

CLAIMS

What is claimed is:

1. A drug solution administration unit, comprising:
 - a drug solution administration module comprising
 - a first flow path unit including an upstream side main body where a first flow path to store drive solution is formed,
 - a second flow path unit including a downstream side main body where a second flow path to store drug solution is formed, and
 - a drive mechanism unit including a pair of electrodes and a porous body sandwiched between the pair of electrodes, the drive mechanism unit having a connecting flow path connecting a downstream end of the first flow path and an upstream end of the second flow path; and
 - a drug solution administration device comprising
 - a housing where a containment unit to store the drug solution administration module is formed,
 - inside of the housing, a branch path where the second flow path is connected,
 - and
 - inside of the housing, a main path that is branched from a downstream side of the branch path and connected to an intravenous tube,
- wherein the drug solution administration module has a drug solution connecting unit at a downstream end of the second flow path, and
- wherein the drug solution administration device has a flow path connecting unit at an upstream end of the branch path to which the drug solution connecting unit is connected.

2. The drug solution administration unit as claimed in claim 1, wherein, in the drug solution administration module,
 - the drive solution is filled in the first flow path and the connecting flow path, and the drug solution is filled in the second flow path, and
 - an amount of the drive solution is smaller than an amount of the drug solution by an adjustment amount.
3. The drug solution administration unit as claimed in claim 1 or 2, wherein the drug solution administration device further comprising a control unit being connected to the pair of electrodes for controlling an operation of the drive mechanism unit.
4. The drug solution administration unit as claimed in claim 3, wherein the drug solution administration device is configured to be able to mount a plurality of the drug solution administration modules.
5. The drug solution administration unit as claimed in claim 4, comprising a plurality of the drug solution administration modules,
 - wherein the control unit controls operation of respective drive mechanism unit of each drug solution administration module based on flow rate data indicating flow rate of drug solution administration by the plurality of the drug solution administration modules and administration data indicating a timing of the drug solution administration.
6. A drug solution administration module, comprising:
 - a first flow path unit including an upstream side main body in which a first flow path for storing drive solution is formed;
 - a second flow path unit including a downstream side main body in which a second flow path for storing drug solution is formed;
 - a drive mechanism unit
 - including a pair of electrodes and a porous body sandwiched between the pair of electrodes, the drive mechanism unit having a connecting flow path connecting a

downstream end of the first flow path and an upstream end of the second flow path;
and

a drug solution connecting unit at a downstream end of the second flow path,
wherein the drug solution administration module is mounted to a drug solution
administration device comprising

a housing in which a containment unit is formed,

inside the housing, a branch path having a flow path connecting unit
provided at an upstream end, and

inside the housing, a main path branched from a downstream side of the
branch path and connected to a tube for infusion,

in a state in which the drug solution connecting unit is connected to the flow path
connecting unit, and

wherein the drug solution administration module is contained in the containment
unit.

7. The drug solution administration module as claimed in claim 6, wherein
the drive solution is filled in the first flow path and the connecting flow path,
the drug solution is filled in the second flow path, and
an amount of the drive solution is smaller than an amount of the drug solution by an
adjustment amount.

8. A drug solution administration device comprising:
a housing in which a containment unit is formed;
inside the housing, a branch path having a flow path connecting unit provided at an
upstream end; and
inside the housing, a main path branched from a downstream side of the branch
path and connected to a tube for infusion,
wherein a drug solution administration module comprising
a first flow path unit including an upstream side main body in which a first
flow path for storing drive solution is formed,
a second flow path unit including a downstream side main body in which a
second flow path for storing drug solution, and

a drive mechanism unit including a pair of electrodes and a porous body sandwiched between the pair of electrodes, the drive mechanism unit having a connecting flow path connecting a downstream end of the first flow path and an upstream end of the second flow path,
 is mounted in a state in which the drug solution connecting unit is connected to the flow path connecting unit and is contained in the containment unit, and
 wherein the drug solution administration device further comprises a control unit that is connected to the pair of electrodes and controls operation of the drive mechanism unit.

9. The drug solution administration device as claimed in claim 8, comprising a plurality of the flow path connecting units, and a plurality of the drug solution administration modules being mounted,
 wherein the control unit controls operation of respective drive mechanism units of each drug solution administration module based on flow rate data indicating flow rate of the drug solution administration by the plurality of the drug solution administration modules and administration data indicating a timing of the drug solution administration.

~~10. The drug solution administration device as claimed in claim 9, wherein the control unit has a function of continuously administering a drug solution by the plurality of the drug solution administration modules.~~

- ~~11~~10. The drug solution administration device as claimed in claim 9 ~~or 10~~, wherein the control unit has a function of simultaneously administering drug solution by two or more of the plurality of the drug solution administration modules.

- ~~12~~11. The drug solution administration device as claimed in ~~any one of claims 9 to 11~~ or 10, wherein

the control unit has a function to, when drug solution administration by one or more of the plurality of the drug solution administration modules is completed and scheduled waiting time has elapsed, start administering drug solution by another one or more of the plurality of the drug solution administration modules.

~~13. The drug solution administration device as claimed in any one of claims 8 to 12, wherein~~

~~—— a reading unit is provided to read tag information from a tag unit, and~~

~~—— the tag unit has the tag information unique to the drug solution administration module and is provided at the drug solution administration module.~~

~~14. The drug solution administration device as claimed in claim 13, wherein~~

~~the reading unit transmits the tag information read from the tag unit to the control unit, and~~

~~the control unit judges appropriateness of the installed drug solution administration module by collating relevant information associated with the tag information of the drug solution administration module to be mounted to the tag information transmitted from the reading unit.~~

~~15~~12. A drug solution administration unit comprising a plurality of the drug solution administration devices as claimed in any one of claims 8 to ~~14~~11, wherein the control unit of each of the plurality of drug solution administration devices controls operation of the drive mechanism unit of the drug solution administration module associated with itself in cooperation with each other.

~~16~~13. A medication management system comprising:

the drug solution administration device as claimed in any one of claims 8 to ~~14~~11;

an analysis processing device for analyzing personal data including information on patient attributes and drug solution data including information on flow rate of drug solution in the drug solution administration module; and

a management device having a display unit,

wherein the display unit displays information based on an analysis result by the analysis processing device.

~~17~~14. The medication management system as claimed in claim ~~16~~13, wherein

the analysis processing device obtains a recommended flow rate value as a predicted value of optimum flow rate of drug solution in the drug solution administration module by using the personal data and the drug solution data, and the display unit displays recommended information including the recommended flow rate value.

- ~~18~~15. The medication management system as claimed in claim ~~16~~13 or ~~17~~14, wherein the personal data includes vital data of a patient, the analysis processing device obtains vital prediction information indicating future changes of the vital data by using the personal data and the drug solution data, and the display unit displays information based on the vital prediction information.

~~19. The medication management system as claimed in claim 17, wherein~~
~~the personal data includes vital data of a patient,~~
~~the analysis processing device obtains post-change time-lapse data indicating~~
~~changes in the vital data over time by using the personal data and the drug solution~~
~~data when the flow rate by the drug solution administration module is changed to a~~
~~recommended flow rate value, and~~
~~the display unit displays information based on the post-change time-lapse data.~~

~~20. The medication management system, as claimed in claim 17 or 19, wherein~~
~~the personal data includes vital data of a patient,~~
~~the analysis processing device, by using the personal data and the drug solution~~
~~data, obtains post-change prediction data indicating vital data after a set period has~~
~~elapsed when a flow rate of the drug solution administration module is changed to a~~
~~recommended flow rate value, and~~
~~the display unit displays information based on the post-change prediction data.~~