CLAIMS

1. A ported catheter assembly, comprising:

a catheter adapter (20) having a proximal end, a distal end and a lumen extending therebetween, the catheter adapter (20) further comprising a side port (30) forming a pathway (32) through a sidewall of the catheter adapter (20) and in communication with the lumen; and

a valve (40) disposed within the lumen and having a proximal opening, a distal membrane (44), and an inner cavity extending therebetween, the valve (40) comprising an outer surface in contact with an inner surface of the catheter adapter (20), wherein a portion of the outer surface forms a seal between the lumen and the pathway (32) of the side port (30), and wherein the distal membrane (44) divides the lumen into a proximal chamber (40) and a distal chamber (80),

characterized in that

the valve (40) further comprises a plurality of vents (132) and a vent ring (140, 141), wherein each of the vents (132) comprises a distal opening in fluid communication with the distal chamber (80) and a proximal opening in fluid communication with the vent ring (140, 141), wherein the vent ring (140, 141) intersects each of vents (132), wherein the vent ring (140, 141) comprises one or more venting holes (142) that provide fluid communication between the vents (132), the vent ring (140, 141), and the proximal chamber (70), wherein the vent ring (140) includes a semi-annular recess formed in an outer surface of the valve (40) or is an annular vent ring (141) with the plurality of vents (132) positioned around the entire circumference of the valve (40).

2. The assembly of claim 1, further comprising a valve actuator (90) disposed within the proximal chamber (70) and having a base (92), a tip (94) and a body (96) extending therebetween, the body (96) being at least partially positioned within the inner cavity such that the tip (94) of the valve actuator (90) is positioned proximate to the distal membrane (44), and the base (92) is positioned proximate to the proximal end of the catheter adapter (20).

3. The assembly of claim 2, wherein the proximal end of the catheter adapter (20) further comprises an opening through which the base of the valve actuator may be accessed.

4. The assembly of claim 2, further comprising an actuator retention tab (98) coupled to an outer surface of the valve actuator (90) and positioned within an annular groove (72) formed on an inner surface of the catheter adapter (20) within the proximal chamber (70).

5. The assembly of claim 4, wherein the lumen comprises a minimum diameter, the annular groove (72) comprises a diameter that is greater than the minimum diameter,

and the retention tab (98) comprises an outer diameter that is less than the diameter of the annular groove (72) and greater than the minimum diameter.

6. The assembly of claim 4, wherein the annular groove (72) comprises a first end, a second end, and a length extending therebetween, wherein the retention tab (98) travels within the annular groove (72) between the first and second ends to advance the tip (94) of the valve actuator (90) though a slit (46) in the distal membrane (44) of the valve (40).

7. The assembly of claim 2, wherein the valve (40) may be defeated to provide a pathway through the distal membrane (44) by advancing the tip (94) of the valve actuator (90) through a slit (46) in the distal membrane (44).

8. The assembly of claim 1, wherein the valve (40) may be defeated by injecting a fluid through the side port (30), whereby fluid pressure from the injected fluid temporarily deforms the body of the valve (40) to permit the injected fluid to flow into the proximal chamber (70) of the lumen via the pathway (32) though the sidewall of the catheter adapter (20).

9. The assembly of claim 1, wherein the vent comprises at least one of one or more recessed surfaces formed in the outer surface of the valve and one or more recessed surfaces formed in the inner surface of the catheter adapter.

10. The assembly of claim 1, wherein each of the vents (132) and the pathway (32) through the sidewall of the catheter adapter (20) do not overlap.

11. The assembly of claim 1, wherein each of the vents (132) comprises a cross-sectional area that permits the passage of air and prevents the passage of blood.

12. The assembly of claim 11, wherein the cross-sectional area of each of the vents (132) permits the passage of air at a desired flow rate from 0.5 ml/min to 3 ml/min.

13. The assembly of claim 1, wherein the cross-sectional area of each of the vents (132) permits the passage of air at a desired flow rate from 0.1 ml/min to 10 ml/min.

14. The assembly of claim 1, wherein the valve (40) comprises a flexible tube having an outer diameter that is approximately the same size as an inner diameter of the lumen, whereby the valve is retained within the lumen by an interference fit.