CLAIMS

1. A catheter and introducer needle assembly, comprising:

a flexible catheter having a proximal end and a distal end;

a catheter hub in fluid communication with the proximal end of the catheter and having a distal end connected to the proximal end of the catheter, the catheter hub having an uninterrupted outer surface portion and a Luer-connecting feature;

an introducer needle disposed in the catheter and having a proximal end and a distal end, and an axis extending from the proximal end to the distal end;

a needle shield having a proximal portion and a distal portion;

a resilient clip adapted to flex between a first position and a second position in a plane perpendicular to the axis of the introducer needle, the resilient clip having a cantilevered arm with a pawl; and

a disabling feature extending radially outward from a proximal portion of the catheter hub and being axially aligned with and spaced apart from the pawl when the resilient clip is in the first position;

wherein, in the first position, the cantilevered arm of the resilient clip is flexed so that the pawl frictionally contacts the uninterrupted outer surface portion of the catheter hub and frictionally retains the needle shield with the catheter hub, and in the second position, the pawl no longer frictionally contacts the uninterrupted outer surface portion, thereby permitting displacement of the needle shield relative to the catheter hub.

2. The assembly according to claim 1, wherein:

when the distal end of the introducer needle extends distally past the resilient clip, the resilient clip is held to one side of the introducer needle in a biased position; and

upon the sharp distal end of the introducer needle being proximally withdrawn past the flexible clip, the flexible clip flexes to an unbiased or less biased position in which it no longer frictionally retains the needle shield with the catheter hub.

3. The assembly according to claim 1 or claim 2, wherein the resilient clip comprises an angled clip, at least a portion of which is movably disposed within the needle shield, the angled clip having an angled portion with the cantilevered arm extending therefrom.

4. The assembly according to claim 2, wherein the resilient clip comprises an angled portion having a needle blocker extending therefrom;

wherein when the flexible clip flexes to the unbiased or less biased position, the needle blocker is disposed to prevent distal displacement of the distal end of introducer needle distal outside of the needle shield.

5. The assembly according to any one of the preceding claims, wherein the catheter hub includes a proximal port adapted for fluid communication with the catheter and connection with a Luer connector.

6. The assembly according to claim 5, wherein the catheter hub comprises a secondary side port adapted for fluid communication with the catheter when the proximal port is in use.

7. The assembly according to any one of the preceding claims, further comprising:

a needle hub disposed at the proximal end of the introducer needle; and

a flexible tether connecting the needle shield and the needle hub.

8. The assembly according to any one of the preceding claims, further comprising a flexible cantilevered fin extending radially from the needle shield toward a central axis of the needle shield;

wherein the fin is disposed between the introducer needle and the resilient clip.

9. The assembly according to any one of the preceding claims, further comprising a septum and an actuator disposed within the catheter hub;

wherein the septum is pierceable by actuator displacement; and

the resilient clip is disposed proximal to the septum.

10. The assembly according to any one of the preceding claims, wherein:

a normal force applied by the pawl on the uninterrupted outer surface portion of the catheter hub is in the range of 0.4 to 1.4 Newtons; and

a coefficient of friction between the pawl and the uninterrupted outer surface portion of the catheter hub is in the range of 0.25 to 0.4.

11. A catheter and introducer needle assembly, comprising:

a flexible catheter having a proximal end and a distal end;

a catheter hub having a distal end connected to the proximal end of the catheter, the catheter hub having:

an uninterrupted outer surface portion;

at least one wing to aid in securing the catheter hub to a patient;

a proximal port in fluid communication with the proximal end of the catheter;

a secondary side port with a valve disposed therein for selective fluid communication with the proximal end of the catheter;

a Luer-connecting feature; and

a disabling feature extending radially outward from a proximal portion of the catheter hub;

an introducer needle having a proximal end, a sharpened distal end, and an axis extending from the proximal end to the distal end,

a needle hub fixedly disposed at the proximal end of the introducer needle;

a needle shield having a proximal portion and a distal portion, and also having a flexible cantilevered fin extending toward a central axis of the needle shield;

an expandable tether connecting the proximal portion of the needle shield with a distal portion of the needle hub; and

a resilient clip adapted to flex between a first position and a second position in a plane perpendicular to the axis on the introducer needle, the resilient clip having:

an anchoring portion anchoring the resilient clip in the needle shield;

an angled portion extending from the anchoring portion and having a needle blocker extending therefrom;

a cantilevered arm extending distally from the angled portion; and

a pawl disposed at a distal end of the cantilevered arm, extending toward the catheter hub;

wherein in an initial assembly configuration:

the introducer needle is disposed through the needle shield, the catheter hub, and the catheter so that the sharpened distal end of the introducer needle extends beyond the distal end of the catheter;

the needle shield is disposed at the proximal end of the catheter hub and at least a portion of the needle shield is disposed within the needle hub;

the tether is in a collapsed state;

the resilient clip is flexed into the first position by the introducer needle, with the fin of the needle shield being disposed between the introducer needle and the angled portion of the resilient clip;

the needle blocker of the resilient clip is not disposed across a pathway of the introducer needle;

the pawl is axially aligned with and spaced apart from the disabling feature; and

the cantilevered arm of the resilient clip is flexed so that the pawl frictionally contacts the uninterrupted outer surface portion of the catheter hub at a distance from the disabling feature and frictionally retains the needle shield with the catheter hub; and

wherein in a deployed assembly configuration subsequent to the withdrawal of the sharpened distal end of the introducer needle proximally past the resilient clip, the tether is extended and the resilient clip is disposed in the second position, in which the needle blocker is disposed across a pathway of the introducer needle and the pawl no longer frictionally contacts the uninterrupted outer surface portion, thereby permitting displacement of the needle shield relative to the catheter hub and preventing displacement of the sharpened distal tip of the introducer needle distally past the resilient clip.

12. A catheter and introducer needle assembly, comprising:

a catheter hub having a fluid path, an uninterrupted outer surface portion, and a Luer-connecting feature, and a disabling feature extending radially outward from a proximal portion of the catheter hub;

a catheter communicating with the fluid path; and

an introducer needle assembly, comprising:

an introducer needle;

a needle hub fixedly disposed at a proximal end of the introducer needle;

a needle shield selectively disposed at the catheter hub and connected with the needle hub, the introducer needle being disposed through the needle shield, the catheter hub, and the catheter; and

a resilient clip movably disposed within the needle shield and having a cantilevered arm extending therefrom with a pawl at a free end of the cantilevered arm, the cantilevered arm being flexed so that the pawl frictionally contacts the uninterrupted outer surface portion and frictionally retains the needle shield with the catheter hub;

wherein the disabling feature is axially aligned with and spaced apart from the pawl.

13. The assembly according to claim 12, wherein:

the introducer needle holds the resilient clip in a first compressed position until a sharpened distal end of the introducer needle proximally passes the resilient clip; and

subsequent to the distal end of the introducer needle proximally passing the resilient clip, the resilient clip expands laterally to an unbiased or less biased position in which the pawl no longer frictionally contacts the uninterrupted outer surface portion and the resilient clip no longer frictionally retains the needle shield with the catheter hub.

14. The assembly according to claim 12 or claim 13, wherein the resilient clip comprises an angled clip having an angled-portion with the cantilevered arm extending therefrom.

15. The assembly according to any one of claims 12 to 14, wherein the catheter hub includes a proximal port adapted for fluid communication with the catheter and connection with a Luer connector.

16. The assembly according to claim 15, wherein the catheter hub comprises a secondary side port adapted for fluid communication with the catheter when the proximal port is in use.

17. The assembly according to any one of claims 12 to 16, wherein a flexible tether connects the needle shield and the needle hub.

18. The assembly according to any one of claims 12 to 16, further comprising a flexible cantilevered fin extending radially from the needle shield toward a central axis of the needle shield;

wherein the fin is disposed between the introducer needle and the resilient clip.

19. The assembly according to any one of claims 12 to 18, further comprising a septum and an actuator disposed within the catheter hub;

wherein the septum is pierceable by actuator displacement; and

the resilient clip is disposed proximal to the septum.

20. The assembly according to any one of claims 12 to 19, wherein:

a normal force applied by the pawl on the uninterrupted outer surface portion is in the range of 0.4 to 1.4 Newtons; and

a coefficient of friction between the pawl and the uninterrupted outer surface portion is in the range of 0.25 to 0.4.

21. A catheter and introducer needle assembly, comprising:

a flexible catheter;

a catheter hub in fluid communication with the catheter, the catheter hub having an outer surface portion;

an introducer needle disposed in the catheter;

a needle shield; and

a resilient clip adapted to flex between a first position and a second position, the resilient clip having a cantilevered arm with a pawl;

wherein, in the first position, the cantilevered arm of the resilient clip is flexed so that the pawl frictionally contacts the outer surface portion of the catheter hub to retain the needle shield with the catheter hub, and in the second position, the pawl no longer frictionally contacts the outer surface portion, thereby permitting displacement of the needle shield relative to the catheter hub.

22. The assembly according to claim 21, wherein:

when a distal end of the introducer needle extends distally past the resilient clip, the resilient clip is held to one side of the introducer needle in a biased position; and

upon the distal end of the introducer needle being proximally withdrawn past the flexible clip, the flexible clip flexes to an unbiased or less biased position in which it no longer frictionally retains the needle shield with the catheter hub.

23. The assembly according to claim 21, wherein the resilient clip comprises an angled clip, at least a portion of which is movably disposed within the needle shield, the angled clip having an angled portion with the cantilevered arm extending therefrom.

24. The assembly according to claim 22, wherein the resilient clip comprises an angled portion having a needle blocker extending therefrom; and

wherein when the flexible clip flexes to the unbiased or less biased position, the needle blocker is disposed to prevent distal displacement of the distal end of the introducer needle distal past the needle blocker.

25. The assembly according to claim 21, wherein the catheter hub includes a proximal port adapted for fluid communication with the catheter and connection with a Luer connector.

26. The assembly according to claim 25, wherein the catheter hub comprises a secondary side port adapted for fluid communication with the catheter when the proximal port is in use.

27. The assembly according to claim 21, further comprising:

a needle hub disposed at the proximal end of the introducer needle; and

a flexible tether connecting the needle shield and the needle hub.

28. The assembly according to claim 21, further comprising a flexible cantilevered fin extending radially from the needle shield toward a central axis of the needle shield;

wherein the fin is disposed between the introducer needle and the resilient clip.

29. The assembly according to claim 21, further comprising a septum and an actuator disposed within the catheter hub;

wherein the septum is pierceable by actuator displacement; and

the resilient clip is disposed proximal to the septum.

30. The assembly according to claim 21, wherein:

a normal force applied by the pawl on the outer surface portion of the catheter hub is in the range of 0.4 to 1.4 Newtons; and

a coefficient of friction between the pawl and the outer surface portion of the catheter hub is in the range of 0.25 to 0.4.

31. The assembly according to claim 21, further comprising a disabling feature extending radially outward from a proximal portion of the catheter hub and being aligned with and spaced apart from the pawl when the resilient clip is in the first position.

32. The assembly according to claim 21, wherein the outer surface portion of the catheter hub comprises an uninterrupted outer surface portion.

33. A catheter and introducer needle assembly, comprising:

a catheter hub having a fluid path and an outer surface portion;

a catheter communicating with the fluid path; and

an introducer needle assembly, comprising:

an introducer needle;

a needle shield selectively disposed at the catheter hub, the introducer needle being disposed through the needle shield, the catheter hub, and the catheter; and

a resilient clip movably disposed within the needle shield and having a cantilevered arm extending therefrom with a pawl at a free end of the cantilevered arm, the cantilevered arm being flexed so that the pawl frictionally contacts the outer surface portion and frictionally retains the needle shield with the catheter hub.

34. The assembly according to claim 33, wherein:

the introducer needle holds the resilient clip in a first compressed position until a distal end of the introducer needle proximally passes the resilient clip; and

subsequent to the distal end of the introducer needle proximally passing the resilient clip, the resilient clip expands laterally to an unbiased or less biased position in which the pawl no longer frictionally contacts the outer surface portion and the resilient clip no longer frictionally retains the needle shield with the catheter hub.

35. The assembly according to claim 33, wherein the resilient clip comprises an angled clip having an angled-portion with the cantilevered arm extending therefrom.

36. The assembly according to claim 33, the catheter hub includes a proximal port adapted for fluid communication with the catheter and connection with a Luer connector.

37. The assembly according to claim 33, further comprising a needle hub fixedly disposed at a proximal end of the introducer needle, wherein a flexible tether connects the needle shield and the needle hub.

38. The assembly according to claim 33, further comprising a flexible cantilevered fin extending radially from the needle shield toward a central axis of the needle shield;

wherein the fin is disposed between the introducer needle and the resilient clip.

39. The assembly according to claim 33, further comprising a septum and an actuator disposed within the catheter hub;

wherein the septum is pierceable by actuator displacement; and

the resilient clip is disposed proximal to the septum.

40. The assembly according to claim 33, wherein:

a normal force applied by the pawl on the outer surface portion is in the range of 0.4 to 1.4 Newtons; and

a coefficient of friction between the pawl and the outer surface portion is in the range of 0.25 to 0.4.

41. The assembly according to claim 33, further comprising a disabling feature extending radially outward from a proximal portion of the catheter hub and being aligned with and spaced apart from the pawl when the resilient clip is flexed so that the pawl frictionally contacts the outer surface portion

42. The assembly according to claim 33, wherein the outer surface portion of the catheter hub comprises an uninterrupted outer surface portion.