CLAIMS

1. A catheter assembly comprising:

a flexible catheter;

a needle having a sharp distal tip, the needle disposed in the flexible catheter and moving from a first position that exposes the needle to a second position;

an outer member that is configured to engage and disengage a catheter hub;

an inner member movably disposed in the outer member; and

a needle shield for shielding at least a distal end of the needle when the needle is in the second position and the needle passing through the needle shield in the first position.

2. The catheter assembly according to claim 1, wherein the outer member interlocks with the catheter hub when the needle is in the first position.

3. The catheter assembly according to claim 1, wherein a catch in the outer member interlocks with a protrusion in the catheter hub.

4. The catheter assembly according to claim 1, wherein

the inner member having an opposing member; and

the opposing member is disposed in the catheter hub when the needle is in the first position.

5. The catheter assembly according to claim 4, wherein when the opposing member is disposed in the catheter hub, the outer member engages the catheter hub.

6. The catheter assembly according to claim 1, wherein the inner member is configured to axially move relative to the outer member when the needle is in the second position.

7. The catheter assembly according to claim 1, wherein

the inner member includes a slot; and

the needle shield is disposed in the slot.

8. The catheter assembly according to claim 1, wherein

the inner member includes a recess;

the outer member includes a protrusion; and

the protrusion engages the recess to ensure that the inner member is disposed within the outer member.

9. The catheter assembly according to claim 1, wherein

the needle shield restricts movement of the inner member when the needle is in the first position.

10. The catheter assembly according to claim 1, wherein the needle shield is made of a thin spring metal.

11. The catheter assembly according to claim 1, wherein a distal surface of the needle shield is secured between the catheter hub and the outer member when the needle is in the first position.

12. The catheter assembly according to claim 1, wherein the needle shield includes an aperture that allows the needle to pass through in the first position.

13. The catheter assembly according to claim 1, wherein

a distal surface of the needle shield shields the distal tip of the needle when the needle is in the second position.

14. The catheter assembly according to claim 1, wherein

a distal surface of the needle shield disengages from the catheter hub and the outer member when the needle is in the second position.

15. The catheter assembly according to claim 1, wherein:

the needle further includes a deformation; and

the deformation is enclosed by the needle shield assembly when the needle is in the second position.

16. The catheter assembly according to claim 15, wherein the deformation in the needle is configured to cause the inner member to axially move relative to the outer member.

17. A method of operating a catheter assembly comprising:

disposing a needle having a sharp distal tip in a flexible catheter and in a first position;

retracting the needle from a catheter hub, through the flexible catheter and through a needle shield;

shielding at least the distal tip of the needle by the needle shield and in an inner member via a second position;

moving the needle shield and an outer member when retracting the needle to the second position; and

disengaging the outer member from the catheter hub; wherein

the inner member is movably disposed in the outer member.

18. The method according to claim 17, further comprising:

securing a distal surface of the needle shield between the catheter hub and the outer member into an open position when the needle is in the first position.

19. The method according to claim 17, further comprising:

disengaging a distal surface of the needle shield between the catheter hub and the outer member into a closed position when the needle is in the second position.

20. The catheter assembly according to claim 1, wherein

a distal surface of the needle shield disengages from an engaged position between the catheter hub and the outer member when the needle is in the second position.