

Adherence and bottlenecks identification in the execution of a sepsis clinical pathway in the emergency department

Ricardo Alfredo Quintano Neira^a, Gert-Jan de Vries^b, Erin Stretton^b, Marcelo Santos^c,
Bruno Franco Mazza^d, Joos Buijs^e, Silvio Hamacher^a

^aIndustrial Engineering Department, Pontifícia Universidade Católica do Rio de Janeiro - PUC-Rio - Rio de Janeiro (RJ), Brazil

^bPhilips Research - Eindhoven, The Netherlands

^cPhilips Research Brasil - São Paulo (SP), Brazil

^dUnidade de Terapia Intensiva Adulto, Hospital Samaritano de São Paulo - São Paulo (SP), Brazil

^eDepartment of Mathematics and Computer Science, University of Technology Eindhoven - TU/e - Eindhoven, The Netherlands

Objective: to identify the adherence and bottlenecks of a sepsis clinical pathway executed in an adult emergency department of a big private hospital.

Methods: we applied process mining techniques (conformance and performance checking) using 2,348 sepsis hospitalizations extracted from a hospital information system (period of 2 years).

Results: the hospital performs the process very close to the one defined in the clinical pathway (*fitness*: 0.94). We identified 56 deviations in the process execution (activities not performed, different order of activities, activities performed by a different role, time target violation). The main bottlenecks were: patients waiting in the reception before triage (mean of 19 minutes) and, the prescription of medicines and request of exams (mean of 7 minutes). The research results will be validated by the hospital staff.

Conclusion: the use of process mining is very promising for the adherence and bottlenecks analysis in clinical pathways. Reducing the non-compliance and waiting times identified with process mining techniques is especially valuable for treatment of time critical conditions such as sepsis.

Funding: Capes, Philips Research.