

CLAIMS

What is claimed:

1. A primer for an intravenous catheter system, comprising:

a main body forming a plunger channel and having a distal end that forms a distal channel that connects to the plunger channel and a proximal end that forms a proximal channel that connects to the plunger channel, the main body further having a venting channel that extends between the plunger channel through an exterior surface of the main body; and

a plunger having a plunger main body that inserts into and slides within the plunger channel between a closed position and an open position, the plunger main body having a first channel and a second channel;

wherein, in response to the plunger being in the closed position, the first channel connects the proximal channel to the venting channel to thereby vent air contained in extension tubing connected to the proximal end through the venting channel, and the second channel is aligned with the distal channel to thereby vent air contained in extension tubing connected to the distal end through the second channel;

wherein, in response to the plunger being in the open position, the first channel connects the proximal channel to the distal channel to thereby enable fluid flow through the primer.

2. The primer of claim 1, wherein the first channel comprises a primary channel that extends through the plunger main body and a branch channel that extends from the primary channel through a proximal exterior surface of the plunger main body.

3. The primer of claim 2, wherein, in response to the plunger being in the closed position, the branch channel aligns with the proximal channel and the primary channel aligns with the venting channel.

4. The primer of claim 3, wherein, in response to the plunger being in the open position, the primary channel aligns with the proximal channel and the distal channel.

5. The primer of claim 1, wherein the second channel comprises a horizontal channel that extends through a distal exterior surface of the plunger main body and a vertical channel that extends through a bottom exterior surface of the plunger main body.

6. The primer of claim 5, wherein, in response to the plunger being in the closed position, the horizontal channel aligns with the distal channel.

7. The primer of claim 1, further comprising:
a first venting member positioned in the venting channel; and
a second venting member positioned in the second channel.

8. The primer of claim 7, wherein the first and second venting members are each hydrophobic membranes, the primer further comprising:

a hydrophilic membrane positioned in the second channel distal to the second venting member.

9. The primer of claim 1, wherein the plunger further comprises an actuating member connected to the plunger main body.

10. The primer of claim 1, wherein the main body further comprises a second venting channel that extends from the plunger channel through the exterior surface of the main body, the second channel forms a blood chamber and the plunger main body further comprises a third channel that extends from the blood chamber through an exterior surface of the plunger main body;

wherein, in response to the plunger being in the closed position, the third channel aligns with the second venting channel such that the air contained in the extension tubing connected to the distal end is vented through the second channel, the third channel and the second venting channel.

11. The primer of claim 10, wherein the second channel comprises a horizontal channel that extends through a distal exterior surface of the plunger main body and a vertical channel that extends through a bottom exterior surface of the plunger main body, the blood chamber being formed between the horizontal and vertical channels, the primer further comprising:

a septum positioned in the vertical channel between the blood chamber and the bottom exterior surface.

12. The primer of claim 10, further comprising:

a first venting member positioned in the venting channel; and

a second venting member positioned in the third channel.

13. The primer of claim 12, wherein the first and second venting members are each hydrophobic membranes, the primer further comprising:

a hydrophilic membrane positioned in the third channel between the second venting member and the blood chamber.

14. An intravenous catheter system comprising:

a catheter assembly having a catheter adapter and a catheter that extends distally from the catheter adapter;

extension tubing that is fluidly coupled to the catheter adapter;

an access port positioned at a proximal end of the extension tubing; and

a primer that is connected inline to the extension tubing such that a distal portion of the extension tubing is positioned between the primer and the catheter adapter and a proximal portion of the extension tubing is positioned between the primer and the access port, the primer comprising:

a main body forming a plunger channel and having a distal end that is coupled to the distal portion of the extension tubing, the distal end forming a distal channel that connects to the plunger channel, the main body also having a proximal end that is coupled to the proximal portion of the extension tubing, the proximal end forming a proximal channel that connects to the plunger channel, the main body further having a venting channel that extends between the plunger channel through an exterior surface of the main body; and

a plunger having a plunger main body that inserts into and slides within the plunger channel between a closed position and an open position, the plunger main body having a first channel and a second channel;

wherein, in response to the plunger being in the closed position, the first channel connects the proximal channel to the venting channel to thereby vent air contained in the proximal portion of the extension tubing through the venting channel, and the second channel is aligned with the distal channel to thereby vent air contained in distal portion of the extension tubing through the second channel;

wherein, in response to the plunger being in the open position, the first channel connects the proximal channel to the distal channel to thereby enable fluid flow through the primer.

15. The intravenous catheter system of claim 14, wherein the first channel comprises a primary channel that extends through the plunger main body and a branch channel that extends from the primary channel through a proximal exterior surface of the plunger main body;

wherein, in response to the plunger being in the closed position, the branch channel aligns with the proximal channel and the primary channel aligns with the venting channel;

wherein, in response to the plunger being in the open position, the primary channel aligns with the proximal channel and the distal channel.

16. The intravenous catheter system of claim 14, wherein the second channel comprises a horizontal channel that extends through a distal exterior surface of the plunger main body and a vertical channel that extends through a bottom exterior surface of the plunger main body.

17. The intravenous catheter system of claim 14, wherein the main body further comprises a second venting channel that extends from the plunger channel through the exterior surface of the main body, the second channel forms a blood chamber and the plunger main body further comprises a third channel that extends from the blood chamber through an exterior surface of the plunger main body;

wherein, in response to the plunger being in the closed position, the third channel aligns with the second venting channel such that the air contained in the distal portion of the extension tubing is vented through the second channel, the third channel and the second venting channel.

18. The intravenous catheter system of claim 17, wherein the primer comprises:

a septum positioned in the second channel between the blood chamber and a bottom exterior surface of the plunger main body.

19. The intravenous catheter system of claim 14, further comprising:

a first venting member that vents the air contained in the proximal portion of the extension tubing;

a second venting member that vents the air contained in the distal portion of the extension tubing; and

a hydrophilic membrane that is positioned distal to the second venting member.

20. A primer for an intravenous catheter system comprising:

a main body forming a plunger channel and having a distal end that forms a distal channel that connects to the plunger channel and a proximal end that forms a proximal channel that connects to the plunger channel, the main body further having a venting channel that extends between the plunger channel through an exterior surface of the main body; and

a plunger having a plunger main body that inserts into and slides within the plunger channel between a closed position and an open position, the plunger main body having a first channel and a second channel, the first channel comprising a primary channel and a branch channel;

wherein, in response to the plunger being in the closed position, the branch channel aligns with the proximal channel and the primary channel aligns with the venting channel to thereby vent air contained in extension tubing connected to the proximal end through the venting channel, and the second channel is aligned with the distal channel to thereby vent air contained in extension tubing connected to the distal end through the second channel;

wherein, in response to the plunger being in the open position, the primary channel connects the proximal channel to the distal channel to thereby enable fluid flow through the primer.