## Data Quality Checks (QC)

The file should be quality checked immediately after downloading as timely data reviewing is key to helping improve any compliance issues, detecting faulty monitors, and minimising data loss:

Run the “QC\_Garmin.bat” script (Note: This script will be provided by PATT). This will produce graphs of the data and a spreadsheet with the information from the file that you need to check.

**Review the following to check:**

**Checks on graphs:**

1. **Check that the duration of the heart rate file and the accelerometer file are the same.** (The yellow and blue graph should have the same start end finish time).
2. **Has the monitor been worn.** If there are no graphs or big gaps in the graph it is likely that the monitor was not worn for some or the whole time.
3. **Does the graph get stuck at any points.** The accelerometry graph will likely be continuously flat if the device was not worn (but if not worn the heart rate graph will have a gap). Overnight there will be less movement, but if heart rate is still showing it should be recording ok. If the graph gets stuck at other unusual points it could indicate a technical issue, contact PATT about this.
4. **How many nights of sleep:** The yellowed area on the graph displays sleep data. Is the number of nights sleep as we expected? If the monitor was taken off during sleep, it won’t be displayed as sleep. Some volunteers may not get sleep data due to their sleep not fitting the algorithms for sleep detection. If this is the case, make a note so if queried it will be known it has already been seen.

**Checks on spreadsheet:**

1. **Check timestamps:** Are the first and last timestamp the same for the heart rate file and accelerometry file.
2. **Wear time:** Is the heart rate wear start and end time what we expected and is the heart rate wear time what we expected? Is the number of days what we expected?
3. **Heart rate values:** Is the minimum and maximum heart rate values realistic? We would not expect it to be much below 40 or much higher than 200 (however this does depend on the population you are studying).
4. **Non wear:** Are there many bouts of non-wear? If there are, check in the heart rate file if these were long (empty gaps on the heart rate graph). This could indicate that the monitor has been taken off often or not worn correctly.
5. **Heart rate file time jumps:** If this number exceeds 60 minutes contact PATT as this could indicate that the monitor is not working correctly.
6. **Accelerometry recording range:** We record accelerometry at 25Hz (25 samples each second). The recording range can potentially vary a bit but should be 25 Hz for most seconds. The variable “Minutes out of 20-30Hz range” displays how many minutes in the accelerometry file, that is outside a 20-30Hz recording range. If this number exceeds 60 minutes, contact PATT as this could indicate that the monitor is not working correctly.

**\*\*\*If files display any unusual or unexpected patterns please contact**

**the PAT team\*\*\***