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[EPODOC: SS 21] catheter and IV and fluid and pressure and sensor

Results in EPODOC 0

[SS 22] catheter and IV and fluid and pressure and sensor

Results in EPODOC 6

[SS 23] ..v

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1/6 © EPODOC / EPO

PN - [MX2017010008](#) A 20171122

PR - US201562111337P
20150203; US201514853504
20150914; WO2016US16420
20160203

AP - MX20170010008 20160203

DT - I

CCI - [A61B5/7235](#) ; [A61B5/02152](#) ;
[A61M5/158](#) ; [A61M5/16854](#)

CCA - [A61M2005/1588](#) ;
[A61B5/7257](#)

PA - UNIVVANDERBILT[US]

TI - INTRAVENOUS ACCESS DEVICE
DETECTING INTRAVENOUS
INFILTRATION AND IN-VEIN
PLACEMENT.

AB - Aspects of the invention
relates to systems and
methods for monitoring an
intravenous (IV) line
functionality of an IV device.
In one embodiment, the
system includes an IV
catheter to be inserted into
the vein of the living subject,

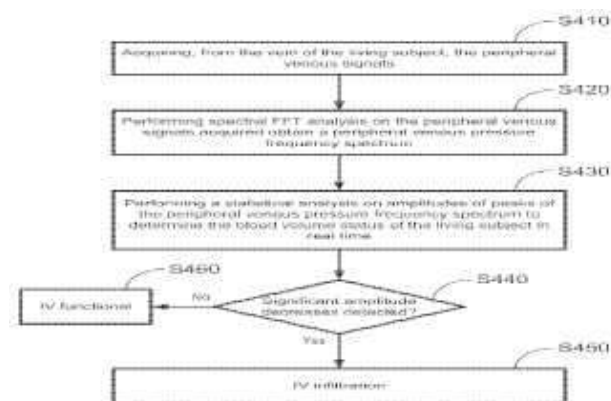
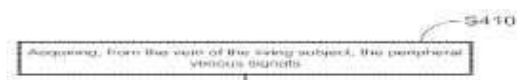


FIG. 4

at least one **pressure sensor** in **fluid** communication with the **IV catheter** to acquire peripheral venous signals; and a processing device. The processing device receives the peripheral venous signals from the **pressure sensor**, performs a spectral analysis on the peripheral venous signals to obtain a peripheral venous **pressure** frequency spectrum, and then performs a statistical analysis on amplitudes of peaks of the peripheral venous **pressure** frequency spectrum to determine an **IV** line functionality of the **IV catheter** in real time. When the **IV** line functionality indicates **IV** infiltration, the processing device may control the **fluid** controlling device to stop the **fluid** flow from the **fluid** source to the **IV catheter**.

2/6 © EPODOC / EPO

- PN - [US2018020935](#) A1 20180125
- PR - US201615547935
20160203; US201514853504
20150914; US201562111337P
20150203; WO2016US16420
20160203
- AP - US201615547935 20160203
- DT - **
- CCI - [A61B5/7235](#) ; [A61B5/02152](#) ;
[A61M5/158](#) ; [A61M5/16854](#)
- CCA - [A61M2005/1588](#) ;
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DETECTING INTRAVENOUS
INFILTRATION AND IN-VEIN
PLACEMENT
- AB - Aspects of the invention
relates to systems and
methods for monitoring an
intravenous (**IV**) line
functionality of an **IV** device.



In one embodiment, the system includes an **IV catheter** to be inserted into the vein of the living subject, at least one **pressure sensor** in **fluid** communication with the **IV catheter** to acquire peripheral venous signals; and a processing device. The processing device receives the peripheral venous signals from the **pressure sensor**, performs a spectral analysis on the peripheral venous signals to obtain a peripheral venous **pressure** frequency spectrum, and then performs a statistical analysis on amplitudes of peaks of the peripheral venous **pressure** frequency spectrum to determine an **IV** line functionality of the **IV catheter** in real time. When the **IV** line functionality indicates **IV** infiltration, the processing device may control the **fluid** controlling device to stop the **fluid** flow from the **fluid** source to the **IV catheter**.

3/6 © EPODOC / EPO

PN - [CN107257652](#) A 20171017

PR - US201562111337P
20150203; US201514853504
20150914; WO2016US16420
20160203

AP - CN2016808685 20160203

DT - I

CCI - [A61B5/7235](#) ; [A61B5/02152](#) ;
[A61M5/158](#) ; [A61M5/16854](#)

CNOI - [A61B5/7235](#) ; [A61B5/02152](#) ;
[A61M5/158](#) ; [A61M5/16854](#) ;
[A61B5/7257](#)

CCA - [A61M2005/1588](#) ;
[A61B5/7257](#)

CNOA - [A61M2005/1588](#)

PA - UNIVVANDERBILT

TI - Intravenous access device
detecting intravenous

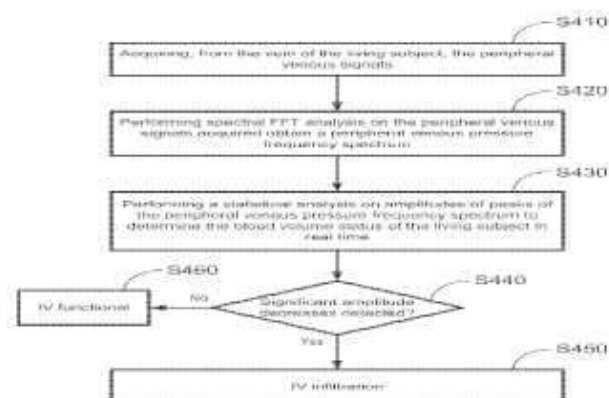
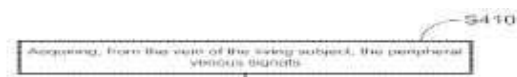


FIG. 4

- infiltration and in-vein placement
- AB - Aspects of the invention relates to systems and methods for monitoring an intravenous (**IV**) line functionality of an **IV** device. In one embodiment, the system includes an **IV catheter** to be inserted into the vein of the living subject, at least one **pressure sensor** in **fluid** communication with the **IV catheter** to acquire peripheral venous signals; and a processing device. The processing device receives the peripheral venous signals from the **pressure sensor**, performs a spectral analysis on the peripheral venous signals to obtain a peripheral venous **pressure** frequency spectrum, and then performs a statistical analysis on amplitudes of peaks of the peripheral venous **pressure** frequency spectrum to determine an **IV** line functionality of the **IV catheter** in real time. When the **IV** line functionality indicates **IV** infiltration, the processing device may control the **fluid** controlling device to stop the **fluid** flow from the **fluid** source to the **IV catheter**.

4/6 © EPODOC / EPO

- PN - [CA2975604](#) A1 20160811
- PR - US201562111337P
20150203; US201514853504
20150914; WO2016US16420
20160203
- AP - CA20162975604 20160203
- DT - I
- CCI - [A61B5/7235](#) ; [A61B5/02152](#) ;
[A61M5/158](#) ; [A61M5/16854](#)
- CCA - [A61M2005/1588](#) ;
[A61B5/7257](#)



- PA - UNIV VANDERBILT [US]
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- AB - Aspects of the invention
relates to systems and
methods for monitoring an
intravenous (**IV**) line
functionality of an **IV** device.
In one embodiment, the
system includes an **IV**
catheter to be inserted into
the vein of the living subject,
at least one **pressure sensor**
in **fluid** communication with
the **IV catheter** to acquire
peripheral venous signals;
and a processing device. The
processing device receives
the peripheral venous signals
from the **pressure sensor**,
performs a spectral analysis
on the peripheral venous
signals to obtain a peripheral
venous **pressure** frequency
spectrum, and then performs
a statistical analysis on
amplitudes of peaks of the
peripheral venous **pressure**
frequency spectrum to
determine an **IV** line
functionality of the **IV**
catheter in real time. When
the **IV** line functionality
indicates **IV** infiltration, the
processing device may
control the **fluid** controlling
device to stop the **fluid** flow
from the **fluid** source to the **IV**
catheter.

PN - [WO2016126856](#) A1 20160811

PR - US201562111337P
20150203; US201514853504
20150914

AP - WO2016US16420 20160203

DT - *; Rep

CT - |KR| ISR (A1)
[US2014207062](#) A1 20140724
[A] (EAGLE SUSAN [US], et al)
[A] 1-15, 24
* See paragraphs [0024], [0077]
-[0082], [0101]; figures 1A, 2. *;
[US2011137241](#) A1 20110609
[A] (DELCASTILIO JORGE A [US],
et al)
[A] 1-15, 24
* See entire document. *;
[EP0431310](#) A1 19910612
[A] (IVAC CORP [US])
[A] 1-15, 24
* See entire document. *;
[US2014073973](#) A1 20140313
[A] (SEXTON KEVIN [US], et al)
[A] 1-15, 24
* See entire document. *;
[US4898576](#) A 19900206
[A] (PHILIP JAMES H [US])
[A] 1-15, 24
* See entire document. *

CCI - [A61B5/7235](#) ; [A61B5/02152](#) ;
[A61M5/158](#) ; [A61M5/16854](#)

CCA - [A61M2005/1588](#) ;
[A61B5/7257](#)

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TI - INTRAVENOUS ACCESS DEVICE
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In one embodiment, the system
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communication with the **IV**
catheter to acquire peripheral
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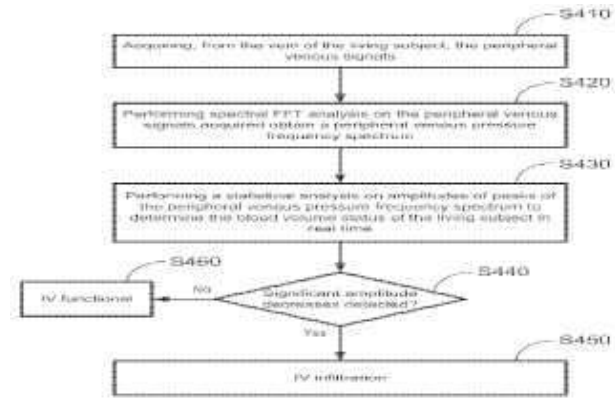
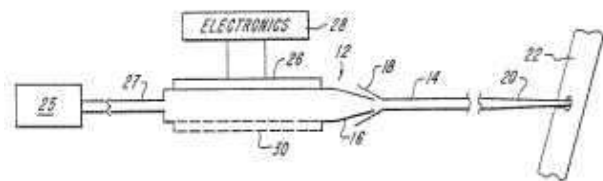


FIG. 4

processing device. The processing device receives the peripheral venous signals from the **pressure sensor**, performs a spectral analysis on the peripheral venous signals to obtain a peripheral venous **pressure** frequency spectrum, and then performs a statistical analysis on amplitudes of peaks of the peripheral venous **pressure** frequency spectrum to determine an **IV** line functionality of the **IV catheter** in real time. When the **IV** line functionality indicates **IV** infiltration, the processing device may control the **fluid** controlling device to stop the **fluid** flow from the **fluid** source to the **IV catheter**.

6/6 © EPODOC / EPO

- PN - [US5026348](#) A 19910625
 PR - US19880203280 19880606
 AP - US19880203280 19880606
 DT - **
 CT - [US3283562](#) A []; [US3898637](#) A [];
[US3974681](#) A []; [US4014206](#) A [];
[US4015464](#) A []; [US4068521](#) A [];
[US4122713](#) A []; [US4137913](#) A [];
[US4256437](#) A []; [US4418565](#) A [];
[US4607520](#) A []; [US4648869](#) A [];
[US4673927](#) A []; [US4778451](#) A [];
[US4821558](#) A []; [US4826482](#) A [];
[SU838552](#) A1 []; [SU1196751](#) A1 []
 CCI - [A61M5/16859](#)
 CCA - [Y10S128/13](#)
 PA - GEN HOSPITAL CORP [US]
 TI - Apparatus and method for the detection of **IV catheter**



- obstruction and extravasation
- AB
- An in-line **fluid** conduit condition analyzer which includes a chamber placed in the conduit flow path and having one wall forming a piezoceramic bender that varies the chamber volume (or **pressure**) according to a predetermined waveform or noise spectrum and an associated piezoceramic **pressure** or displacement **sensor**. The time derivative of the displacement or the **pressure** are analyzed under computer control to identify conduit abnormalities. In particular application to intravenous **fluid** administration to patients, the system is capable of distinguishing a number of abnormalities including catheter obstruction, **catheter** needle out of the vein, **catheter** needle into the vein, as well as **fluid** bubble presence or conduit disconnection.