

CLAIMS

We claim:

1. A catheter system, comprising:
a catheter adapter, comprising a distal end, a proximal end, and a lumen extending through the distal end and the proximal end;
a catheter extending distally from the distal end of the catheter adapter;
a needle hub, comprising a distal end and a proximal end, wherein the distal end of the needle hub is coupled to the proximal end of the catheter adapter, wherein the needle hub is transparent;
a needle, comprising a distal end and a proximal end, wherein the needle is secured within the needle hub;
a flow control plug coupled to the proximal end of the needle hub; and
a flashback pathway disposed between an outer surface of the flow control plug and an inner surface of the needle hub.
2. The catheter system of claim 1, wherein the outer surface of the flow control plug comprises a channel, wherein the flashback pathway extends through the channel between the channel and the inner surface of the needle hub.
3. The catheter system of claim 2, wherein the outer surface of the flow control plug further comprises a pocket proximate the channel, wherein the proximal end of the needle is disposed within the pocket, wherein the pocket is deeper than the channel.
4. The catheter system of claim 2, wherein the channel is formed by a plurality of side walls that extend from a bottom of the channel to the inner surface of the needle hub and contact the inner surface of the needle hub.

5. The catheter system of claim 2, further comprising a vent disposed proximate the channel and at an interface between the proximal end of the needle hub and the flow control plug.
6. The catheter system of claim 2, wherein the outer surface of the flow control plug comprises a plurality of other channels, further comprising a plurality of other flashback pathways extending through the plurality of other channels between the plurality of other channels and the inner surface of the needle hub.
7. The catheter system of claim 6, wherein the outer surface of the flow control plug further comprises a plurality of grooves extending from the plurality of channels inwardly towards a longitudinal axis of the flow control plug.
8. The catheter system of claim 6, wherein a proximal end of the channel is formed by a proximal wall, wherein the proximal wall comprises a vent configured to allow air but not blood to pass, wherein the proximal wall interferes with an inner surface of the needle hub.
9. The catheter system of claim 1, wherein the distal end of the flow control plug comprises a male luer, wherein the male luer is a slip male luer or a threaded male luer.
10. The catheter system of claim 9, wherein a tip of the male luer comprises a generally planar surface that extends across the tip such that a shape of the flashback pathway is generally semi-circular.
11. A catheter system, comprising:

a catheter assembly, comprising:

a catheter adapter, comprising a distal end, a proximal end, and a lumen extending through the distal end and the proximal end; and

a catheter extending distally from the distal end of the catheter adapter; and

a needle assembly coupled to the catheter assembly, the needle assembly comprising:

a needle hub;

a needle, comprising a distal end and a proximal end, wherein the needle is secured within the needle hub;

an inner barrel surrounding the needle hub, wherein the needle hub is secured within the inner barrel;

a flashback pathway disposed between an outer surface of the needle hub and an inner surface of the inner barrel; and

an outer barrel surrounding the inner barrel.

12. The catheter system of claim 11, wherein the needle hub comprises a channel, wherein the flashback pathway extends through the channel between the channel and the inner surface of the inner barrel.

13. The catheter system of claim 12, wherein the needle hub further comprises a pocket proximate the channel, wherein the proximal end of the needle is disposed within the pocket, wherein the pocket is deeper than the channel.

14. The catheter system of claim 12, wherein a proximal end of the channel is formed by a proximal wall, wherein the proximal wall comprises a vent configured to allow air but not blood to pass, wherein the proximal wall interferes with an inner surface of the inner barrel.

15. The catheter system of claim 12, wherein an inner surface of the inner barrel includes a plurality of alignment ridges, wherein an outer surface of the needle hub comprises a plurality of other alignment ridges configured to contact the plurality of alignment ridges.

16. A catheter system, comprising:

a catheter assembly, comprising:

a catheter adapter, comprising a distal end, a proximal end, and a lumen extending through the distal end and the proximal end; and

a catheter extending distally from the distal end of the catheter adapter; and

a needle assembly, comprising:

a needle hub;

a needle, comprising a distal end and a proximal end, wherein the needle is secured within the needle hub;

an inner barrel surrounding the needle hub, wherein the needle hub is secured within the inner barrel, wherein the inner barrel comprises a first hole;

a middle barrel surrounding the inner barrel, wherein the middle barrel comprises a second hole aligned with the first hole;

an outer barrel surrounding the middle barrel; and

a flashback pathway comprising the first hole and the second hole and extending between an outer surface of the middle barrel and an inner surface of the outer barrel.

17. The catheter system of claim 16, wherein the needle hub further comprises a pocket, wherein the proximal end of the needle is disposed within the pocket, wherein the pocket is proximate the first hole.

18. The catheter system of claim 16, wherein the middle barrel comprises a channel, wherein the channel is formed by a plurality of side walls that extend from a bottom of the channel to the inner surface of the outer barrel and contact the inner surface of the outer barrel.
19. The catheter system of claim 16, wherein the inner barrel and the needle hub are configured to move proximally within the middle barrel to retract the needle.
20. The catheter system of claim 19, wherein the needle assembly comprises a button and a spring, wherein the inner barrel and the needle hub move proximally in response to depression of the button and actuation of the spring.