

CLAIMS

What is claimed is:

1. A safety catheter assembly comprising:
a catheter hub (152) comprising a valve (160) and a valve opener (162) for opening the valve;
a catheter tube (154) attached to the catheter hub;
a needle hub (156);
a needle (106, 158) attached to the needle hub and projecting through the catheter tube;
a needle guard (122) comprising a proximal wall (130) having an opening (132) and two arms (134, 136) each comprising an end (138, 140);
wherein the needle guard (122) is positioned in an interior cavity of the catheter hub (152), and wherein a support (126) formed with the catheter hub and wherein the support (126) is located in the interior cavity spaces the two ends (138, 140) of the needle guard from the needle in a ready position,
or
wherein the needle guard is positioned in the interior cavity of the catheter hub (152), and wherein the support (126) formed with the valve opener (162) located inside the catheter hub spaces the two ends (138, 140) of the needle guard from the needle in the ready position,
or
wherein the needle guard is positioned in an interior cavity of a third hub (164) located proximally of the catheter hub (152), and wherein the support (126) formed with the third hub (164) spaces the two ends of the needle guard (138, 140) from the needle in a ready position.
2. The safety catheter assembly of claim 1, wherein the support (126) is ring shaped and coaxially disposed with a flexible tube.
3. The safety catheter assembly of claim 1, wherein the support (126) is formed with the valve opener (122), which is slidable to open the valve.
4. The safety catheter assembly of claim 1, wherein the third hub (164) comprises a distal wall (165) and at least one arm (166) extending from the distal wall and engaging the catheter hub (152) to retain the third hub in the ready position.

5. The safety catheter assembly of claim 4, wherein the at least one arm (166) comprises two arms engaging a holding portion (168) in the interior cavity of the catheter hub (152).
6. The safety catheter assembly of claim 1, wherein the two arms (134, 136) of the needle guard (122) cross each other forming a cross-section and the support is spaced from the cross-section.
7. The safety catheter assembly of claim 1, wherein the needle (106, 158) comprises a needle tip (110) and a change in profile (112) located proximal of the needle tip; and when the change in profile abuts against the proximal wall (130) of the needle guard (122), the ends of the arms of the needle guard (138, 140) no longer bias against the support (126) in a protective position.
8. The safety catheter assembly of claim 1, wherein the third hub (164) comprises a distal wall (165) and an opening (163) defined through the distal wall of the third hub (164), the distal wall (165) abuts against the catheter hub (152), the support (126) is centered around the opening of the distal wall of the third hub, and the needle (106, 158) passes through the opening of the distal wall of the third hub.
9. The safety catheter assembly of claim 8, wherein the third hub (164) further comprises a proximal wall (169) and a sidewall (167) extending between the distal wall (165) of the third hub and the proximal wall of the third hub, the proximal wall of the third hub defining an opening, the needle passes through the opening (163) of the distal wall of the third hub, and the distal wall, the sidewall, the proximal wall of the third hub cooperatively define an interior cavity, and the needle guard (122) is positioned in the interior cavity.
10. The safety catheter assembly of claim 1, wherein the valve (160) comprising a plurality of slits is located in the interior cavity of the catheter hub (152) and the valve opener (162) comprises at least one leg.
11. A safety catheter assembly comprising:
 - a catheter hub (152) comprising a valve (160) and a valve opener (162) for opening the valve;
 - a catheter tube (154) attached to the catheter hub;
 - a needle hub (156);
 - a needle (106, 158) attached to the needle hub and projecting through the catheter tube;

a needle guard (122) positioned in an interior cavity of the catheter hub or an interior cavity of a third hub (164) located proximally of the catheter hub;
wherein the needle guard comprises a proximal wall (130) having a perimeter defining an opening (132) and two arms (134, 136) each comprising an end (138, 140);
characterized in that a support (126) located in the interior cavity of the catheter hub (152) biases the two ends of the needle guard away from the needle in a ready position and the support is spaced from the proximal opening of the proximal wall in the ready position and a protective position.