

## What Is Most Important to Patients When Pursuing Limb Salvage Following a Limb-Threatening Injury?

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**Purpose:** The choice between limb salvage and amputation is complex, and the determinants of patient preferences are poorly understood. In attempts to better understand the relative value of patient preferences in limb salvage, we performed a discrete choice experiment (DCE). We hypothesized that physical function would be the most important factor, and that its relative importance would be impacted by overall health state and time since injury.

**Methods:** This was a cross-sectional analysis of patients with a history of limb salvage after lower extremity traumatic injuries at a single institution over a 10-year period. The DCE was developed using data from focus groups, literature review, expert opinion, and past experience with DCEs in the trauma population. The attributes of the DCE were: (1) recovery time: time until walking without assistive device; (2) function: percent of preinjury distance that can be walked without assistance post-recovery; (3) appearance: noticeability of the leg injury; (4) cost: total out-of-pocket expenses; and (5) time in hospital: cumulative admission in weeks. In a pilot study, we randomly selected 5 patients from each of 2 time points (1 year  $\pm$  3 months, >5 years) to complete the survey. The pilot study confirmed the validity of our attributes and levels. We then widely administered the survey. In addition to the DCE, each participant completed the Patient-Reported Outcomes Measurement Information System (PROMIS) Global-10 measure for overall health.

**Results:** 50 patients completed the final survey (mean age: 50 years [standard deviation: 14], 72% male) sampled from 1 to 10 years after their index injury (median: 5 years). The median PROMIS physical (41, interquartile range [IQR]: 33-45) and mental health (10, IQR: 35-46) scores were approximately 1 standard deviation below population norms. Regaining preinjury function and minimizing costs were of greatest importance, each respectively capturing 49% and 38% of the patient's overall recovery concern. In comparison, recovery time (9%), time in hospital (2%), and the physical appearance of the limb (1%) were of considerably less concern. Despite their aversion to increased costs, patients were willing to pay \$12,082 (95% confidence interval: \$12,021 to \$12,413) for each 10% gain in function. Each 10-point increase in current physical health decreased the value patients were willing to pay for improved outcomes by 27%. For each decade of age, the value of each incremental gain in function was diminished by 5%  $\pm$  4%. There was no effect of time since injury.

**Conclusion:** Patients who underwent limb salvage surgery valued physical recovery, followed by cost. The strength of these preferences correlated with age and physical health, and were not impacted by time from injury. This is the first study to investigate the relative value of patient preferences following limb salvage surgery, highlighting the importance of treatment options that balance and optimize function, out-of-pocket cost, and recovery time.