CLAIMS

What is claimed is:

1. A catheter and holder assembly (85) comprising:

a catheter hub (102) having a catheter tube (104) with a distal opening (112) attached to the catheter hub (102);

a needle (108) comprising a sharpened distal needle tip (110) and a sharpened proximal needle tip (200) and wherein the sharpened distal needle tip (110) projects out the distal opening (112) of the catheter tube (104); and

a blood collection holder (106) having needle hub (106a) with a bore (632) having the needle (108) passing therethrough and a housing (600) having an interior space (620) dimensioned to receive a vacutainer;

wherein the catheter hub (102) is in contact with the blood collection holder (106) and the sharpened proximal needle tip (200) is located within the interior space (620) of the housing (600) in a ready to use position.

2. The catheter and holder assembly (85) according to claim 1, wherein the needle (108) comprises a notch, a crimp, a sleeve, or a buildup located proximally of the sharpened distal needle tip (110).

3. The catheter and holder assembly (85) according to claims 1 or 2, wherein the blood collection holder (106) comprises an end wall (604) and a sidewall (607) defining the interior space (620) and the needle hub (106a) is integrated with the end wall (604).

4. The catheter and holder assembly (85) according to any one of claims 1 to 3, wherein the sharpened proximal needle tip (200) is in the interior space (620) of the blood collection holder (106) when the catheter and holder assembly is in the ready to use position.

5. The catheter and holder assembly (85) according to any one of claims 1 to 4, wherein the blood collection holder (106) has a projection (612) that projects into the catheter hub (102) in the ready to use position.

6. The catheter and holder assembly (85) according to any one of claims 1 to 5, wherein a portion of the needle (108) that extends distally of the blood collection holder (106) is longer than a portion of the needle (108) that extends into the blood collection holder (106).

7. The catheter and holder assembly (85) according to any one of claims 1 to 6, wherein the blood collection holder (106) comprises an interior support column (630) projecting proximally from the end wall (604) into the interior space (620), the interior support column (630) having the bore (632) passing therethrough that the needle is inserted through.

8. The catheter and holder assembly (85) according to any one of claims 1 to 7, wherein the blood collection holder (106) comprises mating flange (610) extending distally from an end wall (604), the distal projection (612) extending distally of the mating flange (610).

9. The catheter and holder assembly (85) according to any one of claims 1 to 8, wherein the needle (108) has a bend (109) corresponding to a bend (633) in the blood collection holder (106) for fitment.

10. The catheter and holder assembly (85) according to any one of claims 1 to 9, further comprising a needle guard (132) comprising a surface that is located to a side of the needle in the ready to use position and wherein the surface is moveable distal of the sharpened distal needle tip (110) in a protective position to cover the sharpened distal needle tip (110).

11. The catheter and holder assembly according to any one of claims 1 to 10, further comprising a side port (500) and a tubing (540) attached to the side port (500) or a valve (136) with a valve opener (134) located within the catheter hub (102).

12. A method of assembling a catheter and holder assembly (85), the method comprising:

mounting a needle (108), comprising a sharpened distal needle tip (110) and a sharpened proximal needle tip (200), to a blood collection holder (106);

coupling the blood collection holder (106) to a catheter hub (102) comprising a catheter tube (104) so that the needle (108) extends through the catheter hub (102) and the catheter tube (104) and the sharpened distal needle tip (110) is located distally of a distal end opening (112) of the catheter tube (104); and

wherein the blood collection holder (106) has a needle hub (106a) with a bore (632) having the needle (108) passing therethrough and a housing (600) defining an interior space (620) that is dimensioned to receive a vacutainer and the sharpened proximal needle tip (200) is located within the interior space (620).

13. The method according to claim 12, wherein the blood collection holder (106) comprises an end wall (604) and a sidewall (607) defining the interior space (620) and a proximal opening.

14. The method according to claims 12 or 13, further comprising a flange (602) at the proximal end of the blood collection holder (106), the flange (602) comprising a surface for gripping.

15. The method according to any one of claims 12 to 14, further comprising:

coupling a deformable shield (252) in the interior space (620) of the blood collection holder (106), the deformable shield (252) covering the sharpened proximal needle tip (200).

16. The method according to any one of claims 12 to 15, wherein the blood collection holder (106) comprises a distal projection (612) extending distally from the end wall (604), the distal projection (612) projecting into an interior of the catheter hub (102).

17. The method according to any one of claims 12 to 16, wherein the blood collection holder (106) comprises a distal ring flange (170) arranged radially outward of the distal projection (612).