than are patients with other allergies (i.e., neither is a significant risk factor). There is no cross-reactivity between different classes of contrast medium. For example, a prior reaction to gadolinium-based contrast medium does not predict a future reaction to iodinated contrast medium, or vice versa, more than any other unrelated allergy."

[[14-15]]

Emergency medicine and radiology providers could benefit from additional awareness of ACR recommendations for managing administration of iodinated contrast media in the presence of a documented iodine or seafood allergy. Despite numerous evidence and recommendations from national organizations, the myth of iodine allergy and IV contrast still persists to a considerable degree.

Prior presentations

None.

Funding sources/disclosures

None.

Acknowledgments

None.

Christopher S. Sampson, MD*
Kara B. Goddard, PharmD
Starr-Mar'ee C. Bedy, PharmD
Julie A.W. Stilley, PhD
University of Missouri-Columbia, Department of Emergency Medicine, United States of America
*Corresponding author.
E-mail address: sampsoncs@health.missouri.edu

29 November 2018

https://doi.org/10.1016/j.ajem.2018.12.011

References

[1] National Institutes for Health Office of Dietary Supplements. Iodine fact sheet for health professionals. Available from https://ods.od.nih.gov/factsheets/Iodine-HealthProfessional/, Accessed date: 23 October 2018.
[2] Brenner DJ, Hall EJ. Computed tomography-an increasing source of radiation exposure. N Engl J Med 2007;357:2277–84.
[3] Larson DB, Johnson LW, Schnell BM, et al. National trends in CT use in the emergency department: 1995–2007. Radiology 2010;258(1):164–73.
[4] Pradubpongsa P, Dhana N, Jongjarearnprasert K, et al. Adverse reactions to iodinated contrast media: prevalence, risk factors and outcome-the results of a 3-year period. Asian Pac J Allergy Immunol 2013;31(4):299–306.
[5] Schabelman E, Wiitting M. The relationship of radiocontrast, iodine, and seafood allergies: a medical myth exposed. J Emerg Med Nov 2010;39(5):701–7.
[6] Nilsson R, Ehrenberg L, Fedorcsak I. Formation of potential antigens from radiographic contrast media. Acta Radiol 1987;28:473–7.
[7] Stejkal V, Nilson R, Grepe A. Immunologic basis for adverse reactions to radiographic contrast media. Acta Radiol 1990;31:605–12.
[8] Can DH, Walker AC. Contrast media reactions: experimental evidence against the allergy theory. Br J Radiol 1984;57:469–73.
[9] Daul CB, Morgan JE, Lehrer SB. Hypersensitivity reactions to Crustacea and mollusks. Clin Rev Allergy 1993;1(1):201–22.
[10] Shehadi WH. Adverse reactions to intravascularly administered contrast media. AJR 1975;24:145–52.
[11] Van Ketel WG, van den Berg WHHW. Sensitization to povidone-iodine. Dermatol Clin 1990;8:107–9.
[12] Waran KD, Munsick RA. Anaphylaxis from povidone-iodine (letter). Lancet 1995; 345:1506.
[13] Beaty AD, Lieberman PL, Slavin RG. Seafood allergy and radiocontrast media: are physicians propagating a myth? Am J Med 2008;121(2):158 e151–154.
[14] ACR Manual on Contrast Media (Version 10.3); 2018.
[15] Boehm I. Seafood allergy and radiocontrast media: are physicians propagating a myth? Am J Med 2008;121(8):e19.

Emergency provider documentation of sexual health risk factors and its association with HIV testing: A retrospective cohort study

Emergency departments (ED) are targeted areas for diagnosing human immunodeficiency virus (HIV) [1]. There is a paucity of data, however, characterizing emergency provider (EP) sexual history documentation (SHD) practices and its association with HIV testing [2-4]. In this regard, we conducted a retrospective cohort study of patients 18 years and older seen at an ED of a level 1 trauma center in Cleveland, Ohio from January 1, 2016 to December 31, 2016. Inclusion criteria were patients' first index visit in 2016 for those patients with billing codes for either a sexually transmitted infection (STI) diagnosis or STI laboratory testing. Patients were excluded from the study if they were transferred from an outside hospital, admitted, left against medical advice, previously diagnosed with HIV, or pregnant at the time of the visit. Data gathered included demographics and laboratory tests, as well as free text from each patient chart. SHD consisted of 7 components based on the CDC's recommendations for STI screening, which include questions about partners, prevention of pregnancy, protection, type of sexual practices, past history of STIs, and patient's sexual orientation [5]. We further included whether patients had a history of intravenous drug use (IVDU) to incorporate an additional known risk factor for HIV transmission [6,7]. In this study, a score of 1 point was given for each of the seven aspects. This study was approved by the University Hospitals Cleveland Medical Center Institutional Review Board.

Descriptive statistics and Pearson's chi-square tests were used to describe demographic characteristics, SHD, and HIV testing, as well to assess the association between both HIV testing and HIV diagnosis within 1 year of index visit. The association among total SHD score and likelihood of HIV testing was assessed with a logistic regression model. This association was adjusted for patient age, race, gender, number of providers seen at the index visit, and total SHD score, which was a shifted continuous variable ranging from 1 to 8 (instead of 0–7) to allow for assessment of the log-linear relationship with the dependent variable. Two sensitivity analyses were conducted with SHD coded as ordinal categorical (0,1− 3,4+) and binary categorical (0 = no, 1+ = yes). A significance level of 5% determined statistical significance. Statistical analyses were conducted using Jamovi Project (Version 0.9.2.12).

We identified 1450 initial patient visits in 2016. Patients were primarily black (90%), female (77%), with a median age of 27 years (IQR, 22–35) of which only 101 (7%) were tested for HIV and 841 (58%) free text notes had SHD (Table 1). When sexual history was documented, it rarely consisted of >3 of the 7 aspects (17%). The most frequently documented aspect of the sexual history were 'partners' (40%), IVDU (27%), and 'protection' (20%) (Fig. 1). In the unadjusted analysis, the only

Table 1
Patient demographics and index visit characteristics.

Variable	
Count	1450
Age, years	27 (22–35)
Female	1121 (77%)
Race/ethnicity	
Black	1311 (90%)
Caucasian	111 (8%)
Other	28 (2%)
Number of providers seen at ED index visit	3 (1–4)
STI laboratory testing	1429 (99%)
STI discharge diagnosis	508 (35%)
HIV testing	101 (5%)

Reported are either median (Q_1 - Q_3) or count (%); STI = sexually transmitted infection; HIV = human immunodeficiency virus; ED = emergency department. [a] Patients who received laboratory testing for an STI at the ED index visit; [b] Patients discharged from the ED index visit with a diagnosis of an STI. [c] Patients who received laboratory testing for HIV at the ED index visit.

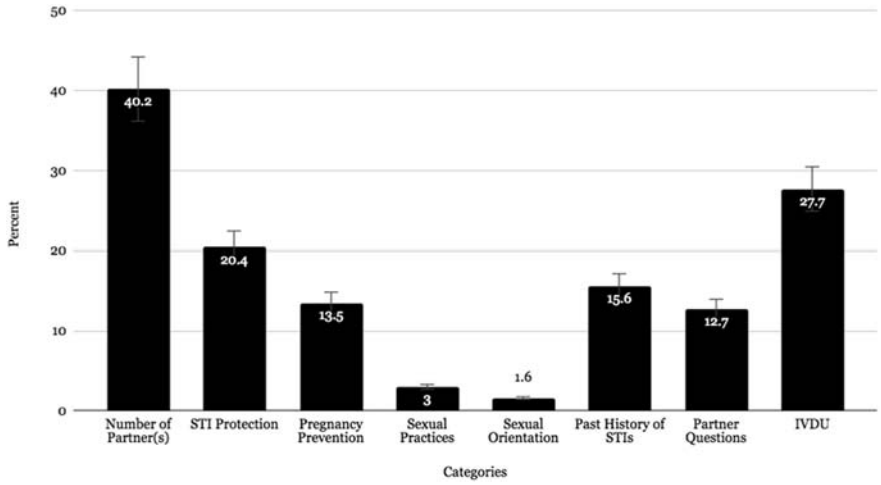

Fig. 1. Frequency of sexual history documented by sexual health risk factor.

variable significantly associated with SHD was gender (68.6% male vs 54.5% female gender $p < 0.01$). The 35% of patients ($n = 508$) with a discharge diagnosis of an STI were more likely to have SHD (64.1%) compared to those without a similar discharge diagnosis (54.2%) ($p < 0.01$). In our adjusted analysis, SHD was not a significant predictor of HIV testing (aOR, 1.39; 95% CI, 0.86–2.17; $p = 0.14$), though age (aOR, 1.03; 95% CI, 1.02–1. 05, $p < 0.01$), male gender (aOR, 4.01; 95% CI, 2.58–6.24; $p < 0.01$), and Caucasian vs. Black race (aOR, 4.25; 95% CI, 2.50–7.24; $p < 0.01$) were significant predictors. In the two sensitivity analyses, SHD (coded as an ordinal and binary variable) remained a non-significant predictor of ordering an HIV test, though age, gender, and race remained significant predictors.

Patients were followed for one year after the index visit to assess frequency of STIs and HIV diagnosis. 627 (43%) and 44 (3%) patients had an additional STI diagnosis and a new HIV diagnosis, respectively, in the chart at their next visit.

This study was limited by its reliance on EMR documentation as surrogate for risk factor assessment, as well as a significant proportion of female patients, which may not be applicable to other settings [8]. However, pertinent risk factors *should be* documented in patient charts. The strength of this study is its direct focus on SHD and significantly larger sample size compared to other studies [2-4], as well as the first characterization of the types of sexual health risk factors documented by EP in the ED setting.

In conclusion, SHD for patients presenting with concern for STIs in the ED remains suboptimal and was not associated with HIV testing, though 43% and 3% of patients presented within one year with an STI and HIV diagnosis, respectively. Targeted efforts to educate EP on assessment of sexual health risk factors for patients presenting with STI-related chief complaints may represent an opportunity to identify those at high-risk for undiagnosed HIV infection earlier rather than later.

Sources of support

HIV Medical Association Medical Student Research Award.

Declarations of interest

JY and JN received funding from the AIDS Funding Collaborative of Cleveland for the 2017–2018 academic year to start and HIV/syphilis screening program in the Department of Emergency Medicine at University Hospitals Cleveland Medical Center, Cleveland, OH.

Author contributions

JN, AN, BG, JY conceived the study. JN, JC, JC were responsible for data collection. JN, AN provided statistical advice on study design and analyzed the data. JN drafted the manuscript, and all authors contributed substantially to its revision. JN takes responsibility for the paper as a whole.

Joshua D. Niforatos, MTS
Cleveland Clinic Lerner College of Medicine of Case Western Reserve University, Cleveland, OH, United States of America
Corresponding author at: 9500 Euclid Avenue, Na/21, Cleveland, OH 44195, United States of America.
E-mail addresses: jxn187@case.edu

Amy S. Nowacki, PhD
Cleveland Clinic Lerner College of Medicine of Case Western Reserve University, Cleveland, OH, United States of America
Department of Quantitative Health Sciences, Cleveland Clinic, Cleveland, OH, United States of America

Jacqueline Cavendish
University Hospitals Cleveland Medical Center, Cleveland, OH, United States of America

Barbara M. Gripshover, MD
John T. Carey Special Immunology Unit, Department of Medicine, Division of Infectious Diseases and HIV Medicine, University Hospitals Cleveland Medical Center, Cleveland, OH, United States of America

Justin A. Yax, MPH
Department of Emergency Medicine, University Hospitals Cleveland Medical Center, Cleveland, OH, United States of America

5 December 2018
https://doi.org/10.1016/j.ajem.2018.12.016

References

[1] Anderson ES, White DAE. Public health conditions for successful broad-scale integration of HIV and HCV screening in emergency departments. Am J Public Health 2018; 108:591–2. https://doi.org/10.2105/AJPH.2018.304364.
[2] Jenkins WD, LeVault KR. Sexual history taking in the emergency department - more specificity required. J Emerg Med 2015;48:143–51. https://doi.org/10.1016/j.jemermed.2014.06.051.

[3] Schechter SB, Romo DL, Cohall AT, Neu NM. Approach to human immunodeficiency virus/sexually transmitted infection testing for men at an urban urgent care center. Sex Transm Dis 2017;44:255. https://doi.org/10.1097/OLQ.0000000000000571.
[4] Goyal M, McCutcheon M, Hayes K, Mollen C. Sexual history documentation in adolescent emergency department patients. Pediatrics 2011;128:86–91. https://doi.org/10.1542/peds.2010-1775.
[5] Clinical Prevention Guidance. STD treatment guidelines, (2018). https://www.cdc.gov/std/tg2015/clinical.htm; 2015, Accessed date: 6 December 2018.
[6] Haukoos JS, Lyons MS, Lindsell CJ, Hopkins E, Bender B, Rothman RE, et al. Derivation and validation of the Denver human immunodeficiency virus (HIV) risk score for targeted HIV screening. Am J Epidemiol 2012;175:838–46. https://doi.org/10.1093/aje/kwr389.
[7] Hsieh Y-H, Haukoos JS, Rothman RE. Validation of an abbreviated version of the Denver HIV risk score for prediction of HIV infection in an urban emergency department. Am J Emerg Med 2014;32:775–9. https://doi.org/10.1016/j.ajem.2014.02.043.
[8] Pearson WS, Peterman TA, Gift TL. An increase in sexually transmitted infections seen in US emergency departments. Prev Med 2017;100:143–4. https://doi.org/10.1016/j.ypmed.2017.04.028.

Airtraq® is superior to the Macintosh laryngoscope for tracheal intubation: Systematic review with trial sequential analysis

The Airtraq® laryngoscope (Prodol Ltd., Vizcaya, Spain) is a one-time-use video-guided laryngoscope for tracheal intubation of patients with either normal or difficult airways [1]. Compared with the conventional laryngoscope, the efficacy of the Airtraq for tracheal intubation has been reported to be inconsistent in adults [2,3]. Here, we performed a systematic review and meta-analysis of several RCTs to compare the usefulness of the Airtraq versus the Macintosh laryngoscope for tracheal intubation in an adult population.

We conducted this meta-analysis according to the recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement [4]. We only included a study in the analysis if it was a prospective randomized trial or it compared the Airtraq and the Macintosh laryngoscope in adults. A comprehensive literature search was performed using PubMed, Cochrane Central Register of Controlled Trials, EMBASE, and Scopus (Table 1).

Data extracted from the eligible studies included the success rate (success on the first attempt), the intubation time, and the assessment of glottic visualization using the Cormack-Lehane classification (2 versus ≥3). We also conducted trial sequential analysis (TSA) [5]. In subgroup analysis, we separated these parameters to assess the influence of the airway condition (normal versus difficult) and laryngoscopist skill (novice versus experienced). We performed all statistical analyses with Review Manager (ver. 5.2, Nordic Cochrane Centre, The Cochrane Collaboration, Copenhagen, Denmark). We combined all data from the individual trials and used DerSimonian and Laird random effects models for our calculations. Pooled effect estimates for the binary variables of success rate and glottic visualization are shown as RR with the 95% CI. Pooled differences in intubation time between the two devices are expressed as the weighted mean difference (WMD) with 95% CI. To determine the percentage of variability due to heterogeneity rather than that due to sampling error, we used the Cochran Q and I^2 statistics to test for homogeneity of the effect size across all trials [6].

Twenty-nine articles describing 31 trials met the inclusion criteria. The Airtraq was used to intubate 1211 patients and the Macintosh laryngoscope was used to intubated 1203 patients. The rate of successful tracheal intubation with the Airtraq in the present meta-analysis of these 31 trials was significantly higher than that with the Macintosh laryngoscope (RR = 1.07, 95% CI, 1.03–1.11, $P = 0.001$, Cochrane's Q = 108.6, $I^2 = 72\%$). TSA corrected the 95% CI to 1.02–1.11. The Z curve met the TSA monitoring boundary for benefit, and the accrued sample size ($n = 2414$) satisfied the previously estimated RIS ($n = 1298$). Intubation time with the Airtraq was significantly shorter than that with the Macintosh laryngoscope (WMD = −9.66, 95% CI 1–13.7 to −5.26, $P < 0.0001$, Cochrane's Q = 1070.1, $I^2 = 97\%$). TSA resulted in correction of the 95% CI to −14.9 to −4.45. The Z curve crossed over the boundary of futility, and TSA further showed the accrued information size ($n = 2192$) to be 72.9% of the previously estimated RIS ($n = 3003$). Assessment of glottic visualization in 17 of the 31 trials examined showed that the Airtraq provided better glottic visualization than the Macintosh

Table 1
Characteristics of included studies

No.	Author	Year	Number of patients (ATQ/Mac)	ASA status	Status of airway	Laryngoscopists
1	Maharaj CH	2006	60 (30/30)	I–III	Normal	Novice
2	Maharaj CH	2007	40 (20/20)	I–III	MILS	Experienced
3	Maharaj CH	2008	40 (20/20)	I–III	Predict difficult airway	Experienced
4	Ndoko SK	2008	106 (53/53)	I–III	Morbidly obese patients	Experienced
5	Hirabayashi Y	2009	200 (100/100)	N/A	Normal	Novice
6	Hirabayashi Y	2009	20 (10/10)	N/A	Normal	Novice
7	Wang WH	2009	40 (20/20)	I–II	Normal	Experienced
8	Gaszynski T	2009	68 (36/32)	N/A	Mobidly obese patients	Experienced
9	Dhonneur G	2009	212 (106/106)	III	Mobidly obese patients	Experienced
10	Chalkeidis O	2010	63 (35/28)	I–III	Normal	Experienced
11	Park SJ	2010	74 (37/37)	I–II	Normal	Novice
12	Koh JC	2010	50 (25/25)	I–II	MILS	Experienced
13	di Marco PD	2011	108 (54/54)	I–III	Normal	Novice
14	de Oliveira GS	2011	30 (15/15)	I–II	Normal	Novice
15	McElwain J	2011	60 (29/31)	I–III	MILS	Experienced
16	Ferrando C	2011	120 (60/60)	I–III	Normal	Novice
17	Nishiyama T	2011	38 (18/20)	I–II	Normal	Experienced
18	Puchner W	2011	40 (20/20)	I–II	Normal	Experienced
19	Mont Gst	2012	100 (50/50)	N/A	Normal or predict difficult airway	Experienced
20	Amor M	2013	120 (60/60)	I	MILS	Experienced
21	Bhandari G	2013	80 (40/40)	I	Normal	Experienced
22	Bensghir M	2013	70 (35/35)	I–II	Difficult, thyroid surgery	Experienced
23	Zhao H	2014	149 (74/75)	I–II	Normal	Novice
24	Saracoglu KT	2014	62 (31/31)	I–II	Normal	Experienced
25	Ranieri Jr. D	2014	132 (68/64)	III	Mobidly obese patients	Experienced
26	Colak A	2015	100 (50/50)	I–III	Normal	Experienced
27	Vijayakumar V	2016	90 (45/45)	I–II	MILS	Experienced
28	Al-Ghamdi AA	2016	43 (21/22)	I–II	Normal	Experienced
29	Castillo-Monzon CG	2017	46 (23/23)	III	Morbidly obese patients	Experienced

ATQ: Airtraq, Mac: Macintosh laryngoscope, MILS: manual in-line neck stabilization, ASA: American Society of Anesthesiologist, N/A: not available.