The Importance of Tissue Recovery Time in Pressure Injury Prevention

Skin Requires Time to Recover After a Pressure Insult

Studies have shown that the skin shows signs of ischemia after only a few hours of unrelieved pressure, which is why we turn patients on a frequent/regular schedule. Failure to turn patients can lead to cell death and the development of pressure injuries.

Following a pressure insult, the skin needs time to recover in order for oxygen levels to be restored and toxic metabolites to be cleared. The amount of recovery time varies based on extrinsic and intrinsic factors. Studies have shown that the time required for skin to recover ranges from 5-15 minutes.

Recovery Time Promotes Tissue Reperfusion

The Leaf Patient Monitoring System automatically adjusts the patient's turn interval based on a patient's position history. If an area of the body has experienced a prolonged pressure insult, Leaf will encourage a longer recovery time for that area. If the insulted area is not given enough time to recover (i.e. the patient "turns back" prematurely), Leaf will encourage providers to reposition the patient sooner than may otherwise be indicated. By ensuring adequate recovery time, Leaf has been clinically proven to dramatically reduce rates of pressure injuries.

Turn Frequency

Ensure that turns are provided as often as necessary, but not more often than necessary.

Turn Angle

Ensure that patient turns are of significant magnitude in order to provide adequate pressure offloading.

Reperfusion Time

Ensure that pressurized tissues are given enough time to properly reperfuse between patient turns.

How Leaf Monitors Tissue Recovery Time

Without continuous position monitoring technology, it's virtually impossible to know if a turn has been sustained for enough time. The Leaf System allows us to ensure that turns are provided with sufficient frequency and quality (turn magnitude + recovery time).

The necessary recovery time is dynamically calculated based on the patient's position history. If a turn is sustained for longer than the minimum recovery time, the patient can turn back onto the previously pressurized area and remain there for 2 hours. However, if the patient turns back onto the previously pressurized area before adequate tissue recovery has occurred, the Leaf system will remind providers to turn the patient sooner.

Figure 1

Illustration of what a user may see on the Leaf User Interface with two different patient scenarios using a 2-hour turn period and 15-minute tissue reperfusion time.

TURN DUE 0:01 OVER L **B** R

Patient has been on his back for 2 hours and is due for a turn.

2:00 **L** B R

He is repositioned to his left side and gets a new turn clock, but only remains there for 7.5 minutes (half of the prescribed recovery time) until he rolls onto his back again. This is called a “turn back.”

1:00 L **B** R

The Leaf System gave him some credit for reperfusing the tissues on his back for 7.5 minutes. This earned him half of a full 2-hour turn period - one hour - upon returning to his back.

TURN DUE 0:01 OVER L **B** R

Patient has been on his back for 2 hours and is due for a turn.

2:00 **L** B R

He is repositioned to his left side and remains there for at least 15 minutes before he rolls onto his back again.

2:00 L **B** R

The Leaf System gave him full credit for reperfusing the tissues on his back for at least 15 minutes. He has been credited a full 2-hour turn period upon returning to his back.

Summary

Patients only benefit from a position change if the new position is maintained for long enough to allow tissue recovery.

The Leaf System detects premature patient “turn backs” and adjusts the turn clock based on the actual amount of tissue recovery that occurred prior to the “turn back”.

References

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