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Barriers and Facilitators to Referral for Asymptomatic Hypertension in the Emergency Department: A Multidisciplinary Survey of ED Providers in U.S.

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Abstract

Introduction: Hypertension is prevalent in the emergency department (ED) and more common in the ED than at visits to primary care providers. As a result of this, the American College of Emergency Physicians recommends all adult patients who have a repeated BP ≥ 140/90 mmHg be referred for evaluation. However, existing literature demonstrates referral for elevated BP is suboptimal.

Methods: This study was guided conceptually using Cabana et al. (1999) to examine ED provider barriers (knowledge, attitudes, and external factors) that are associated with referral of patients with BP ≥ 140/90 mmHg. A random multidisciplinary sample of ED providers (n = 450) were surveyed using three professional organizations in the United States. The appropriate bivariate and multivariate regression analysis was conducted to examine factors associated with referral.

Results: This study achieved a 51% response rate. Knowledge, attitudes, and external factors are associated with referral, yet awareness of the ACEP Policy and provider attitudes were two of the strongest predictors. Providers who reported they have the skills, knowledge, confidence, who take ownership, and perceive less of a medical liability refer 1.4 times more than those who do not perceive these factors (p = 0.001, 95% CI 1.1 - 1.6). In addition, the odds of referral increased by 2.1 for awareness of the ACEP Policy (p = 0.04; 95% CI 1.1 - 4.7).

Discussion: Future interventions to improve referral for asymptomatic HTN in ED patients may take into consideration existing provider barriers prior to implantation. The potential the ED provider has in helping to eliminate the adverse outcomes associated with undiagnosed or under-treated HTN in ED patients is significant.

Introduction

Despite the magnitude of hypertension (HTN)-associated morbidity and mortality, HTN remains under diagnosed and poorly controlled, making elevated blood pressure (BP) a problem frequently encountered in the emergency department (ED) [1-3]. Nearly 44% of patients in the ED have elevated BP, compared to 27% of those who visit their primary care provider (PCP), and this disproportionately affects ethnic minorities and the elderly [4]. Persistently elevated BP contributes more than any other factor to racial differences in cardiovascular disease (CVD) survival and thus, patients with HTN are at disproportionate risk for death over time.

For nearly a decade, professional emergency nursing (ENA) and emergency medicine (ACEP) organizations have endorsed efforts to better screen for HTN and help link those with uncontrolled BP to primary care [5]. They recommend referral for all adults in which their BP is persistently elevated (two or more BP readings ≥ 140/90 mmHg). Unfortunately, ED providers often overlook these findings for a variety of reasons, even though, contrary to the beliefs of many, these patients are often found to remain hypertensive beyond the ED visit [6-10]. Improved vigilance identifying high-risk patients with HTN may be achieved by implementing novel, multi-disciplinary, streamlined interventions. However, prior to doing so a careful assessment of provider barriers is warranted.

Cabana and colleagues (1999) identified that specific barriers - knowledge, attitudes, and external factors influence provider practice patterns [11]. This study aimed to identify provider barriers to referral for elevated BP in the ED and to classify the identified barriers according to the framework of Cabana and colleagues (1998). Additionally, characteristics of the provider (knowledge and attitudes) and external factors (patient-, guideline-, and organizational factors) associated with referral for elevated BP in the ED was explored.

Methods

Study design and sample

The sample was multi-disciplinary and included a random sample of active members from three professional organizations in the U.S.: (1) the American Medical Association (AMA) which represents more than one million physicians and residents in the U.S, in which 38,282 are ED MDs; (2) the Society of Emergency Medicine Physician Assistants (SEMPA), which represents approximately 1,200 ED PAs in the U.S.; and (3) the Emergency Nurses Association (ENA), which represents more than 30,000 ED RNs and NPs in the U.S.

Lists were provided in a secured Excel spreadsheet using Microsoft Excel 2007. One hundred fifty providers were randomly selected from the random list provided by each professional group, for a total N of 450. Participants were given (1) the option to complete the survey using a hard-copy or submitting it electronically via the web, using Survey Monkey®; (Supplementary file) (2) a prepaid financial incentive of $10.00; and (3) a stamped return envelope for those who completed the survey by hand. Three contacts were made [(1) pre-notice post card, (2) letter for survey participation two weeks after the initial mailing), and (3) a reminder letter (two weeks after the

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second mailing)]. An information sheet indicating that participation was voluntary and ensuring confidentiality was provided with each survey. Completion of the survey constituted implied consent. The study was approved by the institutional review board at New York University Washington Square.

Measures

Provider and hospital characteristics (demographics)

Provider types, total years of working in the ED setting, sex, race/ethnicity of the provider, work and shift status were assessed. Hospital characteristics were assessed by asking the provider and included number of each provider type (MD, PA, NP, RN) working per shift, use of electronic medical records (EMR) in the ED for patient progress note documentation, use of EMR for MD/NP/PA order entry, and presence of a current protocol to address patients who have asymptomatic HTN in the ED.

Knowledge

Due to limited study around the area of elevated BP in the ED and inability to identify a validated instrument specific to this population, a knowledge questionnaire was developed by the first-author and based on the literature [12]. The questionnaire was pilot tested using a multidisciplinary sample of ED providers (N = 10).

The knowledge questionnaire consisted of a 3-part, 23-item survey. In Part I, 12-items were constructed to assess knowledge of the *Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of Blood Pressure* JNC 7 definitions of HTN (4-items), knowledge of what action to take according to the ACEP Policy (4-items), and providers' BP threshold for reassessment/referral of an elevated BP per the ACEP Policy (4-items). Scoring for each of the 12-items was dichotomized to 'correct' versus 'incorrect' answers, for a total potential score of 12-out-of-12 correct or 100%. The higher the score the higher level of knowledge.

For Part II of the knowledge assessment, two close-ended questions (13, 14) about *awareness* of the JNC 7 and ACEP recommendations were asked, with answer choices as 'yes', 'no', or 'I do not know'; and two close-ended multiple choice questions (15, 16) about the extent of familiarity with JNC 7 and ACEP questions, with answer choices and scoring as: 'not at all familiar' as score 1, 'somewhat familiar' as score 2, 'neutral' as score 3, 'familiar' as score 4, 'very familiar' as score 5. For awareness, answers were dichotomized to percentage of 'yes' and percentage of 'no' plus 'I do not know'.

For Part III of the knowledge assessment, providers were asked to: "Please rate, on a scale of 1-10, how common you think each cause affects BP in the emergency department patient (1 = not a common cause and 10 = a very common cause). Based on the literature responses included pain, uncontrolled and diagnosed HTN, undiagnosed HTN, anxiety, improper BP cuff fit, inaccurate reading, or other (please specify). Percentage of each perceived cause of elevated BP response was calculated.

Attitudes and external factors

The 'Barriers and Facilitators to Assessment Instrument" (BAFI) [13] was used to assess attitudes (10-items) and external-related barriers (15-items) [patient factors (6-items); guideline factors (4-items); and organizational factors (5-items)]. Twenty-five of the 27 items were used for this study. Two items were removed because they were irrelevant and this was recommended by the authors of the instrument. The first part of the instrument consisted of rating various possible barriers to, and facilitators of, the general implementation of a 'directive or innovation'. The second part of instrument consisted of identification of barriers to and facilitators of, implementation of a preventive care in general. As recommended by the authors of the tool, questions were reworded to address the specific guideline being employed in the study, specifically, the words 'directive or innovation' in the original questionnaire were replaced with the words "ACEP Guideline". For example: "I did not thoroughly read nor remember the '*directive or innovation*' was replaced to "I did not thoroughly read nor remember the ACEP Guideline". Psychometric qualities, in particular item response and range, have been measured by the developers of the instrument and 12 validation studies have been performed to test the psychometric characteristics of the questionnaire. Psychometric properties for this instrument have been previously reported [14,15].

An additional 25 items assessing attitudes and external factors that had been identified in a systematic review and Delphi study after the release of the BFAI were also included [16]. In order to assure that there was a comprehensive examination of all possible determinants that may influence guideline adherence (referral) these items were added, for exploration. However, these questions were analyzed separately. Because these items were identified by Delphi study, no reliability or validity data is available since a questionnaire was not developed based on these findings.

For the BFAI and the *Additional* Items, data were collected in the same manner. Respondents were asked to respond using a 5-point Likert-type scale, ranging from 'fully agree', which corresponds to a score of five, to 'fully disagree', which corresponds to a score of one. A binary choice design was chosen to elicit responses with a visual midpoint of "do not agree nor disagree" in order to reduce the number of meaningless responses. For those who responded as 'fully agree', 'agree', or 'do not agree nor disagree', the new response was coded as being a' barrier'. For those who responded as 'fully disagree' or 'disagree', the new response was coded as 'not a barrier'. Provider responses of 'do not agree nor disagree' were coded as a barrier because having no opinion was considered to be a barrier to referral for elevated BP. Each category was then combined to form one composite score for analysis. At the end of the survey, providers were given the opportunity to offer any additional comments.

A 'referral' was operationalized as a recommendation to have follow up for persistent elevated BP found during the ED visit. To assess practice patterns, providers were asked: "In the past two weeks, how often did you refer an ED patient for outpatient BP evaluation if he/she had a repeated systolic BP measurement ≥ 140 mmHg or diastolic BP ≥ 90 mmHg in the ED"? Response categories included "never" (0% of the time), "rarely" (1%-20%), "sometimes" (21%-50% of the time), "most of the time" (51%-75% of the time) and" almost always" (> 75% of the time). Based on previous studies that have examined barriers to guideline adherence, referral was subsequently dichotomized to those who refer ≥ 75% of the time and those who refer ≤ 75% of the time [17].

Data analysis

Data from Survey Monkey® were directly imported into the Statistical Program for the Social Sciences (SPSS) (Version 15.0, Chicago Illinois, USA). All returned hand-written surveys were double entered into an SPSS dataset in order to assure accuracy of data entry of paper surveys. First, descriptive statistics were conducted and are presented in percentages. Next, bivariate analyses were conducted using independent t-tests or ANOVA and chi-square tests to test for significant relationships between referral and demographics and referral and knowledge. For attitudes and external factors, item analysis was performed for each composite score (attitudes and external factors (patient-, guideline-, or organizational factors). Items showing poor internal consistency were not retained in the composite score; however, these items were analyzed individually.

Finally, variables with a $p < 0.10$ in the bivariate analyses were selected for entry into a multivariate logistic regression model. A step-wise forward entry approach was used, starting with demographic characteristics (provider and hospital characteristics) followed by knowledge, attitudes, and external-factors. This model-building procedure involved the removal of all variables meeting the *p*-value cut-point ($p > 0.10$) at each of the three stages. Variables with the largest *p*-value were removed first. However, any variable that resulted in a Log Likelihood change of greater than 3.84 after the item was removed, was returned to the model [18]. Any variable that significantly improved the fit of the model was retained.

Results

From the 450 surveys sent to ED providers, 51.0% were returned. One hundred eighty two (79.0%) ED providers completed the survey by paper and 48 (21.0%) completed the survey online. Sixty two percent of RNs responded to the survey (n = 91). Of the RN group, 90.0% were RNs, but not Nurse Practitioners (NPs) (n = 82), and 10.0% were NPs (n = 9). Fifty five percent (n = 85) of PAs responded to the survey. The lowest response rate, 36.0%, was in the MD group (n = 54). Of the MDs, 65.0% were Attending MDs (n = 35) and 35.0% were Resident MDs (n = 15).

Responders (n = 230) were more likely to be a RN (n = 91; 39.6%) as compared to MDs (n = 54; 23.5%) or PAs (n = 85; 37%) ($p = 0.02$). Responders (40.8% male) and non-responders (46.3% male) did not differ significantly by sex ($p = 0.136$). However, responders were more likely to live in the Northeast and least likely to come from the West ($p < 0.001$). A large proportion (87.0%) of the total sample was Non-Hispanic White. A sub-study has been previously published [19].

As shown in Table 1, only 13% of providers referred patients with elevated BP at least 75% of the time, however a post-hoc analysis showed that MDs did not refer at significantly higher rates than RNs ($p = 0.073$) or PAs ($p = 0.413$).

Table 1: Referral for elevated BP in the ED.

	ED Provider Group			
	MD N (%)	PA N (%)	RN N (%)	Total N (%)
Referral				
0% [1]	9 (17%)	8 (9%)	21 (3%)	38 (10%)
10%-20% [2]	7 (13%)	17 (21%)	28(31%)	52 (22%)
21%-50% [3]	15 (28%)	32 (39%)	21 (23%)	68(30%)
51%-75% [4]	12 (22%)	16 (19%)	14 (5%)	42 (15%)
≥ 75% of the time[5]	11 (20%)	10 (12%)	7 (8%)	28 (13%)
P-value	0.085	0.413	.073	

Note: [1]Never, [2]Rarely, [3]Sometimes, [4]Most of the Time, [5]Almost Always

As shown in Table 2, the majority of providers correctly defined normal BP, pre-HTN, and stage I HTN according to JNC 7. Nearly half (49%) incorrectly defined stage II HTN as 160-169/90-99 (Stage II HTN is defined as any BP ≥ 160/100 mmHg and is no longer defined as a range, per JNC 7 [20]. Although the majority of providers correctly reported what to do when encountered with an elevated BP, few correctly reported their BP threshold to be the same. Furthermore, less than half were aware of the JNC 7 definitions of HTN and ACEP Policy and the majority of providers rated pain to be the most common cause of elevated BP in the ED, followed by uncontrolled HTN and undiagnosed HTN.

Providers' attitudes about the content of the ACEP Policy and external factors were generally positive. As seen in Table 3, where responses to the BAFI along with the *additional* questions are shown, very few barriers were reported.

Independent variables (composite score or individual item) associated with referral ≥75% of the time (barrier or facilitator) and meeting the $p < 0.10$ cut-point were selected for entry into the multivariate analysis (Table 4). This level of significance was chosen to capture predictor variables that may be only trending toward significance in the bivariate analysis but may be significant predictors or confounders in the multivariate logistic regression when controlling for additional factors.

After adjusting for a number of important covariates (provider/hospital characteristics), the additional provider-related barriers were independently associated with referral and showed that the odds of referral increased by 1.4 times for every 'additional' provider factor barrier ($p = 0.001$, 95% CI 1.1 - 1.6). In other words, providers who reported they had the skills, knowledge, and confidence to refer, who took ownership for referral, and who did not perceive any medical liability to refer, referred 1.4 times more. Additionally, the odds of referral increased 2.1 times for awareness of the ACEP Policy ($p = 0.04$; 95% CI 1.1 - 4.7).

Table 2: Self-Reported Knowledge.

Part I		**Correct (%)**
JNC 7 HTN Definitions	Normal BP Pre-HTN Stage I HTN Stage II HTN	189 (82%) 178 (77%) 179 (77%) 83 (35%)
ACEP Action – scenario/close-ended	Refer for SBP/DBP ≥140/90 mmHg SBP 140 mmHg DBP 90 mmHg	 183 (73%) 146 (62%)
	Reassess for SBP/DBP ≥140/90 mmHg SBP 140 mmHg DBP 90 mmHg	 146 (62%) 170 (73%)
BP Threshold – Multiple Choice	Refer for SBP/DBP ≥140/90 mmHg SBP 140 mmHg DBP 90 mmHg	 180 (33%) 119 (55%)
	Reassess for SBP/DBP ≥140/90 mmHg SBP 140 mmHg DBP 90 mmHg	 60 (29%) 87 (41%)
Part II		**N (%)**
Awareness/Familiarity	Aware of JNC 7 Familiarity Aware of ACEP Policy Familiarity	101 (43%) 59 (60%) 107 (46%) 69 (30%)
Part III		**Mean (SD)**
Perceived Causes of Elevated BP in the ED	Pain Uncontrolled diagnosed HTN Undiagnosed HTN Anxiety inaccurate size BP cuff Inaccurate reading	*M* 8.3 (±2.0) *M* 7.5 (± 1.9) *M* 6.9 (±2.2) *M* 6.8(±2.2) *M* 5.3(±2.1) *M* 5.1(±2.3)

Table 3: Description of Attitudes and External Factors described by ED providers.

	BFAI	Barrier N (%)	Additional Items	Barrier N (%)
Provider Attitudes	Group norms of manager/director	180 (78%)	Work stress	105 (46%)
	Group norms of fellow colleagues	154 (67%)	Knowledge needed	19 (18%)
	Group norms of other colleagues	150 (65%)	Outcome expectation	38 (17%)
	Knowledge, Motivation	127 (55%)	Taking ownership	25 (11%)
	Lack of Involvement	93 (40%)	Skills needed	9 (4%)
	Involvement with ACEP Policy	93 (40%)	Confidence needed	6 (3%)
	Changing routines/working style	45 (19%)	Malpractice liability	5 (2%)
	Training/Education	30 (13%)		
	Resistance to working with protocols	9 (4%)		
	Doubts about innovation	11 (5%)		
External Factors				
Patient Factors	Patients motivation to change	138 (60%)	Lack of patient awareness	169 (74%)
	Age	91 (41%)	Financial burden	146 (65%)
	Ethnicity	81 (35%)	Causing discomfort	78 (34%)
	# of patient contacts	64 (28%)	Patient doubt for provider concern	41 (18%)
	Financial situation, SES	59 (26%)		
	Seem healthy/asymptomatic	49 (21%)		
Guideline Factors	Attractiveness	123 (53%)	Outcome expectation	11 (5%)
	Flexibility	56 (24%)	Expertise of staff	37 (16%)
	Time Investment	17 (7%)		
	Compatibility	14 (6%)		
Organizational Factors	Instrument availability	206 (90%)	Reinforcement by management	175 (76%)
	Supportive staff	194 (84%)	Administrative support	155 (67%)
	Space	162 (70%)	Organizational relationship	155 (67%)
	Timing	130 (57%)	Financial resources	132 (57%)
	Reimbursement, insurance system	56 (24%)	Formalized ACEP Policy	120 (52%)
			Medical director influence	109 (47%)
			Task oriented	107 (47%)
			Staff turnover	95 (41%)
			Staff	83 (36%)
			Logistical problems	79 (34%)
			Involvement	10 (4%)

Table 4: Stages of Logistic Regression.

	B	S.E.	Wald	Sig.	Exp (B)	Log Likelihood Ratio
Step 1						173.77
Provider Group	0.308	0.229	1.811	0.178	1.36	
HTN Policy	0.835	0.487	2.937	0.087	2.30	10.47
Step 2						
Knowledge-Part I	0.196	0.092	4.50	0.034	1.21	
ACEP Awareness	0.914	0.419	4.76	0.029	2.5	
Step 3						4.58
Knowledge-Part I	0.184	0.091	4.06	0.044	1.20	
ACEP Awareness	0.968	0.422	5.26	0.022	2.63	
Group Norms-Socialization	1.052	0.521	4.08	0.043	2.87	
Step IV						4.91
ACEP Awareness	1.012	0.458	4.88	0.040	2.15	
Provider Factors Composite Score	0.118	0.055	4.52	0.001	1.40	

Discussion

While we found providers generally report adequate knowledge and positive attitudes, the low referral rates in our study may mean that providers know what to do, but subconsciously or consciously, do not always do what they should. This study aimed to better understand why this is and had several strengths in doing so.

To our knowledge, this is the first study to use a multi-disciplinary random sample of ED providers who belong to one of three professional ED organizations (AMA, SEMPA, or ENA) across the U.S to identify provider barriers to referral for elevated BP in the ED. This study expanded on previous work and broadens our knowledge and understanding of factors associated with referral which is critical for the development of interventions to improve referral rates, which is a limitation in present literature. This survey revealed that two barriers that have important impacts on referral are awareness of the ACEP Policy and provider attitudes.

First, providers may be unfamiliar with the specific content of the ACEP Policy. In the sample described, mean unfamiliarity level was 40%. One explanation described by one ED provider in this study was that "…BP checks are done in an unconscious way, unmindful of the ACEP guideline…which may have skewed" some responses. Emergency department providers provide care for a variety of patients with an array of problems and therefore, may not be familiar with professional guidelines in all areas. Furthermore, referring a patient for follow up *may* be considered, by some, to be outside the scope of an RN, in some EDs. However, it is well within the scope of a RN to take every appropriate opportunity to assess a patient's BP and facilitate early detection of HTN, by informing a patient, at the very least, that their BP is not in an optimal range and encouraging follow-up outside of the ED visit with their primary care provider.

In addition to unfamiliarity with the ACEP Policy, providers may be unfamiliar with what defines HTN. More than half of providers identified the archived JNC 6 definition as the answer for Stage II

HTN, a definition nearly 15 years old, which defines stage 3 HTN as >180/110 mmHg. This suggests that translation of knowledge is poor; however, findings show it may take as long as one or two decades for research to be translated into practice [21].

Encouraging, the majority of providers accepted the ACEP Policy and believed it was their job to refer patients with elevated BP, which is consistent with other studies examining preventive care in the ED. Delgado et al. [22]. found that 73% of ED directors thought that preventive services should be offered in the ED. Likewise, Williams, Chinnis, and Gutman [23] found that the majority (58%) of ED physicians felt responsible for health promotion activities. Furthermore, medical liability was an interesting facilitator for referrals. Similar to our findings, Tanabe et al. found that providers perceived a relatively high risk of medical liability associated with *not* informing patients of their elevated BP [12]. While Tanabe et al. reported the meaning for their findings was 'unclear, it seems to be unclear in this study as well, which may suggest that further investigation is needed.

Third, patient-, guideline-, or organizational-related external barriers may, over time, affect provider's skills, knowledge, and confidence to refer. In the ED, patients may not perceive the potential benefit for a referral, especially when their BP is not the primary issue for which they sought care. Subsequently, ED providers may focus on what patients view as their problem. As a result, in time, this may compromise provider-patient communication given these conflicting ideas. However, this may provide some understanding for why so few providers referred in this study, while reporting patient-related barriers. This may pose as a major barrier to referral and possibly an area ripe for future research. For example, an intervention that focuses on shared decision-making or improving the provider-patient relationship may facilitate patient referrals and follow-up.

It is encouraging to note that the majority of responders did not report guideline factors to be a barrier and this is similar to findings found by Koh et al. [24] who examined barriers to the implementation of a fall prevention clinical practice guideline. This suggests that providers believe that the characteristics of the ACEP Policy itself does not present as a barrier to adherence.

Adherence to the ACEP Policy is challenging and may require changes beyond the control of the provider. Studies conducted in the ED have found time to be perceived as a barrier to implementing referrals for post-injury patients [25], performing universal HIV screening [26], substance abuse [27], and mandatory domestic violence screening in the ED [28]. Tanabe et al. found time to be a moderately important barrier to reassessing BP [12]. However, time was not reported as a major barrier to reassessment/referral of patients with elevated BP for most providers in this study. Nevertheless, given the fast-paced nature of the ED environment, time may always be an underlying issue and may be one challenge to overcome in order to adhere to the recommendations by the ACEP [29].

Limitations

Research findings show that "passive dissemination of guidelines does not necessarily change practice, nor do multifaceted interventions" [30]. However, multifaceted interventions built upon a careful assessment of barriers to guideline implementation may be more effective than those that are not [30]. Keeping this in mind, it was important to use a measure that examined a multitude of barriers. However, this proved to be a challenge, as no validated instrument was found that specifically examines the ED provider and/or ED provider barriers to referral for elevated BP. Therefore, the results of this study must be interpreted in the light of limitations regarding availability of measures. Furthermore, this study collected information by self-report. Providers may have reported 'socially acceptable' responses when completing the questionnaire, which may result in under-reporting of barrier; and subsequently, (2) there was no attempt made to assess actual practice by comparing responses to a chart audit, in which a disconnect has been previously found [6]. Furthermore, the sample obtained for the PAs and RNs were randomly selected from an ED organization, which may represent providers who are different from other ED providers. Lastly, a 36% response rate from physicians limits the ability to generalize.

Nevertheless, this study has considerable strengths. Although we report cross-sectional data, and despite obtaining only a 51% response rate, this was the first study that attempted to use a random, multi-disciplinary sample of ED providers across the U.S. to assess a multitude of barriers to referral. The information obtained from this approach to studying factors associated with provider practice patterns for elevated BP may serve as a basis for the successful implementation of interventions in the ED that address under-treated HTN in the ED population.

Conclusion

Given the adverse effects of undiagnosed and under-treated HTN and the simplicity of intervening when a patient has elevated BP, a guideline was published in 2006 by the ACEP that recommends all adults who have persistent elevated BP be referred for follow-up for possible HTN or BP management. However, adherence to this recommendation remains suboptimal. To understand why, we examined barriers to referral for elevated BP in the ED. We found that knowledge, attitudes, and external factors are associated with referral, yet awareness of the ACEP Policy and provider attitudes was two of the strongest predictors.

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Reference

1. Go A, Mozaffarian D, Roger B, Berry J, Borden W, et al. (2013) Heart disease and stroke statistics-2013 update: A report from the American Heart Association. Circulation, 127: e6-e245.
2. The Institute of Medicine (2010) A population-based policy and systems change approach to prevent and control hypertension. The National Academies Press, Washingon, DC.
3. Tanabe P, Steinmann R, Kippenhan M, Stehman C, Beach C (2004) Undiagnosed hypertension in the ED setting--an unrecognized opportunity by emergency nurses. J Emerg Nurs 30: 225-229.
4. Niska R, Bhuiya F, Xu J (2010) National Hospital Ambulatory Medical Care Survey: 2007 emergency department summary. Natl Health Stat Report : 1-31.
5. Decker W, Godwin S, Hess E, Lenamond C, Jagoda A (2006) Clinical Policy: Critical issues in the evaluation and management of adult patients with asymptomatic hypertension in the emergency department. Ann Emerg Med 47: 237-249.
6. Bauman B, Cline D, Cienki J, Egging D, Lehrmann J, et al. (2009) Provider self-report and practice: Reassessment and referral of emergency department patients with elevated blood pressure. American Journal of Hypertension 22: 604-610.
7. Tanabe P, Persell SD, Adams JG, McCormick JC, Martinovich Z, et al. (2008) Increased blood pressure in the emergency department: pain, anxiety, or undiagnosed hypertension? Ann Emerg Med 51: 221-229.
8. Fleming J, Meredith C, Henry M (2004) Detection of hypertension in the emergency department. Journal of Emergency Medicine 22: 636-638.
9. Backer HD, Decker L, Ackerson L (2003) Reproducibility of increased blood pressure during an emergency department or urgent care visit. Ann Emerg Med 41: 507-512.
10. Chernow SM, Iserson KV, Criss E (1987) Use of the emergency department for hypertension screening: a prospective study. Ann Emerg Med 16: 180-182.
11. (1998) Barriers to guideline adherence. Based on a presentation by Michael Cabana, MD. Am J Manag Care 4: S741-744.
12. Tanabe P, Cline DM, Cienki JJ, Egging D, Lehrmann JF, et al. (2011) Barriers to screening and intervention for ED patients at risk for undiagnosed or uncontrolled hypertension. J Emerg Nurs 37: 17-23.
13. Peters M, Harmsen M, Laurant M, Wensing M (2002) Room for improvement? Barriers to and facilitators for improvement of patient care. Ctr Qual Care Res.
14. de Vos ML, van der Veer SN, Graafmans WC, de Keizer NF, Jager KJ, et

al. (2010) Implementing quality indicators in intensive care units: exploring barriers to and facilitators of behaviour change. Implement Sci 5: 52.

15. Cabana MD, Rand CS, Becher OJ, Rubin HR (2001) Reasons for pediatrician nonadherence to asthma guidelines. Arch Pediatr Adolesc Med 155: 1057-1062.

16. Fleuren M, Weiffernick K, Paulussen T (2004) Determinants of innovation within health care organizations: Literature review and delphi study. Intern J Qual Health Care 16: 107-123.

17. Garber E, Desai M, Zhou J, Alba L, Angst D, et al. (2008) Barriers to adherence to cystic fibrosis infection control guidelines. Pediatr Pulmonol 43: 900-907.

18. Rothman K, Greenland S, Lash T (208) Modern Epidemiology. Lippincott Williams & Wilkins.

19. Souffront K, Chyun D, Kovner C (2015) Barriers to referral for elevated blood pressure in the emergency department and differences between provider type. J Clin Hypertens (Greenwich) 17: 207-214.

20. Chobanian A, Bakris G, Black H, Cushman W, Green L, et al. (2003) The Seventh Report of the Joint National Commettee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. JAMA 289: 2560-2572.

21. http://www.ahrq.gov/research/trip2fac.htm

22. Delgado MK, Acosta CD, Ginde AA, Wang NE, Strehlow MC, et al. (2011) National survey of preventive health services in US emergency departments. Ann Emerg Med 57: 104-108.

23. Williams JM, Chinnis AC, Gutman D (2000) Health promotion practices of emergency physicians. Am J Emerg Med 18: 17-21.

24. Koh SS, Manias E, Hutchinson AM, Donath S, Johnston L (2008) Nurses' perceived barriers to the implementation of a Fall Prevention Clinical Practice Guideline in Singapore hospitals. BMC Health Serv Res 8: 105.

25. Lee S, Brasel K, Lee B (2004) Emergency care practitioners' barriers to mental health assessment, treatment, and referral of post-injury patients. WMJ 103: 78-82.

26. Arbelaez C, Wright EA, Losina E, Millen JC, Kimmel S, et al. (2012) Emergency provider attitudes and barriers to universal HIV testing in the emergency department. J Emerg Med 42: 7-14.

27. Degutis LC (1998) Screening for alcohol problems in emergency department patients with minor injury: results and recommendations for practice and policy. Contemp Drug Probl 25: 463-475.

28. Yonaka L, Yoder MK, Darrow JB, Sherck JP (2007) Barriers to screening for domestic violence in the emergency department. J Contin Educ Nurs 38: 37-45.

29. Cameron K, Engel K, McCarthy D, Buckley B, Mercer K, et al. (2010) Examining emergencydepartment communication through a staff-based participatory research method: identifying barriers and solutions to meaningful change. Ann Emerg Med 56: 614-622.

30. Ronda G Hughes (2008) Patient Safety and Quality: An Evidence-Based Handbook for Nurses. Agency for Healthcare Research and Quality (US), Rockville, MD.