

TITLE: Management of Clinical Alarm Systems

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Policy Number: NSPP.358

Dept: Practice and Standards

Last Review: 05/2021

PURPOSE:

The purpose of the policy is to manage clinical alarm systems effectively for patient safety. This involves the following:

- a) assessing alarm parameter settings and customizing to individual patients condition to reduce clinically insignificant alarms,
- b) disabling or changing of alarms, alarm parameters and changes to the parameters and identifying who in the organization has the authority to make such decisions,
- c) monitoring and responding to alarms,
- d) checking individual alarms for accurate settings, proper operation and detectability, and
- e) educating staff and licensed independent practitioners about alarm policies and procedures.

DEFINITION:

Licensed Independent Practitioner (LIP): A LIP is a physician or allied health practitioner permitted by State law and credentialed by the hospital as having authority under his/her license to independently prescribe orders for patient care.

Direct Care Provider: A registered nurse, respiratory therapist, or other licensed clinician providing patient care within their scope of practice.

Clinical Alarm System – All alarms that are incorporated into a clinical device and/or any other equipment system that can impact the care of the patient.

- Physiological alarms - Alarms associated with body organ functions (i.e., heart rate, SpO2, etc.).
- Non-physiological alarms - Alarms not associated with body organ function (i.e., bed alarms, wanderguard, nurse call system etc.).

Default Setting - Settings within a device that are automatically set when the device is powered on. Critical physiological alarms are programmed into the default settings by Clinical Engineering.

Critical Alarms – An alarm from a monitor/ device that is used to monitor vital organ systems *and* critical interventions for patient safety. These alarms require an **immediate** response of a caregiver. These may be physiological and non-physiological alarms. Critical physiological alarms

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are programmed into the default settings by Clinical Engineering.

Non-Critical Alarms – All clinical and non-clinical alarms that produces an alarm that requires a response of a less urgent nature and requires a prioritized response in a timely fashion (i.e., IV pump, SCDs etc).

Alarm Parameters – High and low values that may be adjusted to a specific patients.

Learned Alarms-Alarms that take into account the patient's physiological condition and automatically adjusts to produce a customized alarm parameter for that specific patient.

Note: Monitors and devices with continual observation by LIP and perfusionists (i.e., heart and lung bypass machine) in which observation is 1:1 direct observation and line of sight will be monitored directly by LIP and perfusionist.

PROCEDURE:**A. Addressing the Necessity of Alarms:**

1. LIP or direct care provider assesses the patient's clinical status and identifies the appropriate clinical alarm system(s) required to monitor the patient.
2. LIP or direct care provider considers the type of specific alarm(s) needed. Also considered is whether specific alarms unnecessarily contribute to safety concerns (i.e., alarm fatigue/alarm noise).
3. Alarms will be evaluated at the beginning of each shift by the direct care provider. For non-critical alarms, the necessity of the alarm will be reviewed to determine if it is needed.

B. Disabling of Alarms/Alarm Parameters and Changes:

Alarm parameters of clinical devices/equipment are established according to the recommendations by Medical Staff and Critical Care physicians.

1. Default Alarm Parameters

- a. All default settings may **only be changed** with direction from the appropriate department's Medical Staff Executive Committee/chairperson(Vice), and may include the Trinity Health Patient Safety Initiative directives. Such committees may include:

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Critical Care Committee, Pediatric Committee, Obstetrics Committee, Perinatal Committee etc. With recommendation from the above, critical alarm parameters will be set as defaults on alarm systems by a member of the clinical engineering staff.

2. Non-Critical/Non-Default Alarm Parameters

- a. Non-critical alarm parameters may be adjusted by the LIP or direct care provider to meet the needs of the patient.
 - b. Non-critical alarms may be disabled or maintained outside parameters if the patient's condition warrant for the intent to reduce alarm fatigue/alarm noise.
 - c. Changes to non-critical alarm parameters may be made based on patient specific vital sign parameters for the age and condition of the patient and/or specific physician order.
3. Any changes to alarm parameters are to be communicated shift to shift through SBAR communication, bedside rounds, and the hand-off/transition process as appropriate or per department guideline. The RN will notify the LIP of change in patient condition as necessary and document accordingly.

C. Monitoring and Responding to Alarms:

1. Patient acuity and audibility of clinical device alarms is considered for patient placements. Staffing assignments are done with alarm audibility in mind; cluster assignment of patients to the patient care staff may be employed to ensure that they can adequately hear and respond to critical alarms in an immediately fashion.
2. Alarm volume is to be set at an appropriate audible level with respect to distances and competing sounds within the patient care environment. Alarm volume associated with critical alarms cannot be disarmed.
3. Responding to all alarms is the responsibility of all staff in the patient care area.
4. When a clinical device alarm sounds the staff respond as appropriate to the situation and alarm device, this may include: determining the source of the alarm, checking on the patient for safety, and/or notifying the nearest clinician so that action can be instituted to investigate the reason for the alarm and assess the patient's condition.

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5. Response time is **timely** requiring reasonable response, set priorities, for non-critical alarm devices.

D. Accurate Settings, Proper Operation and Detectability of Alarms

1. The Clinical Engineering department has oversight for the testing and maintenance of clinical devices to ensure accurate settings, proper operation and detectability of alarms. This is achieved through adherence to the Clinical Engineering department policies and procedures that include: Trinity Health Clinical Engineering (THCE) Policy #1004: Selection and Acquisition of Equipment; THCE Policy #2004: New Inventory and Inspection of Incoming Equipment; THCE Policy #2007: Administering Planned Maintenance Program and THCE Medical Equipment Management Plan.

E. Staff and LIP Education on Alarm Policies and Procedures

1. Patient care staff are educated on alarm policies and procedures through varied educational methods that may include: orientation with preceptor/designated staff, participation in educational modules, on-site training, and review of alarm policies and procedures. LIP education provided through Medical Staff Executive Committee, Critical Care Committee, Pediatrics Committee, Medical Staff Newsletter and policy review. New LIPs are educated through the Medical Staff Services department through the initial application process for new LIPs. Further just in time education may also be conducted in the department by director/clinical leader/educator or department designee. Education includes the purpose and proper operation of alarm systems for which they are responsible.
2. Patient and/or family member as determined by the direct care provider are oriented to the importance of not disabling or disconnecting an alarm system on the clinical device being used.

CRITICAL ALARM PARAMETERS

Immediate Response is required if an alarm sounds outside the below established critical alarm parameters that are set as defaults on the alarm system.

AGE	*Heart Rate/EKG	**Respiratory Rate	Desaturation/SPO2
Adult:18+ years	Hi: 140	Hi: 30	Hi: 100

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	Low: 40 <u>Additional Parameters:</u> Asystole: >4 Seconds V Fib: Alarm at Occurrence V Tach: >120 Beats Per Min. V Tach Run: >5 Ventricular Beats Brady: <40 Beats Per Min.	Low: 8	Low: 88
Adolescents 13 to 17 years	Hi: 140 Low: 45	Hi: 30 Low: 8	Hi: 100 Low: 88
Child 4 to 12 years	Hi: 120 Low: 60	Hi: 40 Low: 10	Hi: 100 Low: 88
Child 1 to 3 years	Hi: 160 Low: 60	Hi: 40 Low: 10 with 20 seconds of apnea	Hi: 100 Low: 88
Infant 1 to 12 months	Hi: 200 Low: 60	Hi: 60 Low: 10 with 20 seconds of apnea	Hi: 100 Low: 88
Neonate 0 to 28 days old	Hi: 200 Low: 80	Hi: 100 Low: 0 with 20 seconds of	Hi: 95 Low: 85

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		apnea	
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* For Heart Rate/EKG monitor: V-tach/V-fib setting to be ON at all times

** For Respiratory Rate monitor: Apnea setting to be ON at all times with a 20 second delay.

Note: Refer to Electronic Fetal Monitoring Policy for electronic fetal monitoring alarm parameters.

RESOURCES: American Association of Critical-Care Nurses *Practice Alert: Managing Alarms in Acute Care Across the Life Span: Electrocardiography and Pulse Oximetry*. April 2018
The Joint Commission. *National Patient Safety Goal on Alarm Management: NPSG 06.01.01- improve the safety of clinical alarm systems*. July 2019.

PRIMARY REVIEWERS: Practice and Standards Committee; Medical Staff Executive Committee; Critical Care Committee; Obstetrics Chairperson; Perinatal Chairperson; Pediatrics Chairperson; Clinical Safety Committee; Joint Quality Oversight Committee