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Applying the 'CCRAEBC' Approach to Prevent Medical Device Related Pressure Injuries (MDRPI) for Patients with Non-Invasive Ventilation (NIV)

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Introduction

Non-invasive ventilation (NIV) is indicated for patients with respiratory failure, sleep apnoea, and dyspnea related to pulmonary oedema. To create an effective seal of the facial mask, the mask needs to be tight around the nose and the mouth. Medical device related pressure injuries (MDRPI) may occur when NIV is continuously used without any relief of the mask or formal monitoring of the underlying skin. MDRPI may affect the effectiveness of the NIV, so the CCRAEBC approach is applied to prevent MDRPI.

Objectives

- 1) To reduce the incidence rate of the MDRPI.
- 2) To promote early detection and prevention of MDRPI.
- 3) To raise the health care providers' awareness on the prevention of MDRPI.

Methodology

The 'CCRAEBC' approach is initiated to prevent MDRPI:

1. 'C' is to choose the correct size of medical device to fit the individual, the appropriate cushion size of device can spread the contact pressure over a larger skin area and minimize the shearing forces on the nose.
2. The second 'C' is to cushion and protect the skin with dressings in high risk areas such as nasal bridge, the use of the thin hydrocolloids or barrier products can reduce friction and shearing force.
3. 'R' is to remove devices to assess the underlying skin at least daily, it can allow an early identification of pressure injuries and to prevent from worsening the injuries.
4. 'A' is to avoid placement of devices over sites of existing pressure injuries.
5. 'E' is to educate the health care providers on correct use of devices and prevention of skin breakdown.
6. 'B' is to be aware of edema under devices and potential for skin breakdown. Edema under the device due to prolonged pressure applied may increase the development of pressure injuries and delay wound healing.

7. The last 'C' is to confirm that devices are not placed directly under an individual who is bedridden or immobile.

Result

With applying the 'CCRAEBC' approach in year 2017, the incidence rate of MDRPI for NIV patients was 8 per 1000 patients, it was significantly decreased by 82%. The health care providers reported that they were now aware of the prevention and early identification of the pressure injuries, thus promoting the wound healing.

Pressure injury is one of the indicators of quality of health care, it is necessary to prevent the development of MDRPI among patients with using NIV. By applying the 'CCRAEBC' approach, not only the incidence rate of MDRPI can be reduced, but the length of stay (LOS) of the patients can also be decreased.