CLAIMS

1. A compliant catheter adapter comprising:

a needle comprising:

a proximal end, the proximal end of the needle shaped to facilitate a self-slitting/self-guiding process during assembly of the catheter adapter;

a distal end; and

a plurality of notches disposed along the needle between the proximal end and the distal end of the needle, wherein the plurality of notches are configured to facilitate flashback visualization;

a catheter adapter body formed of a compliant material, the catheter adapter body comprising:

a proximal end and a distal end, the catheter adapter body having a generally elongate shape formed about a longitudinal axis extending between the proximal end and the distal end of the catheter adapter body;

an inner chamber disposed within the catheter adapter body, the inner chamber having a generally elongate shape formed about the longitudinal axis extending between the proximal end and the distal end of the catheter adapter body;

a compression resistant septum formed in the compliant material of the catheter adapter body, the compression resistant septum disposed toward the proximal end of the catheter adapter body; and

a lumen formed through the compression resistant septum by the proximal end of the needle during the self-slitting process as the catheter adapter is assembled; and

a compression cap coupled to the compression resistant septum, the compression cap configured to impart a radial compression force to the compression resistant septum such that the lumen narrows and seals when the needle is removed from the lumen, wherein the compression cap comprises a generally cylindrical shape.

2. The compliant catheter adapter of claim 1, wherein the catheter adapter body is integrally formed from a compression set resistant elastomeric material.

3. The compliant catheter adapter of claim 2, wherein the compression set resistant elastomeric material comprises one of a thermoplastic elastomer material, a liquid silicone rubber material, and a polyisoprene material.

4. The compliant catheter adapter of claim 1, wherein the compression cap further comprises:

a proximal end having a first aperture configured to receive the needle there through;

a distal end having a second aperture configured to receive at least a portion of the catheter adapter body; and

a compression surface extending intermediate the proximal end and the distal end of the compression cap, the compression surface enclosing a hollow portion formed in the compression cap, the hollow portion configured to receive at least a portion of the compression resistant septum therein, and the compression surface configured to impart the radial compression force to the compression resistant septum such that the lumen narrows and seals when the needle is removed from the lumen.

5. The compliant catheter adapter of claim 4, wherein the compression cap is a separate piece that is coupled to the compression resistant septum.

6. The compliant catheter adapter of claim 4, wherein the compression cap is integrally formed with the compression resistant septum.

7. The compliant catheter adapter of claim 6, wherein the compression cap is coupled to the compression resistant septum through an over-molding manufacturing process.

8. The compliant catheter adapter of claim 1, further comprising:

one or more stabilization members coupled to the catheter adapter body and configured to stabilize the catheter adapter body with respect to a patient;

a port in fluid communication with the inner chamber and configured to receive an extension tube, the port comprising one of a Y-shaped port, a T-shaped port, a V-shaped port and a parallel-shaped port;

a catheter lumen coupled to and extending from the distal end of the catheter adapter body; and

a catheter wedge disposed toward the distal end of the catheter adapter body and configured to guide the needle into the catheter lumen as the needle is inserted through the catheter adapter body.

9. A compliant catheter adapter comprising:

a needle comprising:

a proximal end, the proximal end of the needle shaped to facilitate a self-slitting/self-guiding process during assembly of the catheter adapter;

a distal end; and

a plurality of notches disposed along the needle between the proximal end and the distal end of the needle, wherein the plurality of notches are configured to facilitate flashback visualization;

a catheter adapter body formed of a compliant material, the catheter adapter body comprising:

a proximal end and a distal end, the catheter adapter body having a generally elongate shape formed about a longitudinal axis extending between the proximal end and the distal end of the catheter adapter body; and

an inner chamber disposed within the catheter adapter body, the inner chamber having a generally elongate shape formed about the longitudinal axis extending between the proximal end and the distal end of the catheter adapter body;

a first compression resistant septum positioned to abut at least a portion of the proximal end of the catheter adapter body, the first compression resistant septum comprising a first lumen formed by the proximal end of the needle during the self-slitting process as the catheter adapter is assembled; and

a compression cap configured to couple the first compression resistant septum to the catheter adapter body and impart a radial compression force to the first compression resistant septum such that the first lumen narrows and seals when the needle is removed from the first lumen, wherein the compression cap has a generally cylindrical shape.

10. The compliant catheter adapter of claim 9, wherein the catheter adapter body is integrally formed from a compression set resistant elastomeric material comprising one of a thermoplastic elastomer material, a liquid silicone rubber material, and a polyisoprene material.

11. The compliant catheter adapter of claim 9, wherein the compression cap is positioned within at least a portion of the proximal end of the catheter adapter body, the compression cap further comprising:

a proximal end having a first aperture configured to receive the needle there through;

a distal end having a second aperture configured to receive at least a portion of the catheter adapter body; and

a compression surface extending intermediate the proximal end and the distal end of the compression cap, the compression surface enclosing a hollow portion formed in the compression cap, the hollow portion configured to receive the first compression resistant septum therein, and the compression surface configured to impart the radial compression force to the first compression resistant septum such that the first lumen narrows and seals when the needle is removed from the first lumen.

12. The compliant catheter adapter of claim 9, further comprising:

one or more stabilization members coupled to the catheter adapter body and configured to stabilize the catheter adapter body with respect to a patient;

a port in fluid communication with the inner chamber and configured to receive an extension tube, and the port comprising one of a Y-shaped port, a T-shaped port, a V-shaped port, and a parallel-shaped port;

a catheter lumen coupled to and extending from the distal end of the catheter adapter body; and

a catheter wedge disposed toward the distal end of the catheter adapter body and configured to guide the needle into the catheter lumen as the needle is inserted through the catheter adapter body.

13. The compliant catheter adapter of claim 9, further comprising a second compression resistant septum disposed within the inner chamber of the catheter adapter body, the second

compression resistant septum positioned to abut the first compression resistant septum, wherein a septum chamber is formed between the first compression resistant septum and the second compression resistant septum, the second compression resistant septum having a second lumen formed by the proximal end of the needle during the self-slitting process as the catheter adapter is assembled.

14. The compliant catheter adapter of claim 9, wherein the compression cap is a separate piece that is coupled to the first compression resistant septum and the catheter adapter body.

15. The compliant catheter adapter of claim 9, wherein the compression cap is coupled to the first compression resistant septum and the catheter adapter body through an over-molding manufacturing process.

16. A catheter system comprising:

a needle component including:

a needle hub;

a needle coupled to the needle hub and extending distally from the needle hub, the needle comprising:

a proximal end, the proximal end of the needle comprising a beveled surface configured to facilitate a self-slitting/self-guiding process during assembly of the catheter adapter;

a distal end; and

a plurality of notches disposed along the needle between the proximal end and the distal end of the needle, wherein the plurality of notches are configured to facilitate flashback visualization; and

a grip coupled to the needle hub;

a catheter adapter body formed of a compliant material, the catheter adapter body comprising:

a proximal end and a distal end, the catheter adapter body having a generally elongate shape formed about a longitudinal axis extending between the proximal end and the distal end of the catheter adapter body;

an inner chamber disposed within the catheter adapter body, the inner chamber having a generally elongate shape formed about the longitudinal axis extending between the proximal end and the distal end of the catheter adapter body; and

a compression resistant septum formed in the compliant material of the catheter adapter body, the compression resistant septum disposed toward the proximal end of the catheter adapter body and comprising a lumen formed by the proximal end of the needle during the self-slitting process as the catheter adapter is assembled; and

a compression cap coupled to the compression resistant septum, the compression cap configured to impart a radial compression force to the compression resistant septum such that the lumen narrows and seals when the needle is removed from the lumen.

17. The catheter system of claim 16, wherein the grip coupled to the needle hub further comprises one of a paddle grip, a straight grip, and a ported grip.

18. The catheter system of claim 16, wherein the catheter adapter body is integrally formed from a compression set resistant elastomeric material comprising one of a thermoplastic elastomer material, a liquid silicone rubber material, and a polyisoprene material.

19. The catheter system of claim 16, wherein the compression cap further comprises:

a proximal end having a first aperture configured to receive the needle there through;

a distal end having a second aperture configured to receive at least a portion of the catheter adapter body; and

a compression surface extending intermediate the proximal end and the distal end of the compression cap, the compression surface enclosing a hollow portion formed in the compression cap, the hollow portion configured to receive at least a portion of the compression resistant septum therein, and the compression surface configured to impart the radial compression force to the compression resistant septum such that the lumen narrows and seals when the needle is removed from the lumen.

20. The catheter system of claim 16, further comprising:

one or more stabilization members integrally formed with the catheter adapter body from the compliant material, the one or more stabilization members configured to stabilize the catheter adapter body with respect to a patient;

a port in fluid communication with the inner chamber and configured to receive an extension tube, and the port comprising one of a Y-shaped port and a parallel-shaped port;

a catheter lumen coupled to and extending from the distal end of the catheter adapter body; and

a catheter wedge disposed toward the distal end of the catheter adapter body and configured to guide the needle into the catheter lumen as the needle is inserted through the catheter adapter body.

CLAIMS

1. A catheter system, comprising:

a needle comprising:

a proximal end;

a distal end; and

an opening disposed along the needle between the proximal end and the distal end of the needle, wherein the opening is configured to facilitate flashback visualization;

a catheter adapter body formed of a compliant material;

;

an inner chamber disposed within the catheter adapter body;

a compression resistant septum comprising a distal end formed in the compliant material of the catheter adapter body, the compression resistant septum further comprising a proximal end, wherein the distal end of the compression resistant septum and the catheter adapter body are integrally formed of the same compliant material, the compression resistant septum disposed toward the proximal end of the catheter adapter body;

a lumen formed through the compression resistant; and

a compression cap coupled to the compression resistant septum, the compression cap configured to impart a radial compression force to the compression resistant septum such that the lumen narrows and seals when the needle is removed from the lumen.

2. The catheter system of claim 1, wherein the catheter adapter body is integrally formed from a compression set resistant elastomeric material.

3. The catheter system of claim 2, wherein the compression set resistant elastomeric material comprises one of a thermoplastic elastomer material, a liquid silicone rubber material, and a polyisoprene material.

4. The catheter system of claim 1, wherein the compression cap is a separate piece that is coupled to the compression resistant septum.

5. The catheter system of claim 4, wherein the compression cap is coupled to the compression resistant septum through an over-molding manufacturing process.

6. The catheter system of claim 1, further comprising:

one or more stabilization members coupled to the catheter adapter body and configured to stabilize the catheter adapter body with respect to a patient;

a port in fluid communication with the inner chamber and configured to receive an extension tube, the port comprising one of a Y-shaped port, a T-shaped port, a V-shaped port and a parallel-shaped port;

a catheter lumen coupled to and extending from the distal end of the catheter adapter body; and

a catheter wedge disposed toward the distal end of the catheter adapter body and configured to guide the needle into the catheter lumen as the needle is inserted through the catheter adapter body.

7. A catheter device, comprising:

a catheter adapter body, comprising a distal end, a proximal end, and a lumen extending therethrough;

a catheter lumen extending from the distal end of the catheter adapter body;

a first compression resistant septum;

a second compression resistant septum disposed within the catheter adapter body and distal to the first compression resistant septum; and

a compression cap configured to impart a radial compression force to the first compression resistant septum and the second compression resistant septum.

8. The catheter device of claim 7, wherein the first compression resistant septum abuts the proximal end of the catheter adapter.

9. The catheter device of claim 7, wherein the second compression resistant septum is disposed within an inner chamber of the catheter adapter body.

10. The catheter device of claim 7, wherein the second compression resistant septum abuts the first compression resistant septum.

11. The catheter device of claim 7, wherein the first compression resistant septum comprises a first lumen and the second compression resistant septum comprises a second lumen.

12. The catheter device of claim 11, further comprising a needle extending through the first lumen and the second lumen, wherein the compression cap is configured to impart the radial compression force to the first compression resistant septum and the second compression resistant septum such that the first lumen and the second lumen narrow when the needle is removed from the first lumen and the second lumen.

13. A catheter system, comprising:

a needle comprising:

a proximal end;

a distal end; and

an opening disposed along the needle between the proximal end and the distal end of the needle, wherein the opening is configured to facilitate flashback visualization;

a catheter adapter body formed of a compliant material;

an inner chamber disposed within the catheter adapter body;

a compression resistant septum comprising a distal end formed in the compliant material of the catheter adapter body, the compression resistant septum further comprising a proximal end, wherein the distal end of the compression resistant septum and the catheter adapter body are integrally formed of the same compliant material, the compression resistant septum disposed toward the proximal end of the catheter adapter body;

a slit formed through the compression resistant septum; and

a compression cap coupled to the compression resistant septum, the compression cap configured to impart a radial compression force to the compression resistant septum such that the slit narrows and seals when the needle is removed from the lumen.

14. The catheter system of claim 13, wherein the catheter adapter body is integrally formed from a compression set resistant elastomeric material.

15. The catheter system of claim 14, wherein the compression set resistant elastomeric material comprises one of a thermoplastic elastomer material, a liquid silicone rubber material, and a polyisoprene material.

16. The catheter system of claim 13, wherein the compression cap is a separate piece that is coupled to the compression resistant septum.

17. The catheter system of claim 16, wherein the compression cap is coupled to the compression resistant septum through an over-molding manufacturing process.