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Patterns in Healthcare Serial Murderers

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Background: Serial Murder by Healthcare Providers

Interpersonal violence against patients and health care providers is a serious concern for healthcare administrators and clinicians [1]. Leaders of healthcare organizations have instituted changes to prevent such violent incidents through improvements in physical environments and mandatory educational sessions [2]. High violence departments in health care environments are targeted for prevention and early recognition of predictors on impending violent situations [3]. Health care providers and patients are vulnerable to harm despite consistent and concentrated safety activities implemented by health care systems and providers.

Although health care serial murder (HCSM) or murder of patients by healthcare providers is a rare occurrence, [4] more attention needs to be paid to identifying and responding to the murders of patients by healthcare providers, one of the most serious threats to patient safety [5]. Although concerns about healthcare providers who murdered patients have been raised for decades; [6,7, 8, 9] many clinicians and administrators have relied on news accounts. They have found few studies making an association between empirical evidence and the certainty that a healthcare provider has murdered patients. However, perhaps due to news accounts and increased research, more attention is being paid to health care killers of patients, some of whom are serial murderers [10, 11, 12]

Serial murder is defined as "The unlawful killing of two or more victims by the same offenders, in separate events." [13] p9 In addition to the personal decision to murder patients based on unique reasons, healthcare providers kill patients in the settings where they work. Their motives might be many and difficult to isolate.14 For example, murder victims may be selected based on availability, vulnerability, and desirability [13]. Murder is an interpersonal act of violence, an egregious example of a safety threat for patients.

Published accounts about healthcare providers convicted as serial killers, such as Charles Cullen [5, 15] and more recently Lucy Letby, [16] are sensationalized by the press. These contemporary angels of death11 differ from other serial killers in that they kill where they work and have routine access to extremely vulnerable people. This article reviews patterns identified in the circumstances of patients murdered by convicted healthcare providers. It examines a recent case of healthcare provider serial murder and suggests strategies that might raise awareness and stimulate action on the possibility that a healthcare provider was murdering patients in hospitals and must be investigated.

Patterns/Indicators

A few indicators of intentional harm of patients have been considered suspicious and can be correlated with the crime of patient

murder. For example, increased counts of patient deaths and resuscitation/cardiopulmonary arrests incidents [6, 7, 17] may have alerted staff on clinical units to a serious patient safety threat. Nurses and physicians that provide direct care to patients in critical care units may have noticed that many patient deaths and resuscitation/cardiopulmonary arrest incidents have increased in a short time and seem very odd compared to their clinical experience. Another frequent indicator of suspicion is the higher incidence of deaths on specific shift, specifically linked to a staff member's shifts worked [8,11].

Awareness of a problematic pattern of increased, critical clinical events may not convince hospital leaders to launch a quality improvement investigation or to initiate a Failure Mode and Effect Analysis18 or Root Cause Analysis to review alarming incidents. These indicators may be interpreted as insufficient evidence to convince health care administrators that murders are occurring in their hospitals. Criminal investigations are also difficult for police and other legal experts to solve and prove murder [19].

Also, monthly or quarterly indicators showing a marked increase in these outcomes may not be easily accessible for frontline providers' review or presented in trended comparisons as before and after quarterly measures of death rates and resuscitation/cardiopulmonary arrests events. Morbidity and mortality, quality improvement, and patient safety committees track patient deaths, but hospital staff may not have a data entry option for documenting resuscitation/cardiopulmonary arrest incidents quarterly. Direct care staff may not see aggregated data or quarterly bar charts suggesting that these few indicators are suspicious of patient harm, require attention, not explained by the acuity of patients cared for, and could be caused by a serial killer.

Disbelief among Healthcare Providers

The idea that a co-worker is a criminal or a murderer and suspicions may initially be dismissed and not reported to supervisors because of initial and persisting disbelief of its probability. Staff's responsibilities center on the care of acutely ill patients with complex needs. However, murders by HCSMs continue to be publicized and the suffering of patients when being murdered and the resultant devastation for families, health care providers, and the reputations of health care organizations may not abate.15 One question persists about why healthcare providers performing serial murders are able to kill patients over time in the same patient unit without notice and capture.

Acknowledging the bizarre possibility that a serial killer is a member of a caregiving team in an intensive care unit or neonatal nursery contradicts the ethical principles that form healthcare providers' commitment to the care of patient [14, 20] The concerns of team members about colleagues that harm patients might temporarily increase when news reports publicize that a healthcare provider is charged and indicted for murdering patients. However, disbelief and fear of litigation could delay the clinical staff reporting suspicions to hospital leaders.

In an example of a serial murderer, a physician explained his rationales for writing high dose medication orders of fentanyl to clinicians that questioned his practice decisions. Nurses and pharmacists also violated opioid protocols [21] Many nurses administered fentanyl doses. In that situation, the state board of medicine suspended the physician's license; the hospital system reported pharmacists and nurses to respective professional state boards. All caregivers were charged and judged as responsible [21]. The physician's motives may be difficult to identify but could include omnipotence, thrill, intellectual exercise, or no reason [10]

Hospital Environments of Care: Standard

All healthcare institutions, such as hospitals and long-term care agencies, bear the highest level of responsibility for providing healthcare services that prevent injury and are rooted in the ethical principle of do no harm. Healthcare organizations are committed to providing quality and safe services [22]. Their interdisciplinary teams work collaboratively to improve the physical environment and processes of care that ensure patient safety [23] They assess systems failures consistently and respond to safety threats reported by staff on their intranets. Administrators and clinicians focus teams' attention on safety threats, monitor events on a continuous basis, and intervene to correct patient care processes and other challenges.

Teams composed of staff and leaders meet regularly to assess the culture of safety and specific incidents that signal the possibility of harm to patients, as in the case of good catches where actions prevent harm from occurring, after errors are reported, and when other incidents or situations demand process improvement and Root Cause Analysis. Team members perform many interventions characteristic of integrated safety systems [22]. Of note is the Environment of Care Standard EC.04.01.01 that describes elements of performance: "The hospital establishes a process(es) for continually monitoring, internally reporting, and investigating specific outcomes."22,pPS23 A specific example is "Injuries to patients or others within the hospital's facilities."22,pPS23 Patient safety, quality improvement, and morbidity and mortality committees in health systems routinely assess patient safety challenges and outcomes associated with harm in patients.

It is challenging to explain, although attributable to complex hospital systems, how healthcare providers do not bring their suspicions to leaders that a killer may be working with them in patient units. Leaders may not respond to repeated complaints, fearing damage to the reputation of the health care organization or litigation when investigating the situation of a potential murderer [15].

Lucy Letby: Brief Case Analysis

Lucy Letby, a former nurse who worked at the Countess of Chester's neonatal unit in Manchester, United Kingdom, was charged with murdering 7 babies and attempting to murder [15]. She was tried and convicted of murder and attempted murder.24 Her trial began in October 2022 and was conducted at Manchester Crown Court. Like other healthcare providers that murdered patients, Ms. Letby's anchor point or place-specific environment for killing was her employing hospital's neonatal unit [13,20] Employing institutions are the common environment in which murders by healthcare providers have been committed [13].

The 33-year old accused and convicted felon was questioned by the prosecutor during a 10-month trial. She denied all murder charges. She also blamed infants' deaths on raw sewage [24] According to a news report on the trial, [25] Letby lied when describing details of her arrest. When questioned about an affair with a married, physician colleague, [25] Letby denied it and said he was a friend. Text messages suggested otherwise.

Of issue to investigators evaluating cases in which serial murder is suspected, evidence tends to be largely circumstantial. Evidence is complicated to prove because of routine health care practices and clinical outcomes that are difficult to connect to cause of death [26, 27] Hospital rooms are cleaned when beds are vacated after death and discharge. In Letby's case, deaths were not reported correctly suggesting that high fatality rates could not stimulate an administrative response.28 Patients die in hospitals; however, high rates of deaths and near-death cardiopulmonary arrests were a concern and increased over months in the neonatal unit. When patient alarms sounded one night, a nurse said, "I wonder if Lucy's working tonight."[29] Despite reports to a nurse administrator, Ms. Letby continued to work. Later in the investigative process, a physician recommended that the deaths of four babies be analyzed forensically [28].

Ms. Letby killed infants by injecting air or insulin intravenously through tubing already in place and by force feeding milk or air through a nasogastric tube. Disconnecting or dislodging breathing tubes and smothering were also examined as possible causes of death.30 Using these different methods of harming infants was interpreted as a cover up or diversion [15, 24, 25, 28, 31, 32] Also, prior to dismissal, Letby damaged medical equipment on the unit when still employed and warned staff of an intravenous tubing missing a stopper, pointing out a potential air embolus. Perhaps seeking support after arrest, she wrote to three triplet boys on their birthday and offered sympathy for the death of one brother. Letby was present in court for the verdicts delivered for murdering 7 babies between June 2015 and June 201632 and did not appear in court for subsequent verdicts [29].

Ms. Letby was described as calculating and devious, [24] negating the societal expectations of her nursing role as a caregiver intent on doing good and avoiding harm to vulnerable patients. She violated peoples' trust in Britain's National Health Service [29]. Her knowledge of healthcare services and access to patients, medications, and in place tubing (intravenous and nasogastric) provided opportunities to hide observable, murdering behaviors. The neonatal unit where she worked as a nurse became a crime scene; it

provided her with access to extremely vulnerable infants at risk.

Nurses on the neonatal unit were suspicious of infant deaths. Letby likely manipulated her co-workers who may have questioned her about the increased number of infant deaths and resuscitations/cardiopulmonary arrests, thereby confusing and lying to them.31 Physician reports to nursing supervisors of suspicions against Letby were not answered for months [28].

In this case and others, institutional response to reports of serious concern about murder or other indicators of patient harm, such as death or induced resuscitation/cardiopulmonary arrests, were slow [15, 20]. In some cases, whistleblowers are not believed yet their reports are crucial [25]. Eventually alleged HCSMs may be charged and arrested, the reputation of a hospital system suffers, eventually. More rapid response and investigation might save patients.

It is difficult to identify Ms. Letby's motives for murdering the infants; speculations or assumptions follow but are not research-based [12]. Perhaps the desire for attention from colleagues was sought because of trying to impress them when caring for infants who required resuscitation. She might have desired power and control of clinical situations and enjoyed the thrill or excitement of caring for infants that suffered and died at her hand. In a situation following an infant's death, she wanted to enter the room where the devastated parents grieved; she was dismissed by another staff member [25].

The impact of Letby's crimes will last for some time [16] Not only did infants suffer, evidenced by screams, and died, but liver damage, hemorrhage, brain damage, and other harmful effects were reported. They mark the lives of parents and families, children that survived, and the community served by the hospital.

Detection: The Problem of Data and Data Analysis for Confirming a Murderer's Culpability

The crime scenes of murders committed in healthcare institutions are often devoid of clues following patient deaths [12]. It is difficult to obtain evidence of suspicious deaths and criminal intent and to convict accused healthcare providers. HCSMs escape detection [14]. That reason and the use of accessible medications as poisons and intravenous tubing in place challenge the collection of forensic evidence [26].

Reliable and valid data on alleged and convicted HCSMs' criminal histories and psychiatric diagnoses may not be easily accessible. These characteristics may not explain the motives for murder. Patient outcomes, such as increased death counts, may be more easily documented and analyzed. Some characteristics are included in checklists.10,20

Checklists are instruments for generation data by summing "Yes" and "No" responses and establishing a range of low, medium, or high scores. However, results may not lead administrators to label a healthcare provider as a murderer. The construct validity of such an instrument may miss traditional instrument development methods.33 A cluster of positive items could convince administrators and police to investigate but not prevent the ongoing murders by HCSMs. Many data sources for checklists are not empirical; when analyzed in studies of HCSMs, they often rely initially on content analysis methods.

For example, two checklists[10, 11, 20] were used independently by the author on data sources on Lucy Letby's case. The results are disappointing, calculating a total score may be meaningless. Red flag items or potential indicators of murdering characteristics were matched and used in content analysis of news accounts about Letby's arrest, trial, and conviction. They only provide a view of her situation. Proof of murder based on evidence continues to pose difficulties in healthcare environments. Regrettably, most analysis of HCSM indicators is retrospective.

Accessible Reports and Reporting Option

The Centers for Disease Control and Prevention (CDC) National Violent Death Reporting System (NVDRS) [34] provided a state-based surveillance report on violent dates over 32 states for 2016. A total of 41,466 deaths in 32 states were included and most were

suicides, then homicides, death of undetermined intent, legal intervention deaths (law enforcement and others, line of duty), and unintentional firearm deaths.

Homicide is defined in the CDC's NVDRS35 report as "a death resulting from the use of physical force or power, threatened or actual, against another person, group, or community when a preponderance of evidence indicates that the use of force was intentional"[35],p5 Evidence may be sparse and intentionality difficult to establish. Also, HCSMs do not have a relationship with subjects, as contrasted with other homicides. The murderers are strangers, together by virtue of patient care services [13]. The place of murder is the work setting.

The NVDRS report for 2016 categorizes types by Sex, Race/Ethnicity, and Age Group, Method and Location of Injury, Toxicology Results of Decedent, and Precipitation Circumstances. Young and middle aged populations were disproportionately represented [34]. Participating states differed in inclusion criteria used in reports. Other states data were missing. However, the report is an excellent profile of homicides in the US; the NVDRS will include more states' data for the 2019 report.

Another group examines murder statistics. The Murder Accountability Project has been coding murders in the US since 1976.36 Thomas Hargrove and colleagues created the project to fill the gap between murders that may not be reported to the Department of Justice, Federal Bureau of Investigation. An algorithm, database, Web address, and board work to collect an aggregate data. Members of the organization have described over 38,000 unreported deaths.

Actual deaths might be higher than known evidenced by limitations of all studies and reports; this possibility is a concern for all parties including health care providers. However, once internal investigations begin, it is important to consult with police departments and lawyers not employed by health care systems about suspicions. The experts at the Federal Bureau of Investigation and forensic database consultants might be consulted [13].

In contrast, New Jersey enacted the Title 13 Law and Public Safety Code that addresses health care professional reporting responsibilities [37]. The Clearing House Coordinator receives reports from healthcare entities, such as hospitals, for reasons of professional impairment, incompetency, professional misconduct associated with patient care and safety due to harmful actions or outcomes putting patients in imminent danger. A hospital, for example, initiates an investigation. Professional boards in the state are also contacted. The law in this state provides policies and procedures that healthcare institutions can follow consistent with internal investigations. Event reporting instructions are published and a form is available [38] Some states have adopted New Jersey's strategies.

Suspicious deaths; suspicious circumstances surrounding unexpected deaths	X
Deaths unrelated to reason for hospital admission: patients may be stable and conditions change dramatically (unexplained seizures, complications, illnesses)	X
High number of deaths, resuscitations/cardiopulmonary arrests, emergency situations for intensive care and other units	X
Calls multiple codes; first on scene	X
Suspected of creating emergencies	X
Emergency situations increase during nurse's shifts	X
Higher incidents of death on nurse's shift. Patients more likely to die on her shifts	X
Present during many deaths and many sudden, unexpected deaths	X

Patients become ill whenever nurse cares for patient	X
Relatives suspicious of staff member	X
Unexpected injuries in patients: bleeding pharynx, skin changes after death consistent with air embolus	X
Provides contradictory explanations about suspicious incidents when interviewed	X
Observes patients as they were dying; wanted to observe parents after patient death; odd behavior when patients die	X
Needs excitement and attention	X
Co-workers suspicious and anxious about staff member; report suspicious behavior	X
Investigated by administrators	X
Suspended with pay or without pay	X
Lies when challenged about deaths; inconsistent statements	X
Lies about personal information	X
Secretive personal relationships; relationship with married co-worker	X

Table 1: Combined Checklist Items [10, 11, 20] Applied to Lucy Letby Case

Conclusion

More than 10 years ago HCSMs were labeled a patient safety orphan [26] Since then, more references are accessible, punctuated by egregious examples of patient murders publicized by the popular press. Of concern is that the literature on HCSMs is more prolific in news accounts as compared to research studies; however, press reports inform the community of healthcare providers about the problem.

Education is needed, perhaps on a yearly basis at morbidity and mortality, quality improvement, and patient safety committees during a designated patient safety week. Administrators and direct care providers might benefit from teaching sessions focused on the possibility of patient murder at work. It is important to suspend disbelief and acknowledge that some healthcare providers do murder patients.

Perhaps murders by healthcare providers could be reconceptualized as a failure to rescue, considering that unit staff and administrators who suspect intentional harm but hesitate to investigate. Also, employers in healthcare systems need to recognize the limitations of circumstantial evidence yet still be alert to the likelihood of a serial killer [12].

The silence of nurses about their suspicions has been offered as a reason that the trajectory of murder continues in patient units [9,25]. Nurses may believe that murders may have happened. However, they may fear what happens to whistleblowers.

Solutions are needed to prevent serial murder and identify it when occurring. Routine background checks may not eliminate healthcare providers who have criminal histories when applications are reviewed by professional state boards [39] and human resource departments of healthcare institutions. Analysis of microsystem or unit statistics on three indicators, deaths, resuscitation/-cardiopulmonary events and the correlation between death and staff member work schedules should be documented quarterly. After administrators are notified by health care providers and consult with in-house counselors, they need to rapidly follow up by seeking the advice of police, external counsel, and ultimately the Federal Bureau of Investigation.

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