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Trends in Length Of Stay For Major Orthopaedic Procedures.
An Analysis Of Administrative Data From 34 Hospitals In Eight Countries.

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Background
An increasing number of patients with chronic diseases such as degenerative spine, hip and knee need operative treatment. During the last decades, the population health has increased. The number of hospital beds and the length of hospital stay (LOS) has decreased.

Purpose
The question is whether we can expect this decrease in length of stay to continue in a linearly fashion or whether this decrease will level off? The purpose of this analysis was to evaluate the trends in LOS for lumbar fusion, total hip (THA) and knee arthroplasty (TKA) and hip fractures in hospitals participating in the Global Comparators international benchmarking collaborative.

Materials and Methods
We explored hospital administrative data for the period 2008 through 2014 for 34 University Hospitals from Australia, Belgium, Denmark, Finland, Great Britain, Italy, Netherlands and USA. We used fixed and random effects modelling, adding country as a grouping variable. We included data on 15905 lumbar fusion 56772 THA, 69182 THA and 47104.

Results
For lumbar fusion, there was no change in LOS. For THA, there was reduction in LOS from 8.1 to 4.6 days. Adjusted the reduction in LOS decreased by year (P < 0.001). For TKA, there was a reduction in LOS from 7.7 to 4.5 days. Adjusted the reduction in LOS decreased by year (P < 0.001). For hip fracture, there was a minor reduction in LOS from 4.9 to 4.5 days. Adjusted the reduction in LOS decreased by year (P < 0.001).

Conclusions
Mean LOS reduced after THA, TKA and hip fractures but this trend seems to level off. For hip fracture, there is an indication that LOS have reached a plateau. For lumbar fusion, we found no change in LOS. Given increasing numbers of elderly, this suggests that hospital capacity might have to increase, as reduction in LOS cannot compensate the increasing number of patients.

Figure 1. Observed unadjusted trend of quarterly mean length of stay in days.

Figure 2. Adjusted trend in reduction of length of stay. Fixed effect model adding country as a variable, adjusted for co-morbidity, age, in-hospital death and interactions.