

NRFit connectors in regional anaesthesia- Another step towards safe clinical practice

Sir,

Medication administration errors can have catastrophic outcomes if a drug is inadvertently administered via the wrong route. Regional anaesthesia involves the use of drugs like local anaesthetics, adjuvants that can have serious outcomes like local anaesthetic systemic toxicity, cardiac arrest and anaphylaxis.^[1] Similarly, there are several instances of medications intended for systemic use having been inadvertently injected in the neuraxial space and thereby responsible for serious events including death. There are many such incidents reported in the literature and the seriousness has been emphasised.

In 2016, the International Organization for Standardization (ISO) introduced the use of 80369 series of connectors with syringes that are further sub-divided into various categories intended for various areas like enteral route, respiratory, intravascular and neuraxial injections (spinal and epidural spaces).^[2] ISO has assigned 80369-6 series connectors known as the Neuraxial and Regional block Fit (NRFit) connectors dedicated for injecting in the neuraxial space and for peripheral nerve blocks. The justification for introducing this is to avoid accidental injections, and thus to avoid near-miss or other serious situations. When the person finds out that the syringe is not getting connected for administering the desired medication, it will raise an alert, and thus a serious situation can be avoided. Earlier, it was suggested to use Luer connection syringes for spinal anaesthesia.^[3] The Luer connections were more of a convenience for performing the injection and did not confer any kind of safety as such in avoiding a potential

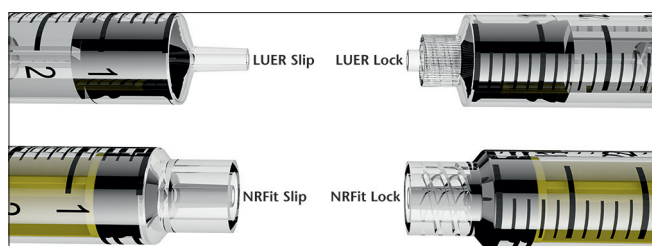


Figure 1: Comparison between NRFit connector and Luer lock connectors

error. The syringes with Luer connections are uniform in calibre. They are not different when used in various situations like enteral use, respiratory, intravenous and intrathecal. Therefore, this does not guarantee safety and wrong routes of injections are not uncommon.^[4]

The NRFit connector is 3 mm longer than the regular Luer connector. It has a 20% smaller connector diameter, has collared slip syringes with NRFit denoted on the syringes and is colour-coded (yellow) for easy identification. The smaller diameter could pose a problem when performing lumbar punctures because it is expected that the flow could be slower than with a Luer connector, which is unfavourable [Figure 1]. Cook *et al.*^[5] conducted a multicentre, clinical simulation evaluation of the ISO80369-6 neuraxial nonLuer connector, that is NRFit connector. They enrolled 38 doctors and 17 nurses in this study. They performed procedures like spinal anaesthesia, intrathecal chemotherapy, lumbar puncture, cerebrospinal fluid collection and pressure measurement and epidural catheter placement. They concluded that NRFit connectors had leak-free connections and no cross-connections; they were easy to use and reliable.

Several companies are manufacturing NRFit products like spinal and epidural needles, nerve block needles and catheters, syringes including loss of resistance syringes, syringe pump connections, elastomeric pumps, filters and adapters. The purpose of introducing different connectors for different routes is to increase safety, prevent erroneous drug administration errors, and standardise connectors for different purposes. The NRFit connector still has not become popular in the practice of regional anaesthesia although studies have established its efficacy over conventional Luer connectors. The cost of products with NRFit connectors, lack of interest in changing over to safer practices and inconsistent recommendations from various societies all over the world could be the reason why these connectors are still not used routinely all over the world.^[6] We recommend the use of these connectors in the practice of regional

anaesthesia to ensure safety, prevent wrong route administration and avoid potentially serious events.

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Conflicts of interest

There are no conflicts of interest.

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REFERENCES

- Mehdiratta L, Bajwa SJ, Malhotra N, Joshi M. Exploring cocktails, remixes and innovations in regional nerve blocks: The clinical research journey continues. *Indian J Anaesth* 2020;64:1003-6.
- Litman RS, Smith VI, Mainland P. New solutions to reduce wrong route medication errors. *Paediatr Anaesth* 2018;28:8-12.
- Davies S. Use of Luer connection syringes for spinal anaesthesia. *Br J Anaesth* 2009;103:459-60.
- Managing risk during transition to new ISO tubing connector standards. *Sentinel Event Alert* 2014; 53:1-6.
- Cook TM, Wilkes A, Bickford Smith P, Dorn L, Stacey M, Kinsella SM, *et al.* Multicentre clinical simulation evaluation of the ISO 80369-6 neuraxial non-Luer connector. *Anaesthesia* 2019;74:619-29.
- Cannons K, Shaw I. Changing practice for neuraxial applications using NRFit™ small-bore connectors to improve patient safety. *Br J Nurs* 2021;30:S22-7.

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