# Positive Impact of an Implemented Ward Pharmacist in a Multiprofessional Cancer Care Team in Germany

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## Background and Importance
A high number of newly diagnosed cancer patients and the growing complexity of new chemotherapeutics results in an increasing demand for better management of these patients.<sup>1</sup> Pharmacists are able to ensure the patient's safety and quality of life.<sup>2</sup>

## Aim and Objectives
The objective of this intervention study is to evaluate the benefit of a pharmacist embedded in a multiprofessional cancer care team on an oncology ward of a maximum care hospital with >1000 beds in Germany.

## Methods

### Study Design
- single centered & controlled
- retrospective & prospective phases
- intervention study

### Study Phases
- P<sub>0</sub>: control phase
- P<sub>1</sub> & P<sub>2</sub>: ward pharmacist determined, documented, and solved medication errors (MEs) as part of the daily work
- P<sub>2</sub>: more structured environment due to standards

### Data Collection
- P<sub>0</sub>, P<sub>1</sub>, P<sub>2</sub>: two clinical pharmacists independently identified all MEs which they detected retrospectively after the phases
- classification as clinically relevant ME in accordance with oncologist

## Results

### Characterization of the study population

<table>
<thead>
<tr>
<th>Patient characteristics</th>
<th>P&lt;sub&gt;0&lt;/sub&gt; [n = 52]</th>
<th>P&lt;sub&gt;1&lt;/sub&gt; [n = 46]</th>
<th>P&lt;sub&gt;2&lt;/sub&gt; [n = 50]</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender [% female]</td>
<td>51.9</td>
<td>54.3</td>
<td>50.0</td>
<td>0.913</td>
</tr>
<tr>
<td>Age ± SD</td>
<td>64.5 ± 11.5</td>
<td>64.6 ± 10.1</td>
<td>65.7 ± 14.3</td>
<td>0.704</td>
</tr>
<tr>
<td>Haematological tumor [%]</td>
<td>63.5</td>
<td>56.5</td>
<td>60.0</td>
<td>0.782</td>
</tr>
<tr>
<td>Solid tumor [%]</td>
<td>36.5</td>
<td>43.5</td>
<td>40.0</td>
<td>0.782</td>
</tr>
<tr>
<td>Number of Medication Lines [AM ± SD]</td>
<td>96.3 ± 82.9</td>
<td>89.6 ± 83.0</td>
<td>131.5 ± 98.8</td>
<td>0.158</td>
</tr>
<tr>
<td>Number of Drugs at Admission [AM ± SD]</td>
<td>5.7 ± 3.8</td>
<td>5.2 ± 4.2</td>
<td>5.7 ± 4.6</td>
<td>0.696</td>
</tr>
<tr>
<td>Number of Drugs at Discharge [AM ± SD]</td>
<td>7.2 ± 3.5</td>
<td>8.1 ± 4.9</td>
<td>8.7 ± 5.0</td>
<td>0.372</td>
</tr>
<tr>
<td>Duration of Stay [d ± SD]</td>
<td>9.4 ± 5.5</td>
<td>10 ± 6.2</td>
<td>10.5 ± 6.2</td>
<td>0.567</td>
</tr>
</tbody>
</table>

### Medication Errors

- a) Correct medication lines versus incorrect medication lines throughout all phases depicted as bar charts. P<sub>0</sub> (dark blue bar), P<sub>1</sub> (turquoise bar), P<sub>2</sub> (orange bar). One medication line corresponds to one drug per day.
- b) MEs per patient and phase depicted as boxplots. P<sub>0</sub> (dark blue box), P<sub>1</sub> (turquoise box), P<sub>2</sub> (orange box).
- c) Clinically relevant MEs per patient and phase depicted as boxplots. 
- d) MEs without category “documenting errors” per patient and phase depicted as boxplots. Color code as described in b).

### Conclusion and Relevance
The implementation of a ward pharmacist had a significant impact on the reduction of MEs consequently increasing the patient’s medication safety. Although these results cannot be easily transferred to other disciplines, the present study shows the benefit of a ward pharmacist in oncology together with oncology related services, e.g., preparation of cytostatics, offered by the hospital pharmacy.

## References

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