# Piloting Total Perioperative Telemedicine for Elective Cholecystectomies for Symptomatic Cholelithiasis

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## INTRODUCTION

- Telemedicine has become integral in offering remote access to medical services
- There is increased awareness about the environmental impact of healthcare and the need for sustainable solutions
- Telemedicine can potentially increase healthcare access and lower the environmental impact of providing care
- There is limited data examining the effectiveness of telemedicine for preoperative evaluations, particularly in the elective setting for common procedures such as cholecystectomies

## METHODS

Six-month pilot study to assess feasibility and outcomes of telemedicine for preoperative evaluations (TPT) in surgery

Compared adverse events (AE), clinic visits, and environmental impact via Life Cycle Assessment (LCA) between TPT and in-person evaluations

AE were defined as complications within 30 days post-surgery, including surgical site infections, bile leaks, and readmissions

LCA considered patient travel, internet usage, server emissions associated with telemedicine

## RESULTS

- AE rates were comparable between TPT and in-person evaluations (8.3% vs. 12.9%, p=0.67, chi-squared test)
- Patients undergoing TPT had a higher number of clinic visits on average (1.42 vs. 1.06, p=0.0042, independent t-test), but significantly fewer travel trips to the medical center (1.3 vs. 2.9, p<0.0001, independent t-test), resulting in reduced carbon emissions
- The LCA revealed substantial environmental benefits associated with TPT

| | | TPT group | In-Person Group |
|---|---|---|---|
| **Assumed Device** | | | |
| | -Phone | 1.7* | 0.1* |
| | -Laptop | 1.9* | 0.1* |
| | -Desktop | 2.4* | 0.2* |
| **Car** | | 58.5* | 123.3* |
| **TOTAL (assuming Desktop):** | | **60.9*** | **123.5*** |

Table 1: LCA Results – Avg CO2 emissions per patient
*Per-Patient Greenhouse Gases ($kgCO_2$-eq)

## DISCUSSION

- TPT is safe and effective for preoperative evaluations, with similar AE rates to in-person evaluations
- TPT significantly reduces travel trips and carbon emissions, supporting sustainable healthcare practices
- Despite more preoperative clinic visits, TPT offers convenience and is feasible, especially for remote patients
- Small sample size calls for larger studies to validate TPT's safety and efficacy
- TPT can be integrated into routine practice for evaluating patients with symptomatic gallstones, aligning with digital health trends for access and sustainability.

## CONCLUSION

- Extending telemedicine to preoperative evaluations demonstrates promising results in patients with symptomatic gallstones in regards to patient safety and environmental impact.
- The integration of telemedicine into surgical practice has the potential to improve healthcare access while mitigating the healthcare sector's carbon footprint.
- Continued research and quality improvement initiatives are essential to harness the full benefits of surgical telemedicine for our patients and our environment

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