

AI wearable solution that helps Reduce “Onset-to-Arrival” Time for Stroke Patients



Stroke Care Challenge_ Reperfusion Extremely Time Dependent

Time to Alarm is a weak link of the stroke chain
at home or in hospital



①

Patients Unable
to self-detect & call for help
on their own

②

+60% patients
don't arrive on time
to hospital for effective treatment

③

50% survivors
chronically disabled

Stroke Alarm by Uman Sense

AI powered
wearable solution
for early detection
of stroke symptoms
in high-risk patients .



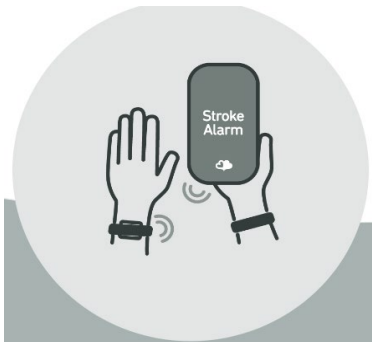
Stroke Alarm Solution _How does this work?

83-90% of stroke patients suffer from arm paresis

The solution early detects unilateral arm weakness that characterizes most stroke patients and notifies pre-selected user's contacts via SMS. It applies a proprietary algorithm that uniquely distinguishes stroke-affected arms from healthy ones during everyday activities and sleep.

1

Wear every day



Vigilant around the Clock day and night

2

Detect



Identifies arm weakness & vibrates to symptoms

3

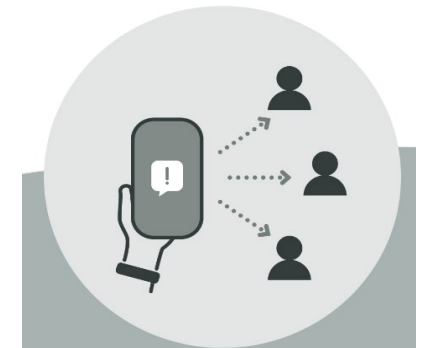
Test



2 steps escalation test to negate false indications

4

Alarm Contacts



Automatically notifies pre-selected contacts

Increases the chances for patients who are at high risk of stroke to get help early and have access to an effective stroke treatment within the required time.

Scientific-based Innovation with High Sensitivity and Specificity

Developed and Validated by Neurologists and Data-Scientists Experts in Stroke



Associate professor Johan Wassélius and professor Kalle Åström, Lund University

Johan Wassélius : Associate Pr of radiology, Interventional neuroradiologist - CCO and co-founder

Kalle Astrom, Pr of Centre for Mathematical Sciences, Lund University. Stroke Imaging Research Group.

Bo Norrving, Pr. Neurology, Lund . Clinical Stroke Research. Advisor

Effective Balanced Algorithm ensuring day and night high stroke detection performance while ensuring high user compliance

Day
Sensitivity : 0.71, Specificity: 0.995 in 30 to 65 minutes
Night
Same results in 120 minutes

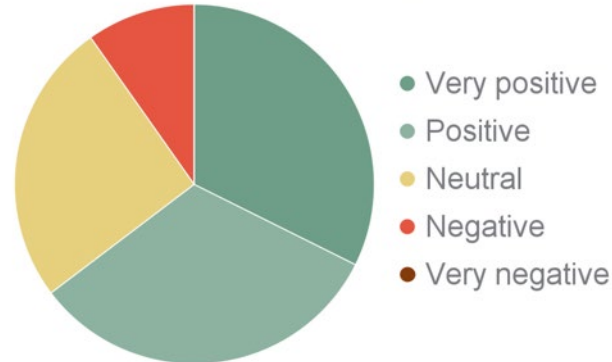
We can run it at a higher sensitivity but in this case, the models would generate more indications, requiring more frequent user interaction to further inform the system of user health and raising user's anxiety and annoyance. We want to keep user interaction at a level where they feel happy and safe and stay compliant. We adjust model parameters to keep sensitivity and specificity at a level that ensures a good user experience and high compliance.

Source: Wassélius et al. Detection of Unilateral Arm Paresis after Stroke by Wearable Accelerometers and Machine Learning. Sensors 2021, 21, 7784

Endorsed by patients*

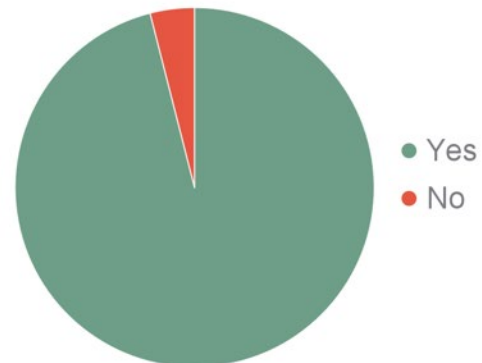
Nearly **90%** patients very positive, positive or neutral

Overall experience of using the device



96% patients would use a similar device again

Would you be willing to use a similar device?



The majority of patients said spontaneously that they felt safer using the device.

* Source: [Esbjörnsson M, Ullberg T. Safety and usability of wearable accelerometers for stroke detection the STROKE ALARM PRO 1 study. J Stroke Cerebrovasc Dis. 2022 Nov;31\(11\):106762. 30 Patients after stroke / TIA without notable arm paresis over 30 days period](#)

Easy Stroke Monitoring for Caregivers and Care Team

✓ Simple and quick patient onboarding

"May I suggest you wear a Stroke Alarm?"



Prescription by Healthcare professionals to patients at increased risk of stroke

1. Install the app on your phone
2. Follow the app onboarding instructions
3. Wear the bracelets
4. You are good to go. Take care!

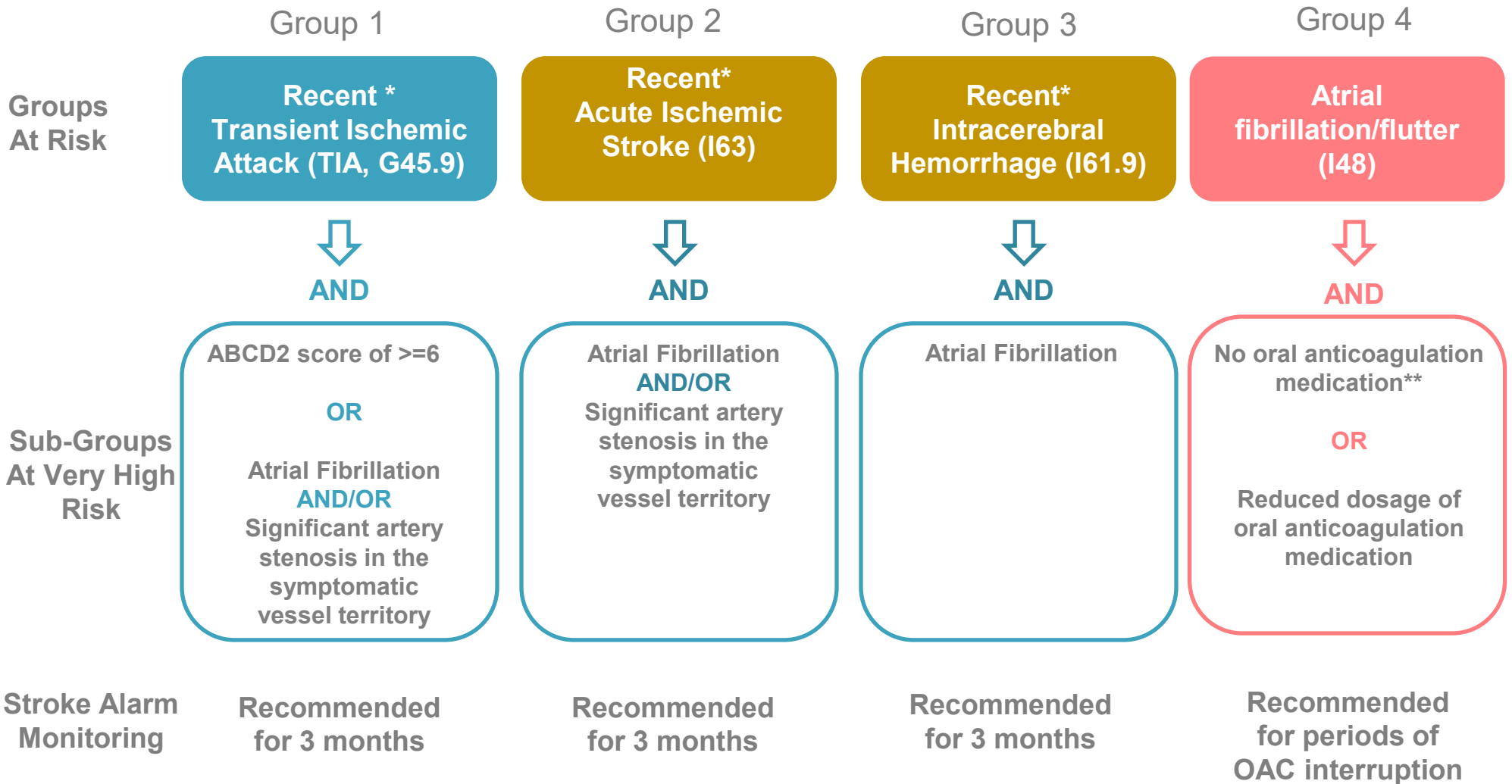
The system is ready to use out of the box. The bracelet batteries last 6 months and can be activated and deactivated according to patient monitoring needs.

✓ No extra monitoring burden for the care team

- Stroke Alarm does monitor the patient autonomously.
- Stroke Alarm will help the doctor increase the number of high-risk patients arriving on time for reperfusion.



Patients at Risk Groups who will benefit from Stroke Alarm



Exclusion of Arm motor deficit from any previous medical condition

* Recent = 2 weeks - **Including all oral anticoagulation medication such as Warfarin and NOACs, but not antiplatelet medication.

Stroke Alarm increases Access to Brain-Saving Therapies

First Swedish Prospective Study

Before Stroke Alarm

41%

of the patients
arrive at the hospital
within 4.5 hrs. window*



After Stroke Alarm

83%

of the patients
could arrive at the hospital
within 4.5 hrs. window*

(e.g. out of 9000 patients detected, 3850 could be shifted to a 4.5 hrs. time window.)

* We can customize the algorithm with a shorter time window

Strong Evidence behind Stroke Alarm

Stroke treatment is time critical

- Emberson J et al. Lancet 2014; 384(9958): 1929–35
- Saver JL et al. JAMA 2016; 316(12): 1279–88

Arm paresis is present at onset in 83-90%

- Kidwell CS et al. Prehospital Emergency Care 1998; 2:4: 267–73
- Bogousslavsky J et al. Stroke. 1988;19(9): 1083-92.

Accelerometers can detect arm paresis in stroke

- ▶ Wasselius J et al. Sensors (Basel). 2021 Nov 23;21(23):7784.
- Messé SR et al. J Am Heart Assoc. 2023 7;12(3):e028819.

Stroke Alarm is safe and well tolerated

- ▶ Esbjörnsson M et al. J Stroke Cerebrovasc Dis. 2022;31(11): 106762.

Stroke Alarm is cost-effective

- ▶ Wasselius et al. *Manuscript*

Stroke detection by accelerometer bracelet technology is Safe, Accurate and likely Cost-Effective for known Risk Groups and Highly Appreciated by Patients.

Stroke Alarm – When Every Minute Counts



Request a Demo – Contact Tarom Digital Health
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