

# Implementation status of safety measures to prevent errors with non-oncologic methotrexate: surveys in community and hospital pharmacies

Lea D. Brühwiler<sup>1</sup>, Simone J. Gresch<sup>1,2</sup>, David L.B. Schwappach<sup>1,3</sup>

<sup>1</sup>*Swiss Patient Safety Foundation, Zurich*

<sup>2</sup>*Pharmaceutical Care Research Group (PCRG), University of Basel, Basel*

<sup>3</sup>*Institute of Social and Preventive Medicine (ISPM), University of Bern, Bern*

## Abstract

**Background:** Accidental overdose of low-dose methotrexate can lead to serious patient harm. Different safety measures are recommended to prevent errors, yet, as errors continue to happen, their implementation is questionable.

**Aim:** To evaluate the implementation status of safety measures for methotrexate in community and hospital pharmacies.

**Method:** An electronic questionnaire was sent to head pharmacists of 163 community and 94 hospital pharmacies in Switzerland. The implementation of recommended safety measures (general measures, safety working procedures, IT-based measures) was assessed and descriptive analysis performed. An analysis of sales data underlined the relevance of our results, i.e., the population under risk for overdose.

**Results:** A response was obtained from 53% (n = 87) of community and 50% (n = 47) of hospital pharmacists. Pharmacies had implemented a median of 6 (IQR 3, community) and 5 (IQR 5, hospital) safety measures overall. Most of these were defined safety procedures, instructing staff on how to handle methotrexate prescriptions. Across all safety measures, compliance with single procedures was perceived as "very likely" by 54% of community pharmacies. IT-based measures (e.g., alerts) were absent in 38% (n = 31) of community and 57% (n = 27) of hospital pharmacies. On average, every community pharmacy dispensed 22 packages annually.

**Conclusion:** Safety in relation to methotrexate in pharmacies relies mostly on staff instructions, which are considered weak measures. In light of the serious risk imposed on patients, pharmacies should set a focus on stronger IT-based measures that rely less on human performance.