Safety Enhanced Design Brief
Preventing Electronic Medication Order Errors

Electronic prescribing, or e-Prescribing, allows licensed healthcare providers to electronically generate and submit medication prescriptions to a dispensary.

The data entered by the clinician is key to the safe treatment of the patient as it will be direct and seamlessly transmitted to the pharmacy where it will be verified, then perfected and medications dispensed to the patient. The original data should, therefore, be as clean as possible.

In this document we present guidelines for safer medication ordering and e-prescribing interface design.

1 To support accurate data entry and provide flexible order entry forms

As e-prescribing requires electronic transmission of information, the system should support the following types of orders: ***classic form entry, tapered dose entry, atypical dosage entry, additive, compounding and free text entry*** (equivalent to a semi-structured paper script)

2 To improve ordering flexibility, allow multiple script delivery modes

There are many logistic barriers in clinical field work, therefore multiple pharmacy selection and order routing options should be available to the user when e-prescribing:

- Send to usual pharmacy
- Send to a different pharmacy
- Do not e-prescribe and print order
- Do not e-prescribe and save for later
- Cancel order

3 To support patient-set constraints, allow multiple dispensing locations

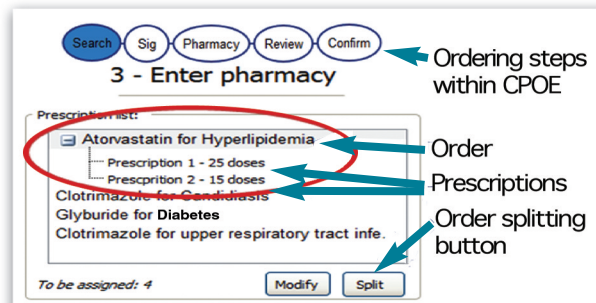Clinicians have reported a frequent need to write two prescriptions under one order due to mail-order pharmacy delays.

Fig 1 – Sample order list interface implementation that allows splitting medication orders into multiple scripts.

4 To improve context awareness

- Present alerts during medication order entry
- Present alerts at different stages of the ordering process
- Do not present all alert information at the end of the workflow
- Do not interrupt the user with modal alerts unless there are high patient risks

5 To avoid work duplication and streamline order entry

- present early non-intrusive alert indicators with simplified 'traffic light' indicator in real time

6 To ensure the clarity of written patient instructions

- Provide label preview functionality

7 To support medication selection present insurance coverage information

- This supports clinician decision making to ensure a viable drug selection that the patient is able to afford and is willing to pay for from the beginning

Fig 2 – Example of a drug interaction alert fired during CPOE ordering of Warfarin (See https://sbmi.uth.edu/nccd/SED/Briefs/sedb-mu04.htm for more information about Alerts)
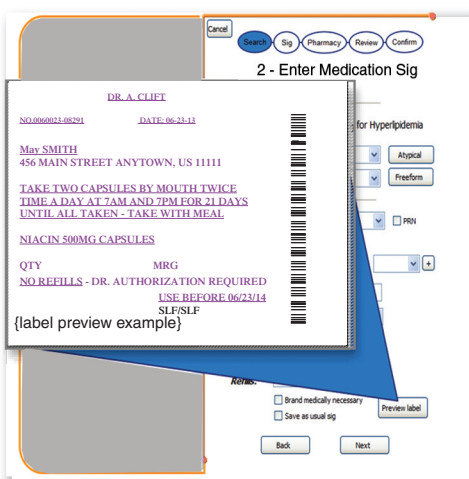
Fig 3 – Example of a label preview functionality aimed to review patient instructions

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