Name of Policy: Hospital Clinical Alarms **Policy Number**: 3364-100-45-24 **Approving Officer**: Chief Executive Officer, Chief of Staff **Responsible Agent**: Chief Nursing Officer **Scope**: University of Toledo Medical Center	UTOLEDO HEALTH **Effective date:** **Original effective date**: 6/1/2016
Key words: Hospital Clinical Alarms, Adverse Events, Patient Safety, Alarm Management, Safety Goals	

☐	New policy proposal	☒	Minor/technical revision of existing policy
☐	Major revision of existing policy	☐	Reaffirmation of existing policy

(A) Policy Statement:

Hospital professional staff have a duty to provide quality care while safeguarding our patients from adverse events. In order to meet The Joint Commission's (TJCs) National Patient Safety Goal (NPSG) and the University of Toledo Medical Center (UTMC) safety goals, a systematic coordinated approach to clinical alarm system management has been developed that will encompass all clinical hospital departments.

(B) Purpose of Policy:

To establish best practices for reducing the number of false and excessive clinical alarms , while addressing the issue of desensitizing staff members to alarms. The goal is to have established processes that connect the management of clinical alarms directly with individualized patient parameters in order to increase patient safety and provide a quiet environment that promotes patient healing.

(C) Procedure (four parts):

1. UTMC leaders establish alarm system safety as a hospital priority :

    a. Under the direction of the Chief Nursing Officer (CNO)/Director of Nursing, and the Director of Biomedical Engineering, a multidisciplinary team was established to review and refine organizational process related to clinical alarm safety.
    b. Team members consist of hospital personnel from medicine, biomedical engineering, nursing administration, respiratory, information technology, and facilities maintenance.
    c. Team members will meet on a regular basis to review and refine internal processes related to clinical alarm safety.
    d. Both internal and external data will be utilized to assist team members with decision making regarding best-practices associated with clinical alarm safety.

2. Identify the most important alarm signals to manage based on risk assessment tool :

    a. With input from medical and clinical staff, all medical equipment with clinical alarms was inventoried in 2012 using a risk assessment tool that considered the severity and probability of an appropriate response by staff to a clinical alarm.
    b. Using data obtained via literature searches, internal incident reports, vendor-supported recommendations, and best practice, the multidisciplinary team developed and used a severity rating scale from 1-5, and a probability of inappropriate response by staff rating scale from 1-5, and scores greater than or equal to 9 points were further evaluated.
    c. Results from this risk assessment of clinical equipment were then tabulated and initial efforts addressing clinical alarms safety were geared towards these identified medical devices.

3. Establish policies and procedure for managing the alarms identified via risk assessment tool :

    a. The importance of clinical judgment must be considered when adjusting alarm settings that go beyond recommended parameter settings. The clinician (i.e., Respiratory Therapist, Registered Nurse, etc.) will use clinical judgment when discovering individual alarm settings that keep the patient safe and also takes into consideration reducing the rate of 'false-alarms' in an attempt to decrease noise and promote healing with a quiet environment.
    b. The clinician will work collaboratively with the physicians to set and change clinical alarms.
    c. The clinical staff must consult with a physician and obtain an order when alarm parameters are adjusted outside of established parameters.
    d. Refer to the attached table for alarm parameters.

4. Educate staff and licensed independent practitioners about the purpose and proper operation of alarm systems:

    a. It is the responsibility of the clinical staff members to ensure that alarm systems are used appropriately and safely, and that sound levels are sufficient to notify staff in the event of an alarm.
    b. For alarms that are an integral part of a patient care device, the user must ensure that the alarms are set appropriately and functioning correctly before each use.
    c. Clinical staff members, as appropriate, are trained in the use of medical devices and alarms during initial orientation. The correct and safe use of these devices and alarms is also part of the annual competency review.
    d. Changes in processes related to clinical alarm management will be disseminated and communicated to staff via email, newsletters, and directly from managers.

(D) Specific Departments:

A. <u>Respiratory Therapy</u>:

1. Adjust the ventilator settings according to the physician's orders.
2. For mechanical ventilator settings, plan of care, safety checks, and establishing ventilator alarm settings, the following will be considered:
    a. Low tidal volume alarm will be adjusted 50% below desired exhaled tidal volume, or spontaneous tidal volume, if on a low Synchronized Intermittent Mandatory Ventilation (SIMV) rate of 6 or below.
    b. Low minute ventilation volume will be adjusted 2-5 L/min below minimum SIMV or Assist Control (A/C) back-up minute ventilation.

c. High pressure alarm will be set initially at 50 cmH2O and then adjusted to 10-20 cmH2O above peak inspiratory pressure.
d. All ventilator alarms will be checked by the on-coming shift Respiratory Therapist and following any patient transport.

Note: Ventilator alarms may be adjusted above or below these recommended settings by physician order after considering patient-specific criteria.

References:

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Honan, L., Funk, M., Maynard, M., Fahs, D., Clark, T., & Yadin, D. (2015). Nurses' perspectives on clinical alarms. *American Journal of Critical Care, 24*(5), 387-395.

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Equipment	High	Low		Other

NBP Non-Invasive Blood Pressure Systolic	**160 mmHg**	**90 mmHg**		
NBP Non-Invasive Blood Pressure Diastolic	**90 mmHg**	**60 mmHg**		
ABP Arterial Blood Pressure Systolic	**160mmHg**	**90 mmHg**		
ABP Arterial Blood Pressure Diastolic	**90 mmHg**	**50 mmHg**		
Respirations	**30 rpm**	**8 rpm**		
Airway Respirations	**30 rpm**	**8rpm**		
ECG/Pulse	**120 bpm**	**50 bpm**		
CVP Systolic	**14 mmHg**	**6 mmHg**		
CVP Diastolic	**6 mmHg**	**-4 mmHg**		
PAP Systolic	**34 mmHg**	**10 mmHg**		
PAP Diastolic	**16 mmHg**	**0 mmHg**		
ICP Systolic	**14 mmHg**	**6 mmHg**		

ICP Diastolic	**6 mmHg**	**-4 mmHg**		
SpO2	**100%**	**90%**		
CO2	**50**	**30**		
Temperature	**39.0°C**	**36.0°C**		
Ventilator	**High pressure alarm. Limit set at 50 cm H2O then adjusted to 10-20 cm H2O above PIP.**			
Ventilator		**Low tidal volume. Adjusted 50% below desired exhaled tidal volume, or spontaneous tidal volume, if on a low SIMV rate, 6 or below.**		
Ventilator		**Low minute volume. Adjusted 2-5 L/min below minimum SIMV or assist-control back-up minute ventilation.**		

Legend: Peak Inspiratory Pressure = PIP; Pulse Oximeter = PO; Synchronized Intermittent Mandatory Ventilation = SIMV

Approved by: _____ Daniel Barbee Chief Executive Officer _____ Date _____ Puneet Sindhwani, MD Chief of Staff _____ Date _____ Kurt Kless Chief Nursing Officer _____ Date *Review/Revision Completed by: Chief Nursing Officer, Heart and Vascular, Cardiac, Respiratory*	**Policies Superseded by This Policy:** • *N/A* Initial effective date: 6/1/2016 Review/Revision Date: 6/1/2016 6/1/2019 7/1/2020 Next review date: