Infusion technology

For nurses

Basic proficiency requirements for the safe use of infusion technology

nivel

EMGO+ Institute for Health and Care Research

VUmc

These proficiency requirements have been determined as a result of the work of the expert group comprising:

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We should also like to thank Noordhoff Health and LeQuest for their collaboration during the expert group's meetings

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Dear reader,

The proficiency requirements you are looking at have been developed by the NIVEL in collaboration with a number of experts in context of the project “Proficiency of users of medical technology”. The aim of this project is to work for and with the sector in the development of a practical and feasible generic road map to ensure that the users of medical technologies have the required knowledge and skills. An element of this is the development of proficiency requirements for three specific technologies, that is to say infusion technology, robotic surgery and electrosurgery. The proficiency requirements for the use of infusion technology have been developed for nurses, but comparable proficiency requirements also could be developed for other users of infusion technology in the future.

The proficiency requirements have been developed during two meetings with an expert group, consisting of three nurses, a clinical physicist and test developers. These proficiency requirements are the minimum proficiency requirements in order to make use of infusion technology safely. In other words, what someone must be able to do as a minimum in order to be able to work with infusion technology. The total proficiency of a person or team is more than that which is described by these proficiency requirements but these requirements form the essential basis.

These proficiency requirements can be used in the training of nurses and also for more advanced nurses in order to assess whether their proficiencies are still sufficient. The proficiency requirements can used as part of a training schedule or as part of a test to be taken. These requirements have been produced generically so that they can be adjusted to a local context.

The research team

Basis	
1.1	The nurse can name what the indications are for the use of an infusion pump
1.2	The nurse can name where information about the infusion pump can be found or where this can be retrieved
1.3	The nurse can name which infusion pump is suitable for which application (for example for the administration of medication / blood)
1.4	The nurse can name what the risks are of different administration routes
1.5	The nurse can name globally what is in the various protocols
1.6	The nurse can calculate the correct concentration and administration speed for a drug / fluid
1.7	The nurse can explain what the functionalities of the infusion pump are
Preparation	
2.1	The nurse can explain the instructions of the doctor
2.2	The nurse can based on the instructions of the doctor reason what the correct treatment is
2.3	The nurse can explain how medication has to be made and checked (VGTM)
2.4	The nurse can name how it can be checked whether medicines may be administered together via one infusion line
2.5	The nurse can explain how to work in an aseptic manner (WIP)
2.6	The nurse can name which equipment belongs with which infusion pump
2.7	The nurse can name which equipment is suitable for which medication/fluids
2.8	The nurse can name which equipment is required in order to be able to connect an infusion pump correctly
2.9	The nurse can name whether non-return valves have to be used
2.10	The nurse can demonstrate how the infusion pump has to be attached
2.11	The nurse can demonstrate how the infusion system has to be filled
Usage	
3.1	The nurse can demonstrate how one must work following the protocol
3.2	The nurse can name when it has to be checked whether the needle and system are still in a good position
3.3	The nurse can demonstrate how it has to be checked whether the needle and system are still in a good position
3.4	The nurse can explain which the correct program is in order to set the infusion pump
3.5	The nurse can name what the different buttons on the infusion pump are for
3.6	The nurse can demonstrate how the infusion pump has to be set
3.7	The nurse can demonstrate how adjustments have to be made to the infusion pump
3.8	The nurse can name why the infusion pump settings have to be double-checked
3.9	The nurse can demonstrate how an extra drug has to be connected
3.10	The nurse can name what the effects can be when several fluids are administered via one infusion line (multi-infusion)
3.11	The nurse can demonstrate which line / infusion pump belongs with which medication / fluid and how this can be checked

3.12	The nurse can explain that, when several drugs are running through one infusion line, the concentration ratio of the drugs in the line is the result of the settings from the infusion pumps which are connected to the same line
3.13	The nurse can explain that, when several drugs are running through one infusion line, in the case that an infusion pump setting changes it will take some time before the right concentration ratio of medication is given to the patient
3.14	The nurse can explain that when several drugs run through one infusion line a temporary dosing error can occur at infusion pumps which are not modified.
3.15	The nurse can explain what the consequences of rinsing or not rinsing the infusion line can be
3.16	The nurse can demonstrate how free-flow can be prevented
	Alarms
4.1	The nurse can explain what all the alarms mean
4.2	The nurse can demonstrate how to handle the situation when there is an alarm
4.3	The nurse can demonstrate what has to be done in the case of an occlusion
4.4	The nurse can name what the dangers of occlusion are
4.5	The nurse can name which alarm settings the health professional can or cannot modify themselves
4.6	The nurse can name when the alarm settings may be adjusted
4.7	The nurse can demonstrate how the alarm settings can be adjusted
4.8	The nurse can demonstrate how the alarm settings can be checked
4.9	The nurse can explain what the alarm settings are and why these are the settings
4.10	The nurse can name that there are different types of alarm settings and that these settings vary between departments
4.11	The nurse can name what the consequences are when the alarm settings are adjusted
	After use
5.1	The nurse can demonstrate how the infusion has to be rinsed through
5.2	The nurse can demonstrate how the infusion pump has to be disconnected
5.3	The nurse can demonstrate how the infusion pump has to be cleaned
5.4	The nurse can demonstrate how the infusion pump has to be stored
	Transport/transfer/mobility
6.1	The nurse can demonstrate how one should handle a patient who has come from outside the hospital and who has an infusion pump
6.2	The nurse can demonstrate how a patient with an infusion pump can be transported safely
6.3	The nurse can demonstrate how a patient with an infusion pump has to be prepared for diagnostic tests
6.4	The nurse can demonstrate how a patient with an infusion pump must be transferred when being moved to another department / another hospital
6.5	The nurse can explain to the patient how he can be mobile with an infusion pump.
	Power supply
7.1	The nurse can explain how the infusion pump is provided with power

7.2	The nurse can demonstrate how to handle the battery of an infusion pump
7.3	The nurse can demonstrate how the infusion pump has to be charged
7.4	The nurse can demonstrate which wall socket has to be used
7.5	The nurse can explain how to recognise when the infusion pump battery is about to run down
7.6	The nurse can name what has to be done in the event of a power failure
7.7	The nurse can discuss why the plug has to be disconnected on the side of the wall socket and not on the side of the infusion pump
Malfunction	
8.1	The nurse can demonstrate how it must be checked whether an infusion pump is functioning well
8.2	The nurse can recognise when there is a problem with the pump
8.3	The nurse can name what must be done if the infusion pump is not functioning well or if t there is doubt concerning this