CLAIMS

1. An intravenous delivery system comprising:

a liquid source containing a liquid;

tubing comprising:

a first end connectable to the liquid source to receive the liquid from the liquid source; and

a second end; and

a vent cap comprising:

a proximal end connectable to the second end of the tubing to receive the liquid from the tubing;

a distal end comprising a vent that is substantially impermeable to the liquid and substantially permeable to air; and

a chamber wall that defines a chamber that receives the liquid from the proximal end, wherein the chamber is in communication with the vent to facilitate passage of air from the liquid out of the vent cap through the vent, wherein the chamber comprises a volume selected to enable the chamber to receive a quantity of the liquid from the tubing in which the air, if entrained in the liquid, is likely to reside after the tubing has been primed sufficiently to advance the liquid through the second end of the tubing;

wherein the chamber wall is shaped to define an orifice adjacent to the chamber, wherein the orifice is sized such that, after detachment of the vent cap from the tubing, the orifice substantially prevents flow of liquid out of the vent cap through the orifice such that the vent cap substantially retains all of the quantity of the liquid within the chamber, without requiring presence of a valve within the vent cap, due to a surface tension of the liquid at the orifice that is sufficient to counteract forces that would tend to remove the liquid from the chamber through the orifice.

2. The intravenous delivery system of claim 1, wherein volume is determined by the equation $V = \pi r^2 l$, where V is the volume, r is a radius of an interior of the tubing, and l is a length of tubing within which the air, if present in the liquid, is likely to reside after the tubing has been primed.

3. The intravenous delivery system of claim 1 or claim 2, wherein the length of tubing is within a range of 2 inches to 15 inches.

4. The intravenous delivery system of any one of the preceding claims, wherein the volume is within a range of 0.3 milliliters to 2.7 milliliters.

5. The intravenous delivery system of any one of the preceding claims, wherein the vent cap chamber wall has a generally tubular shape comprising an interior diameter within a range of 7 millimeters to 15 millimeters.

6. The intravenous delivery system of any one of claims 1 to 4, wherein the vent cap chamber wall has a generally tubular shape comprising a length within a range of 5 millimeters to 15 millimeters.

7. The intravenous delivery system of any one of the preceding claims, wherein the proximal end of the vent cap comprises a vent cap luer lock, wherein the tubing comprises a tubing luer lock that mates with the vent cap luer lock.

8. The intravenous delivery system of claim 7, wherein the chamber wall has a cross-sectional area larger than a largest cross-sectional area of the vent cap luer lock.

9. The intravenous delivery system of any one of the preceding claims, wherein the vent cap further comprises a hydrophilic membrane positioned proximate the orifice such that, after detachment of the vent cap from the tubing, the hydrophilic membrane substantially prevents flow of liquid out of the vent cap through the orifice.

10. The intravenous delivery system of any one of the preceding claims, wherein the vent comprises a hydrophobic membrane positioned adjacent to the chamber.

11. The intravenous delivery system of any one of the preceding claims, further comprising a drip unit comprising a drip chamber, wherein the drip unit is connectable to the liquid source to receive drops of the liquid from the liquid source within the drip chamber, wherein the drip unit is connectable to the tubing to supply the liquid to the tubing via gravity feed.

12. The intravenous delivery system of claim 11, further comprising an intravenous access unit connectable to the second end of the tubing to deliver the liquid intravenously to a patient.

13. A method for preparing an intravenous delivery system for use, the intravenous delivery system comprising a liquid source, a vent cap, and tubing comprising a first end connected to the liquid source and a second end connected to the vent cap, the method comprising:

priming the intravenous delivery system by gravity feeding liquid from the liquid source to the vent cap through the tubing;

in response to priming the intravenous delivery system, receiving, within a chamber of the vent cap, a quantity of the liquid from the tubing in which air, if entrained in the liquid, is likely to reside after the tubing has been primed sufficiently to advance the liquid through the second end of the tubing wherein the chamber comprises a volume selected to enable the chamber to receive the quantity of the liquid from the tubing; and

in response to receipt of the quantity of the liquid within the vent cap, venting the air out of the vent cap through a vent of the vent cap;

wherein after venting the air out of the vent cap, detaching the vent cap from the second end of the tubing; and

in response to detachment of the vent cap from the second end of the tubing, retaining substantially all of the quantity of the liquid without requiring presence of a valve within the vent cap; and wherein

the chamber includes a chamber wall that is shaped to define an orifice adjacent to the chamber, wherein the orifice is sized such that, after detachment of the vent cap from the tubing, the orifice substantially prevents flow of liquid out of the vent cap through the orifice such that the vent cap substantially retains all of the quantity of the liquid within the chamber, without requiring presence of a valve within the vent cap, due to a surface tension of the liquid at the orifice that is sufficient to counteract forces that would tend to remove the liquid from the chamber through the orifice.

14. The method of claim 13, wherein receiving, within the vent cap, the quantity of the liquid comprises receiving the quantity of the liquid within a chamber of the vent cap, the chamber having a volume within a range of 0.3 milliliters to 0.2.7 milliliters.

15. The method of claim 13, wherein the vent cap comprises a vent cap luer lock and the tubing comprises a tubing luer lock, the method further comprising, prior to priming the intravenous delivery system, mating the tubing luer lock with the vent cap luer lock.

16. The method of claim 15, further comprising connecting an intravenous access unit to the second end of the tubing, wherein the intravenous access unit is configured to convey the liquid intravenously to a patient.