

CLAIMS

1. A system for accessing a patient's vascular system, the system comprising:
 - a tube comprising a wall that defines an exterior surface and a lumen with a proximal end and a distal end;
 - a guidewire that is deployable by sliding distally from a retracted position in which the guidewire resides in the lumen, to a deployed position in which the guidewire extends beyond the distal end; and
 - at least one element selected from the group consisting of:
 - a retraction mechanism that can be actuated to retract the guidewire from the deployed position to the retracted position; and
 - a protective shield that can be actuated to extend distally from the distal end of the tube to cover the guidewire in the deployed position.
2. The system of claim 1, wherein:
 - the proximal end is connectable to a source of pressurized fluid; and
 - the guidewire is deployable in response to pressure, proximal to the lumen, from the source of pressurized fluid.
3. The system of claim 1, wherein:
 - the system comprises an extension set for a vascular access device (VAD); and
 - the distal end comprises a blunt cannula configured to mate with a needleless access connector of the VAD.

4. The system of claim 3, further comprising a cap configured to cover the blunt cannula prior to attachment of the blunt cannula to the VAD.
5. The system of claim 1, wherein:
- the element comprises the retraction mechanism; and
 - the retraction mechanism is slidably coupled to the exterior surface and is coupled to the guidewire such that motion of the retraction mechanism toward the proximal end retracts the guidewire from the deployed position to the retracted position.
6. The system of claim 1, wherein:
- the element comprises the retraction mechanism;
 - the guidewire comprises:
 - a distal portion with an elongated shape; and
 - a proximal portion with a coupling feature with a cross-sectional shape that is enlarged relative to the distal portion; and
 - the retraction mechanism is coupled to the coupling feature through the wall.
7. The system of claim 6, wherein the coupling feature comprises at least one selection from the group consisting of:
- a wedge shape;
 - one or more rounded ridges;
 - one or more fins;
 - one or more splines;
 - one or more longitudinal ribs; and

one or more anti-rotation features.

8. The system of claim 6, wherein the retraction mechanism compresses the wall into contact with the coupling feature to cause the wall to urge the coupling feature to move proximally in response to proximal motion of the retraction mechanism.

9. The system of claim 8, wherein the retraction mechanism comprises at least one selection from the group consisting of:

one or more wheels that engage the exterior surface to compress the tube;

one or more ball bearings that engage the exterior surface to compress the tube; and

one or more manually compressible walls that can be flexed toward the tube.

10. The system of claim 6, wherein:

the element comprises the retraction mechanism; and

the retraction mechanism comprises at least one selection from the group consisting of:

one or more magnets that magnetically engage the coupling feature;

one or more springs coupled to the coupling feature; and

a tether secured to the coupling feature.

11. The system of claim 1, further comprising a spring that urges the guidewire to deploy from the retracted position to the deployed position.

12. The system of claim 1, wherein:

the element comprises the protective shield; and

the system further comprises an absorbent component positioned to remove blood from the guidewire after deployment of the guidewire.

13. The system of claim 1, wherein the guidewire comprises at least one selection from the group consisting of:

a spring comprising a variable pitch; and

a secondary tube comprising an interior bore through which blood can be aspirated from the vascular system.

14. The system of claim 13, wherein:

the proximal end is connectable to a source of pressurized fluid;

the guidewire is deployable in response to pressure, proximal to the lumen, from the source of pressurized fluid;

the guidewire comprises the secondary tube; and

the guidewire further comprises a valve that is closed during deployment of the guidewire and open during aspiration of blood from the vascular system.

15. The system of claim 14, wherein at least one of the guidewire and the tube further comprises a catch mechanism that retains the guidewire in the deployed position.

16. A method for accessing a patient's vascular system, the method comprising:

positioning a tube proximate the vascular system, the tube comprising an exterior surface and a lumen with a proximal end and a distal end;

deploying a guidewire by sliding the guidewire distally, from a retracted position in which the guidewire resides in the lumen, to a deployed position in which the guidewire extends beyond the distal end; and

performing at least one step selected from the group consisting of:

retracting the guidewire from the deployed position to the retracted position by sliding a retraction mechanism, slidably coupled to the exterior surface, proximally; and

actuating a protective shield to extend distally from the distal end of the tube to cover the guidewire in the deployed position.

17. The method of claim 16, wherein:

the step comprises retracting the guidewire by sliding the retraction mechanism; and

the method further comprises, prior to deploying the guidewire, moving the retraction mechanism to a predetermined position such that, during deployment of the guidewire, the retraction mechanism limits a range of proximal motion of the guidewire.

18. The method of claim 16, wherein:

the step comprises actuating the protective shield; and

the method further comprises, with an absorbent component, removing blood from the guidewire after deployment of the guidewire.

19. The method of claim 16, wherein:

the method further comprises, prior to deploying the guidewire, connecting the proximal end to a source of pressurized fluid;

the guidewire comprises:

a secondary tube comprising an interior bore; and

a valve;

deploying the guidewire comprises, with the valve closed to prevent fluid flow through the interior bore, deploying the guidewire in response to pressure, proximal to the lumen, from the source of pressurized fluid; and

the method further comprises, after deploying the guidewire:

opening the valve to permit fluid flow through the interior bore; and

aspirating blood through the interior bore.

20. A system for accessing a patient's vascular system, the system comprising:

a tube comprising a wall that defines an exterior surface and a lumen with a proximal end and a distal end;

a guidewire that is deployable by sliding distally from a retracted position in which the guidewire resides in the lumen, to a deployed position in which the guidewire extends beyond the distal end, the guidewire comprising:

a distal portion with an elongated shape; and

a proximal portion with a coupling feature with a cross-sectional shape that is enlarged relative to the distal portion; and

a retraction mechanism that can be actuated to retract the guidewire from the deployed position to the retracted position;

wherein:

the proximal end is connectable to a source of pressurized fluid;

the guidewire is deployable in response to pressure, proximal to the lumen, from the source of pressurized fluid;

the system comprises an extension set for a vascular access device (VAD); and

the distal end comprises a blunt cannula configured to mate with a needleless access connector of the VAD.