

## CLAIMS

What is claimed is:

1. A rapid insertion central catheter system, comprising:
  - an introducer placement system configured to place an introducer within a vasculature of a patient, comprising:
    - a needle defining a needle lumen;
    - an introducer guidewire, disposed within the needle lumen;
    - a dilator defining a dilator lumen;
    - an introducer supported by an introducer hub, the introducer defining a introducer lumen configured to receive the dilator disposed therein;
    - a guidewire housing including a guidewire advancement assembly coupled to a proximal end of the introducer guidewire, and a needle retraction assembly coupled to a proximal end of the needle;
    - a dilator housing coupled to a distal end of the guidewire housing and including a dilator advancement assembly coupled to a proximal end of a dilator; and
    - a blood flash indicator tube fluidly coupled with the needle lumen;
  - a docking station, releasably coupled to a distal end of the dilator housing, the docking station defining a lumen configured to retain the introducer hub; and
  - a catheter placement system configured to engage a proximal end of the docking station and place a catheter within a vasculature of a patient, the catheter placement system comprising:
    - a docking portion configured to engage the docking station to axially align the catheter with the introducer lumen;
    - a rail extending proximally from the docking portion;
    - a locking hub disposed at a proximal end of the rail, the locking hub defining a locking hub lumen;
    - a catheter guidewire including a guidewire hub permanently attached to a distal end thereof, wherein a portion of the guidewire is disposed within the locking hub lumen; and
    - a catheter frame slidably engaged with the rail, wherein the catheter is supported by the catheter frame.

2. The rapid insertion central catheter system according to claim 1, wherein the introducer placement system further includes a blood flash actuator configured to release a vacuum disposed within the blood flash indicator tube to draw a proximal blood flow through the needle lumen and into the blood flash indicator tube.

3. The rapid insertion central catheter system according to claim 2, wherein the blood flow disposed within the blood flash indicator tube is observable through the blood flash indicator tube and through the guidewire housing.

4. The rapid insertion central catheter system according to any claim of claims 1-3, wherein one of the rail and the catheter guidewire is disposed within a collapsible sterile barrier to prevent contact therewith.

5. The rapid insertion central catheter system according to any claim of claims 1-4, wherein the catheter is disposed within the collapsible sterile barrier that includes the rail disposed therein, the catheter frame extending through an aperture disposed in a side wall of the sterile barrier and configured to be grasped by a clinician.

6. The rapid insertion central catheter system according to any claim of claims 1-5, wherein one of the guidewire advancement assembly, the needle retraction assembly, and the dilator advancement assembly includes a release mechanism that requires a pair of finger tabs to move laterally inward prior to allowing any longitudinal movement thereof.

7. The rapid insertion central catheter system according to any claim of claims 1-6, wherein the guidewire of the dilator placement system is configured to blunt a tip of the needle when the guidewire is advanced distally through the needle lumen.

8. The rapid insertion central catheter system according to any claim of claims 1-7, wherein distal advancement of the dilator assembly causes the dilator and the introducer to advance distally over the needle and the guidewire.

9. The rapid insertion central catheter system according to any claim of claims 1-8, wherein proximal withdrawal of the needle retraction assembly causes proximal withdrawal of the needle and the introducer guidewire.

10. The rapid insertion central catheter system according to any claim of claims 1-9, wherein distal advancement of the dilator advancement assembly transfers the introducer from the dilator housing to the docking station.

11. The rapid insertion central catheter system according to claim 10, wherein proximal withdrawal of the dilator advancement assembly causes proximal withdrawal of the dilator from the lumen of the introducer.

12. The rapid insertion central catheter system according to any claim of claims 1-11, wherein the docking station defines a distal surface including an adhesive layer configured to adhere the docking station to a skin surface of a patient.

13. The rapid insertion central catheter system according to any claim of claims 1-12, wherein a width of the guidewire hub of the catheter guidewire is greater than a width of the locking hub lumen to prevent a proximal end of the catheter guidewire passing through the locking hub lumen.

14. The rapid insertion central catheter system according to any claim of claims 1-13, wherein the docking portion of the catheter placement system includes an introducer retraction assembly configured to split the introducer along a longitudinal axis into a first half and a second half, the first half wound around a first reel and a second half wound around a second reel.

15. The rapid insertion central catheter system according to any claim of claims 1-14, wherein the locking hub further includes a guidewire lock, configured to lock the catheter guidewire and prevent longitudinal movement thereof, relative to the locking hub.

16. The rapid insertion central catheter system according to any claim of claims 1-15, wherein the docking station includes a breach line extending longitudinally, and is configured to separate along the breach line when a first body portion and a second body portion of the docking station are urged laterally outward.

17. A two-step method of placing a catheter within a vasculature of a patient including a first step of placing an introducer using an introducer placement system comprising a body, a docking station releasably coupled to a distal end of the body, a needle, an introducer guidewire, a dilator, and an introducer, and a second step of placing a catheter using a catheter

placement system including a docking portion, a rail including a catheter frame slidably engaged thereto, a catheter releasably coupled to the catheter frame, and a locking hub disposed at a proximal end of the rail, the method comprising:

- accessing the vasculature using the needle;
- advancing the introducer guidewire through a lumen of the needle;
- advancing the dilator, including the introducer disposed thereon, over the needle to transfer the introducer from the body to the docking station;
- retracting the needle and the guidewire from the dilator;
- retracting the dilator from the introducer;
- detaching the body of the introducer placement system from the docking station;
- coupling the docking portion of the catheter placement system with a proximal end of the docking station;
- advancing a catheter guidewire distally through a lumen of the catheter and through a lumen of the introducer until a distal portion is disposed distally of a distal tip of the introducer;
- advancing a catheter frame distally to advance the catheter through the lumen of the introducer;
- actuating an introducer retraction assembly to split the introducer along a longitudinal axis into a first half and a second half, wherein the first half of the introducer is wound around a first reel, and wherein the second half of the introducer is wound around a second reel;
- retracting the catheter guidewire distally from the catheter;
- removing the catheter placement system from the docking station; and
- removing the docking station from the catheter.

18. The method according to claim 17, wherein accessing the vasculature using the needle further includes actuating a blood flash actuator, configured to release a vacuum disposed within a blood flash indicator tube to draw a proximal blood flow through the needle lumen and into the blood flash indicator tube, to confirm vascular access of the needle.

19. The method according to claim 18, wherein accessing the vasculature using the needle further includes observing a blood flow through the blood flash indicator tube and through the body of the introducer placement system.

20. The method according to any claim of claims 17-19, wherein one of advancing the introducer guidewire, advancing the dilator, and retracting the needle includes releasing a locking mechanism by pinching a pair of finger tabs together, prior to longitudinal movement of the pair of finger tabs relative to the introducer placement system.

21. The method according to any claim of claims 17-20, wherein advancing the catheter guidewire distally includes collapsing a guidewire sterile barrier between a guidewire hub and the locking hub of the catheter placement system, the guidewire sterile barrier surrounding the catheter guidewire and preventing a clinician from contacting the catheter guidewire.

22. The method according to any claim of claims 17-21, wherein advancing the catheter frame distally includes collapsing a portion of a rail sterile barrier between the catheter frame and a docking portion of the catheter placement system, wherein the rail sterile barrier surrounding the rail and a portion of the catheter is configured to prevent a clinician from contacting the portion of the catheter.

23. The method according to claim 22, wherein a portion of the catheter frame extends through an aperture disposed in a side wall of the rail sterile barrier, and is configured to allow a clinician to grasp the portion of the catheter frame to urge the catheter frame distally.

24. The method according to any claim of claims 17-23, wherein advancing the catheter frame distally includes expanding an extension leg sterile barrier between the locking hub and an extension leg of the catheter, the extension leg sterile barrier surrounding the catheter guidewire and prevents a clinician from contacting the catheter guidewire.

25. The method according to any claim of claims 17-24, wherein advancing the introducer guidewire through the lumen of the needle further includes blunting a tip of the needle.

26. The method according to any claim of claims 17-25, wherein transferring the introducer from the body to the docking station further includes retaining an introducer hub within a lumen of the docking station.

27. The method according to any claim of claims 17-26, wherein detaching the docking station from the body further includes adhering a distal surface of the docking station to a skin surface of a patient.

28. The method according to any claim of claims 17-27, wherein the catheter guidewire further includes a guidewire hub permanently attached to a proximal end thereof, the guidewire hub configured to prevent the proximal end of the catheter guidewire entering the lumen of the catheter.

29. The method according to any claim of claims 17-28, wherein coupling the catheter placement system with the proximal end of the docking station further includes coupling a clamp of the introducer retraction assembly with an introducer hub, the clamp opening a valve disposed within the introducer hub.

30. The method according to any claim of claims 17-29, wherein advancing the catheter guidewire proximally further includes unlocking a guidewire lock to allow longitudinal movement of the catheter guidewire relative to the catheter placement system, followed by locking the guidewire lock, to inhibit longitudinal movement of the catheter guidewire relative to the catheter placement system when a distal tip of the catheter guidewire is disposed proximate a target location.

31. The method according to any claim of claims 17-30, wherein actuating an introducer retraction assembly further includes rotating a twist knob of the introducer retraction assembly.

32. The method according to any claim of claims 17-31, wherein removing the catheter placement system from the docking station further includes removing a cap portion of the catheter placement system to allow transverse movement of the catheter placement system relative to the catheter.

33. The method according to any claim of claims 17-32, wherein removing the docking station from the catheter further includes splitting the docking station longitudinally along a breach line by urging a first portion and a second portion laterally outward.

34. A rapid insertion central catheter system, comprising:  
an introducer placement system, configured to place an introducer within a vasculature of a patient;  
a docking station, releasably coupled to a distal end of the introducer placement system; and  
a catheter placement system configured to engage a proximal end of the docking station and place a catheter within a vasculature of a patient.

35. The rapid insertion central catheter system according to claim 34, wherein the introducer placement system includes one of a needle, an introducer guidewire, a dilator, an introducer, an introducer hub, and a blood flash indicator tube.

36. The rapid insertion central catheter system according to claim 35, wherein the introducer placement system further includes a blood flash actuator configured to release a vacuum disposed within the blood flash indicator tube to draw a proximal blood flow through a lumen of the needle and into the blood flash indicator tube.

37. The rapid insertion central catheter system according to any claim of claims 34-36, wherein the catheter placement system includes one of a docking portion, a rail, a locking hub, a catheter guidewire, and a catheter frame.

38. The rapid insertion central catheter system according to claim 37, wherein one of the rail, the catheter, and the catheter guidewire is disposed within a collapsible sterile barrier to prevent contact therewith.

39. The rapid insertion central catheter system according to any claim of claims 34-38, wherein the introducer placement system includes one of a guidewire advancement assembly, a needle retraction assembly, and a dilator advancement assembly.

40. The rapid insertion central catheter system according to claim 38, wherein one of the guidewire advancement assembly, the needle retraction assembly, and the dilator advancement assembly includes a release mechanism.

41. A method of placing a catheter within a vasculature of a patient, comprising:  
placing an introducer within the vasculature of the patient using an introducer placement system including a body and a docking station;

detaching the body of the introducer placement system from the docking station;  
coupling a catheter placement system with the docking station;  
advancing a catheter into the vasculature of the patient;  
removing the introducer using an introducer retraction assembly; and  
removing the catheter placement system and the docking station.

42. The method according to claim 41, wherein placing the introducer further includes transferring the introducer from the body of the introducer placement system to the docking station.

43. The method according to claim 42, further including retaining an introducer hub of the introducer within a lumen of the docking station.

44. The method according to any claim of claims 41-43, further including actuating a blood flash actuator configured to release a vacuum disposed within a blood flash indicator tube to draw a proximal blood flow through a needle lumen and into the blood flash indicator tube to confirm vascular access of a needle.

45. The method according to any claim of claims 41-44, wherein placing an introducer within the vasculature of the patient further includes advancing an introducer guidewire through the needle lumen and blunting a tip of the needle.

46. The method according to any claim of claims 41-45, wherein advancing the catheter into the vasculature of the patient further includes a guidewire hub permanently attached to a proximal end of a catheter guidewire, the guidewire hub configured to prevent a proximal end of the catheter guidewire entering a lumen of the catheter.

47. The method according to any claim of claims 41-46, wherein removing the introducer further includes splitting the introducer along a longitudinal axis.