What is claimed:

1. An apparatus, comprising:

a catheter having a proximal end portion and a distal end portion and defining a lumen extending through the proximal end portion and the distal end portion;

an introducer having a proximal end portion and a distal end portion, the introducer defining an inner volume configured to movably receive the catheter, the distal end portion of the introducer having a lock configured to couple the introducer to an indwelling peripheral intravenous line; and

an actuator movably coupled to the introducer, the actuator having a first portion disposed outside of the introducer and a second portion disposed in the inner volume of the introducer and coupled to the proximal end portion of the catheter, the actuator configured to move relative to the introducer to move the catheter between a first position, in which the catheter is disposed within the introducer, and a second position, in which the distal end portion of the catheter is disposed beyond the distal end portion of the introducer such that at least a first portion of the catheter is disposed within the peripheral intravenous line when the introducer is coupled to the peripheral intravenous line,

the first portion of the actuator being in contact with an outer surface of the introducer such that (1) a longitudinal axis defined by the second portion of the actuator is nonparallel to a longitudinal axis defined by the introducer and (2) the second portion of the actuator exerts a force on the proximal end portion of the catheter operable to increase an internal stress within at least a second portion of the catheter disposed between the second portion of the actuator and the lock resulting in a deformation of the second portion of the catheter.

2. The apparatus of claim 1, wherein the lock defines a lumen, a longitudinal axis defined by the lumen of the lock is substantially parallel to the longitudinal axis of the introducer, the lumen of the lock is configured to receive a portion of the catheter as the catheter is moved between the first position and the second position.

3. The apparatus of claim 1, wherein the lock has an outer surface configured to be placed in contact with an inner surface of the peripheral intravenous line when the lock is coupled to the peripheral intravenous line, the lock having an inner surface defining a lumen, the lumen of the lock is configured to receive a portion of the catheter as the catheter is moved between the first position and the second position, the inner surface of the lock is configured to guide the catheter as the catheter is moved between the first position and the second position.

4. The apparatus of claim 1, wherein the proximal end portion of the catheter is coupled to the second portion of the actuator such that the distal end portion of the catheter is distal to actuator, the second portion of the actuator is configured to couple to a distal end portion of a secondary catheter such that a proximal end portion of the secondary catheter is proximal to the actuator,

the secondary catheter defining a lumen in fluid communication with the lumen defined by the catheter, the proximal end portion of the secondary catheter is configured to fluidically couple to at least one of a fluid reservoir, a fluid source, or a syringe to place the lumen of the catheter in fluid communication with at least one of the fluid reservoir, the fluid source, or the syringe.

5. The apparatus of claim 4, wherein the proximal end portion of the introducer defines an opening, the opening including a first portion having a first size and a second portion having a second size smaller than the first size,

a portion of the secondary catheter is movably disposed within the opening, the secondary catheter is configured to move between a first position, in which the secondary catheter is disposed in the first portion of the opening, and a second position, in which the secondary catheter is disposed in the second portion of the opening, the lumen of the secondary catheter being substantially clamped when the secondary catheter is in the second position.

6. The apparatus of claim 4, wherein the catheter has a first stiffness and the secondary catheter has a second stiffness less than the first stiffness, and

the secondary catheter is configured to be fluidically coupled to at least one of a fluid reservoir defining a negative pressure or a syringe configured to generate a negative

pressure, at least a portion of the secondary catheter configured to deform in response to the negative pressure to reduce a negative pressure to which the lumen of the catheter is exposed.

7. The apparatus of claim 1, wherein the second portion of the catheter is a portion of the catheter disposed between the second portion of the actuator and the lock.

8. The apparatus of claim 1, wherein the second portion of the catheter is a portion of the catheter disposed between the second portion of the actuator and the lock, and

the increase in the internal stress within the second portion of the catheter results in a predetermined bias within the second portion of the catheter, the predetermined bias configured to produce a predetermined deflection of the second portion of the catheter in response to the distal end portion of the catheter impacting an obstruction as the catheter is moved from the first position to the second position.

9. An apparatus, comprising:

a catheter having a proximal end portion and a distal end portion and defining a lumen extending through the proximal end portion and the distal end portion;

an introducer having a proximal end portion and a distal end portion, the introducer defining an inner volume configured to movably receive the catheter, the distal end portion of the introducer having a lock configured to be coupled to an indwelling peripheral intravenous line, the lock defining a lumen configured to movably receive the catheter; and

an actuator having a first portion disposed outside of the introducer and a second portion disposed within the introducer and coupled to the proximal end portion of the catheter, the actuator configured to move relative to the introducer in response to a first force exerted on the actuator to move the catheter between a first position, in which the distal end portion of the catheter is disposed within the lumen of the lock, and a second position, in which the catheter extends through the lock and the peripheral intravenous line when the lock is coupled to the peripheral intravenous line such that the distal end portion of the catheter is distal to the peripheral intravenous line,

the second portion of the actuator configured to exert a second force different from the first force on the proximal end portion of the catheter as the actuator moves the catheter

from the first position to the second position, the second force resulting in a deflection of a portion of the catheter disposed between the actuator and the lock as the actuator moves the catheter from the first position to the second position.

10. The apparatus of claim 9, wherein the first portion of the actuator is in contact with an outer surface of the introducer, the contact between the first portion of the actuator and the outer surface of the introducer tilts the actuator relative to the introducer such that a longitudinal axis defined by the second portion of the actuator is nonparallel to a longitudinal axis defined by the introducer.

11. The apparatus of claim 9, wherein the first portion of the actuator includes a tab configured to be in contact with an outer surface of the introducer, the contact between the tab and the outer surface of the introducer tilts the actuator relative to the introducer, the second force exerted by the second portion of the actuator is a result of the tilt of the actuator relative to the introducer.

12. The apparatus of claim 9, wherein the deflection of the portion of the catheter disposed between the actuator and the lock is a first deflection, the first deflection results in a predetermined bias within the portion of the catheter disposed between the actuator and the lock,

the predetermined bias configured to produce a second deflection of the portion of the catheter disposed between the actuator and the lock in response to the distal end portion of the catheter impacting at least one of an obstruction within the peripheral intravenous line or a vascular wall as the catheter is moved from the first position to the second position, the second deflection being a predetermined deflection.

13. The apparatus of claim 9, wherein at least a portion of the first force exerted on the actuator to move the catheter between the first position and the second position the deflection of the portion of the catheter disposed between the actuator and the lock is a first deflection, the first deflection results in a predetermined bias within the portion of the catheter disposed between the actuator and the lock,

the predetermined bias configured to produce a second deflection of the portion of the catheter disposed between the actuator and the lock in response to the distal end portion of the catheter impacting at least one of an obstruction within the peripheral intravenous line or a vascular wall as the catheter is moved from the first position to the second position, the second deflection being a predetermined deflection.

14. The apparatus of claim 13, wherein the introducer includes an internal support member disposed within the inner volume of the introducer, the portion of the catheter disposed between the actuator and the lock being positioned within the internal support member, the internal support member configured to limit the second deflection of the portion of the catheter disposed within the internal support member.