

Background

Oxygen cylinders are routinely used in the hospital everyday during transportation of patients that require oxygen from one department to another. Preparation of current oxygen cylinders requires staff to attach an oxygen regulator to it, then detach it once the oxygen cylinder is empty. This is **time consuming**. (Fig 1)

The Takeo™ oxygen cylinder is a singular entity with the regulator, and a digital analog that determines the remaining time and oxygen supply left for use. This study seeks to assess the potential time savings Takeo™ oxygen cylinder can achieve.

Aim

- To measure the time taken to prepare an oxygen cylinder for use.
- To understand the challenges faced in preparing the current oxygen cylinder.
- To calculate the potential time savings when using the TAKEO™ oxygen cylinder.
- To assess the ability of the TAKEO™ oxygen cylinder in mitigating current challenges.

Methodology

A time and motion study was conducted pre and post implementation of TAKEO™ oxygen cylinder. This is done to observe and measure the time taken for healthcare professionals to prepare an oxygen cylinder. 50 observations were recorded at the emergency department.

Semi-structured interviews were also conducted with the healthcare professionals to understand the current challenges as well as gather feedback regarding the use of TAKEO™ oxygen cylinder.



Fig 2a: Current: 7kg



Fig 2b: TAKEO™: 4.7kg



Fig 3: TAKEO™ oxygen cylinder hooked on the bed



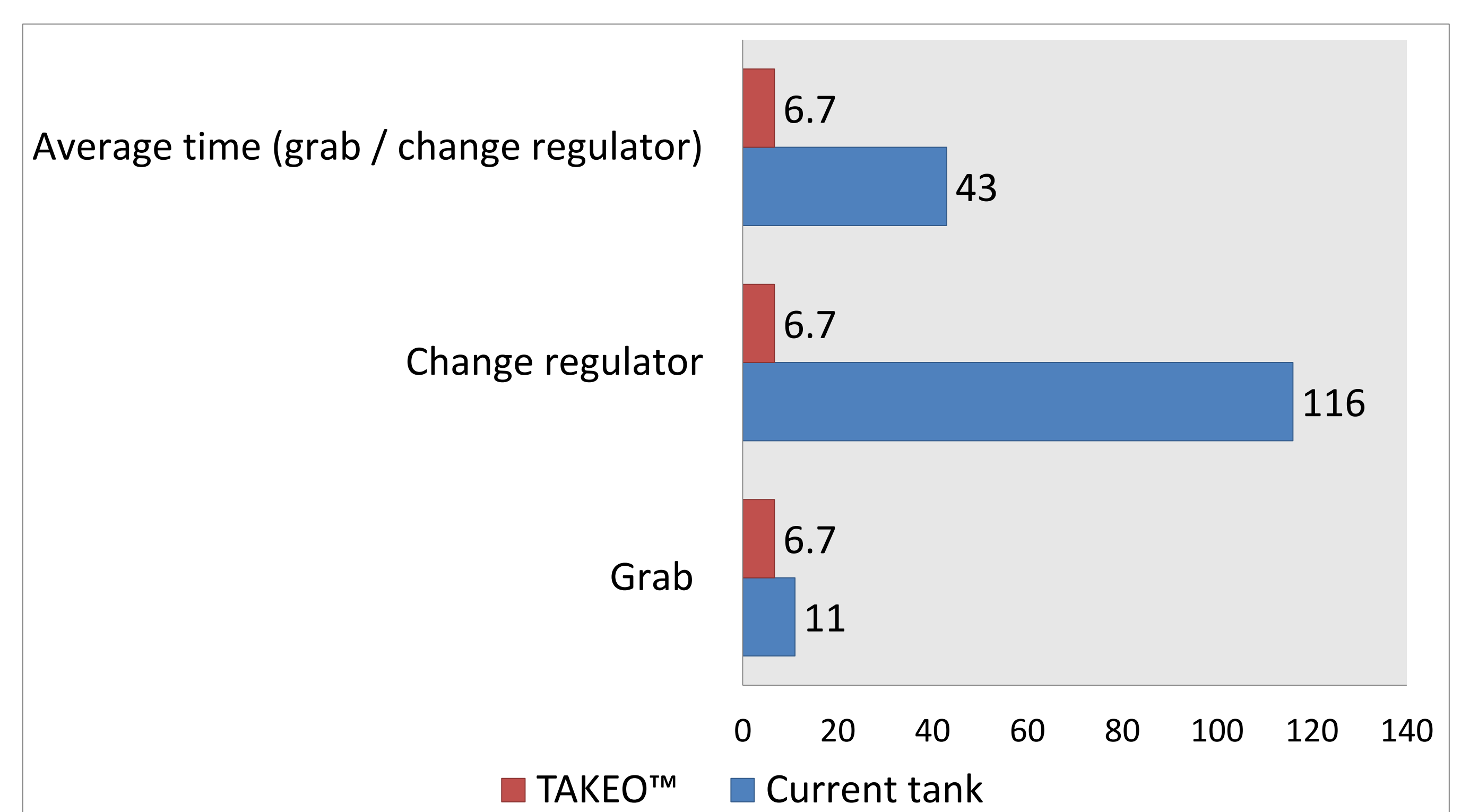
Fig 1: Nurse changing the oxygen regulator from an empty tank to a new tank.

Results (Post-Implementation)

Post-implementation of TAKEO™ oxygen cylinder

- Average time taken to prepare (grab) an oxygen cylinder is **6.7 secs**
- Average time taken for staff to stock check oxygen cylinder is **73.5 secs**

This brings a **84%** time reduction in preparing for an oxygen cylinder (43 secs – 6.7 secs). There is also a **67%** time reduction when checking the stock count for oxygen cylinder.



Discussion

The initial projected time savings was a 75% reduction, from 43 secs to 11 secs, as the TAKEO™ oxygen cylinder did not require regulator change. However, post implementation results yielded an average time of 6.7 secs.

Semi-structured interviews were conducted with the staff to gain feedback of TAKEO™ oxygen cylinder and to understand what contributed to the decrease in time taken.

1. TAKEO™ oxygen cylinder had a digital interface which was easier to read as compared to the current analog dial.
2. TAKEO™ digital analog was able to alarm user of the time and amount of oxygen left for use
3. TAKEO™ oxygen cylinder is slightly over 2kg lighter, making it easier to carry. (Fig 2a & 2b)
4. TAKEO™ oxygen cylinder has an inbuilt hook and will not require other accessories, further decreasing the grab time. (Fig 3)

Conclusion

The TAKEO™ oxygen cylinder has shown to bring a **84% time savings** when preparing oxygen cylinder, and a **67% reduction in time** taken for stock taking.

Staff interviewed has given positive feedback, and find the TAKEO™ oxygen cylinder to be less time consuming and convenient for nurses to use.

The digital analog attached to the cylinder has the ability to calculate the remaining amount of time left till the cylinder runs out, which could facilitate the nurse to plan a smooth transporting journey of patients requiring oxygen support.

A long period of data collection will still be required to examine if the TAKEO™ oxygen cylinder can potentially help to reduce oxygen wastage and determine the effective use of TAKEO™ in the future.