have to be manually cleaned. Examples are the Nerve Express ECG unit or the Mind Ware units. https://www.mindwaretech.com/

The second level down regarding quality of reading is the Holter style chest monitor such as Polar makes, and which is used by the basic level Nerve Express unit or Elite HRV App. This has more noise, is hard to (impossible to) manually clean the data, but which is much easier to use in terms of convenience and time. They are less expensive as well. This is the method I use now clinically and personally.

The third level down is the photoplethysmography sensor that is applied to an extremity, i.e., finger cuff, wrist, watch or ring type, and uses a beam of IR light to take the R-R intervals. There is an increased likelihood of errors due to the distance from the heart and the fact that other variables can intrude on the physiology that you want to most directly measure, the CNS function. The more layers between what you desire to measure and the data you take, the more likely errors will accumulate.

Now that I have stated all of this, there is debate about whether the Holter belt, wrist and finger photoplethysmography sensors are really that inferior to the gold standard ECG data. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4751190/

This paper analyses the differences in the end result of HRV data obtained by three different methods. It concludes that the end results are only marginally different between the three methods. As far as clinically vs potentially, some research-based data gathering may be largely functionally equivalent.

There is a chapter on remote monitoring in the *Handbook of Psychophysiology*, which asserts that the very act of taking a blood pressure changes the blood pressure in ways that are not able to be compensated for fully. There is a goal in the field of psychophysiology to develop ways to assess ANS function without touching a person potentially from a distance, or even from video recordings. This would allow more accurate measurements to be made of the ANS and how the body reacts free of the variables introduced by the tools used to make the measurements themselves. Motion Microscopy aka Eulerian Video Magnification (EVM) https://www.extremetech.com/extreme/149623-mit-releases-open-source-software-that-reveals-invisible-motion-and-detail-in-video is one of these promising technologies that we may be using in the future. This video shows its potential: https://www.youtube.com/watch?v=kztqmhX-dpY

The field continues to change as the technology develops. Stay tuned for more changes. In the meantime, let's use the technology that is available now to see the effect that our work has on both our patients and ourselves. Start working with this technology and upgrade when time and money allow. Start playing with it in your own practices and in your own life and see what you can discover.