UHN Canada's Hospital

Current Review of Weapons Detection Publications

Main Takeaways Messages

Overall, numerous studies demonstrate that weapon detectors increase the detection and confiscation of weapons. Additionally, survey-based studies show that healthcare workers and the public are generally not opposed to weapons detection and do not perceive it as bringing negative attention. However, there is no conclusive evidence that weapons detection reduces the impact or frequency of workplace violence (WPV) incidents. Studies also highlight the need for careful planning for confiscating weapons, and some hospitals move away from weapons detection to improve patient experience. Many studies were performed in the 1990s and early 2000s, with fewer studies conducted post-pandemic, making their findings potentially less relevant to the current environment. In conclusion, implementing weapons detection will increase the number of confiscated weapons, but its impact on WPV overall remains inconclusive.

Literature Reviews

1. Blando, J. D., Cramer, R. J., & Szklo-Coxe, M. (2019). Hospital security programs and policies related to guns and other weapons. Journal of healthcare management, 64(3), 157-166.

A validated anonymous online cross-sectional survey gathered data from security professionals affiliated with the International Association for Healthcare Security & Safety, operating in the United States. Typically, members of this organization hold security roles, often serving as directors of security within hospitals or hospital systems. The survey revealed that 48% of respondents utilized portable metal detectors like wands. The author speculated that this lesser percentage might stem from hospital administrators favoring a customer-friendly business approach, notwithstanding the fact that many hospital visitors support, and even appreciate, the use of metal detectors for the sense of security they offer.

2. Blando, J. D., Paul, C., & Szklo-Coxe, M. (2021). Risk factors for workplace encounters with weapons by hospital employees. Public Health in Practice, 2, 100105.

An online cross-sectional survey was conducted among hospital security directors affiliated with International Association for Healthcare Security & Safety, operating in the United States. The survey was to evaluate the links between organizational factors and the frequency of weapons confiscation. The survey discovered that hospitals with metal detectors were 5 times more likely to frequently confiscate weapons. As well, hospitals with psychiatric units are more likely to frequently confiscate weapons, however, this may be due to standardized procedures related to searching patients before admission to the psychiatric unit. Consequently, the study concluded that searching patients and metal detectors are effective means of confiscating

weapons before they enter the hospital.

3. Huang, C. J., Boulos, A. K., Field, S., Wang, V. J., & Yen, K. (2024). Workplace violence in the pediatric emergency department: a national survey of physicians in the United States. Pediatric emergency care, 40(4), 249-254.

A recent cross-sectional survey of 207 US emergency department pediatric physicians investigated physicians' perspectives on topics related to WPV such as metal detectors. The survey found that 67% of physicians were in favour of weapon detection, 14% felt neutral towards weapons detection and no physicians in hospitals that had metal detectors opposed their use. Additionally, in the discussion section, the study referenced a hospital that witnessed an increase of 200 weapons detected per month after implementing metal detectors.

4. Kelly, M. (2020). Violent Attacks Against Emergency Physicians Remain a Problem: Are Hospitals Doing Enough to Protect Them? Will Congress?. Annals of Emergency Medicine, 75(2), A11-A14.

This article, written in a news/commentary style, highlights numerous pros and cons regarding metal detectors in hospitals. It states that a survey revealed most people encourage hospitals to do more to address WPV, such as adding metal detectors. The article discusses hospitals that are adding metal detectors and those that have removed them to improve patient experience. The author lists counterpoints, noting that while metal detectors decrease the number of firearms, chemical sprays, and other weapons, there is no data showing this leads to fewer dangerous events in the ED. Additionally, metal detectors require carefully planned confiscation and safe storage procedures and create a rate-limiting step, causing delays in care and triaging. The article then states that metal detectors alone are not enough and other initiatives such as education are required.

5. Malka, S. T., Chisholm, R., Doehring, M., & Chisholm, C. (2015). Weapons retrieved after the implementation of emergency department metal detection. The Journal of Emergency Medicine, 49(3), 355-358.

A retrospective review of security records for a 26-month period was performed to investigate the effectiveness of metal detectors. A metal detector and "no weapons" signage were implemented at the entrance of an urban private community teaching hospital Emergency Department (ED), situated in the Midwest and receiving 110,000 visits annually. This ED, operating as a Level 1 trauma center catering to both adult and pediatric patients, screens all ambulatory visitors upon entry to the registration area using an arch-style walk-through metal detector supervised by security personnel. During the 26-month period, a total of 5,877 weapons were confiscated, averaging 218 per month. This included 268 firearms (4.6%), 4,842 knives (82%), 512 chemical sprays (8.7%), and 275 other potential weapons like brass knuckles, stun guns, and box cutters (4.7%). The count of confiscated guns decreased significantly from 2012 to 2013 (from 182 to 47; $p < 0.001$), while the number of knives, chemical sprays, and other potential weapons increased over the same period. Security observed people begin to enter the building and then turn around after seeing the metal detection system. After metal detection measures were introduced, hospital maintenance found discarded weapons in the landscaping outside the ED.

6. Meyer, T., Wrenn, K., Wright, S. W., Glaser, J., & Slovis, C. M. (1997). Attitudes toward the use of a metal detector in an urban emergency department. Annals of emergency medicine, 29(5), 621-624.

A survey of 176 patrons and 95 employees at an urban university hospital in Nashville, Tennessee was performed to investigate attitudes of patients, their family and friends, and ED staff toward a

walk-through metal detector in the ED. The study found that 80% of patrons and 85% of employees expressed satisfaction with the metal detector. A high proportion of both patrons (89%) and employees (73%) reported feeling safer due to its presence. Only a small percentage of patrons (12%) and employees (10%) felt their privacy or others' privacy was compromised. Additionally, less than 1% of patrons indicated reduced likelihood of returning to the ED because of the metal detector, while 39% stated it made them more inclined to return. No notable differences were observed based on age, sex, or race.

7. Richardson, S. K., Ardagh, M. W., Morrison, R., & Grainger, P. C. (2019). Management of the aggressive emergency department patient: non-pharmacological perspectives and evidence base. Open access emergency medicine, 271-290.

This review discusses the findings of papers investigating the use of weapons detection in hospitals. The review found that the use of metal detectors showed mixed effects, with some staff and consumers feeling reassured, while others noted that despite identifying and removing weapons, overall violence levels were not reduced, and there could be potential negative publicity. The authors stated that most studies on this topic were conducted in the 1990s, and more recent research remains inconclusive about the effectiveness of this approach. While recent studies have shown increased rates of weapon confiscation and improved perceptions of safety among staff and consumers, there are no evaluation studies demonstrating a reduction in violence. Additionally, these screening processes do not cover all entry points to the ED, particularly ambulance access.

8. Simon, H. K., Khan, N. S., & Delgado, C. A. (2003). Weapons detection at two urban hospitals. Pediatric emergency care, 19(4), 248-251.

A prospective evaluation study was conducted at both an emergency department within a general hospital, receiving 85,000 visits annually, and an emergency department within a children’s hospital, with 45,000 visits per year, situated in Atlanta, Georgia. The study aimed to examine the weapons confiscated by metal detectors positioned at the entrances of these emergency departments. Before the investigation, both the general hospital and the children's hospital had established weapons detection systems. At the general hospital, security personnel, a roped-off region, and a walk-through metal detector screened individuals entering the emergency center. Similarly, the children's hospital had a metal detector at the main entrance, manned by 24-hour security. Over an 8-month period, a total of 3,706 metallic weapons were seized from the two facilities, with 3,446 retrieved from the general hospital and 260 from the children’s center. The types of weapons confiscated at the general hospital versus the children’s hospital were as follows: guns (4 vs. 0), knives (2,048 vs. 114), box cutter/razors (596 vs. 37), scissors (70 vs. 53), chemical sprays (205 vs. 50), tools (73 vs. 6), and miscellaneous items (450 vs. 0). Metal detectors, though part of a broader hospital security strategy, may not fully prevent determined individuals from bringing weapons into emergency departments, especially non-metallic ones or through alternative entrances. However, when combined with uniformed security, emergency alert systems, and restricted access areas, they contribute to deterring many weapons from entering. While some studies suggest metal detectors alone may not significantly impact assault rates, the confiscation of nearly 4,000 weapons in this study, particularly guns, supports their effectiveness in deterring potential violence within urban emergency centers, given the prevalence of gun ownership in the area.

9. Vilke, G. M., Billberry, E., Bongbong, D. N., Castillo, E. M., Brennan, J., & Chan, T. C. (2023). Impact of implementation of a new weapons screening at an urban emergency department. The Journal of Emergency Medicine, 65(6), e594-e599.

This study utilized a pre-post design to compare weapon screening and confiscation before

after the implementation of a new screening program. Multiple aspects of the weapons screening program were evaluated at 2 and 6 months prior to and after the protocol was initiated at an urban ED. In the Pre-Screen periods, only patients primarily seeking care for mental health were screened prior to entry. In the Post-Screen periods, all patients and visitors were screened with walk-through magnetometers or wand metal detectors, and additional screening checks were initiated. The number of individuals screened and the number of weapons found were measured. The study found that the number of people screened and number of weapons confiscated increased from 511 to 13149 patients screened and 15 to 194 weapons confiscated after 2 months, and 1701 to 43321 patients screened and 103 to 567 weapons confiscated after 6 months. However the study does not report additional findings related to the impact of the metal detectors.