Introduction:
Severe traumatic brain injury (TBI) is considered a serious public health problem in Europe. Partly because of the heterogeneity of TBI, considerable uncertainty may exist in the expected outcome of patients. The International Mission for Prognosis and Analysis of Clinical Trials in TBI (IMPACT) and the Corticosteroid Randomization After Significant Head Injury (CRASH) prediction models are considered the most widely validated prognostic models [1,2]. However, studies using these prediction models for benchmarking of outcomes have been scarce. We aimed to compare actual outcomes in a TBI cohort of critically ill TBI patients with predicted outcomes in a quality of care initiative in an Academic Hospital.

Methods:
In this retrospective cohort study, we included consecutively admitted TBI patients to the ICU Adults of Erasmus MC, University Medical Center, Rotterdam, The Netherlands between January 2018 and February 2019.

Results:
We included 87 patients with TBI. 14-day mortality was 25%, six-month mortality was 36% and six-month unfavourable outcome was 50%. The IMPACT core+CT+lab model predicted 34% 6-month mortality (vs 35% actual, p=0.89) and 51% unfavourable outcome (vs 50% actual, p=0.9). The 14-day mortality prediction by CRASH prognosis calculator was 43% versus actual 14-day mortality of only 25% (p=0.01), whereas 6-month unfavourable outcome prediction by CRASH was 67% (vs. 50% actual, p=0.02) (Figure 1).

Conclusion:
The IMPACT model, although developed more than a decade ago, seemed appropriate for benchmarking purposes in this single center cohort in the Netherlands, while CRASH predictions were less applicable to our setting.

References:
Actual and predicted outcome according to CRASH and IMPACT