CLAIMS

We claim:

1. A catheter assembly, comprising:

a catheter adapter having a distal end comprising an intravenous catheter, a proximal end configured to receive a needle assembly, and an interior lumen extending therebetween; and

an extension tube comprising a first lumen and a second lumen, said first and second lumens being in fluid communication with the interior lumen at first end of the extension tube, a second end of the extension tube having an infusion port in fluid communication with the first lumen, and a blood collection port in fluid communication with the second lumen,

wherein the first lumen comprises a first flow resistance that is incompatible for infusing shear-sensitive fluids, and the second lumen comprises a second flow resistance that is compatible for infusing shear-sensitive fluids.

2. The catheter assembly of claim 1, wherein a flow resistance of the second lumen is greater than a flow resistance of the first lumen.

3. The catheter assembly of claim 1, wherein a cross-section area of the first lumen is greater than a cross-section area of the second lumen.

4. The catheter assembly of claim 1, wherein the extension tube consists of a single tube comprising the first and second lumens.

5. The catheter assembly of claim 4, wherein the single tube is a multi-lumen tube.

6. The catheter assembly of claim 5, wherein the second lumen is positioned within the first lumen.

7. The catheter assembly of claim 5, wherein the first lumen is positioned within the second lumen.

8. The catheter assembly of claim 5, wherein the first lumen and the second lumen are separated by an interior wall of the single tube.

9. The catheter assembly of claim 8, wherein the interior wall is a sidewall of the first or second lumen.

10. The catheter assembly of claim 1, wherein the infusion port and the blood collection port are a y-port.

11. The catheter assembly of claim 1, wherein the extension tube comprises a first extension tube comprising the first lumen and the blood collection port, and a second extension tube comprising the second lumen and the infusion port.

12. The catheter assembly of claim 1, wherein the first end of the extension tube is coupled to the catheter adapter via an extension tube having a single lumen.

13. The catheter assembly of claim 1, wherein the second flow resistance is configured to minimize hemolysis.

14. A catheter assembly set, comprising:

a catheter adapter having a distal end comprising an intravenous catheter, a proximal end configured to receive a needle assembly, and an interior lumen extending therebetween;

a first extension tube comprising a first end in fluid communication with the interior lumen, and a second end positioned opposite the first end;

a y-port coupled to the second end of the first extension tube, the y-port comprising an infusion port, and further comprising a luer adapter; and

a second extension tube coupled to the luer adapter and comprising a blood collection port, wherein the first extension tube comprises a first flow resistance that is incompatible for infusing

shear-sensitive fluids, and the second extension tube comprises a second flow resistance that is compatible for infusing shear-sensitive fluids.

15. The catheter assembly set of claim 14, wherein the second flow resistance is configured to minimize hemolysis.

16. The catheter assembly set of claim 14, wherein the infusion port is coupled to the y-port via a second luer adapter.

17. The catheter assembly set of claim 14, wherein a maximum flow rate through the second extension tube is less than a maximum flow rate through the first extension tube, and less than a maximum flow rate through the infusion port.

18. The catheter assembly set of claim 17, wherein the maximum flow rate through the second extension tube is less than or equal to a maximum shear stress of red blood cells.

19. A catheter extension set, comprising an extension tube having a first end, a second end, and a first lumen and a second lumen extending therebetween, said first end being configured to couple to a catheter adapter of a catheter assembly, and said second end having an infusion port in fluid communication with the first lumen, and a blood collection port in fluid communication with the second lumen, wherein the first lumen comprises a first flow resistance that is incompatible for infusing shear-sensitive fluids, and the second lumen comprises a second flow resistance that is compatible for infusing shear-sensitive fluids.

20. The catheter extension set of claim 19, wherein the extension tube comprises a first extension tube comprising the first lumen and the infusion port, and a second extension tube comprising the second lumen and the blood collection port.