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Making a difference: Using technology to enhance mental health patient care and safety in hospital settings and beyond

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The Emergency Medical Treatment and Active Labour Act requires that all hospital Emergency Departments (EDs) medically screen all patients seeking care – including the evaluation and stabilisation of patients suffering from mental illness.

According to the Agency for Healthcare Research and Quality, about one in eight patients or up to 12 million ED visits per year, are patients suffering either from some form of mental health disorder or substance abuse. The impact these patients have on the ED and hospital is far greater than the impact made by other patient types. For starters, many are suicidal and present a host of safety issues to themselves and others. Also, elopement is a key risk; they are likely to run away, if given the opportunity. But mostly, mental health patients greatly impact hospital staffing resources. During an interval suicide watch, every 15 or 30 minutes, patients must be checked on by a nurse, doctor, or guard to ensure that he/she is well. In severe cases, a patient is placed under continuous watch, where a sitter is within arm's reach of the patient.

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An American College of Emergency Physicians' poll found that more than one in five emergency physicians had patients waiting two or more days for in-patient psychiatric beds, otherwise known as patient boarding. In part, this is because many emergency rooms are not equipped to handle people with serious mental health issues. They simply do not have psychiatrists or other mental health clinicians on staff to assess and treat mental health problems. Compared with other types of patients, people with mental health conditions rely more on EDs for treatment and are more often than not admitted to the hospital, from the ED. In addition, there is also a shortage of mental health facilities as well as beds.

However, many technology-based practices are being leveraged to ensure patient safety and reduce the impact of caring for patients while both in the ED and as an inpatient, as well as developing self-care.

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Emergency Department Tools

EDs are using a variety of measures to protect the safety and wellbeing of mental health patients and others. The majority utilise physical sitters or security for the monitoring of mental health patients. But other EDs use high definition (HD) video cameras to assist in monitoring, make use of 'mental health areas', or leverage the benefits of 'telemedicine'.

At its most basic, video cameras, monitored by guards, are placed within an ED's entrance, hallways, and nursing stations, to protect the safety of both staff and visitors. The guard then monitors the video feeds and communicates with staff as needed.

Another option is the creation of a contained area, within the ED, can provide a quieter setting; a 'mental health area' of a few rooms, in a portion of the ED specifically intended for psychiatric emergencies. After patients are medically cleared, they can be seated in this area. Fixed high-definition cameras assist in patient monitoring, and the observers are housed either in the ED or in another location. Observers can quickly activate staff or security, if needed. A single observer can closely monitor four or more patients, at one time, thereby reducing in-room sitter costs. However, a potential downside of these areas is that, for many patients, the separation and observation feels punitive and may heighten their symptoms.

Having a psychiatrist available to see and speak with patients, and to make decisions about placement and treatment modalities has been shown to decrease the need for inpatient admissions. It also means that the psychiatrist can begin a treatment regimen, if necessary. Yet, bi-directional audio and video or telemedicine, is as effective as in-person patient evaluation. Genoa Telepsychiatry is one company providing this service. Their website states that research of approximately 100,000 consumers has found telepsychiatry to be more effective and even preferable to in-person care.

This form of telemedicine is relatively inexpensive to deploy as it only requires a single mobile cart with high-definition audio and video capabilities; no medical devices are needed.

Inpatient Tools

When it comes to inpatient monitoring tools, there are a number of audio video options. Video cameras and video motion detection analytics assist hospital staff, and by using video, even psychiatric hospital rounds can be done remotely. As for patients who need to interact outside of the hospital, videoconferencing is an option.

Video cameras monitored by patient observers, nurses, or guards are strategically placed within a behavioural or mental health unit: entry/hallway leading to unit entrance, hallways within the unit, nursing station area, social activity areas or day rooms, occupational/activity therapy and group therapy rooms, and seclusion/restraint rooms. Fixed HD cameras are placed in mental health patient rooms' ceilings to monitor patient safety. These cameras are vandal-resistant and built for durability. Some, but not all, hospitals include bi-directional audio capabilities. Typically, an observer trained in caring for mental health patients monitors the patient and communicates with patient and staff, as needed. The observer can watch a greater number of patients, with the actual number dependent on the acuity and activity level of the patients.

Hospitals are implementing video motion detection analytics and event notification capabilities of high-definition IP cameras. Analytics consists of embedded software that runs on the camera or monitoring workstation to provide alerts when people or objects cross a user-defined line such as entering a room, entering a bathroom, or getting out of bed.

In some facilities, a psychiatrist in a remote location performs rounding, consultative, and other psychiatric services using an audio/visual mobile cart with the assistance of a bedside clinician. Many of these services are provided on-demand.

Videoconference solutions that provide bi-directional audio and video capabilities are used for involuntary admission court hearings when it is in the best interest of the patient to not be there in person or when a judge is unable to appear in person at the hospital.

Things to consider when deploying audio video solutions

HD cameras with 1080p or higher resolution provide the clearest images. A camera with infrared (IR) technology allows the observer to see in low-light and no-light conditions which is needed at night or whenever the lighting is low.

Cameras provide video streams to the observer; this video stream can be recorded but many hospitals choose not to record. Some solutions provide a video recording annotation function that a medical professional can use to provide explanatory notes or comments that is then saved and stored with the video recording.

Apart from the optimal use of the technology itself, there are a number of considerations, mostly regarding observee privacy that need to be considered. Video monitoring screens used to view surveillance images must be in a place that ensures a patient or other unauthorised person cannot view an image on the video monitoring screen. Signage should be posted within an ED or on units advising patients and visitors of the use of video cameras. Notice of the potential use of video cameras should also be provided to newly admitted patients and visitors. Hospital policies and procedures should be developed that address reasons that a patient will be remotely observed, information provided to patient and hospital visitors, whether video recording will be done and in what circumstances, signage, documentation, and other information.

Security features should be deployed to ensure that video images can't be accessed, viewed, or copied without the consent and approval of a hospital administrator.

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mHealth Tools

mHealth is the use of mobile and wireless devices to improve healthcare services and outcomes. It's hoped that mHealth technology will reduce patient visits to the ED and inpatient admissions by providing preventative tools to manage symptoms and intervene, when needed, to help reduce relapse and promote recovery. The National Institute of Mental Health (NIMH), the largest funder of mental disorder research in the world, has awarded 404 grants, totalling USD 445 million, for computer-based intervention studies, designed to prevent or treat mental health disorders.

In 2016, Lantern, a start-up that offers online coaching and cognitive behavioural therapy tools received over USD 22 million funding, to date, for a digital mental-health company. It offers programmes on stress, anxiety, and body image. Pacifica is an app for your phone that provides tools that provide cognitive behavioural therapy, mindfulness meditation, relaxation, and mood and health tracking. Rise Up + Recover is one of several food addiction phone apps that allow a person to track meals, emotions, behaviours, and thoughts. It also provides information about valuable resources such as dietitians, therapists, and centres which may help reduce the need for the person to go to the ED for assistance. Sober Grid is an app for those people who are in recovery and in need of a sober social network. Lyra Health's (received USD 35 million funding in 2015) model is different from the guided self-help apps just described, as employers purchase the Lyra Health solution for their employees and family members to be referred to the appropriate mental health practitioners.

Other types of technology include the Fisher Wallace Simulator, a FDA-approved neurostimulation device to help treat depression, anxiety, and insomnia. The patient places a headband-like device over their temples. The band then stimulates the brain to release serotonin and dopamine, which, by turns, reduce stress and increase feelings of happiness. Second Life is a virtual reality programme that allows patients to explore different identities and test different behaviours in a safe environment. One program, The T2 Virtual PTSD Experience, 'invites you to endure the causes, confront the symptoms, and discover the help available for combat-related PTSD in this serious role-play adventure.'

Creating a brighter future for mental health

Technology is becoming more prevalent within the ED, acute care, and guided self-help environments. It is most commonly seen in the form of video surveillance, telemedicine, and mHealth, and is providing enhanced safety and treatment protocols, reduced wait times, social support networks, and on-demand treatment and tracking. However, mHealth technologies have limited regulation and providers, users/patients, and technologists are working to resolve issues involving security, liability, reimbursement, controlling data, and the delivery of services. Yet, with digital technology's continued advances, mental health disorders can be supported as can more timely and cost-effective healthcare, lessening the burden on EDs and reducing inpatient admissions.

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