A convenient fix for postural hypotension

When I learnt that my grandfather had fainted and fallen in the middle of the night I immediately looked up his condition and why he was not able to prevent it from happening.

Elderly people may need to use the restroom frequently at night. Many of them including my grandfather suffer from postural hypotension where when they get up from bed and start walking their blood pressure drops and they may fall leading to injuries which can be very fatal.

On speaking to my grandfather furthur I determined that even though a simple solution like sitting down for 3 minutes before you stand up exists, it is difficult for him to remember to do it while sleepy and drowsy at night. Since no other person is generally awake to alert him either, he often simply gets up without waiting and because of his condition faints and falls.

Postural or orthostatic hypotension results from a drop in blood pressure when making sudden jerky movements. It is fairly common for elderly adults and the solutions currently available including sitting for three minutes, uncomfortable compression stockings, abdominal compressions are not convenient for people to sustain for long.

Possible solutions for this issue include the following

1. A pillow that senses when you get up (monitors the pressure and when there is a drop in pressure near your head and pick up of pressure near your hips, it concludes that the person has woken up/stood up) and sends either voice alerts or automatically compresses the belt. Possible problem is comfort- the pillow should be comfortable enough to sleep in while also monitoring pressure
2. For most cases, heart rate increase is accompanied by a rise in blood pressure and so a device that checks the heart rate of a person and if it rises above a set limit, sends voice alerts. The possible problem with this could be if a person's heart rate rises due to other reasons even when he/she is not trying to get up. This could disturb people in their sleep.
3. Motion sensors under the bed can detect if a person's feet touch the ground and then go on to send alerts to be slow and careful while walking. The potential problems include that by the time the person touches the group his or her blood pressure might already have fallen and it may be too late to alert. Another issue may be insects or wind of any kind may falsely trigger the sensor and could be disturbing.
4. Compression belts would compress near the abdomen (which regulates blood pressure and does not allow it to drop too low) and could be a set to automatically compress when it senses the person getting up (could be combined with the pillows possibly). Potential problems include that the belts may not be comfortable to wear throughout the night and may be too tight

Blood pressure machines, decompression belts (<https://www.youtube.com/watch?v=btPLWptXhRI>) work on the principle of a person manually pushing to cause the compression so we need to come up with a way that the belt automatically compresses.