

by fingers or hands). Venting of displaced air is achieved by the new check valve; air will flow out of flash chamber through open check valve and out Y-port vented end cap (cap used to maintain sterility of Y-port opening).

4. Blood then deflects past rubber prepierced stopper, then routed up into Y-port, and finally reaching the check valve, hydraulic pressure from blood pushes check valve up against opposite valve seat opening (FIG. 2), sealing off any more flow of blood. The check valve in conjunction with rubber prepierced stopper effectively sealing flash chamber while still allowing venting of air.

5. When user easily (unobstructed view) sees this "flash," he can advance the catheter into vein by one of two methods; (a) user can hook optimized push flange (FIG. 1 or 10) (on either left or right side of hub) with thumbnail and advance catheter fully into vein (FIG. 13); (b) user can use index fingernail (FIG. 1 or 10) and advance catheter utilizing optimized push flange on upper portion of Y-port.

6. As catheter is advanced over needle (FIG. 14), flash chamber seal is still maintained by rubber prepierced resealable stopper.

7. User will then hold inserted catheter with one hand and hold telescoping safety tube unit with the other hand. Then depressing "trigger" (FIG. 14), will actuate lever that lifts pin out of hole in back of needle carrier, freeing spring and ejecting used needle into retracted telescoping safety tube. The tube will then be forced out to its fully extended length and locked in place utilizing locking system (FIGS. 10 and 15).

8. The safety tube can now be safely set down while user secures catheter to patient using tape.

9. Optionally, user can now inject lifesaving medications directly into rubber prepierced stopper, saving valuable time.

10. The user now has the option to decide if he would like to "Heparin Lock" the catheter or bloodlessly connect IV tubing to distal end of Y-port. This versatility allows the user to choose the method of use based on the situation.

11. If heparin locking is chosen, then user injects heparin into rubber prepierced stopper, flushing blood from catheter hub and eliminating possibility of blood clotting in hub chamber. IV start is now complete and done in half the time it normally takes, and user has not spilled a drop of blood.

12. If IV line attachment is chosen, then user can bloodlessly connect IV tubing to distal end of Y-port after optionally giving any emergency medications through rubber prepierced stopper (FIGS. 2 and 15); then tape IV line in place without loop. When IV is opened, the hydraulic pressure from IV fluid will push open the check valve in Y-port, allowing IV fluid to run around valve and into closed hub. The IV fluid will then flush out any latent blood from hub chamber and continue into patient. The Y-port design of the catheter eliminates the need to loop the connected IV tubing, eliminating possibility of "kinked" tubing, or chance that loop will catch on something and disconnect IV line.

13. Once IV line is secured in place, the protective telescoping safety tube assembly can be disposed of in proper "sharps" container.

14. If a blood sample is now required, all the user has to do is draw blood out of sealed flash chamber utilizing the rubber prepierced stopper. This eliminates need for second needle puncture and its associated risks.

15. If medications need to be given, they can be conveniently injected through rubber prepierced stopper (FIG. 2). The user is assured that he will be giving medicine through the shortest route conceivable for the most effective therapy possible.

16. After the IV start is complete, the catheter will continue to protect and serve the healthcare professional. If the IV line is accidentally set to low, the check valve in Y-port will prevent blood from backing up and clotting in IV line, saving the patient and user the need to start replacement IV. If the IV line becomes separated from catheter, there will not be any blood loss or contamination, as the check valve will prevent blood from escaping out of catheter. If the healthcare professional needs to switch IV lines, he can do so quickly, safely, and without blood exposure, as check valve prevents blood back-flow. One can also "piggy-back" more than one IV drip as needed, preventing the need for second IV site to run second, third or more IV drips.

Various modifications can be made to the present invention without departing from the apparent scope hereof.

I claim:

1. A catheter assembly of the over-the-needle type for a user to percutaneously introduce a liquid into a bloodstream of a patient from a conduit, said catheter assembly comprising:

a catheter housing defining an interior region, a first port, and a second port, the conduit being operatively connected to said first port in fluid communication therewith such that the liquid may flow from the conduit into said interior region of said catheter housing;

a needle carried on said catheter housing and selectively removable therefrom, said needle having a proximal end and a distal end;

a catheter tube operatively connected to and extending from said catheter housing in covering relation to said needle, said catheter tube defining a lumen fluidly communicating with said interior region of said catheter housing and a distal end received within the bloodstream of the patient such that the fluid may flow from the interior of the catheter housing into the bloodstream of the patient;

a check valve operatively connected to said catheter housing and fluidly communicating with said first port, said check valve preventing blood or the liquid from flowing from said interior of said catheter housing out through said first port;

a self-sealing injection site connected to said catheter housing in sealing relation to said second port, said catheter housing, said check valve, and said self-sealing injection site forming a closed hub configuration external to the patient and to which the conduit is attached to introduce the liquid into the bloodstream of the patient, at least a portion of said needle extending through and being selectively removable from said self-sealing injection site and said catheter tube;

a safety tube assembly operatively connected to said catheter housing, at least a portion of said safety tube assembly being retractable relative to said catheter housing, said proximal end of said needle being operatively connected to said safety tube assembly such that when said portion of said safety tube assembly is retracted said distal end of said needle is completely withdrawn through said self-sealing injection site and received within said safety tube assembly;

a latching mechanism for engaging and maintaining said portion of said safety tube assembly which is retractible against rearward movement relative to said catheter housing, said latching mechanism including a trigger member which may be selectively actuated by the user; and

a biasing mechanism for urging said portion of said safety tube assembly which is retractible rearwardly relative