



GREENLIGHT CLINICAL GUIDELINES

Heart Rate Monitoring

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Heart Rate Monitoring Guidelines

Introduction

'Heart Rate' (HR) is a clinical observation that measures how many times a heart beats per minute. A single heart beat is a full cycle of contraction and relaxation of the heart. This can be done in a non-invasive manner by using a Heart rate monitor or manually. This document will explain how to use a heart rate monitor and how to measure a heart rate manually, it will give basic information on how the machine works and how to interpret the given results.

What does a Heart Rate measure?

A Heart Rate Monitor measures a person's Heart Rate. The heart is a part of the Circulatory system and is located to the left side of the centre of a person's chest. It is made up of 4 chambers called the Left Atrium, Right Atrium, Left Ventricle and Right Ventricle. A single heart beat is a full cycle of contraction and relaxation of the heart. This is co-ordinated by electrical impulses working through the heart to ensure a co-ordinated beat. The heart is a pump that transports blood carrying oxygen, nutrients and waste products to different parts of the body.

What is a Heart Rate Range?

A healthy heart rate (HR) is widely considered to vary between 60-100 beat per minute (BPM). A healthy heart also beats with an equal amount of time between each beat. The range itself can vary for many reasons including age, fitness levels and sickness.

Arrhythmia

Tachycardia: Bradycardia:
≥100 BPM ≤ 60 BPM

Irregular Rhythm:
When the time between each beat varies.

Outside of the healthy range a patient is at risk of developing further complications due to impaired Oxygen delivery to the tissues in the body. These include Stroke, Heart Attack, Kidney Injury and many others.

If you obtain a high or low reading encourage the patient to relax and retake the heart rate again. If the heart rate remains out of range, consider contacting the Senior Medic On-Call.

If a patient has an abnormally high, low or irregular heart rate and feels unwell, please do not hesitate to call an ambulance.

Common causes for Abnormal Heart Rate

There are many different causes for abnormal heart rates:

- Electrolyte imbalances -Heart block
- Healing from injuries -Coronary heart disease
- Arterial Fibrillation -Ventricular fibrillation
- Changes in heart muscles

Common medications to treat and regulate Heart Rate

- Digoxin -Apixaban -Amiodarone
- Rivaroxaban -Verapamil -Warfarin
- Bisoprolol (& other beta blockers) -Dronedarone

How a Heart Monitor works

A Heart Rate Monitor works by shining a beam of light through the person's capillaries and noting how frequently blood moves past the beam. In the case of using a Pulse Oximeter it adapts the information obtained from the receiver and the red-light information. Both methods of mechanical monitoring are at risk of error:

Pulse Oximeter:

- Nail varnish on nails -Low battery/ dim bulb.
- Bad circulation -cold hands.
- Low battery/ dim bulb. -False/fake nails.
- Dirt covering light or receiver.

Heart rate monitor:

- Electrical interference (Rare)

Both measure the HR by measuring the time between each beat. In the case of an irregular heart rate, an inaccurate and variable number will be shown. If this occurs, it is advised that a manual HR should be taken.

Heart Rate Standard Operating Procedure

How to measure a Pulse (Heart Rate)

Manual:

- Step 1: Wash and dry hands thoroughly.
- Step 2: Obtain consent and explain procedure.
- Step 3: Place the first and second finger over the radial artery, pushing lightly until you can feel the pulse.
- Step 4: Count the pulse for 60 seconds, also making note of the rhythm.
- Step 4b: Before releasing the patient's wrist, this is an opportune moment to note a person's respiration rate.
- Step 5: Document the Heart rate and Respiration rate.
- Step 6: Wash and dry your hands thoroughly.

Mechanical: Using Pulse Oximeter (POx)

- Step 1: Wash and dry your hands thoroughly.
- Step 2: Obtain consent and explain procedure.
- Step 3: Find the site on which you will place the POx. Check the capillary refill (≤ 4), that the area is warm and that the finger is clear of dirt, nail varnish and false nails.
- Step 4: Place the POx on the finger, making sure that it is not too tight restricting blood flow to the area.
- Step 5: Turn on the POx and document the HR (Be mindful that the Blood Saturations may also be shown on the screen).
- Step 6: Remove the POx and clean.
- Step 7: Wash and dry your hands thoroughly.

NB All Greenlight Clinical Guidelines are based upon approved existing guidelines adapted for the specific use and demographic of service users seen on the medical van in the community.

References:

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