Hi Christy

Your device - a wrist monitor to detect heart rate and blood pressure sounds very interesting.

Pulse is traditionally measured by palpating the radial artery at the wrist. The measurement is accurate, reliable and repeatable. One has to look at both the rate and rhythm in order to get useful information from pulse measurements.

There are a few wrist home monitors avaliable on the market. They are advisable for few patients for home monitoring of BP,  as upper arm BP measurement is more accurate and reliable.

Primary hypertension tends to be a disorder affecting the older population and is multifactorial when one is looking for the cause.

Heart disorders are varied and some can be present from birth.

I am pasting this segment from a journal regarding BP -

Wrist blood pressure monitors can be accurate if used exactly as directed. However, according to the American Heart Association, it's best to use a home blood pressure monitor that measures blood pressure in your upper arm. Devices for the upper arm are also easier to check for accuracy than are wrist monitors.

Wrist blood pressure monitors are extremely sensitive to body position. To get an accurate reading when taking your blood pressure with a wrist monitor, your arm and wrist must be at heart level. Even then, blood pressure measurements taken at the wrist are usually higher and less accurate than those taken at your arm. That's because the wrist arteries are narrower and not as deep under your skin as those of the forearm.

Some people can't have their blood pressure measured at the upper arm because they have a very large arm or find blood pressure measurements painful. In these cases, measuring blood pressure at the wrist is acceptable.

A clip to help with causes for arrythmias -

Arrhythmias may be caused by many different factors, including:

* Coronary artery disease.
* Electrolyte imbalances in your blood (such as sodium or potassium).
* Changes in your heart muscle.
* Injury from a [heart attack](http://www.medicinenet.com/heart_attack/article.htm).
* Healing process after heart surgery.
* Irregular heart rhythms can also occur in "normal, healthy" hearts.

Monitoring is a very useful tool. For detecting, diagnosis and effectiveness of the treatment initiated for the patient.

The subject matter is vast and I have tried to answer the questions you have asked.

As a project for you -

\*The reliability of the measurements;

\*The ease of putting the cuff independently by the patient;

\*Memory feature to store the measured values with time and date;

\*An optional alarm feature like a flickering value - when doctor to be contacted for advice and provision to individualise 'the alarm values' for the patient would be an attractive feature.

Good luck for the project.

Regards

Mrs S Kasetti

Sent from Samsung Mobile

-------- Original message --------

From: Gmail

Date:13/03/2015 1:42 PM (GMT+01:00)

To: Savitha Kasetti , Pragna Kasetti

Subject: Fwd: SSC Robotics project

Thanks

Ravi

Sent from my iPhone

Begin forwarded message:

**From:** Christy Chan <[CHAN11@Sevenoaksschool.org](mailto:CHAN11@Sevenoaksschool.org)>  
**Date:** 13 March 2015 09:37:34 GMT  
**To:** "'[rkasetti@gmail.com](mailto:rkasetti@gmail.com)'" <[rkasetti@gmail.com](mailto:rkasetti@gmail.com)>  
**Subject:** **SSC Robotics project**

Dear Dr. Kasetti,

My name is Christy Chan, and I am a student at Sevenoaks School. I am currently doing a project for my Robotics design SSC course. I am planning to design a heart rate and blood pressure monitor that fits around the wrist, which can periodically measure blood pressure and heart rate to detect any problems the patient might have, and alarm them gently if so. I was wondering if you knew anyone who had hypertension or heart disorders, how old they are and what type of job they do, and if that might greatly affect their blood pressure when relaxed.

In addition, I would like to ask what type of alarm you believe would allow for someone to know if their blood pressure was too high, but without causing the patient themselves’ blood pressure to go high.

As well as this, I would like to know more about whether or not there are certain types of fatal diseases that this product could help detect, other than that of hypertension and hypotension, heart murmurs and some other disorders.

If there is any other useful information for me to know about how certain factors would affect blood pressure or the heart, please do not hesitate to let me know. I am very thankful for your time, and I hope to hear from you soon.

Faithfully,

Christy Chan

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Further details of the School are available at <www.sevenoaksschool.org>.

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Hello Daughter

Your idea is a good one and one that is needed by many people

One of my friends has hypertension and needs such a device

Whilst it can strike at any age, it is typically something that strikes later in life and can really affect anyone – in my friends case, he was a management consultant and now works for a private equity firm, jobs that are very stressful which has probably led to his hypertension – he is in his mid 40s

His job is stressful so this impacts his blood pressure

I think simply telling someone through a beep that the blood pressure has been continually higher after several readings is what is needed

I am not sure the device unless you alter it can detect much more;  by applying pressure you can determine blood pressure;  and through pulses can detect the heart rate

Beyond that, I am not sure it can do anymore unless it is light enough where it can be worn all the time and can also measure number of steps taken etc, like Fitbit

Many things impact hypertension:

Diet i.e. Too much salt

Stress, i.e. Too much is bad

Lifestyle, i.e. Too sedentary, too much excitement

For heart disease, these are:

Diet, i.e. Too much fat is bad

Lifestyle, i.e. Lack of exercise

The biggest one is genetics, i.e. If one of your parents, has it, there is a higher chance that the son/daughter will have it

Ask mum if she has the harvard report on the silent killer, hypertension

Let me know if you need more

**From:** Christy Chan <[CHAN11@Sevenoaksschool.org](mailto:CHAN11@Sevenoaksschool.org)>  
**Date:** Friday, 13 March 2015 17:27  
**To:** Wai-Chan Chan <[wai-chan.chan@occstrategy.com](mailto:wai-chan.chan@occstrategy.com)>  
**Subject:** robotics project

Dear Dad,

I am currently doing a project for my Robotics design SSC course. I am planning to design a heart rate and blood pressure monitor that fits around the wrist, which can periodically measure blood pressure and heart rate to detect any problems the patient might have, and alarm them gently if so. I was wondering if you knew anyone who had hypertension or heart disorders, how old they are and what type of job they do, and if that might greatly affect their blood pressure when relaxed.

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Yours sincerely,

Christy

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