CLAIMS

We claim:

1. A vascular access system, comprising:

a housing, comprising a distal end, a proximal end, a lumen extending between the distal end and the proximal end, and a slot disposed between the distal end and the proximal end, wherein the slot comprises a notch;

a cannula hub disposed within the housing and movable with respect to the slot, wherein the cannula hub comprises a tab extending through the slot;

a cannula extending distally from the cannula hub, wherein the cannula comprises a distal tip, wherein in response to the tab being disposed within the notch, the distal tip of the cannula is disposed within the housing, wherein in response to advancing the tab along the slot to a distal end of the slot, the distal tip of the cannula is disposed distal to the distal end of the housing.

2. The vascular access system of claim 1, further comprising an extension tube coupled to a proximal end of the cannula hub and extending through the proximal end of the housing.

3. The vascular access system of claim 1, wherein the proximal end of the housing comprises a cap.

4. The vascular access system of claim 1, further comprising a catheter assembly, comprising:

a catheter adapter, comprising:

a body disposed within the distal opening, wherein the body comprises a distal end, a proximal end, a lumen extending through the distal end and the

proximal end, wherein the proximal end of the body is coupled to the distal end of the housing; and

a catheter extending from the distal end of the body of the catheter adapter.

5. The vascular access system of claim 4, wherein the catheter adapter comprises a side port, wherein the catheter assembly further comprises a pinch clamp device and an extension tube extending from the side port and through the pinch clamp device, wherein the pinch clamp device comprises:

a first arm, comprising a first end and a second end, wherein the first end comprises a first lip and a second lip, wherein the second end comprises a first clamping surface;

a second arm, comprising a first end comprising a terminal end and a second end comprising a second clamping surface positioned opposite the first clamping surface; and

a hinge interconnecting the second end of the first arm and the second end of the second arm,

wherein in response to the terminal end being engaged with the first lip, the pinch clamp is configured to partially occlude a portion of the extension tube disposed between the first clamping surface and the second clamping surface such that air passes the portion but blood does not, wherein in response to the terminal end being engaged with the second lip, the pinch clamp is configured to occlude a portion of the extension tube disposed between the first clamping surface and the second clamping surface such that neither air nor blood pass the portion.

6. The vascular access system of claim 4, wherein the catheter assembly further comprises a metal wedge disposed within the lumen of the catheter adapter, wherein the metal wedge secures the catheter within the catheter adapter, wherein in response to advancing the tab along the slot to a distal end of the slot, the distal tip of the cannula is disposed within the metal wedge.

7. A pinch clamp device, comprising:

a first arm, comprising a first end and a second end, wherein the first end comprises a first lip and a second lip, wherein the second end comprises a first clamping surface;

a second arm, comprising a first end comprising a terminal end and a second end comprising a second clamping surface positioned opposite the first clamping surface; and

a hinge interconnecting the second end of the first arm and the second end of the second arm.

8. The pinch clamp device of claim 7, wherein in response to the terminal end being engaged with the first lip, the pinch clamp is configured to partially occlude a portion of the extension tube disposed between the first clamping surface and the second clamping surface such that air passes the portion but blood does not.

9. The pinch clamp device of claim 8, wherein in response to the terminal end being engaged with the second lip, the pinch clamp is configured to occlude a portion of the extension tube disposed between the first clamping surface and the second clamping surface such that neither air nor blood pass the portion.

~~10. A method, comprising:~~

~~positioning a pinch clamp device at a proximal end of an extension tube of a catheter system, wherein the catheter system comprises:~~

~~a catheter adapter, comprising:~~

~~a body comprising a distal end, a proximal end, a lumen extending through the distal end and the proximal end, and a side port disposed between the distal end of the body and the proximal end of the body;~~

~~the pinch clamp device, comprising:~~

~~a first arm comprising a first end and a second end, wherein the first end comprises a first lip and a second lip, wherein the second end comprises a first clamping surface;~~

~~a second arm comprising a first end comprising a terminal end and a second end comprising a second clamping surface positioned opposite the first clamping surface; and~~

~~a hinge interconnecting the second end of the first arm and the second end of the second arm;~~

~~the extension tube extending from the side port and through the pinch clamp device; and~~

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

~~engaging the terminal end with the first lip, wherein in response to engaging the terminal end with the first lip, the pinch clamp partially occludes a portion of the extension tube disposed between the first clamping surface and the second clamping surface such that air passes the portion but blood does not; and~~

~~inserting the catheter into vasculature of a patient.~~

~~11. The method of claim 10, further comprising:~~

coupling a housing to the proximal end of the catheter adapter, wherein the housing comprises a distal end, a proximal end, a lumen extending between the distal end and the proximal end, and a slot disposed between the distal end and the proximal end, wherein the slot comprises a notch, wherein a cannula hub is disposed within the housing and movable with respect to the slot, wherein the cannula hub comprises a tab extending through the slot, wherein a cannula extends distally from the cannula hub, wherein the cannula comprises a distal tip, wherein in response to the tab being disposed within the notch, the distal tip of the cannula is disposed within the housing;

advancing the tab along the slot to a distal end of the slot, wherein in response to advancing the tab along the slot to the distal end of the slot, the distal tip of the cannula passes through the septum; and

drawing blood through the cannula.

12. The method of claim 11, wherein an outer surface of the body of the catheter adapter comprises a protrusion, wherein an inner surface of the housing comprises a L-shaped slot extending from the distal end of the housing, wherein coupling the housing to the proximal end of the catheter adapter comprises inserting the protrusion into the L-shaped slot and rotating the catheter adapter within the L-shaped slot.

13. The method of claim 11, further comprising:

moving the tab along the slot from the distal end of the slot into the notch, wherein in response to moving the tab along the slot from the distal end of the slot into the notch, the distal tip of the cannula is retracted into the housing; and

uncoupling the housing from the proximal end of the catheter adapter.

~~14. The method of claim 13, further comprising:~~

~~disengaging the terminal end from the first lip such that the pinch clamp device is in an open configuration; and~~

~~flushing the catheter via the extension tube.~~

~~15.~~10. A vascular access system, comprising:

a cannula assembly, comprising a cannula hub and a cannula extending distally from the cannula; and

a housing, comprising a distal opening, a proximal opening, a lumen extending from the distal opening to the proximal opening, an internal rib, and a notch disposed distal to the internal rib, wherein a height of the internal rib increases in a distal direction, wherein the cannula hub is disposed within the proximal opening, wherein a distal end of the cannula is disposed proximal to the distal opening.

~~16.~~11. The vascular access system of claim 10~~15~~, wherein the housing further comprises a slot extending from the distal opening.

~~17.~~12. The vascular access system of claim 10~~15~~, wherein the housing comprises a stepped surface, wherein the cannula hub comprises a flange, wherein the flange contacts the stepped surface.

~~18.~~13. The vascular access system of claim 12~~17~~, wherein the stepped surface forms the proximal opening of the housing.

~~19.~~14. The vascular access system of claim 10~~15~~, further comprising a catheter assembly, comprising:

a catheter adapter, comprising:

a body disposed within the distal opening, wherein the body comprises a distal end, a proximal end, a lumen extending through the distal end and the proximal end; and

a protrusion extending from an outer surface of the body, wherein the protrusion is disposed within the notch;

a septum disposed within the lumen of the body of the catheter adapter; and

a catheter extending from the distal end of the body of the catheter adapter.

~~20.~~15. The vascular access system of claim 14~~19~~, wherein in response to moving the cannula hub distally within the housing along the internal rib, the cannula extends through the septum and an inner diameter of the housing increases and the protrusion is released from the notch.