



Silver Tsunami

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Innovation and Inspiration for Healthcare

Summary: The EAHM Innovation Award 2019 honoured posters for four healthcare projects that are challenging the status quo and innovating in logistics, healing and tech leverage around Europe. Read on for the run down on the winning initiatives.

Logistics, Innovation and Technology

The challenge for the EOC group was multi-faceted; operating two hospitals with a total of 320 beds in the city of Lugano, transporting blood from facility to facility was proving inefficient and uneconomical.

The smaller hospital had a small blood-testing lab, but it didn't operate 24/7 so blood samples from patients in the emergency were being transported to the main hospital's blood-testing laboratory, which runs round the clock.

Taxis handled the blood transport and the problems were evident: they were time-consuming, cost intensive, inefficient and not environmentally friendly. Taxi availability wasn't always guaranteed and transport time meant a loss in all round treatment quality. The EOC Group partnered with Swiss Post to address the inefficiency; the drone transport project was born.

The drone flies entirely autonomously from the smaller Hospital Italiano to Hospital Civico at a speed of about 70km/h and with a payload capacity of 2kg. According to the abstract, "landing stations for take-off and landing have been installed at both hospitals. The flight route has been carefully chosen to minimise the risk of damage in case of an emergency landing."

Logistically, the drone blood transport works much better than taxi in terms of both availability and if the weather is too poor for a drone flight, the facilities can revert to taxi transport. Significantly, the drone journey time is cut by up to

70% with the flight time taking about five minutes. Process costs have been lowered by up to 80%, and the prices for transportation are already marginally lower than the costs for a taxi.

The environmental impact deserves a mention. While a taxi journey involves shifting around 1.5 tonnes between hospitals for every 1kg of blood samples, a drone weighs around 10 kg and can carry the same load.

In the coming years the Swiss Post plans to implement this solution with other hospital groups in Switzerland.

First Place: Drones in Action for Public Health

Innovators: Luca Jelmoni (CEO Ospedale Regionale di Lugano) and Andrea Marrazzo (Swiss Post)

Facility: Ente Ospedaliero Cantonale (EOC)

Location: Lugano, Switzerland

Healing Architecture

The grounds of the LVR-Klinik Langenfeld cover about 42 hectares. As opposed to one central hospital building, approximately 50 facility buildings spread out over the area. The clinic has extensive green areas, small forests, footpaths and areas to relax. These outdoor areas have the two-pronged aim of supporting the healing of patients and meeting the clinic's ecological and environmental goals.

Since 2017, LVR-Klinik Langenfeld has worked closely with the local Nature and Biodiversity Conservation Union (NABU). The clinic's premises encompass a large protected biotope for local

bird breeds, insects, bats and other animals. More than 30 bird breeds live within the grounds which the clinic has used to its advantage; one of the biggest interventions in cooperation with NABU, also included in therapy plans, is the bird protection project. In the work-therapy group "wood," patients and therapists build bird boxes using environmentally-friendly materials and distribute them all over the clinic's premises.

The bird-shelter and feeding initiative is only one example in the extensive outdoor work of the clinic. Groups plant local flowers and fruit trees not only in the green areas but also in the clinic's organic garden where vegetables and herbs are cultivated. Patients have the opportunity to learn about the full process of gardening and selling the produce they grow. Activities are carried out in the presence of a therapist as part of a therapy programme to help promote physical, mental and social skills.

Additionally, all new buildings have been constructed in the passive-house-standard. This model of building is very energy efficient requiring minimal levels of power to achieve a comfortable temperature year round.

The NABU-project and the passive-house-standard buildings are supporting the clinic in achieving its ecological goals.

Second Place: Environmentally-Friendly and Ecological Healing Environment and Architecture

Innovator: Holger Höhmann

Facility: LVR-Klinik Langenfeld

Location: Langenfeld, Germany

Big Data and Digital Health – Innovation and Technology

AZ Maria Middelaeres is a private, non-profit 542-bed acute care hospital in Belgium.

In spite of the financial burden for the hospital in the current Belgian fee-for-service healthcare model, the team put a hospital-wide assessment and monitoring process for vital parameters into place resulting in an 80% drop in the number of resuscitations across the facility. New health technology and data analysis and reporting into actionable clinical dashboards with automated alerting enabled this development along with an open no-fault culture on the floor, empowerment and, critically, supportive leadership.

The abstract described the process: “Based on the measurement and registration of five physiological parameters – blood pressure, heart frequency, respiration rate, body temperature and saturation – the level of consciousness an Early Warning Score (EWS) is established three times a day for all admitted patients. When the EWS score goes up, so does the frequency of measurements. The frequency can be as high as every 30 minutes. On a yearly basis the hospital collects more than 2.5 million data points.”

Such close monitoring allows identification of patients whose condition is evolving into critical illness up to eight hours in advance giving the medical team time to investigate and discuss treatment options amongst the caregivers and with relatives.

Uniquely positioned in Belgium in its application of EWS monitoring, AZ Maria Middelaeres is raising the bar for qualitative and safe healthcare.

Joint Third Place: Reduction of Resuscitations and Vital Sign Data Collection Technology

Innovators: Christophe Mouton, Dr Ronny Goethals, Dr Diederik Van Sassenbroeck, Dr Henk Vanoverschelde, Tom Verbeke, Kurt Roesbeke, Jolien Vanden Berghe, Kathleen Stam



Image Credit: BVZD

Facility: AZ Maria Middelaeres

Location: Ghent, Belgium

Impact of Vital Sign Data Collection Technology on Data Quality and Patient Experience

In line with its EWS monitoring initiative, AZ Maria Middelaeres is introducing automated vital sign monitoring equipment and a new wearable sensor for data collection that is transferred automatically into the electronic medical record.

First steps included installation of spot check monitors and respiration pods. In a second phase a continual monitoring “hotspot package” for patients with a second EWS assessment of three or higher was introduced. The equipment for this monitoring comprised a wearable biosensor, a peripheral oxygen saturation meter and non-invasive blood pressure monitor.

Data analysis improved multi-fold; the growing database of clinical parameters displayed increasingly precise and reliable data compared to a manual process.

Notably, accuracy improvements have been recorded in the respiration rate measurement with the odds of initiating an alarm being 2.1 times higher compared to the manual measurements. For consciousness level, heart

frequency and oxygen saturation no differences between the two methods were demonstrated.

This integration of technology into monitoring processes has improved the general patient experience as nursing staff have more freedom to focus on core care duties. Additionally, the use of wearables means patients can be monitored from the comfort of their homes avoiding unnecessary hospital admissions and cutting length of hospital stays.

Joint Third Place: Impact of Vital Sign Data Collection Technology on Data Quality and Patient Experience

Innovators: Christophe Mouton, Dr Ronny Goethals, Dr Diederik Van Sassenbroeck, Dr Henk Vanoverschelde, Nicky Van Der Vekens, Tom Verbeke, Kurt Roesbeke, Jolien Vanden Berghe, Kathleen Stam

Facility: AZ Maria Middelaeres

Location: Ghent, Belgium