What is claimed is:

1. A vial adapter assembly, comprising:

a housing comprising a distal end and a proximal end;

a first receptacle formed within the housing and configured to at least partially receive a first vial within a body of the housing via a first distal opening at the distal end of the housing, wherein a first proximal opening of the first receptacle is in fluid communication with an upper surface at the proximal end of the housing;

a second receptacle formed within the housing and configured to at least partially receive a second vial within the body of the housing via a second distal opening at the distal end of the housing, wherein a second proximal opening of the second receptacle is in fluid communication with the upper surface at the proximal end of the housing; and

a cap coupled to the housing, wherein the cap is movable relative to the housing from a closed configuration to an open configuration;

wherein, in the closed configuration, the cap is configured to cover the first proximal opening of the first receptacle and the second proximal opening of the second receptacle on the upper surface of the housing; and

wherein, in the open configuration, the cap is configured to uncover the first proximal opening of the first receptacle and the second proximal opening of the second receptacle, and expose the upper surface of the housing, a portion of the first vial and a portion of the second vial.

2. The vial adapter assembly of claim 1, wherein the housing includes at least one slot on the upper surface of the housing, and the cap includes at least one corresponding protrusion extending outwardly from a surface of the cap configured to mate with the upper surface of the housing.

3. The vial adapter assembly of claim 2, wherein, in the closed configuration, the at least one of slots is configured to receive one of the at least one corresponding protrusions.

4. The vial adapter assembly of claim 2, wherein, in the open configuration, each of the at least one protrusions is configured to deform, such that the cap is inhibited from transitioning from the open configuration to the closed configuration.

5. The vial adapter assembly of claim 1, wherein the first and second proximal openings of the first and second receptacles are sized smaller relative to the first and second distal openings of the first and second receptacles.

6. The vial adapter assembly of claim 5, wherein the first and second distal openings of the first receptacle and the second receptacle are sized to receive the first vial and the second vial, respectively; and

wherein the first and second proximal openings of the first receptacle and the second receptacle are positioned to align with first and second vial openings of the first and second vial, respectively, when the first and second vial are received within the first and second receptacles.

7. The vial adapter assembly of claim 1, wherein the first receptacle is positioned adjacent to the second receptacle such that the first vial is maintained alongside the second vial when received within the housing.

8. The vial adapter assembly of claim 1, further including a single hinge coupling the housing to the cap, wherein the hinge is configured to pivot the cap relative to the housing when moving from the closed configuration to the open configuration.

9. The vial adapter assembly of claim 1, wherein the cap is configured to simultaneously cover the first proximal opening of the first receptacle and the second proximal opening of the second receptacle when in the closed configuration, and simultaneously uncover the opening of the first receptacle and the opening of the second receptacle when in the open configuration.

10. The vial adapter assembly of claim 1, wherein the housing is configured to at least partially enclose the first vial and the second vial such that the first vial and the second vial are positioned adjacent to one another.

11. The vial adapter assembly of claim 1, further including an actuator positioned over the first proximal opening of the first receptacle and the second proximal opening of the second receptacle.

12. The vial adapter assembly of claim 11, wherein the actuator includes a first hollow piercing element extending towards the first receptacle and a second hollow piercing element extending towards the second receptacle.

13. The vial adapter assembly of claim 12, wherein the actuator is configured to simultaneously move the first hollow piercing element relative to the first receptacle and the second hollow piercing element relative to the second receptacle.

14. The vial adapter of claim 1, wherein the cap includes a first lid and a second lid, wherein in the closed configuration the first lid is configured to cover the first proximal opening, and the second lid is configured to cover the second proximal opening.

15. The vial adapter of claim 1, wherein the housing is configured such that a distal end of the first vial and a distal end of the second vial extend beyond the distal end of the housing, when the first and second vial are received within the first and second receptacles.