CE 2.3 HOURS Continuing Education

Supporting Staff Recovery and Reintegration After a Critical Incident Resulting in Infant Death

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ABSTRACT

A critical incident is described as any sudden unexpected event that has the power to overwhelm the usual effective coping skills of an individual or a group and can cause significant psychological distress in usually healthy persons. A Just Culture model to deal with critical incidents is an approach that seeks to identify and balance system events and personal accountability. This article reports a critical incident that occurred at the Neonatal Intensive Care Unit, Methodist Hospital of Indianapolis, when 5 infants received an overdose of heparin that resulted in the death of 3 infants. Although care of the family after the critical incident was the immediate priority, the focus of this article was on the recovery and reintegration of the NICU staff after a critical incident based on the Just Culture philosophy.

KEY WORDS: critical incident, Just Culture, medication errors, neonatal care, nursing, patient safety

In our NICU, on September 16, 2006, we experienced a tragic critical incident when 5 infants received an overdose of heparin. The NICU automated dispensing cabinet (ADC) had been stocked with the incorrect concentration of heparin by a pharmacy technician. A single dose vial of 10,000 U/mL of heparin was loaded in the ADC rather than the replacement of a single dose vial of 10 U/mL of heparin. Subsequently, 3 infants died from the overdose of heparin. The focus of this article is on the recovery and reintegration of the NICU staff after a critical incident based on the Just Culture approach. We will discuss immediate actions taken, the ongoing response, and support provided for the affected nurses (nurses who administered the heparin) as well as the unit nursing staff. The process of rebuilding the staff's confidence, the reintegration of the affected staff back into the work environment, and lessons learned will be presented.

A critical incident has been described as any sudden unexpected event that has the power to overwhelm the usual effective coping skills of an individual or a group and can cause significant psychological distress in usually healthy persons.[1]

According to one author, when a critical incident strikes, the aftershocks of grief and trauma can occur in 2 dimensions. These include (1) each participant's individual realm and (2) the circles of influence radiating from the event to those directly affected, the family and friends, spreading out to the workplace, to the community at large, to the state, and potentially to the nation, creating a cumulative grief reaction.[2] This description accurately reflects the cumulative grief and trauma experienced by our staff because of this critical incident and the subsequent public reporting to the local and national media.

Critical incident stress (CIS) refers to a broad range of responses that occur after a stressful experience. These may include confusion, poor concentration, physical fatigue, insomnia, gastrointestinal problems, depression, emotional numbing, guilt, anger, and anxiety, as well as feelings of disbelief, vulnerability, and a change in self-image or self-esteem.[3,4] Each nurse brings his or her character, personality, and previous experiences to the encounter, and these will determine how the nurse reacts during the critical

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incident and beyond. Physical and emotional reactions are considered normal responses to an unusual event but have the potential to become unhealthy if symptoms become prolonged or aggravated.[3]

Critical incident stress debriefing (CISD) refers to techniques designed to provide intervention and supportive services to professionals who have experienced critical incidents.[4,5] CISD promotes emotional processing and helps normalize reactions to trauma, stress, and critical incidents. It provides peer support and group cohesion and gives legitimacy to the stress experienced. It helps facilitate a return to the level of functioning and routine that existed before the incident.[5]

In the environment of a critical care unit, nurses are frequently exposed to critical incidents. The NICU population is particularly vulnerable due to the small margin of error in therapeutic dosing. Therefore, CISD is important to help stabilize a crisis situation when it occurs, assist individuals in mobilizing their own resources, assist individuals in normalizing the crisis experience, and restore distressed individuals to normal functions as rapidly as possible.[2]

Development of a Just Culture

Before the 1990s, the prevailing thought in healthcare was that individual workers were fully accountable for all errors made while treating patients. Perfect performance was expected, and the threat of disciplinary action for errors was thought to be necessary to maintain a proper safety environment.[6] The effect of this punitive culture focused on the errors of individuals, blaming them for forgetfulness, inattention, or moral weakness. A punitive culture also caused fear of retribution and fear of reporting errors. Near misses were rarely, if ever, reported, and people created workarounds in an attempt to avoid disciplinary action.[7] By focusing on the individual, a punitive environment does not fully take into account system errors.

In response to the faults of a punitive culture, the blame-free culture flourished.[6,7] The blame-free culture acknowledged the impossible task of perfect performance. It acknowledged that honest errors were made even by the most experienced and caring staff members and that punishing them for unintentional acts was unjustified.[8] It recognized that most unsafe acts were the result of mistakes that were rooted in system, process, or environmental weaknesses within the organization.[7] Like the punitive environment, the blame-free culture had shortcomings. It ignored or failed to confront individuals who willfully engaged in dangerous behaviors, and it failed to address the difference between actions that were culpable and those that were not.

The healthcare industry is now evolving to a safety-minded Just Culture environment. The phrase "just culture" was made prominent in the patient safety arena and defined principles for creating a culture in which employees feel less threatened disclosing errors.[9]

A Just Culture model seeks to identify and balance system events and personal accountability. It identifies 3 classes of human fallibility as human error, at-risk behavior, and reckless behavior. Human error involves unintentional behavior that involves doing other than what should have been done. At-risk behavior is behavior that generally involves taking shortcuts that ultimately lead to increased risk for the patient. And finally, reckless behaviors are acts that are done in a conscious disregard for standards and policies and put the patient at a substantial and unjustifiable risk.[9]

A Just Culture model recognizes that individual practitioners should not be held accountable for system failings but has zero tolerance for conscious disregard of clear risks to patients or gross misconduct. Effective risk management depends on establishing a reporting culture. Without a detailed analysis of near misses, incidents, and mishaps, we have no way of uncovering recurrent error traps.[8]

At the time of the critical incident at Methodist Hospital, a Just Culture policy was in the early phases of being implemented. Included in this policy is an Unsafe Acts Algorithm modeled after the algorithm developed by James Reason[8] (Figure 1). The Unsafe Acts Algorithm is a tool for evaluating conduct in any circumstance in which the actions of an employee do not match the values of the organization. This algorithm was used in the process of conducting our investigation of the critical incident, identifying system contributions, and assessing accountability for those involved.

Immediate Response

When the signs of a potential heparin overdose were first discovered in one of the affected infants, a prompt investigation of the source of the overdose began. The neonatal nurse practitioner discovered that a single dose vial of 10,000 U/mL of heparin had been stocked in the ADC instead of a single dose vial of 10 U/mL of heparin. An ADC report was generated and identified which patients had received the incorrect doses. The nurse practitioner and neonatologist consulted with the pediatric pharmacist, and protamine sulfate was administered to all 5 infants. Two infants subsequently died within 24 hours of receiving the heparin overdose and the third infant died 3 days later.

When a critical event of this magnitude occurs, the organization must engage executives and leadership at the onset. Within a short period, the NICU clinical manager, the director of pediatrics, the chief executive officers (CEOs), the chief nursing officers, the director of pharmacy, the director of risk

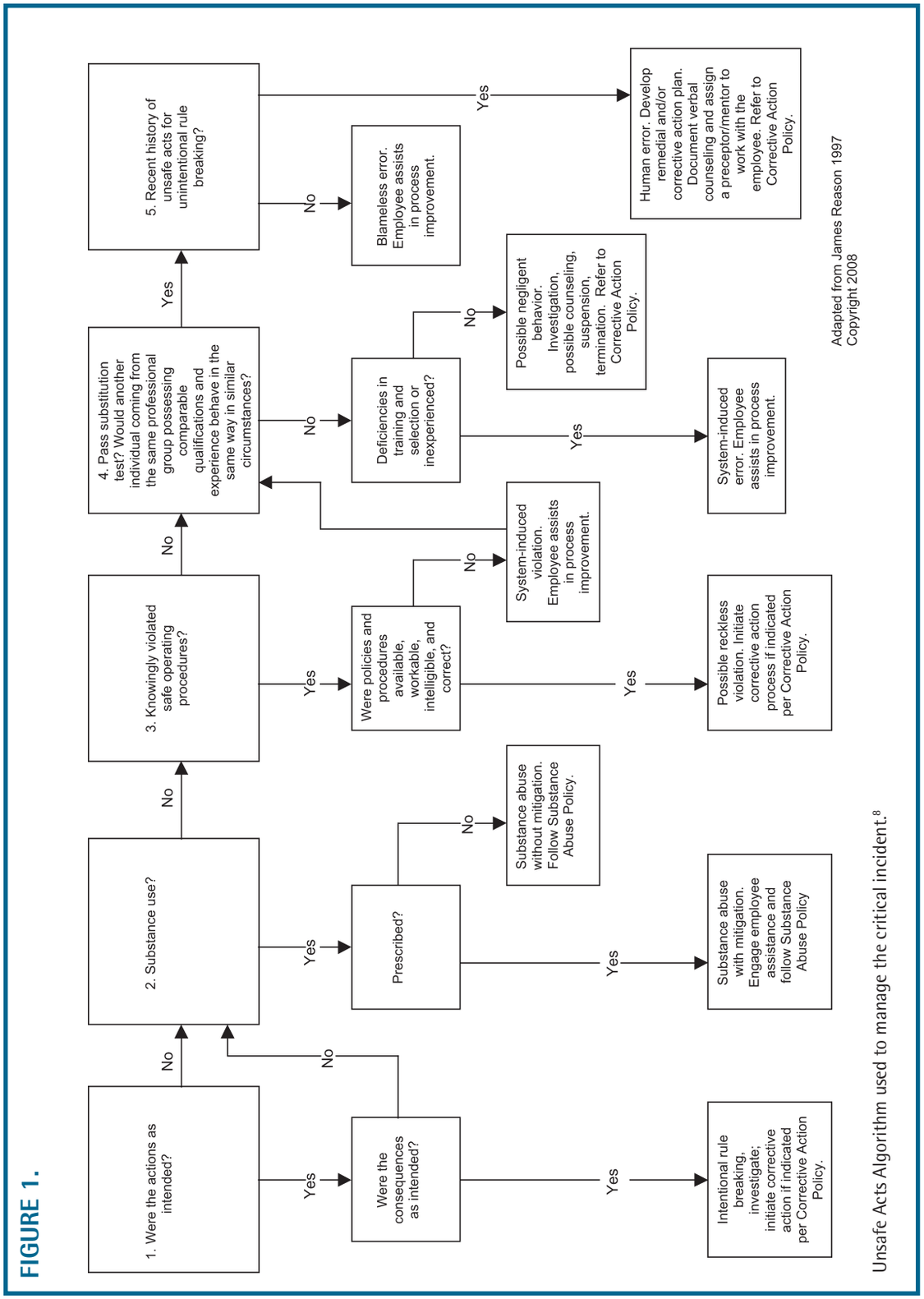

FIGURE 1.

Unsafe Acts Algorithm used to manage the critical incident.[8]

management, and the vice president of media relations were notified and were actively directing resources to manage the response to the critical incident. Other departments were notified including chaplaincy, social work, Critical Incident Rapid Response Team (CIRRT), bereavement counselors, Employee Assistance Program (EAP) counselors, security, and staffing support to provide needed immediate response resources. Regulatory agencies such as the Indiana State Department of Health, the

Joint Commission on Accreditation of Healthcare Organizations, and the coroner's office were promptly notified.

A communication plan is key in the immediate response to a critical incident. Prompt notification of the nursing and physician staff is needed. Three of the nurses involved in the overdose incident were on duty when the infants became critically ill. Those 3 nurses were relieved of their patient assignment and were provided support. The other affected nurses were notified of the deteriorating clinical condition of the infants and were provided support over the phone. Off-duty neonatologists were called to provide additional medical support, and off-duty unit nursing staff were informed by an informal phone tree. Staffing levels were quickly increased, utilizing nurses from the NICU transport team, the pediatric staff, and mother & baby unit to provide immediate patient care and family support.

Although the focus of this article was on the support of the nursing staff after a critical incident, the highest priority at the time was support and care of the affected infants and their families. Notification to the families whose infants received the heparin overdose occurred as soon as the error was discovered. Bereavement counselors were immediately available for these families. For more details about the immediate and ongoing support for these affected families, see Table 1.

As the staffing issues were resolved, the priority was to notify the families of nonaffected infants in the unit about the critical incident. This explanation was very open, honest, and direct as we assured them that their infants were not affected. Prior to our initial press conference, the CEO, the unit manager, and the chaplain gathered all the families whose infants had not received a heparin overdose and again explained what had occurred. We reassured them that their infants were safe and were not involved in the occurrence. We informed them of the impending press conferences.

Public disclosure of the critical incident occurred at a press conference, and the media was told the essentials of the events. Further press conferences to update the public on the condition of the surviving infants and the preventive measures immediately taken to prevent future incidents were held in the days that followed.

A Root Cause Analysis (RCA) was held within days of the critical incident. Immediate action items following the RCA included recommitting to the 5 rights of medication administration, the elimination of the single dose vials of 10,000 U/mL of heparin, and an institution of a double check by pharmacy personnel for all medications to be stocked in the ADCs. All of these action items were implemented system wide.

Support for Affected Nurses

Immediately after the RCA, a debriefing session was held for the affected nurses. This session was conducted by the CIRRT and gave the affected nurses opportunity to be together, to talk about what had happened, and to begin the journey of grieving and recovery. Common themes and feelings expressed in this debriefing session were guilt, grief, embarrassment, fear for their jobs, and personal safety because of threats received.

TABLE 1. Support for Each Family Whose Infant Received Heparin Overdose

Role	Support Provided
Immediately after the critical incident	
Bereavement staff	Utilized our bereavement room away from the unit, provided bereavement care for the family as well as individual bereavement care for the infant, which included bathing, hand and foot casting, pictures, and removal of a lock of hair
CEO/Senior leadership staff	Apology and recognition of our error, explanation of error, and answered questions
Chaplin	Emotional support, helped with funeral arrangements, and bereavement care
Manager	Emotional support and answered questions
Physicians	Provided medical care and explanation of the overdose
Ongoing support activities	
Individual counselors	Support and counseling for as long as they had need
Risk management representative	Provided legal counsel and be present for all conversations with families
CEO/senior leadership staff	Individual meetings with the families
Financial representative	Instructions for further financial compensation, funeral, and hospital costs paid

Abbreviations: CEO, chief executive officer.

All 6 nurses and the pharmacy technician were placed on paid administrative leave of absence for an indeterminate amount of time. They each had an EAP counselor assigned, and eventually each nurse was required to meet with an outside independent counselor for support and to determine readiness to return to work.

For the first couple of weeks, the clinical manager and the EAP counselor had daily contact on phone or in person for support. Subsequently, the EAP and independent counselors were in contact with these nurses on a regular basis.

Because the affected nurses did not quickly return to work, the unit nursing staff felt isolated from them. The unit staff wanted to provide support but were very uncertain and unsure about initiating contact. To comfort and show their concern for the affected staff, the unit nursing staff assembled care baskets containing cards of support, food, chocolate, a copy of a binder of cards, letters, and e-mails of encouragement that came from nurses, physicians, and families both within and outside of the hospital. The care baskets were provided for the 6 nurses, the pharmacy technician, the neonatal nurse practitioner, and the neonatologist present during the incident.

Shortly after the event became public, the county prosecutor's office launched an investigation to determine whether any criminal action had occurred in the administration of the heparin. Because of this investigation, both in-house counsel and outside attorneys were provided to assist and prepare the nurses, the pharmacy technician, the neonatal nurse practitioner, the physician, and the unit manager involved in giving depositions. Three months later, the criminal investigation was concluded when no criminal intent was found.

Support for Unit Staff

As many unit staff as possible were contacted before the initial press conference to inform them of the critical incident. The unit staff were very concerned and anxious about making errors themselves, so nurse staffing was increased for several weeks after the incident. It was a very tense environment for a while.

The CIRRT, composed of social workers, counselors, and nurses trained in critical incident support, held debriefing sessions for the unit staff and provided ongoing care for the following 2 weeks. Availability of the CIRRT was also extended to ancillary staff that interacted with our unit. The EAP counselors were also available to speak with employees. The information on how to contact EAP counselors was readily available in the unit.

The leadership team needs to be sensitive to the impact of extensive media coverage on the unit morale. Media attention and scrutiny was initially very intense, and reported public opinion included comments that the nurses should be shot, fired, and permanently lose their license. The unit also received threatening phone calls. The unit staff felt frightened, isolated, and alone. Many nurses stopped watching TV and stopped telling people where they worked.

The overwhelming support received from the NICU community, the medical community, and previous NICU families was an integral part of the staff's recovery. Every NICU in the city responded with food, flowers, and cards; we also received thoughtful expressions of support from other NICUs nationwide. Other hospital units sent food, cards, letters, and flowers, or nurses showed up in person to hug the staff and to tell them how much they cared and were grieving with them. Many nurses identified with the medication error and stated the concern that it could have happened to any one of them. Letters of support were received from families who had had their infants in our NICU and other NICUs lending their care, support, and prayers.

Healing Beyond Today

About 4 weeks after the loss, discussion began on how to bring the affected nurses back to work. Some were ready, while others were not. A CSID program, using outside facilitators, was initiated for all staff to provide a safe structure to verbalize their story and to rebuild unit cohesion. The goal of these debriefing sessions was to be a catalyst to help our staff move through the grief stages, to achieve forgiveness, and to create a new vision for the future of the unit. The debriefing program was called "Healing Beyond Today." Attendance was mandatory for unit staff, and invitations were extended to ancillary personnel. The sessions were held at an off-site location to be more comfortable for the participants. Many of the staff were resistant to attending the program and expressed ambivalence and exasperation. Some of them stated that they had dealt with the incident and did not need this type of support, while others stated that they did not want to talk about it anymore.

Everyone was affected differently, and the "Healing Beyond Today" program allowed the staff to share their own story (how they learned about the incident, what they felt, and what they thought). In telling their story, staff nurses expressed anger and blame toward the media, with themselves, and with the pharmacy. They felt embarrassed that this had happened to them and their unit. They expressed anxiety about talking to parents and about having to explain what happened. They talked about being hypervigilant in all of their nursing actions and the fatigue that hypervigilance created. They expressed guilt, frustration, sorrow, sadness, and grief.

The "Healing Beyond Today" debriefing program provided the opportunity for the staff to work through emotions, to begin to forgive themselves and

others, to look forward, and to develop a future vision for the unit. An important exercise to build toward the future was recognition of this critical incident as a loss. Recognizing this as a loss helped the staff to grieve the many losses that occurred such as the loss of life, trust, and pride in the unit. Another essential component of the debriefing program was an exercise in forgiveness. These exercises helped the staff move forward.

Rebuilding

Rebuilding staff confidence was a priority for unit leadership. One approach was to increase staffing for several weeks after the incident to decrease stress on the staff. The staff reported being hypervigilant about all nursing cases and increased staffing helped ease some of this stress.

The staff did not want to administer any heparin flush, and it was removed from the ADC. Lines that needed to be locked were infused with heparinized fluids mixed in the pharmacy at a "to keep open" rate. About 6 months after the incident, heparin flush of 10 U/mL was reintroduced in the form of a prefilled syringe. At that time, an independent double check of all high-risk medications was implemented.

By invitation, the Institute for Safe Medication Practices (ISMP) completed an analysis of medication practices in the NICU as well as in all areas of the hospital system. The ISMP educated the leadership about confirmation bias and operant conditioning that occurs when staff obtains medication from an ADC. Prior to the critical incident, the staff was not aware of errors that could occur in the pharmacy in the process of restocking an ADC.

Employee assistance program counselors continued support for the staff for approximately 3 months and then continued to be available when the staff had times of heightened awareness of the critical incident. Continued EAP counseling assistance is an important consideration for unit leadership when events that bring back the painful reminder of the loss occur. For the unit, examples of painful events included the discharge of the infants who survived the critical incident, announcements of lawsuits, anniversary of the event, media coverage, and similar critical incidents occurring nationally. These events affected different nurses at different times. The level of support varied from merely touching base to comprehensive legal and emotional support for the nurses involved. When a lawsuit was initiated, the support provided was very extensive and involved providing attorneys and counselors. When an article in the local newspaper reported multiple inaccuracies about liability lawsuits, some staff members were again worried and anxious. Because of the ongoing nature of these events, continued support and care for the staff through each of these circumstances is necessary.

Staff and Unit Recovery

Five of the nurses and the pharmacy technician are back at work in the same jobs held prior to the critical incident. One nurse's husband was transferred out of state, so she did not return to work. Time off from work was determined by the employee and the independent counselor so that they were able to come back in their own time. Affected nurses continue to have support from our EAP and their independent counselor.

The unit nursing leadership is committed to sharing the story of this critical incident. It is all too obvious that medication errors continue to be a hazard to our patients and to the health of our profession. It is hoped that a critical incident of this magnitude will not happen again to any infant, family, or nursing unit. But the combination of a vulnerable patient population, the NICU environment, and the presence of human error creates the potential for the occurrence of a critical event; therefore, it is necessary that we share lessons learned form this critical incident.

Key Lessons Learned

- The established NICU culture of disclosure was integral in how the critical incident was handled. When errors happen, notify families immediately. The critical incident reinforced the culture and helped us see the value of disclosure. Although painful, it provided an opportunity to talk openly to healthcare providers about the event and to promote an increase in medication safety awareness at a national level.
- It is vitally important to have the full support from leadership executives during the incident and through the process of recovery. That support is required when making decisions to increase staffing, allowing time off, providing security, counseling opportunities, and legal advice.
- Be vigilant with simple basic process especially related to high-risk drugs. Do not assume it will not happen in your workplace. Be vigilant and look at the processes in your institution, in the NICU, and in the pharmacy. Even when things seem simple, like restocking ADCs, everything can be error prone.
- Stress the importance of confirming the 5 rights of medication administration. Staff must understand that operant conditioning and confirmation bias can occur at the ADC and that labels must be read.
- The debriefing and healing sessions held were essential to the unit moving through the grief process. In the midst of the horror, anger, sadness, guilt, and sorrow, it was vital to have a safe place

to express the pain and loss. It was in these sessions that people were able to start moving forward.

- It is necessary to have policies that support the process of decision making when critical incidents occur. The Just Culture policy guided the unit's response and resources to manage the critical event and the decisions related to the management and treatment of the affected staff members.

Unit Teaching Toolbox: Nursing leadership guide to respond to a critical incident resulting in infant death

You and your leadership team are facing a most difficult and emotional crisis to effectively manage a critical incident that has resulted in the death of an infant. A quick, compassionate, and professional response is needed despite legal, public relations, and employment ramifications. This resource is intended to provide guidance for potential leadership actions within the hours, days, weeks, and months following a critical incident of this magnitude.

What are the first steps that should be taken?

Notify and assemble hospital executives and unit management team to guide decisions and to provide resources to manage critical incident (for example)

- NICU clinical manager
- NICU medical director
- CEO
- Chief nursing officer
- Risk management
- Media relations
- Other departments as involved.

Notify other hospital departments to deploy additional resources (for example)

- CIRRT
- Chaplaincy
- Social work
- Bereavement counselors
- Employee assistance program
- Security
- Additional staffing support

Notify regulatory agencies within required timelines

- Coroner's office
- State Department of Health
- The Joint Commission on Accreditation of Healthcare Organizations.

What needs to be done immediately for the families of the affected infant?

- Notify the families as soon as possible after the critical incident has occurred.
- Neonatologist provides honest explanation of the critical incident and the medical care provided.
- Bereavement support for the family of the affected infant is provided.
- Provide for conversation with CEO.

What needs to be done immediately for the families of the unaffected infants?

- Communicate to families of nonaffected infants the details of the critical event.
- Reassure the families that their infant was not affected.
- Explain the actions taken to prevent the incident from reoccurring.
- Notify the families of impending news conferences.

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Unit Teaching Toolbox: Nursing leadership guide to respond to a critical incident resulting in infant death (*Continued*)

What should be done immediately for the staff involved in the critical incident?

Relieve the affected staff of their patient care assignment.

Provide a safe place away from the unit for the affected staff member to receive support from leadership, CIRRT, EAP counselor, and chaplain as appropriate

What should be done immediately for the unaffected unit staff?

Initiate a communication plan so as to notify all staff of the critical incident prior to their next scheduled work shift.

Have CIRRT members available on the unit.

What type of ongoing support in the first few days after the critical incident should be provided for the affected family?

The CEO and the senior leadership should meet with the family to provide an apology and recognition of error, and answer any questions.

Chaplain should continue to provide spiritual support and assist with funeral arrangements and bereavement care.

Risk Management representative should provide legal counsel to be present for all conversations with the family.

Financial representative should provide instructions for further financial compensations, funeral costs, and hospital cost.

What type of support in the first few days after the critical incident should be provided for the affected nurses?

Provide a debriefing session.

Daily contact with nurse manager and EAP counselor.

Provide an independent counselor.

Provide in-house and outside legal counsel if needed.

Provide support during their involvement in the Root Cause Analysis.

Share the support and encouragement of their colleagues, medical community, and public support that may be received.

What type of support in the first few days after the critical incident should be provided for the unit staff?

Communicate actions identified during Root Cause Analysis.

Provide debriefing sessions.

Provide visible support in the unit, CIRRT members, chaplaincy, and social work.

Maintain low patient to staff ratios to assist with hypervigilance fatigue and anxiety felt by both staff and families.

Increase unit security.

Discuss with staff how they can provide support to affected staff members.

What type of ongoing support in the weeks and months after the critical incident should be provided for the unit staff?

Continued low patient nurse staff ratios until confidence is reestablished.

Provide access to EAP for unit staff and ancillary staff that supports the NICU.

Continue unit debriefing sessions.

Inform staff of ongoing events related to the critical incident, for example, press conferences, notification of lawsuits, and reports of similar incidents.

Start planning for a reintegration of affected employees into the unit.

How to reintegrate affected staff, rebuild unit confidence, and future vision?

Consider a mandatory critical incidence stress debriefing program for all unit staff members.

Consider holding this session off-site from the hospital.

Provide the "language" to talk about the incident, for example, "our tragedy" or "the loss."

Provide an opportunity for each staff member to tell his or her story of the critical incident.

Provide an exercise to seek forgiveness.

Provide an exercise that helps staff members look to the future.

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Unit Teaching Toolbox: Nursing leadership guide to respond to a critical incident resulting in infant death (*Continued*)

How to move forward as a leadership team?

- Acknowledge the error and the importance of a culture of disclosure.
- Be vigilant with the simple basics related to high-risk drugs.
- Reinforce the importance of confirming the 5 rights of medication administration.
- Update policies that support decision making during the stress of a critical incident.
- Have the courage to share the story and lessons learned.

Abbreviations: CEO, chief executive officer; CIRRT, Critical Incident Rapid Response Team; EAP, Employee Assistance Program.

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