

# ISMP Canada Safety Bulletin

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## Health Care Provider Insights Drive Safer Packaging

Health Canada recently informed health care providers of an important change to the colour of the ferrule and cap for vials of cisatracurium, a neuromuscular blocking agent (NMBA).<sup>1</sup> This bulletin describes how end-user feedback and insights from a questionnaire, developed collaboratively by HealthPRO Canada and ISMP Canada, impacted the labelling and packaging of cisatracurium products.

### BACKGROUND

Cisatracurium is classified as a high-alert medication.<sup>2</sup> Due to the paralyzing effect of NMBAs on respiratory muscles, ventilation support is a required component of patient care when such medications are administered. Catastrophic harm or death has resulted when NMBAs are inadvertently selected and administered without airway control and ventilation capability.<sup>3,4</sup> This type of error is considered a never event.<sup>5</sup>

To reduce the risk of mix-ups between NMBAs and other injectable medications, Health Canada’s Good Label and Package Practices Guide for Prescription Drugs recommends the following differentiation strategies:<sup>6</sup>

- Include “Warning: Paralyzing Agent” or “Paralyzing Agent” on the label, the cap, and the ferrule (metal seal on the vial opening).
- Consider using a red ferrule with one of the above warnings.
- Consider using a red cap with white lettering or, alternatively, a clear cap, to allow visualization of the ferrule and its printed warning.
- Prominently display the warning on all principal display panels on the label.

In Canada, most NMBA products already have a red ferrule and either a red or clear cap, with “Warning: Paralyzing Agent” or “Paralyzing Agent” printed on the ferrule or cap (Figure 1). The exception is a



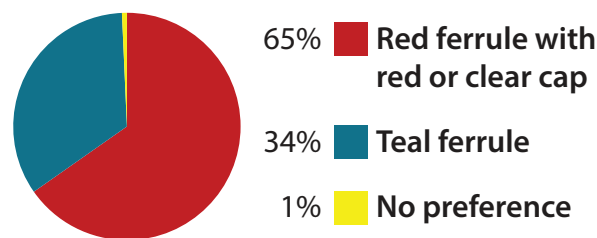
**FIGURE 1.** Selected neuromuscular blocking agents available in Canada. Top row shows various products with the cap on; bottom row shows the same products with the cap off and the ferrule exposed. Photo courtesy of HealthPRO Canada.

cisatracurium injectable product manufactured by Juno Pharma Canada Inc. (previously Omega Laboratories Limited), which has a teal ferrule and a clear cap.

Determination of the most appropriate colour for the aluminum ferrule and cap was needed for a new cisatracurium product when another company, Hikma Canada Limited, requested market authorization from Health Canada in 2024. A targeted questionnaire (developed collaboratively by HealthPRO Canada and ISMP Canada) was sent to health care providers engaged in the selection and administration of these medications. Dissemination of the questionnaire was supported by the Canadian Society of Healthcare-Systems Pharmacy (CSHP), the Canadian Anesthesiologists' Society (CAS), and the Canadian Association of Critical Care Nurses (CACCN).

### QUESTIONNAIRE RESULTS

The questionnaire was distributed between May 31 and July 11, 2024. A total of 276 health care providers, from all provinces, responded (Figure 2). Among specific groups, 73% of anesthesiologists, 72% of pharmacists, and 56% of critical care nurses preferred a red ferrule with a red or clear cap. The data were shared with Health Canada to help inform decisions regarding packaging of the cisatracurium products noted in the next section.



**FIGURE 2.** Questionnaire results: preferences for cisatracurium product presentation.

### PACKAGING OF CISATRACURIUM PRODUCTS

In May 2025, Health Canada authorized a new cisatracurium product with a red ferrule and cap, manufactured by Hikma Canada Ltd. (Figure 3).<sup>1</sup>

In December 2025, Health Canada authorized another cisatracurium product, manufactured by SteriMax Inc. (Figure 4), with a red ferrule and a clear cap.

The questionnaire results were shared with Omega Laboratories Ltd. (now Juno Pharma Canada Inc.) who has since notified Health Canada of their intention to change the colour of the ferrule of their cisatracurium product from teal to red by March 2026 (Figure 5). Once this change has occurred, all NMBAAs available in Canada will have a red ferrule with a recommended warning.<sup>1</sup>



**FIGURE 3.** Cisatracurium besylate injection, USP 20 mg/10 mL, manufactured by Hikma Canada Ltd. Photo courtesy of Hikma Canada Ltd.



**FIGURE 4.** Cisatracurium besylate injection, USP 20 mg/10 mL, manufactured by SteriMax Inc. Photo courtesy of SteriMax Inc.



**FIGURE 5.** Cisatracurium besylate injection, USP 20 mg/10 mL, manufactured by Juno Pharma Canada Inc. Photo courtesy of Juno Pharma Canada Inc.

## COMPREHENSIVE HIGH-ALERT MEDICATION SAFETY SYSTEMS STILL NEEDED

The unique combination of the red ferrule/cap and warning on all NMBAs is one layer of a comprehensive approach to the safety of this class of high-alert medications, enabling providers to more easily identify, select, and distinguish NMBAs from other injectable products.

There is a need for additional system safeguards (e.g., bar coding, automated dispensing cabinets) to help differentiate among NMBAs, given that all NMBAs now have the red ferrule/cap and warnings. It is important for manufacturers to have well-designed labels with critical information (e.g., generic name, strength, route of administration, and warnings) on the principal display panels and in the largest possible font size.

The cisatracurium products have a bar code with a Global Trade Item Number (GTIN), which can track the product and support medication-use processes such as inventory management, medication selection, and medication administration.

## CONCLUSION

Health care providers' knowledge and experience have informed the colour of the vial closures for cisatracurium products. The consistent use of standardized colours and warnings among NMBAs is important to differentiate these medications from other injectable products and to reduce the risk of catastrophic patient harm due to inadvertent selection and administration. Use of additional system safeguards remains important to help differentiate NMBAs from each other as well.

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