CLAIMS

1. A needleless access connector (10), comprising:

a body (55), comprising:

a proximal end (38) configured to couple to an instrument delivery device (22); and

a distal end (12) configured to couple to a peripheral intravenous catheter assembly (48);

an accordion valve (16) disposed within the body between the proximal end and the distal end, wherein the accordion valve comprises an accordion portion (32), wherein in response to compression of the accordion portion and opening of the accordion valve, a straight pathway (24) extending through the proximal end and the distal end is exposed such that an instrument (26) of the instrument delivery device may move distally from the proximal end to the distal end through the straight pathway without bending; and

a post (14) configured to extend through the accordion valve when the accordion valve is open, wherein a proximal end (30) of the post is flexible.

2. The needless access connector of claim 1, wherein the accordion valve comprises a rigid portion (34), wherein the rigid portion is disposed proximal to the accordion portion.

3. The needleless access connector of claim 1, wherein the accordion valve comprises a rigid portion (34) disposed on an inner surface of the accordion valve, wherein the rigid portion contacts the post.

4. The needleless access connector of claim 1, wherein a proximal end of the accordion valve comprises a rigid portion (34).

5. The needleless access connector of claim 1, comprising a male luer fitting (18) configured to slide between a proximal position and a distal position, wherein in response to the male luer fitting sliding from the proximal position to the distal position, the male luer fitting contacts a proximal end of the accordion valve and moves the accordion valve distally.

6. The needleless access connector of claim 5, wherein the accordion valve comprises a slit (28), the slit opens in response to contact from the male luer fitting and prior to the accordion valve contacting the post.

7. The needleless access connector of claim 5, wherein in response to the male luer fitting sliding from the proximal position to the distal position, the accordion valve opens on the post.

8. The needleless access connector of claim 7, wherein the accordion valve comprises a slit (28).

9. The needleless access connector of claim 1, comprising an anti-reflux valve (42, 42a) disposed within the body between the proximal end and the distal end.

10. The needleless access connector of claim 9, comprising another anti-reflux valve (42b) disposed within the body between the proximal end and the distal end.

11. The needleless access connector of claim 1, wherein the body is monolithically formed as a single unit.

12. The needleless access connector of claim 9, wherein the body comprises a first piece that comprises the anti-reflux valve and a second piece that comprises the accordion valve, wherein a luer fitting of the first piece is coupled to a corresponding luer fitting of the second piece.

13. The needleless access connector of claim 12, wherein the second piece comprises a side port (54) and an extension tube (67) extending from the side port.

14. The needleless access connector of claim 1, wherein the distal end is coupled to the peripheral intravenous catheter assembly.

15. The needleless access connector of claim 1, comprising a side port (54), wherein the side port comprises another valve (58), wherein the another valve (58) is compressible such that fluid flows around an outer surface of the another valve to pass the other valve.

16. The needleless access connector of claim 1, comprising a side port (54), wherein the side port comprises another valve (58), wherein the other valve comprises an accordion portion.

17. The needleless access connector of claim 12, comprising another post configured to extend through the another valve when the another valve is open.

18. The needleless access connector of claim 1, wherein the distal end comprises an extension tube (67), wherein the extension tube extends outwardly from a distal port (66).

19. The needleless access connector (10), comprising:

a body (55), comprising:

a proximal end (38) configured to couple to an instrument delivery device (22); and

a distal end (12) configured to couple to a peripheral intravenous catheter assembly (48);

an accordion valve (16) disposed within the body between the proximal end and the distal end, wherein the accordion valve comprises an accordion portion, wherein in response to compression of the accordion portion and opening of the accordion valve, a straight pathway (24) extending through the proximal end and the distal end is exposed such that an instrument (26) of the instrument delivery device may move distally from the proximal end to the distal end through the straight pathway without bending; and

an anti-reflux valve (42) disposed within the body between the proximal end and the distal end,

wherein the body comprises a first piece that comprises the anti-reflux valve and a second piece that comprises the accordion valve, wherein a luer fitting (18) of the first piece is coupled to a corresponding luer fitting of the second piece, wherein the second piece comprises a side port (54) and an extension tube (67) extending from the side port.