Electronic order entry with order sets at University Hospital Frankfurt - speeding up clinical processes and reducing length of stay

Summary

Piloting of electronic order sets at University Hospital Frankfurt (UKF) has shown that order sets can speed up electronic order entry and reduce length of stay.

What are order sets?

Order sets are pre-prepared pick-lists of orders for a specific diagnosis, operation or procedure. Order sets are integrated into the hospital information system (HIS). They suggest guideline and evidence-based treatment options based on the patient’s diagnosis. Decision-making aids help the physician enter the right orders for the individual patient.
Selected by Entscheiderfabrik

As part of the Entscheiderfabrik initiative – organised by GuiG and the German Association of Hospital Directors (Verband der Krankenhausbereichstörer Deutschlands) – in early 2015, order set-based electronic order entry was designated one of five key IT issues for the German healthcare sector. Over the course of 2015, order sets were integrated into HIS systems and piloted at University Hospital Frankfurt and LVR-Klinik Langenfeld. The pilot project at these two hospitals examined the effect on speed of order entry, physician satisfaction with the order entry process in the HIS, and the effect on average length of stay. In Frankfurt, five order sets were implemented in the hospital’s Agfa HealthCare ORBIS HIS and were used in the gastroenterology and urology departments.

Mean length of stay for gastroenterology patients

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<th>Q1 2015</th>
<th>Q1 2016</th>
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<td>Observation</td>
<td>8.53</td>
<td>8.05</td>
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Results of the pilot project

The pilot project showed a reduction in mean length of stay for patients in the relevant diagnosis-related group from 8.53 days in the control period (Q1 2015) to 8.05 days in the observation period (Q1 2016). This is due both to faster immediate decision-making as a result of the integration of medical content into the work process, and increased awareness of stringent decision-making pathways as a result of the introduction of order sets.

“The use of order sets was also able to reduce the time required for electronic order entry. Time measurement found that the order entry process per patient was completed 42 seconds faster, with ordering time dropping from 6.1 minutes per case where order sets were not used to an average of 5.4 minutes per case where order sets were used.”

— Junior doctor at University Hospital Frankfurt

“Order sets are a very good aide memoire for general orders such as special diets, heparin, etc.”

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Surveys of doctors undertaking order entry show that order sets also provide improved support for clinical decision making during order entry. The support for clinical decision making provided by the HIS order entry process was assessed on a scale of 1 (very satisfied) to 6 (very unsatisfied) before and after the introduction of order sets. Without order sets, the process was rated 3.2; with order sets it was rated 2.0. In addition to the measured time savings, this suggests that order sets also have quality benefits, though this was not measured directly in this particular project.

Order sets proved such a hit at University Hospital Frankfurt and LVR-Klinik Langenfeld that their use is being continued beyond the pilot project. University Hospital Frankfurt has developed a general order set for patient admissions with the aim both of achieving time savings and of better supporting clinical decision making during order entry.

Outlook

In February 2016, electronic order entry with order sets was again selected as one of the five key IT issues for the German healthcare sector. University Hospital Frankfurt, LVR-Klinik Langenfeld and now the Robert Bosch Hospital and Ategris are currently working with academic publishing house Elsevier on the larger-scale implementation of order sets in clinical practice.

1 Elsevier/UKF (2016): Comparison of length of stay for 133 patients with gastroenterology diagnoses (liver, pancreas) from Q1 2015 with 105 patients with comparable gastroenterology diagnoses from Q1 2016 (order sets pilot period).
2 Elsevier/UKF (2016): Measurement of order entry time for 27 patients without using order sets and 27 patients using order sets.
3 Elsevier/UKF (2016): Online survey of 16 doctors undertaking order entry in the pilot departments before and after the introduction of order sets.