Patient compliance with remote monitoring: Findings from a multi-center study

Robert C Marchand[1], Emily Hampp[2], Ricardo Antunes, Paul B Jacob[3], Andrew J Meyer, T. Elaine Justice, Kelly B Taylor, Matthias A Verstraete, Michael A Mont[4]
[1]Orthopedics Rhode Island, [2]Stryker, [3]Oklahoma Joint Reconstruction Institute, [4]Rubin Institute for Advanced Orthopedics

INTRODUCTION:

There has been an increase in the use of technology to remotely administer rehabilitation and monitor recovery after total knee arthroplasty (TKA). However, the implementation and adoption of these devices is not well-characterized. The purpose of this study is to review the preliminary findings related to patient compliance from a multi-center study for a newer generation wearable device after TKA.

METHODS:

A total of 101 patients (mean age of 65 y/o, range 50 to 79 y/o) were enrolled at two centers. Device use compliance was characterized by the mean worn time, per each 30-day period pre- and post-surgery (1-30 days post-operative, 31-60 days post-operative, and 61-90 days post-operative), normalized by each patient's total expected worn days in that period (to normalize for any loss to follow-up). The mean number of hours per day that the wearable sensors were worn by a patient was also characterized for each of these 30-day periods.

RESULTS:

On average, patients wore the device for 80%, 70%, 70% and 40% of the expected days for the pre-operative period, 1-30 days post-operative, 31-60 days post-operative, and 61-90 days post-operative, respectively. When the device was worn, the mean worn time for the pre-operative period, 1-30 days post-operative, 31-60 days post-operative, and 61-90 days post-operative, was 9.8, 9.8, 9.8, and 10.3 hours per day, respectively (Figure 1).

DISCUSSION AND CONCLUSION:

The average device worn time demonstrated high compliance in terms of the percent of expected days that the device was worn (pre-operatively and up to 60 days post-operatively), and the number of hours the device was worn per day throughout recovery. A limitation in the expected worn time is the assumption that the mean percent is constant within the 30-day period if a patient is lost to follow-up. These preliminary findings demonstrate the potential for remote therapeutic monitoring reimbursement, while also giving an objective view on the patient's functional recovery after surgery.

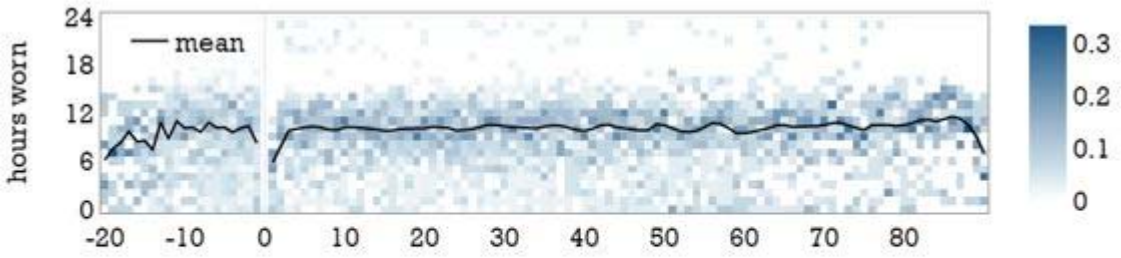

Figure 1: Mean worn time throughout the recovery journey