

Metrological assessment of infusion pump emergency practice in times of pandemic: The COVID-19 case

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Challenges

The unprecedented conditions Public Health Institutions experience due to COVID-19 pandemic crisis have forced Hospital Administrations to use **procedures outside the normal work practices** to:

- reduce exposure of health care staff to COVID-19
- preserve personal protective equipment (PPE)
- manage shortages of equipment
- manage of wastage of critical drugs or substances
- manage staff shortages and reorientation of staff to areas outside their usual expertise

Extraordinary measures include:

- using the drug delivery devices
 - outside the patients' room
 - Outside manufacturer specifications
- postponing maintenance and calibration of equipment for patient-critical use

can lead to large dosing errors

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How can metrology help?

RECOMMENDATIONS

On using the drug delivery devices outside the patients' room:

The accuracy of the device may change due to the setup modification and the pump will not perform according to the specifications of the manufacturer

- Test the flow rate and volume delivered when using extension lines, especially at low flow rates

On using the drug delivery devices with associated clinical risks and lower accuracy:

- Volumetric infusion pumps can replace syringe pumps at a flow rate greater than 15 mL/h

Any other variation to manufacturer specification should be **validated by performance tests** done by qualified laboratories to assure accuracy

For delaying maintenance and calibration of equipment for patient-critical use:

Provide information on the metrological performance and maintenance status of the drug delivery device and justify extending the verification deadline

- A quick check of the pump dosing error can be performed by internal personnel using a measuring cylinder and a stopwatch

This method has 2% uncertainty and can be executed in 10 minutes

Metrology laboratories can advance the understanding of how drug delivery devices perform. To tackle COVID-19 in extraordinary, non-ideal conditions, testing with the actual fluids used for patient infusions can help identify errors and quantify device uncertainties. These strategies enable the development of best practices and methodologies to use drug delivery devices in challenging conditions.

See more at <https://drugmetrology.com/meddii-contributions-to-help-fight-covid-19>