over- or under-use of clinic resources, suggesting a possible quality improvement target for emergency medicine practice.

Keywords

Follow-up; primary care; discharge instructions

INTRODUCTION

Approximately 21% of U.S. children are seen in the Emergency Department (ED) at least once in a given year,¹ accounting for over 25 million visits per year.² Overall, 97% of children seen in the ED are discharged to home rather than admitted to the hospital.² When patients are discharged from the ED it is standard practice to advise them to follow up with their primary care practitioner (PCP) or other specialists. Care guidelines for specific illnesses often advise follow-up be recommended at particular times. For example, the American Academy of Pediatrics recommends a follow-up visit after 7–14 days of antimicrobial treatment for febrile infants aged 2–24 months diagnosed with a urinary tract infection.³ In one popular review source, children who have been diagnosed with otitis media and are being treated with antimicrobial therapy are recommended to have follow-up within 48 to 72 hours if they fail to improve, 8 to 12 weeks if the child is less than 2 years old or has language or learning problems, or at their next health maintenance visit if they do not fall into one of these two categories.⁴ Some authors also recommend that febrile young infants with fevers who are to be discharged from the ED require reliable follow-up to be arranged within 24 hours.⁵

Although such recommendations provide some guidance to emergency medicine practitioners (EMPs) in advising follow-up for ED patients, there is little literature available to support any particular practice. Much of the literature in this area has focused on maximizing use of PCP follow-up after ED visits for asthma exacerbations and improving continuity of information between EMPs and PCPs.^{6–12} However, there have been no systematic assessments of PCP preferences for such recommendations, nor of advice given by EMPs, in asthma or in other conditions. Scheduled ED follow-up visits consume a slot on the PCP's schedule, may require the patient and family members to miss school or work and incur transportation expenses, and lead to monetary costs to families and insurers. Optimization of EMP recommendations for follow-up would have the potential to improve use of these resources, maximizing the likelihood that a recommended follow-up appointment would be considered helpful by the PCP and the patient or patient's family. This study endeavored to determine what PCPs in one regional health system consider appropriate follow-up for their pediatric patients after an emergency visit, and how this compares to current EMP practice in the same community.

MATERIALS AND METHODS

Study design

This investigation was a cross-sectional study of primary care providers (PCPs) in the Fairview health system in Minnesota. Fairview Health Services is a nonprofit health care system that includes over 3000 credentialed physicians, 7 hospitals and medical centers (including tertiary care referral centers for adults and children), and over 40 primary care clinics. Providers surveyed included physicians, nurse practitioners, and physician assistants who care for children in primary care settings. An on-line survey was used to assess their preferences for clinic follow-up recommendations to be given to their pediatric patients when they visit the ED. A version of the survey was also given to EMPs in the same system to allow comparison of EMP practice with PCP preferences. The appropriate Institutional Review Board approved the study prior to initiation of data collection.

Subject selection and recruitment

PCP subjects were selected from providers in the Fairview system based on a listed specialty of pediatrics or family medicine and a primary care clinic practice setting. EMP subjects were selected from the Fairview system based on a listed specialty of emergency medicine or pediatric emergency medicine and a primary practice located in an ED. Subjects in both groups were screened by initial survey questions and excluded if they declined consent to participate, indicated they did not provide care for children in the appropriate setting, or did not answer any of the clinical survey questions.

Data collection

The PCP questionnaire collected demographic information such as age, gender, level of training, field of practice, practice location, and practice type. The main body of the survey gathered participants' views on when and if they would prefer pediatric patients of various ages and conditions to be advised to follow up after a visit to the ED. For each age-condition combination, they were prompted to indicate when they would prefer patients be advised to obtain follow-up, and if that recommendation should be definite or contingent on the patient's clinical improvement. Only one answer was allowed per condition; comments were allowed. Conditions were selected by review of the most common presenting complaints to the PED for those likely to require primary care (rather than specialist) follow-up. The conditions surveyed were: acute otitis media, upper respiratory infection, bronchiolitis, asthma exacerbation, pharyngitis, community acquired pneumonia, croup, fever without localizing source, urinary tract infection, constipation, gastroenteritis, allergic reaction, concussion, cellulitis, and lacerations.

The EMP questionnaire collected similar demographic information from emergency medicine providers, and gathered information on the same clinical scenarios, rewritten from the EMP's perspective.

Providers were invited to participate in the study via email. The survey was conducted via an online survey provider (SurveyMonkey, Palo Alto, CA). Those who completed the survey were invited to participate in a drawing for a \$100 gift card.

Data Analysis

Logistic regression estimates the association between the group (i.e., PCP or EMP) and the outcome (i.e., follow-up of five or more days) while adjusting for age group. Generalized estimating equations (GEE)¹³ with an exchangeable working correlation matrix were used to account for potential correlation between answers from the same participant. The results are presented using LS means, which estimates the group probabilities using the average age group. All analyses were done in SAS v9.3.

RESULTS

Survey invitations were sent to 520 PCPs and 74 EMPs. One hundred twenty five PCPs (24% of invitees) and 41 EMPs (55%) responded to the survey. Of these, 90 PCPs (17% of invitees) and 36 EMPs (49%) completed at least a portion of the clinical survey questions after giving consent and confirming the appropriateness of the survey to their practice. Seventy-eight PCPs (15% of invitees) and 29 EMPs (39%) completed all 15 clinical scenarios. Table 1 outlines demographics of the participants.

In general, there was a preference for more conservative management in younger patients, with both PCPs and EMPs opting for sooner and more definitive follow-up in infants than in older children. For example, in fever without localizing source, the probability of selecting follow-up 5 or more days after the visit varied from 0% (EMPs) and 3% (PCPs) for 4–8 week old infants to 43% (EMPs) and 35% (PCPs) for children over 5 years of age. Because of the expected strong effect of age on recommendations in this condition, we present full findings for fever without localizing source, by age, in Table 2.

Table 3 shows the probability of providers preferring follow-up be recommended five or more days after the patient's ED visit, estimated for an average age group. In all cases where significant differences by provider type were found, PCPs had a higher probability of selecting the less-conservative approach of a longer time interval before follow-up.

Table 4 reports the probability of providers preferring follow-up be advised only if the patient is not improving, estimated for an average age group. Of the five conditions with significant differences, PCPs had a higher probability of selecting the less-conservative, "as needed" approach in two cases (acute otitis media and upper respiratory infection). Conversely, EMPs favored the less-conservative approach in three cases (pneumonia, concussion, and asthma exacerbation).

DISCUSSION

This study demonstrates that there is significant variation between the approach to ED follow-up preferred by PCPs for their pediatric patients and the approach reportedly used by EMPs in the same system. In particular, PCPs prefer longer times than EMPs between ED visit and recommended follow-up for nearly all conditions surveyed. In some cases, the magnitude of the difference was substantial. For example, probability of selecting follow-up five or more days later was 6 times higher among PCPs than EMPs (18% vs. 3%) for cellulitis, and over 3 times higher (62% vs. 20%) for streptococcal pharyngitis.

Additionally, for a number of conditions there were significant differences in reported preferences for whether follow-up is recommended in all cases or only if the patient's condition is not improving. These results were more complex, with PCPs favoring the less conservative, as-needed approach in some conditions (acute otitis media and upper respiratory infection) and EMPs favoring it in others (pneumonia, concussion, and asthma exacerbation). This may reflect a complexity of approach that was difficult to capture in this survey format. For example, in community acquired pneumonia, EMPs had a significantly lower probability of recommending first follow-up after 5 or more days (8% vs. 33% among PCPs, $p=0.0012$), but a significantly *higher* probability of selecting as-needed only follow-up (51% vs. 35%, $p=0.044$). This would be consistent with a shorter-term focus among EMPs, favoring advice to "Follow up if not improving in 2–3 days," contrasting with a longer-term focus among PCPs, favoring advice such as "Follow up in 7–10 days [to ensure complete resolution]."

Though there are published guidelines and recommendations for primary care follow-up after emergency department visits for some illnesses in children,^{3–5, 12} we are not aware of studies assessing the usefulness of these practices nor primary care providers' perception of the recommendations. The variation in practice we have uncovered likely stems from the differing perspectives of the two specialties. In emergency medicine practice, follow-up may be considered an important means of ensuring adherence to recommendations, re-establishing connection with the PCP, and allowing re-assessment of the patient's changing condition. Conversely, the PCP must consider availability of clinic resources, billing concerns, and the likelihood that the visit will truly change the patient's clinical course. Ideally, these recommendations would be made base on clear data regarding the effect of PCP follow-up on patient outcomes. However, as there is very little such data available in the literature, individual providers must rely on their own preferences (developed through training and personal experience) and expert opinion as reported in guidelines and reviews.

Our results suggest that in many cases, EMP recommendations for follow-up after ED visits are more conservative than PCPs would prefer. In the majority of cases where there are not clear published guidelines to inform practice, there is the possibility that these conservative recommendations may lead to clinic visits that PCPs regard as unnecessary. These potentially unnecessary visits may indicate wasted resources for PCPs, patients, and their families. However, in the case of febrile young infants, it is worth noting that the less-conservative PCP recommendations are in opposition to published recommendations.⁵ Given the consensus in the literature that febrile young infants require prompt follow-up, it is surprising that 19% of PCPs advised as-needed follow-up only for 4–8 week old infants with fever, and 3% recommended first follow-up 5 or more days after the ED visit. Additionally, in the small number of conditions for which PCPs had a higher probability of selecting definite follow-up than EMPs, there is potential for underuse of clinic resources in ongoing management of acute or chronic disease. In all three such cases, asthma, pneumonia, and concussion, there is potential for important issues to be under-treated if the patient is advised to follow-up only if they do not feel their acute issues are improving. Asthma, in particular, is known to be sensitive to ambulatory management,¹⁴ making the 79% probability of EMPs selecting as-needed follow-up only in this condition a surprising and potentially troubling finding. National guidelines recommend scheduled follow-up between one and four weeks

after an exacerbation;¹⁵ “as needed” follow-up recommendations have the potential to lead to suboptimal ongoing management.

In general, while the details are complex, these findings represent a potentially important quality improvement target for pediatric emergency medicine practice. Further research is needed to determine the optimal timing and approach to follow-up for children cared for in EDs. Ideally, such research would assess the effect of follow-up care on patient-centered outcomes and would allow for optimization of recommendations to improve those outcomes. However, in the absence of completed research addressing objective outcomes associated with ED follow-up, a better understanding of the current state of provider preference in this area would at least allow EMPs to thoughtfully consider the PCP viewpoint when making their recommendations. Ultimately, success in optimizing ED discharge instructions has the potential to improve resource utilization, patient and family satisfaction, referring provider satisfaction, and patient health outcomes.

Limitations

There are several significant limitations. First, all study participants were from a single regional health care system. This may not be representative of other systems and locations, and may limit the generalizability of the results. However, disparities in practice might have been expected to be even more pronounced if we had surveyed a more diverse sampling of providers. Second, provider response rate was low, particularly among PCPs. There is no way to determine how the preferences of providers who did not respond may have differed from those who did. Additionally, a significant majority of the providers who did respond were trained in family medicine rather than in pediatrics. It is possible that pediatricians would have responded differently. Third, our results only indicate reported preferences. The study did not examine the reasons behind these preferences, nor whether they were evidence based. Finally, respondents were limited to a single follow-up recommendation for each age-condition combination, and the scenarios necessarily included simplified clinical information. Although respondents were permitted to enter comments, this was not widely done. It is possible that concordance between PCPs and EMPs would have been greater if the survey had allowed compound responses, such as “In 2–4 days if not improving AND in one week to reassess.” Further research in this area should be structured to allow for two-part responses.

CONCLUSIONS

In this small regional survey, PCPs preferred longer times between ED visit and follow-up than EMPs for a number of conditions. Differences were also found in preference for as-needed or definite follow-up, varying by condition. In the majority of discrepant cases, EMP recommendations were more conservative than the corresponding PCP preferences. These discrepancies could result in perceived overuse of PCP clinic resources and unnecessarily lost work and school time by patients and their families. Further research is needed to better understand provider preferences, and ultimately to determine the ideal approach for patient outcomes. Standardizing and optimizing follow-up recommendations is a possible quality improvement target for emergency medicine practice.

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Table 1Demographics of survey participants (n=126)^a

Age (years)	20–29	3 (2%)
	30–39	41 (33%)
	40–49	36 (29%)
	50–59	17 (13%)
	60+	10 (8%)
	Did not answer	19 (15%)
Sex	Male	55 (44%)
	Female	50 (40%)
	Did not answer	21 (17%)
Practice location	Urban	17 (13%)
	Suburban	69 (55%)
	Rural	21 (17%)
	Did not answer	19 (15%)
Primary Care Provider group (n=90; 71%)		
Specialty	Pediatrics	11 (12%)
	Internal medicine/ pediatrics	7 (8%)
	Family medicine	58 (64%)
	Did not answer	14 (16%)
Training type	Physician	59 (66%)
	Physician Assistant	14 (16%)
	Nurse Practitioner	5 (6%)
	Did not answer	12 (13%)
EMP group (n=36; 28%)		
Specialty	Emergency medicine	22 (61%)
	Pediatric emergency medicine	3 (8%)
	Family medicine	4 (11%)
	Did not answer	7 (19%)
Practice location	General ED	25 (69%)
	Pediatric ED	3 (8%)
	Pediatric-focused practice in general ED	1 (%)
	Did not answer	7 (19%)

^aSome percentages do not add up to 100 due to rounding.

Table 2

Proportion of providers recommending the following follow-up in children with fever without localizing source, by age

	4–8 weeks	8–12 weeks	3–6 months	6–24 months	2–5 years	5+ years
Follow-up 5 or more days after ED visit:						
PCP ^a	3%	5%	7%	12%	27%	35%
EMP ^b	0%	0%	0%	10%	27%	43%
As-needed follow-up only:						
PCP ^a	19%	30%	50%	62%	76%	78%
EMP ^b	4%	13%	40%	63%	73%	73%

^aPCP: Primary Care Provider

^bEMP: Emergency Medicine Provider

Table 3

Provider probability of selecting recommended follow-up to be 5 or more days after Emergency Department visit, estimated for the average age group

Condition	PCP ^a	EMP ^b	p-value
Fever without localizing source	8%	12%	0.39
Cellulitis	18%	3%	0.023
Bronchiolitis	24%	8%	0.037
Croup	26%	11%	0.030
Gastroenteritis	29%	13%	0.052
Community acquired pneumonia	33%	8%	0.0012
Asthma	34%	14%	0.017
Urinary tract infection	39%	17%	0.016
Acute otitis media	43%	36%	0.41
Concussion	52%	56%	0.69
Allergic reaction	54%	25%	0.0074
Constipation	57%	39%	0.067
Streptococcal pharyngitis	62%	20%	<0.001
Laceration	64%	27%	0.0011
Upper respiratory infection	74%	41%	<0.001

^aPCP: Primary Care Provider

^bEMP: Emergency Medicine Provider

Table 4

Provider probability of selecting as-needed follow-up only, estimated for average age group

Condition	PCP ^a	EMP ^b	p-value
Fever without localizing source	55%	48%	0.38
Cellulitis	52%	49%	0.80
Bronchiolitis	40%	38%	0.79
Croup	74%	63%	0.16
Gastroenteritis	79%	81%	0.70
Community acquired pneumonia	35%	51%	0.044
Asthma	46%	79%	<0.001
Urinary tract infection	26%	33%	0.34
Acute otitis media	76%	59%	0.012
Concussion	22%	46%	0.013
Allergic reaction	76%	92%	0.063
Constipation	78%	78%	0.95
Streptococcal pharyngitis	96%	86%	0.057
Laceration	43%	30%	0.81
Upper respiratory infection	91%	73%	<0.001

^aPCP: Primary Care Provider

^bEMP: Emergency Medicine Provider