

Safe vincristine use in Switzerland: still a long way to go?

Lea D. Brühwiler* ¹, David L.B. Schwappach^{1, 2}

¹ Patient Safety Switzerland, Zürich, ² Institute of Social and Preventive Medicine (ISPM), University of Bern, Switzerland

Introduction

Background: Different international organizations recommend safety guards to prevent accidental wrong route applications of vincristine (confusion with an intrathecal therapy) ¹⁻³. Recommendations concern e.g., the use of bags for infusion instead of syringes for injection, special prescription, ordering, controls, packaging, labeling and delivery.

Aim: To investigate the implementation of safety guards for vincristine and intrathecal chemotherapies in Switzerland.

Methods

Method: Online survey in May 2018. The survey was piloted and translated to French by a bilingual oncology pharmacist.

Target group: Pharmacies of all general care and pediatric hospitals were eligible for participation (n=102). Contact information of the hospital pharmacies was retrieved from the Swiss hospital pharmacists' association (GSASA) or obtained by internet search, by mail or phone.

Data analysis: Descriptive data analysis was performed. Hospitals preparing vincristine in their onsite pharmacy were analyzed in-depth. Hospitals with additional intrathecal chemotherapy preparation were asked for the respective safety guards.

Results

Respondents' characteristics: The survey was completed by 66 hospitals (65%). 4 were university hospitals, 37 general, 19 cantonal and 3 pediatric hospitals. 12 (18.2%) responders choose the French survey version.

Chemotherapy use: Parenteral chemotherapy is administered in 59 hospitals (89.4%). Of these, 27 (45.8%) hospitals have chemotherapy produced by the onsite hospital pharmacy and 32 (54.2%) hospitals have chemotherapy prepared on wards (multiple answers possible).

Vincristine use: All 27 hospitals with onsite pharmacy production used vincristine in 2017, namely a median of 112 [IQR 30, 210] doses for local use. 20 pharmacies prepared vincristine for both ambulatory wards and in-patient wards. Vincristine dosage forms are given in table 1.

Safety guards: The safety guards implemented in Swiss hospitals are shown in table 2. The most prevalent guard for vincristine is special labeling of the primary packaging material (in 6 hospitals). For intrathecal chemotherapies, special ordering and delivery processes are implemented most often.

We calculated the number of safety guards for both therapies for each hospital. Figure 1 shows that 15 hospitals have no safety guard for vincristine, 10 none for intrathecal chemotherapies and summarized, 4 of 21 hospitals preparing both therapies had no safety guard for neither therapy.

(Near) Misses: One hospital reported a wrong route administration of vincristine, when vincristine was confused with intrathecal methotrexate. The case had a fatal outcome.

Conclusions

This is the first evaluation of safety guards for vincristine use in Switzerland. We found that:

- syringes are still widely used for vincristine, contrary to international recommendations;
- there are some hospitals with many safety guards implemented, showing high sensibility for the risks of vincristine use;
- 4 of 21 Swiss hospitals have no safety guards implemented neither for vincristine nor intrathecal chemotherapy.

Compliance with international guidelines is low in Swiss hospitals and patients are still at risk for fatal wrong route vincristine administration. By publication of these results, pharmacist should be motivated to engage for medication safety in their hospitals.

Small number of responses and potential non-responder bias are limitations of the study.

Table 1: Vincristine dosage forms prepared in hospitals with onsite preparation by the hospital pharmacy (n=27). Sum of all prepared doses and number of hospitals using the specific dosage form in 2017.

	No. of doses for adults	No. of doses for children	No. of hospitals using the dosage form for adults	No. of hospitals using the dosage form for children
Syringe ≤ 9ml	1362	2	15	1
Syringe 10-19	276	284	4	2
Syringe 20-29	219	203	2	1
Syringe ≥30ml	0	0	0	0
Infusion bag ≤ 25ml	0	0	0	0
Infusion bag 26-49ml	0	0	0	0
Infusion bag 50-99ml	36	125	1	2
Infusion bag ≥100ml	1887	94	11	2
Other	20	0	1	0
Ratio syringes/infusion bags	0.97	2.23		

Table 2: Implementation of safety guards in hospitals using vincristine (n=27) and additional intrathecal drugs (n=21). * multiple choice question. n.a.=not applicable, as question was not asked

	No. of hospitals having implemented this recommendation for vincristine	No. of hospitals having implemented this recommendation for intrathecal drugs
Special prescription or approval by physician needed? *	2	1
Special call up or order by nurses/wards? *	3	5
Special controls in hospital pharmacy during preparation?	3	n.a.
Provision with special administration material (e.g. bolus set, connecting tube, transfer set, infusion set)?	3	n.a.
Special label of primary packaging (syringe/infusion bag) not standardized for all chemotherapies? *	6	n.a.
Label on secondary packaging (outer bag, transport bag)?	2	n.a.
Different secondary packaging (e.g. material or colour)?	0	n.a.
Special collection or delivery route? *	2	8

Figure 1: Number of hospitals with the respective number of safety guards, for vincristine (n=27), intrathecal therapies (n=21) and summarized safety guards for both therapies (n=21).

