

Elastomeric pumps for symptom control medication in patients dying with COVID-19

BACKGROUND

Syringe drivers which deliver continuous subcutaneous infusions (CSCIs) of symptom control medicines have been common in palliative medicine since the 1980s.¹ Like most teams across the UK, we have recently routinely used the McKinley T34 syringe driver.

Unfortunately, due to a recall of version 3 and the small number of devices within both the hospital and local community, we have been concerned we may not have sufficient to cope with peak demands.

A work group was established to either source more devices or find other ways to mitigate the problem. Despite best efforts to source more version 2 devices we were only able to purchase two reconditioned drivers. Elastomeric pumps were suggested by the senior pharmacist in late 2019 but the risks of a new device then outweighed the benefits; we did not anticipate the shortage would continue beyond a few months.

COVID-19

In the early days of the pandemic our team developed a strategy for dealing with the impact. We discussed the need for CSCIs. Early reports were that many patients died so quickly that an infusion would not benefit them. We felt that if numbers were as high as predicted, if even a small

percentage of patients died more slowly, demand would quickly exceed our supply.

Given this, we reintroduced the elastomeric pump idea as the balance of risks and benefits had changed. After several devices were considered we bought 300 Vygon Accufuser pumps. We opted for the 60 mL pumps with a 2 mL/hour fixed flow rate (49 mL of drug/diluent solution to give 24 hours at 2 mL/hour—plus the 1 mL residual in the device/tubing at the end of the infusion).

A risk assessment was performed. It was agreed that use of the devices would be limited to the specialist palliative care team in patients dying with COVID-19. We hoped to free up the McKinley T34s for other patients where the team were less active. The devices were independently tested by the senior pharmacist and found reliable. There was a slight variation in flow rate dependent on ambient temperature so we were advised to keep the flow rate device close to the patients' skin. Packs were made up containing an instruction sheet, a 50 mL luer lock syringe and an elastomeric pump.

During April, May and June 2020 the devices were used multiple times by the specialist palliative care team, see [box 1](#).

EXPERIENCE

There were no concerns about function from nursing or medical staff. There was one report of a family concerned that the infusion was not running but, on checking, it functioned correctly; the family

were reassured and had no ongoing concerns.

Feedback from the palliative care nurses has been universally positive. They are lighter and slightly smaller than the McKinley T34 so may be easier for ambulatory patients.

A potential disadvantage is that the volume infused and left to be infused cannot be accurately assessed during the infusion, as the scale inside the device is unreliable. However, it can be argued that provided we are confident the device is working, monitoring is unnecessary—particularly as in the community devices are routinely left unattended for 24 hours. The simple mechanical nature of the device means faults are less likely. Set-up is straightforward without the need to programme; and there are no user-defined settings, unlike the McKinley T34, just a fixed flowrate. Monitoring the injection site is of course both possible and worthwhile.

POST-COVID-19

Given the positive experience and an ongoing shortage of McKinley T34s, as the number of COVID-19 cases has fallen we have increasingly found ourselves in the situation where we want to provide a CSCI, struggle to source a syringe driver, but the patient does not have COVID-19. We agreed to use the devices for any palliative patient when a McKinley T34 is unavailable.

We have had several expressions of interest/requests for information from others which has prompted us to share our experience more widely.

CONCLUSION

Elastomeric pumps for CSCIs in palliative medicine appear to provide a viable alternative to syringe drivers. Our experience is limited but we have not encountered any serious concerns to date; we intend to continue to monitor and audit the use of these devices including patient feedback.

Box 1 Use of Devices—Summary

- ⇒ Total patients: 12.
- ⇒ Devices used (ie, patients days on the pump): 38.
- ⇒ Average number used per patient: 3.2.
- ⇒ Average age of patients: 84.75.
- ⇒ Maximum number of medicines in pumps: 3 (although no limit placed on this as long as drugs were compatible).
- ⇒ Average number of medicines per pump: 2.25.
- ⇒ Medicines used: glycopyrronium, haloperidol, midazolam, morphine, oxycodone.

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