



Success Stories:

Going the Extra Mile

Aiming to provide the best possible care for their patients, Sister Peggy Cheng and her team have paved the way forward in preventing extravasation. The team has successfully achieved a monthly median of zero extravasation incidents. (From left Jane Guo Lifeng, Krister Eunice Basbas Padilla, Peggy Cheng Lay See and Alex Ong Han Keng of the 2017 Extravasation team)

Extravasation happens when a fluid or drug being administered to a patient leaks into the surrounding tissue, potentially causing local damage. At the National Cancer Centre Singapore (NCCS), this is a significant concern with chemotherapy drug administration. “It’s the aftermath [of extravasation] that we are worried about,” says Peggy. “The worst case scenario could result in amputation. Other risks include increased hospitalisation costs and delayed patient treatment.”

Peggy led her team in investigating treatment procedures to minimise and eliminate the risks of extravasation in cancer treatment. Whenever an incident occurred, an enquiry was sent to the team, which then determined if, and how preventable it was. Based on evidence and deductions derived from numerous cases, changes to procedures and treatments were proposed.

Key to the team’s success was teamwork. “All of us are contributing in all the cases,” says Oncology Pharmacist Krister Padilla. Team leader Peggy Cheng agrees, noting that the members’ different positions did not impede any communication or initiative. In fact, the natural chemistry between Krister and herself reflects the openness of the team at large. Their goal is to counter extravasation rates.

Recipe for success

Peggy and Krister share insight on why the team has worked so well: “During meetings, all members have equal voices,” Krister remarks.

This culture reflects the receptive and supportive management, which has always emphasised that “there are no bad ideas”. Beyond that, every member also brought with them a specialised and unique depth of experience. Sister Peggy herself, for instance is a senior nurse manager in the Ambulatory Treatment Unit (ATU), while Krister contributes her expertise in pharmacy.

“We would not be the best judge of what drugs or dilution rates we can have,” Peggy says. Instead, she would approach Krister for advice. This ensured that the patients ultimately received the most suitable drug with the lowest risk for extravasation.

A solid foundation

The current team was formed in 2017, following a previous team that had explored extravasation in 2015. Krister was part of this original team, and recalls how they switched the administration of carboplatin (a chemotherapy drug) from a 500ml to a 250ml bag in order to reduce the number of extravasations. But the new team of 10 oversaw drastic improvements in achieving a median monthly extravasation rate of zero.

The new team does more in-depth investigation into extravasation factors, including the use of Plan, Do, Study, Act (PDSA), a four-step methodology for continual improvement of practices and products. This is a widely used quality improvement tool and taught throughout the SingHealth organisation.

In their tenure, the team conducted three PDSA cycles. They sought to minimise the occurrences of extravasations by identifying and reducing various risk factors. As Peggy puts it, “One clinical incident does not [only] come from one source.”

Risk factors for extravasation

In their willingness to draw from the experience of others, the team took heed when a radiographer observed how a 22-gauge needle could not support the high speed and volume of the administered drug. This caused a higher yield of contrast extravasation while injecting the contrast during scans. Hence, they deduced that a larger 19- or 20-gauge needle would be more suitable, depending on the patient’s vein integrity.

In addition, what goes through the cannula also plays a part. Krister highlights the contributions of pharmacists like herself, saying, “For us pharmacists, we know which drugs [and classifications] have higher risks; and so, caution can be adjusted accordingly.”

For other observed risks of extravasation, the solution was to educate staff and improve procedures. For example, it was found that there was a higher risk of extravasation within the first hour of cannulation. Hence, nurses applied extra-cautionary practices like checking the cannulation site every 15 minutes, and the patients were told to inform the nurses of any discomfort they might feel around the cannulation site.

It was also revealed in PDSA 3 that a high number of extravasation incidents occurred when patients visited the toilet during their treatment. Most likely, this was due to the shifting of the cannula. To avoid this, the patient’s cannulation site is now checked and infusion is paused whenever they need to use the toilet. After patients return, the nurses check the cannulation site again to ensure that it is strong enough to resume treatment.

Patients play a role too

While the healthcare team shoulders most of the responsibility, the patient also has an important role to play. Part of the team’s solution was educating patients in recognising the signs of extravasation and encouraging them to report it immediately. This allowed the nurses to react quickly, and in many cases, to minimise or avoid extravasation.

Sustaining is harder than implementing

But the new measures responsible for bringing down extravasation rates were easier said than done. Staff resistance in changing conventional treatment practices had to be overcome. “Implementation is always easy to do. It’s about the sustaining,” explains Peggy.

Fortunately, NCCS has remained dedicated to staff education. Following PDSA 2, a standardised method of teaching nurses how to care for chemotherapy patients was developed. In addition, a chemotherapy nurse educator was designated solely for this task. Caregivers were henceforth taught to highlight areas of high risk for extravasation and the importance of prompt reporting.

To ensure that new employees adopt and perpetuate the new culture of care treatment, there are standardised ways of inducting new employees with on-the-job training. While confirmation of a new employee is at 6 months, it takes at least a year for a new employee to be able to manage the complex work within the unit more independently. New nurses are also assigned to an experienced preceptor. “It takes time to train people,” explained Krister. “If you are not an expert at cannulation then you may contribute to the problem.”

The results have been nothing short of rewarding. Krister continues, “People will always ask why there’s a need to change, however I think all of us [have] witnessed the positive improvement we can give to our patients, and we believe that the effort we put in is well spent.”

Looking forward

Today, the team’s solutions have been implemented successfully across NCCS — and the same could certainly be done for other healthcare institutions. All it takes is the opportunity to do so. After all, as Peggy notes, “People in healthcare already know that they want to do their best for patients.”