CLAIMS

1. A catheter assembly comprising:
a catheter;

a needle having a sharp distal tip disposed in the catheter;

a catheter hub housing the catheter and the needle, the catheter hub having a collar, the collar including a notch;

a needle shield connected to the catheter hub when the needle is in a first position; and

a clip disposed in the needle shield that cooperates with the needle, wherein

the clip engages the collar of the catheter hub in the first position of the needle, and

the clip disengages the collar of the catheter hub through the notch when the needle is retracted to a second position to enclose at least a portion of the needle.

2. The catheter assembly of claim 1, wherein a portion of the collar has an outer diameter greater than a portion of an outer diameter of the catheter hub adjacent to the collar.

3. The catheter assembly of claim 1, wherein the notch of the collar has an outer diameter substantially equal to or greater than a portion of an outer diameter of the catheter hub adjacent to the collar.

4. The catheter assembly of claim 1, wherein the collar includes external Luer threads.

5. The catheter assembly of claim 1, wherein the first position of the needle biases the clip into an open position during needle use.

6. The catheter assembly of claim 1, wherein the second position of the needle allows the clip to move to a closed position to block the distal tip of the needle when the needle is retracted after needle use.

7. The catheter assembly of claim 6, wherein the clip includes one or more flags that block the distal tip of the needle in the second position.

8. The catheter assembly of claim 1, further comprising
a washer disposed in the needle shield that cooperates with the needle, wherein

the needle further includes a deformation; and

the washer prevents the distal tip of the needle and the deformation from exiting the needle shield when the needle is in the second position.

9. The catheter assembly of claim 8, wherein
the clip and the washer enclose the distal tip of the needle when the needle is in the second position.

10. The catheter assembly of claim 1, wherein
the clip includes a spade that attaches the clip to the needle shield, and an outer surface of the spade is exposed to an outside of the catheter assembly.

11. The catheter assembly of claim 10, wherein
the spade includes one or more barbs, and

the one or more barbs engage an inner surface of the needle shield.

12. The catheter assembly of claim 1, wherein
the collar is disposed on a proximal end of the catheter hub, and
the clip includes a latch that is configured to engage and disengage the collar and the needle shield.

13. The catheter assembly of claim 12, wherein
the clip includes two legs, and
the latch is disposed between the two legs.

14. The catheter assembly of claim 12, wherein the latch is offset from the notch to engage the collar when the needle is in the first position.

15. The catheter assembly of claim 12, wherein the latch is aligned with the notch to disengage the collar when the needle is in the second position.

16. The catheter assembly of claim 12, wherein the latch moves laterally to disengage the collar.

17. The catheter assembly of claim 12, wherein the latch is off-center with respect to the needle at each of the engaged and disengaged position.

18. A catheter assembly comprising:
a catheter;

a needle having a sharp distal tip disposed in the catheter;

a catheter hub housing the catheter and the needle;

a needle shield configured to be connected to the catheter hub; and

a clip disposed in the needle shield that cooperates with the needle, the clip including a spade that attaches the clip to the needle shield, wherein

an outer surface of the spade is exposed to an outside of the catheter assembly.

19. The catheter assembly of claim 18, wherein
the spade includes one or more barbs, and
the one or more barbs engage an inner surface of the needle shield.

20. A method of operating a catheter assembly comprising:
disposing a needle having a sharp distal tip in a catheter;
biasing a clip when the needle is in use in a first position;
removing the needle from a catheter hub having a collar including a notch;
releasing the clip when the needle is in a second position to enclose at least a portion of the needle; and
disengaging the clip from the collar of the catheter hub through the notch when the needle is in the second position.

21. The method of claim 20, further comprising engaging the clip and the catheter hub when the needle is in the first position.

22. The method of claim 20, further comprising
connecting the catheter hub and a needle shield when the clip engages the catheter hub; and
disconnecting the catheter hub and the needle shield when the clip disengages the catheter hub,
wherein the clip is disposed in the needle shield.