Precautions in Bedside ECG Monitoring

Key points for safe use

(Case 1) The alarm in the bedside ECG monitor went off. The medical staff visited the patient’s room and found an abnormal waveform on the monitor. After checking, it was found that the electrode, which was attached to the patient, had come off.

1. Precautions for the technical alarm (electrode detachment)

- The electrode should be replaced periodically before the adhesive performance decreases.

The adhesive performance of electrodes decreases with long-term use and skin conditions of the patient such as sweating. Defining rules for electrode replacement intervals and changing electrodes before they come off will help reduce inaccurate measurements.
An alarm related to incomplete wireless transmission went off. Medical staff checked the ECG system and found that the battery of the transmitter worn on the patient was running out and the signals were not received by the central monitor.

2 Precautions for the technical alarm (running out of battery)

- Change the battery of the transmitter immediately when the central monitor shows the battery change indicator, regardless of whether there is an alarm or not.

### Examples of battery change indicators

**WEP-1000** Series

Fukuda Denshi Co., Ltd.

**DS-8700** Series

Philips Electronics Japan, Ltd.

**Central Monitor** Phillips Patient Information Center
(Case 3) An alarm related to incomplete wireless transmission went off. The medical staff checked the ECG system and found that the battery of the transmitter worn on the patient was running out and the signals were not received by the central monitor.

3 Precautions for the technical alarm (improper transmission)

- Check the reception status in hospital rooms of the monitor antenna.

If the transmitter is located far from the antenna or intercepted by walls from the antenna, wireless transmission will be compromised on the side of the central monitor.

The environment for the ECG monitor should be improved to avoid needless alarms such as lead disconnection from the electrode, electrode detachment, running out of battery, improper wireless transmission and printer’s out-of-paper status, etc.
5 Precautions for patient monitor settings

- Make sure that patient information set in the monitor is for the right patient attached to the transmitter.

Medical staff may have to handle multiple transmitters. Establishing a procedure for the setup of the central monitor such as a patient-specific setting is also important.
(Case 6) Alarms went off for several patients at once. The medical staff stopped all the alarms once and attended the patients one by one, failing to respond to high-priority patients in time.

(Case 7) The alarm went off frequently despite having been turned off. The medical staff assumed that the patient was just moving and failed to respond quickly.

6 Proper use of bedside monitors etc.

- Define the basic policy of responses when an alarm goes off.
- Discuss in the team the necessity of a central monitor, etc. for proper use of devices.

Necessity of a bedside monitor. etc.

Patient A’s condition is stable now. He can remove the ECG monitor and switch to a pulse oximeter!

To discuss the necessity of a bedside monitor as a team for each patient is important.

Proper alarm settings

The settings of the alarms for heart rate threshold, arrhythmia, etc. should be changed as appropriate according to the condition of patients.

Proper alarm setting for each patient helps avoid needless alarms. Discussing the proper alarm sound and volume is also important.

Notice from organizations and groups that are related to this medical safety information is available at the Pharmaceuticals and Medical Devices Information website (only in Japanese)

About this information

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