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**Background:** Antimicrobial stewardship (AMS) programs have been shown to be effective to improve antibiotic use, reduce antimicrobial resistance and improve patient care. Computerized decision support systems (CDSS) provide new opportunities for automating some AMS interventions and integrating them in routine healthcare.

**Methods:** We developed and implemented two CDSS integrated into the in-house electronic health records in three public hospitals in Switzerland (Geneva, Lugano, Bellinzona) in the context of the COMPASS study (1) (clinicaltrials.gov: NCT03120975). The decision support is intended to encourage physicians (*i*) to use local guidelines for empiric therapy and duration of treatment and (*ii*) to regularly reevaluate treatment. We also provided feedback to users on their antimicrobials use through the system.

**Results:** The development of the system and its integration into the computerized physician order entry system took between 9 (Ticino) and 12 months (Geneva). Despite a relatively simple algorithm with few patient-specific data, the integration in electronic prescribing was complex and unforeseen problems were frequent. Each step and pathway should be described as clearly as possible and early implication of all stakeholders seems crucial. Ergonomic and user-friendliness are two key points to consider when designing such a system. The development should also be thought in a way that can be used for other medications (e.g. oncology guidelines).

Fig. 1 - Screenshot of the CDSS in Ticino

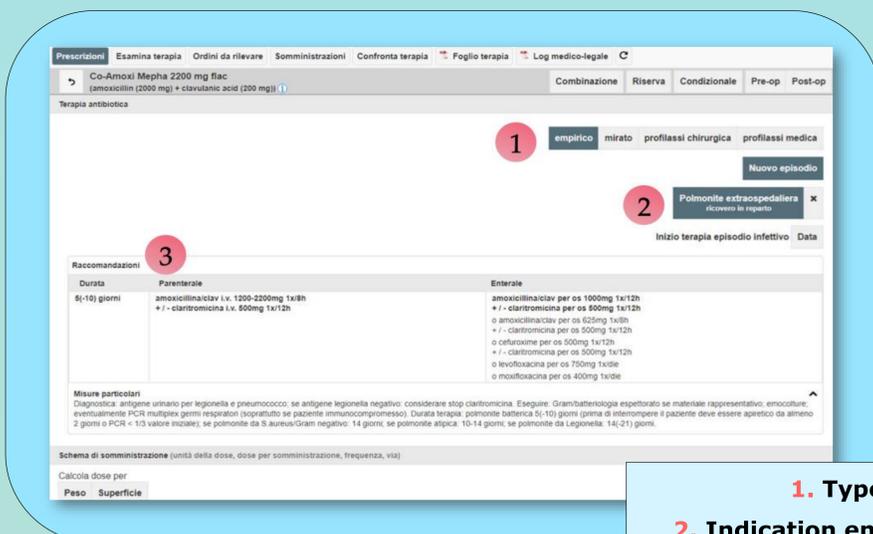
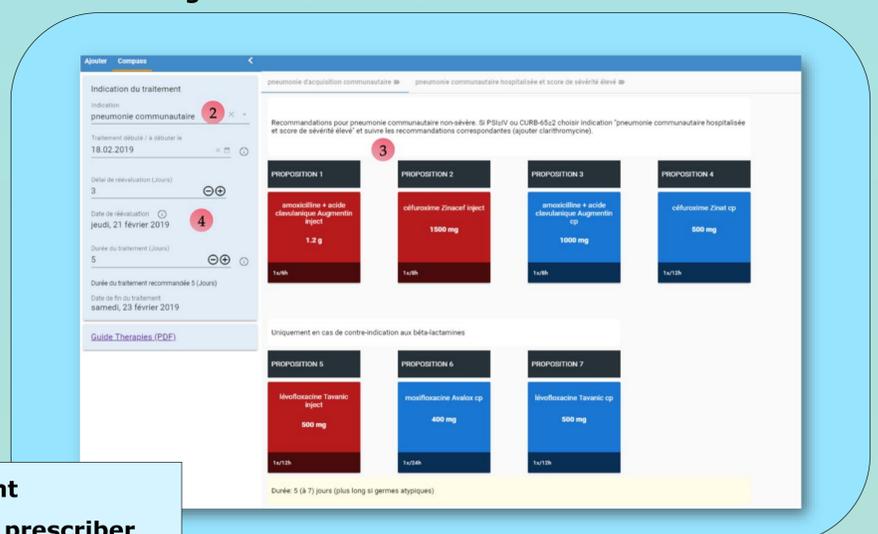
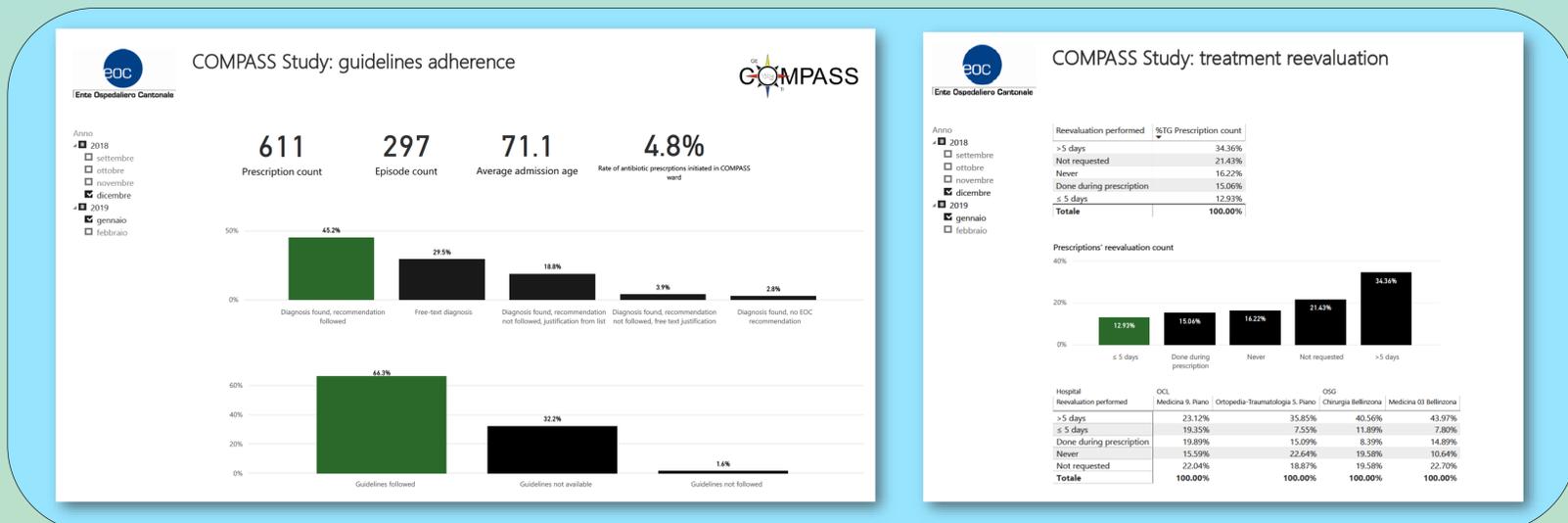


Fig. 2 - Screenshot of the CDSS in Geneva



1. Type of treatment
2. Indication entered by the prescriber
3. Recommendation proposed by the system
4. Recommended treatment duration

Fig. 3 - Feedback to physicians on the system use



**Conclusion:** When designing and developing a CDSS, close collaboration between the IT team and clinicians is essential. Having an IT team with development expertise is required. In-house software for electronic prescribing offers the flexibility to implement such interventions. This computerized decision support tools will be evaluated by a cluster-randomized trial during a 12 months intervention period which started in September 2018 at the public hospitals network of Ticino (Ente Ospedaliero Cantonale) and in December 2018 at the university hospitals of Geneva (Hôpitaux Universitaires Genève).

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