

Pulse oximeters



What the fact sheet covers:

- How pulse oximeters work
- Their potential uses in mental health unit settings

What are pulse oximeters?

Pulse oximeters are a non-invasive way to monitor a person's blood oxygen levels and pulse rate. Commonly seen in hospital wards, they take the form of a finger monitor and wired connection. They are widely used in settings where a person's oxygen levels are unstable, such as intensive care units, operating rooms, recovery wards, ambulances and emergency wards.

How do they work?

- Pulse oximeters are typically worn as a finger-tip probe, which shines a light through the finger. This light is then picked up by a sensor on the other side of the device.
- This light sensor can detect the slight colour change that indicates different levels of oxygen in the bloodstream. The sensor also detects the pulse rate.
- If the wearer's oxygen levels drop or their pulse rate changes beyond set thresholds, an alarm will sound so that medical staff can respond immediately.

What are pulse oximeters currently used for?

- Pulse oximeters help medical staff decide if a patient needs supplemental oxygen.
- They play an important role in emergency medicine.
- They help in the care of patients with respiratory or cardiac problems.
- The devices can assist in the diagnosis of some sleep disorders, including sleep apnoea.
- Depending on the sophistication of the device, they can also capture other health data including physical activity and sleep patterns.

How could they be used within mental health units?

Sadly, there have been cases where suicidal patients have taken their lives while being treated in mental health units. These instances of suicide have made doctors, nurses, patients



and their families aware of the need for additional monitoring techniques.

The idea of using pulse oximeters as monitoring devices was put forward in 2016, and a coronial inquiry into a person's death in 2017 recommended to the NSW government that pulse oximetry in mental health settings trial be used to help reduce inpatient suicide.

Researchers will soon trial pulse oximeters to test their suitability and acceptability in mental health unit settings. The devices will complement existing observation methods, including regular and frequent monitoring by clinical staff. Staff will be instantly alerted if a patient's oxygen levels drop (which may reflect a drop in vital signs), or if the patient removes the device or leaves a set area, allowing for early detection and intervention.

What are the potential benefits of pulse oximeters within mental health units?

- A reduction in the number of inpatient suicides and attempts
- More time for nursing staff to pursue positive therapeutic interactions with patients
- Increased freedom of movement for patients, without limiting the ability of staff to monitor those in their care)
- Less intrusive methods of observation – for example, currently patients may need to be woken during the night so that staff can perform checks

- Reassurance for patients who have distressing suicidal thoughts or urges (as they could seek comfort in the knowledge that staff will be alerted early if they act on these urges)
- Peace of mind for patients' families or carers, knowing there is an additional safety net in place protecting their loved one

What more needs to be done before pulse oximeters are adopted in mental health units?

While pulse oximetry devices have proven beneficial in other healthcare settings, several important questions remain before they can become widely available in mental health units.

There is a vast array of devices available on the market, but to date none of these have been tested for the specific purpose of reducing suicide risk. There is currently not enough evidence to support the use of these devices in mental health environments. Researchers will need to confirm the technology is reliable and easy to implement into clinical practice for mental health staff.

Patient wellbeing is also a primary concern. Anecdotally, the preference is to use a device that can be worn comfortably and be as unrestrictive as possible, for example in the form of a wrist band. Ongoing research will determine which devices might be most acceptable to patients, while also ensuring their safety in care.



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