

CLAIMS

What is claimed is:

1. A rapidly insertable central catheter (“RICC”) assembly, comprising:
a RICC including:
a catheter tube including a first section formed of a first material having a first durometer, a second section formed of a second material having a second durometer less than the first durometer, and a side aperture through a side of the catheter tube in a distal-end portion thereof but proximal of the first section of the catheter tube, the side aperture opening into an introducing lumen of the catheter tube that extends from at least the side aperture to a distal end of the RICC;
a catheter hub coupled to a proximal-end portion of the catheter tube; and
one or more extension legs, each extension leg of the one-or-more extension legs coupled to the catheter hub by a distal-end portion thereof;
an introducer including:
a retractable-needle device including an introducer needle having a shaft and a needle tip in a distal-end portion of the shaft, the needle tip extending beyond the distal end of the RICC when the RICC assembly is in at least a ready-to-deploy state of the RICC assembly;
a syringe; and
a coupling hub coupling the retractable-needle device and the syringe together proximal of the side aperture in at least the ready-to-deploy state of the RICC assembly.
2. The RICC assembly of claim 1, wherein the shaft of the introducer needle extends through a longitudinal through hole of the coupling hub, through the side aperture of the catheter tube, and along the introducing lumen of the catheter tube in at least the ready-to-deploy state of the RICC assembly.
3. The RICC assembly of either claim 1 or 2, wherein the coupling hub includes a sealed blood-flashback chamber, a cutout of the shaft of the introducer needle disposed in the blood-flashback chamber configured to release blood into the blood-flashback chamber upon the needle tip accessing a blood-vessel lumen of a patient.

4. The RICC assembly of claim 3, wherein the coupling hub includes a side arm extending from a side of the coupling hub, the syringe fluidly coupled to the blood-flashback chamber by a side-arm lumen of the side arm for aspirating blood upon accessing the blood-vessel lumen.
5. The RICC assembly of any claim of claims 1-4, the introducer further including:
a clip having a syringe-clipping portion and needle device-clipping portion, the syringe-clipping portion of the clip configured to clip the syringe by a barrel of the syringe and the needle device-clipping portion of the clip configured to clip the retractable-needle device by a body of the retractable-needle device while allowing the retractable-needle device to slide in the needle device-clipping portion of the clip.
6. The RICC assembly of claim 5, wherein the syringe includes a plunger disposed in the barrel of the syringe, the plunger including a plunger extension configured to allow a clinician to withdraw the plunger from the barrel by proximally pushing a tab of the plunger extension while handling the RICC assembly around the coupling hub.
7. The RICC assembly of any claim of claims 1-6, wherein the coupling hub includes a tab configured to allow a clinician to single handedly advance the RICC over the needle tip with a single finger of a hand while holding a distal-end portion of the retractable-needle device between a thumb and another finger or fingers of the hand.
8. The RICC assembly of any claim of claims 1-7, the retractable-needle device further including:
an access guidewire disposed in a needle lumen of the introducer needle; and
an access-guidewire actuator configured to advance a distal-end portion of the access guidewire beyond the needle tip or withdraw the distal-end portion of the access guidewire into the distal-end portion of the shaft of the introducer needle proximal of the needle tip.
9. The RICC assembly of claim 8, wherein the access-guidewire actuator includes a slider slidably disposed in a longitudinal slot of a housing of the retractable-needle device, the slider including an extension coupled to a proximal-end portion of the access guidewire within a cavity of the retractable-needle device enclosed by the housing.

10. The RICC assembly of claim 9, wherein a proximal-end portion of the introducer needle is disposed in a carriage of the retractable-needle device, an introducer-needle actuator of the retractable-needle device configured to release a compressed compression spring around the carriage when actuated and thrust both the carriage and the introducer needle proximally into the cavity of the retractable-needle device.

11. The RICC assembly of claim 10, wherein the carriage is configured to engage the slider of the access-guidewire actuator when the carriage is thrust proximally into the cavity of the retractable-needle device, thereby withdrawing the access guidewire into the cavity of the retractable-needle device by the distal-end portion thereof together with the introducer needle when the introducer-needle actuator is actuated.

12. The RICC assembly of any claim of claims 1-11, the RICC further including a sterile barrier over the catheter tube between the catheter hub and the side aperture of the catheter tube, the sterile barrier configured to split apart when a sterile-barrier tab of a proximal-end portion of the sterile barrier is pulled away from the catheter tube by the sterile-barrier tab.

13. The RICC assembly of any claim of claims 1-12, wherein the RICC includes a set of three lumens including a distal lumen, a medial lumen, and a proximal lumen formed of fluidly connected portions of three catheter-tube lumens, three hub lumens, and three extension-leg lumens, the introducing lumen of the catheter tube coincident with a distal-end portion of the distal lumen.

14. The RICC assembly of claim 13, wherein the distal lumen has a distal-lumen aperture in the distal end of the RICC, the medial lumen has a medial-lumen aperture in the side of the catheter tube proximal of the distal-lumen aperture, the proximal lumen has a proximal-lumen aperture in the side of the catheter tube proximal of the medial-lumen aperture, and the side aperture of the catheter tube is between the distal-lumen aperture and the medial-lumen aperture, between the medial-lumen aperture and the proximal-lumen aperture, or proximal of the proximal-lumen aperture.

15. A method for inserting a rapidly insertable central catheter ("RICC") into a blood-vessel lumen of a patient, comprising:

obtaining a RICC assembly including the RICC and an introducer of a retractable-needle device and a syringe coupled together by a coupling hub, the retractable-needle device including an introducer needle having a shaft

extending through a longitudinal through hole of the coupling hub, through a side aperture in a distal-end portion of a catheter tube of the RICC, along an introducing lumen of the catheter tube, and beyond a distal end of the RICC in at least a ready-to-deploy state of the RICC assembly;

establishing a needle tract from an area of skin to the blood-vessel lumen of the patient with a needle tip of the introducer needle while holding a distal-end portion of the retractable-needle device;

advancing a distal-end portion of the catheter tube into the blood-vessel lumen over the needle tip; and

withdrawing the shaft of the introducer needle from the introducing lumen by way of the side aperture of the catheter tube.

16. The method of claim 15, wherein establishing the needle tract includes ensuring blood flashes back into a sealed blood-flashback chamber of the coupling hub, a cutout of the shaft of the introducer needle disposed in the blood-flashback chamber for releasing blood into the blood-flashback chamber upon establishing the needle tract.

17. The method of claim 16, further comprising aspirating blood with the syringe before withdrawing the shaft of the introducer needle from the introducing lumen, thereby confirming the needle tip is disposed in the blood-vessel lumen of the patient, the syringe fluidly coupled to the blood-flashback chamber by a side-arm lumen of a side arm of the coupling hub for aspirating blood upon accessing the blood-vessel lumen of the patient.

18. The method of any claim of claims 15-17, wherein advancing the distal-end portion of the catheter tube into the blood-vessel lumen includes advancing the catheter tube into the blood-vessel lumen with a single finger of a hand while holding a distal-end portion of the retractable-needle device between a thumb and another finger or fingers of the hand, the coupling hub including a tab configured for advancing the catheter tube into the blood-vessel lumen with the single finger.

19. The method of any claim of claims 15-18, further comprising advancing a distal-end portion of an access guidewire disposed in a needle lumen of the introducer needle into the blood-vessel lumen before advancing the distal-end portion of the catheter tube into the blood-vessel lumen over the needle tip, the advancing including sliding a slider slidably disposed in a longitudinal slot of a housing of the retractable-needle device, which slider includes an

extension coupled to a proximal-end portion of the access guidewire disposed in a cavity of the retractable-needle device enclosed by the housing.

20. The method of claim 19, wherein withdrawing the shaft of the introducer needle from the introducing lumen of the catheter tube includes actuating an introducer-needle actuator of the retractable-needle device, a proximal-end portion of the introducer needle disposed in a carriage of the retractable-needle device configured to thrust proximally into the cavity of the retractable-needle device when a compressed compression spring around the carriage is released by the introducer-needle actuator.

21. The method of any claim of claims 15-20, further comprising advancing a maneuver guidewire into the blood-vessel lumen by way of a distal lumen having a distal-lumen aperture in the distal end of the RICC, the introducing lumen of the catheter tube coincident with a distal-end portion of the distal lumen, thereby mandating the withdrawing of the shaft of the introducer needle from the introducing lumen of the catheter tube before advancing the maneuver guidewire into the blood-vessel lumen.

22. The method of any claim of claims 15-21, further comprising removing a sterile barrier disposed over the catheter tube between a catheter hub of the RICC and the side aperture of the catheter tube by pulling a sterile-barrier tab of a proximal-end portion of the sterile barrier away from the catheter tube to split the sterile barrier apart.

23. The method of any claim of claims 15-22, wherein the catheter tube includes a first section of formed of a first material having a first durometer and a second section proximal of the first section formed of a second material having a second durometer less than the first durometer, the first section of the catheter tube configured with a column strength for advancing the catheter tube into the blood-vessel lumen.