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## HEALTHCHAIN STORIES

# FALLPREDICT: PREDICTING RISK. PROTECTING PATIENTS

### THE NEED

Currently, prevention efforts rely heavily on manual supervision by healthcare staff. However, taking into account the number of medical staff (74 nurses working in shifts and 8 caregivers) in the Clinic for cardiovascular diseases and number of beds 53 and 8 special chairs for one day hospital stay (therapy and diagnostic procedures), it's not feasible that each patient is monitored all the time.

To provide continuous and better supervision or assistance for patients who need to go for a walk, use the restroom, etc. implementing a solution that allows for remote monitoring of patients during unassisted movements during hospital stay can bring several significant benefits.

It enhances patient safety, reduces the risk of falls and injuries, optimizes staff resources, and improves overall operational efficiency. The hospital benefits from increased patient satisfaction, reduced incidents of adverse events, and a more proactive approach to patient care.



### THE HEALTHCHAIN SUPPORT

HealthChain supported Healthcare Organisations in identifying their innovation challenges and selecting companies to address them. They worked closely as an interregional team to co-create, test, and validate a solution aligned with real clinical workflows, patient needs, and organisational constraints. The project provided financial and business support to boost the solution's market-readiness and commercialisation.



# THE SOLUTION

StabilityGuard, is an AI-powered system designed for real-time fall prevention and detection in healthcare settings. It integrates wearable sensors (discreet wristbands) to monitor patient movement and vital signs, an AI model that predicts fall incidents using predictive algorithms, and a centralized monitoring dashboard for medical staff. When the system detects a high-risk movement or a fall, it triggers an immediate alert to facilitate a rapid response.

StabilityGuard system centers on its ability to provide hospital-grade, predictive fall prevention rather than just reactive detection. Key elements include:



## Enhanced Patient Safety

Uses real-time data and AI-driven predictive analytics to identify high-risk movements, allowing healthcare providers to intervene proactively.



## Reduced Staff Burden

Automates continuous monitoring, which is critical in understaffed environments, allowing nurses to focus on other clinical duties.



## Hospital-Specific Design

Unlike general consumer wearables (e.g., Apple Watch), it is tailored for clinical settings with features like HL7 interoperability for hospital IT systems.



## Data Security and Privacy

Features an on-premise data architecture that ensures compliance with strict EU and Croatian healthcare regulations (GDPR), addressing common privacy concerns associated with cloud-based solutions.



## Cost-Effectiveness

Provides a scalable alternative to manual 1-on-1 patient monitoring while supporting hospital administration in decision-making through data-driven reporting.

# IMPACT

The pilot was conducted at the Clinic for Cardiovascular Diseases of KBCRI. It included a total of 56 patients (27 in the experimental group, 29 in the control group) and involved 93 nurses and 10 caregivers. It achieved several key achievements:

- The system achieved a minimum 10% reduction in the fall incidence rate among the experimental group compared to the control group.
- Maintained high accuracy with a false detection rate of less than 5%.
- 90% completion rate for medical staff training, with 8 professionals fully certified.
- 20 patient surveys were collected with more than 50% positive responses regarding comfort and safety.
- Technical constraints, such as weak Bluetooth signals, were mitigated by deploying and re-positioning additional IoT gateways.

# OUTCOMES

Beyond the data, StabilityGuard transformed the clinical environment by shifting the approach to patient safety and workflow efficiency:

- The system introduced a secure data-driven approach to fall prevention, allowing for proactive interventions rather than just reactive responses.
- Medical staff attitudes were highly positive (mean = 5.00), confirming that the sensors provided actionable insights without adding to their daily workload.
- Real-time alerts enabled faster response times, directly reducing the severity of injuries when falls occurred.
- The solution's built-in HL7 communication ensures it can scale and integrate with broader hospital IT infrastructures in the future.
- Already engaged 11 healthcare organizations for future deployment.

# SUSTAINABILITY

The roadmap for StabilityGuard ensures that the project moves from a successful trial to a permanent, commercially viable solution:

- Unlike generic wearables, StabilityGuard's sustainability is anchored in its clinical-grade architecture. The system can be integrated into hospital-wide Electronic Health Record (EHR) systems as it is built in HL7 communication.
- Defined protocols for ongoing system updates and technical support are in place to ensure long-term operational uptime.
- To ensure full commercial viability and meet regulatory requirements, the SMEs are prioritising MDR certification. The team applied for a National Call leveraging ERDF funds which would co-fund 75% of the expenses.
- Financial and institutional support was secured during the pilot, and ongoing system updates and technical support mechanisms have been defined to ensure long-term reliability beyond the healthcare organisation.

# TESTIMONIALS

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*“HealthChain helped us do the hard part: take StabilityGuard out of slide-deck mode and into a real hospital ward. The co-creation process gave us fast feedback from clinicians, clear priorities, and a clean path to deploy securely on-prem while still integrating via HL7. We left the pilot with a solution that’s technically solid, operationally realistic, and actually ready to scale.”*

- SPARKY SOLUTION, Developers

