To evaluate the patient safety of ward-level medication dispensing performed by pharmaconomists (pharmacy technician with a 3-year degree) compared to nurse-led medication dispensing.

### 1. Aim

- To evaluate the patient safety of ward-level medication dispensing performed by pharmaconomists (pharmacy technician with a 3-year degree) compared to nurse-led medication dispensing.

### 2. Background and importance

**What we know:**
- High patient safety have top priority in healthcare systems worldwide.
- To secure high patient safety previous research have focused on different medication concepts e.g. automatic medication dispensing, nurse-led medication dispensing or self-administration by patients.

**What we don’t know:**
- The risk of dispensing errors, when medication is dispensed by pharmaconomists as compared to nurses, is unclear.

### 3. Materials and methods

- Medication dispensing by pharmaconomists was implemented at Randers Regional Hospital, Denmark in January 2020.
- The proportion of ward-level dispensing errors was collected through disguised observation of nurses and pharmaconomists in the medicine room before and after the implementation.

#### Data collection

<table>
<thead>
<tr>
<th>Year</th>
<th>Before-data were collected</th>
<th>After-data were collected**</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>37 nurses in one ward*</td>
<td>9 pharmaconomists in seven wards***</td>
</tr>
</tbody>
</table>

#### Outcome

\[
\text{Error proportion} = \frac{\text{Dispensing errors}}{\text{Opportunities for error (OEs)}} \times 100\%
\]

Dispensing errors were defined as deviations between the prescription and the dispensed medication. Opportunities for error (OEs) were defined as any dose dispensed plus any dose prescribed but omitted.

* Before-data stem from a Ph.D. study at the same hospital [1].
** Data collected over two periods due to Covid-19 hospital restrictions.
*** After data were collected in seven wards to increase the number of pharmaconomists observed and thereby increase generalisability.

### 4. Results

Significantly fewer dispensing errors were observed in pharmaconomist-led medication dispensing as compared to nurse-led medication dispensing.

<table>
<thead>
<tr>
<th>Error proportion</th>
<th>After (122 patients)</th>
<th>Before (120 patients)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(95% CI)</td>
<td>(2.2)</td>
<td>(12.8)</td>
</tr>
<tr>
<td>(total errors)</td>
<td>(1.4 - 3.3)</td>
<td>(10.9 – 15.0)</td>
</tr>
<tr>
<td>P-value</td>
<td>0.00(^1)</td>
<td></td>
</tr>
</tbody>
</table>

#### Error examples

- Venlafaxine HCl 75 mg prescribed, Acetylsalicylic acid 75 mg dispensed.
- Isosorbide mononitrate 30 mg prescribed, 60 mg dispensed.
- Methylphenidate prescribed, but omitted.

### 5. Conclusion and relevance

- Pharmaconomists made fewer dispensing errors during medication dispensing compared to nurse-led medication dispensing.
- Hospital managers can consider medication dispensing by pharmaconomists as a patient safe medication concept.

### 6. Reference