Dedicated Robotic Bedside Assistants Can Dramatically Enhance Operating Room Efficiency and Cost-Effectiveness

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Introduction

Though robotic surgery has been demonstrated to be a safe and effective technique, concerns regarding its cost-effectiveness and possible longer operative times persist. Dedicated robotic bedside assistants are highly trained individuals that may mitigate some of these concerns. In this study, we sought to investigate how a dedicated robotic registered nurse first assistant (RNFA) could enhance operating room efficiency while controlling the costs of robotic surgery.

Methods

This is a descriptive analysis of the development of a robotic bedside assistant program at our institution from 2017 to 2023. All robotic cases during this study period were analyzed. Outcome metrics included case volumes, % of cases supported by an RNFA, first-case on-time (FCOT) start accuracy, turn-over times (TOT), average number of robotic cases performed per day per room, and errors in supply charge documentation.

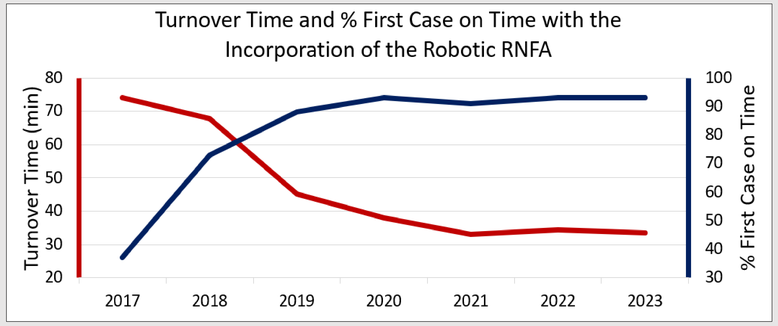


Figure 1. Line graph demonstrating the decrease in turnover time and the increase in proportion of first cases that started on time with the addition of further dedicated robotic RNFAs.

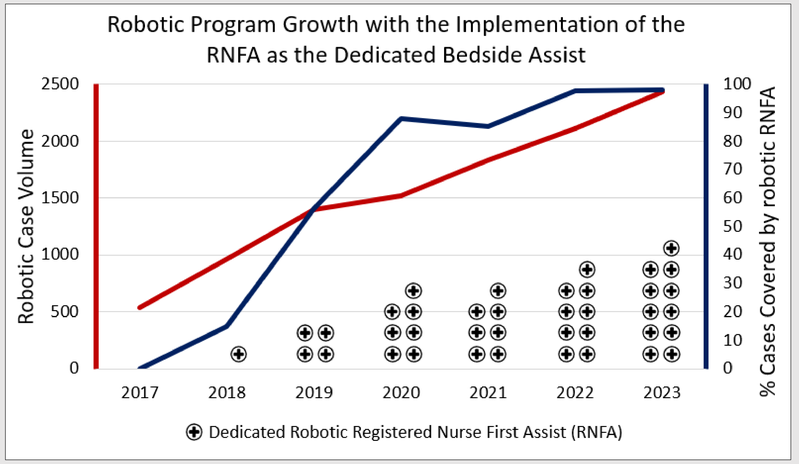


Figure 2. Figure depicting the growth in robotic case volume. The proportion of robotic cases with dedicated RNFA coverage increased as the number of RNFAs increase from 1 to 11 over the study period.

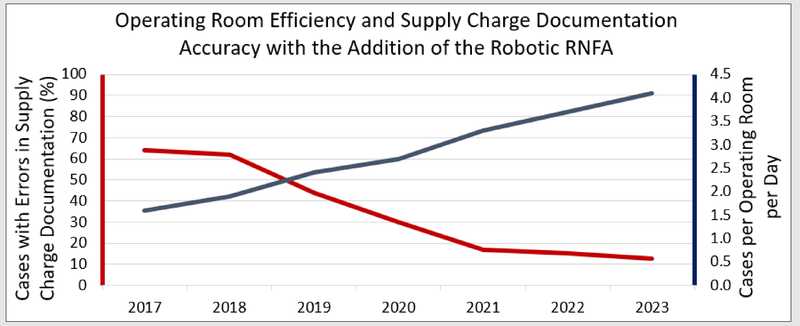


Figure 3. Figure demonstrating the decrease in the number of errors in supply charge documentation and the increase in the number of cases per operating room per day with the inclusion of the RNFA.

Results

Yearly robotic volumes during the study period increased from 534 cases in 2017 to 2434 cases in 2023, nearly five-fold growth. The number of dedicated robotic RNFAs increased from 1 in 2018, which was the pilot year, to 11 in 2023. The percentage of cases covered by an RNFA increased from 14.7% in 2018 to 98.1% in 2023. The average number of robotic cases performed per operating room increased from 1.6 to 4.1 cases per day. TOT decreased from 74.1 to 33.5 minutes. FCOT start accuracy improved from 37% to 93%. The proportion of cases with an error in the supply charge documentation decreased from 64.2% to 12.8%.

Conclusion

- A dedicated RNFA as the robotic bedside assistant may have significant impacts on the efficiency of robotic surgical procedures.
- A dedicated robotic bedside assistant program may help to improve OR utilization without the need for additional rooms.
- Dedicated RNFA programs may also provide a financial benefit in reducing documentation errors and increasing OR productivity.