SUMMARY OF THE INVENTION

[0003a] In one aspect, the present invention presents a device for delivering a fluid comprising: a housing defining an interior space and having a bottom surface configured for contacting a patient, the bottom surface defining a needle opening;

a reservoir disposed within the interior space of the housing for containing a fluid therein;

a needle carrier disposed within the housing;

an injection needle supported by the needle carrier and defining a lumen, the lumen of the injection needle configured to be placed in fluid communication with the reservoir, wherein the injection needle is transitionable from an initial position in which the injection needle is disposed within the housing, to a use position in which the injection needle extends through the needle opening, and a substantially shielded position in which the injection needle is disposed within the housing;

a needle actuator controlling positioning of the needle carrier and the injection needle; and

an indicator for separately indicating when the injection needle is in the initial position, the use position, and the shielded position;

wherein the indicator comprises an indicator tab disposed on and movable with the needle actuator and the needle actuator closes the needle opening when the injection needle is in the shielded position

[0004] In one example, a device for delivering a fluid includes a housing defining an interior space and having a bottom surface configured for contacting a patient. The bottom surface defines a needle opening. The device also includes a reservoir disposed within the interior space of the housing for containing a fluid therein, a needle carrier disposed within the housing, and an injection needle supported by the needle carrier and defining a lumen. The lumen of the injection needle is configured to be placed in fluid communication with the reservoir. The injection needle is transitionable from an initial position in which the injection needle is disposed within the housing, to a use position in which the injection needle extends through the needle opening, and a substantially shielded position in which the injection needle is disposed within the housing and the lumen of the needle is blocked by a portion of the housing.

[0005] The device may also include a needle actuator having a first ramp portion having an inclined section and a level section with the level section being generally parallel to the

bottom surface of the housing. The needle carrier may include a first engagement for contacting the inclined section of the first ramp portion to transition the injection needle from the initial position to the use position. The needle actuator may also include a second ramp portion having an inclined section and a level section being generally parallel to the bottom surface of the housing and the needle carrier may include a second engagement for contacting the inclined section of the second ramp portion to transition the injection needle from the use position to the shielded position. The device may include a pad disposed within the housing, where the lumen of the injection needle is blocked by the pad when the injection needle is in the shielded position. The needle actuator may be configured to drive the injection needle into the pad when the injection needle is transitioned from the use position to the shielded position. At least a portion of the pad may be received by the needle actuator in the shielded position.

[0006] The reservoir may be configured to automatically supply fluid to the injection needle after the injection needle is transitioned from the initial position to the use position. A needle actuator may be configured to engage the needle carrier to transition the injection needle from the initial position, to the use position, and the shielded position. The reservoir may comprise a syringe assembly including a syringe barrel for containing a fluid therein, a stopper disposed within the syringe barrel, and a plunger configured to advance the stopper within the syringe barrel to expel the fluid therefrom. The device may include a plunger stop

engaged with the plunger when the injection needle is in the initial position, wherein the plunger stop is configured to engage the needle carrier and release the plunger stop from the plunger when the injection needle is transitioned from the initial position to the use position. The device may include a needle stop configured to restrict movement of the injection needle from the use position to the shielded position until a predetermined amount of fluid has been dispensed from the reservoir. The needle stop may include a rotatable body which engages the needle actuator and the plunger when the injection needle is in the use position with the needle stop disengaging from the plunger when the injection needle is transitioned from the use position to the shielded position.

[0007] The device may also include an activation button, wherein deployment of the activation button allows the injection needle to transition from the initial position to the use position. The device may be provided with an indicator for indicating when the injection needle is in the initial position, the use position, and the shielded position.

[0008] In a further example, a device for delivering a fluid includes a housing defining an interior space and having a bottom surface configured for contacting a patient. The bottom surface defines a needle opening. The device further includes a reservoir disposed within the interior space of the housing for containing a fluid therein, a needle carrier disposed within the housing, and an injection needle supported by the needle carrier and defining a lumen. The lumen of the injection needle is configured to be placed in fluid communication with the reservoir, wherein the injection needle is transitionable from an initial position in which the injection needle is disposed within the housing, to a use position in which the injection needle extends through the needle opening, and a substantially shielded position in which the injection needle is disposed within the housing. The device also includes an indicator for indicating when the injection needle is in the initial position, the use position, and the shielded position.

[0009] The housing may include at least one indicator lens, where the indicator is visible from an exterior of the housing via the indicator lens. The indicator may provide a visual and tactile indication of the position of the injection needle. The indicator may include an indicator post with the housing defining an indicator opening. The indicator post is disposed within the housing when the injection needle is in the initial position and the use position and extends through the indicator opening when the injection needle is in the shielded position.

[0010] In another example, a device for delivering a fluid includes a housing defining an interior space and having a bottom surface configured for contacting a patient. The

WHAT IS CLAIMED IS:

1. A device for delivering a fluid comprising:

a housing defining an interior space and having a bottom surface configured for contacting a patient, the bottom surface defining a needle opening;

a reservoir disposed within the interior space of the housing for containing a fluid therein;

a needle carrier disposed within the housing;

an injection needle supported by the needle carrier and defining a lumen, the lumen of the injection needle configured to be placed in fluid communication with the reservoir, wherein the injection needle is transitionable from an initial position in which the injection needle is disposed within the housing, to a use position in which the injection needle extends through the needle opening, and a substantially shielded position in which the injection needle is disposed within the housing;

a needle actuator controlling positioning of the needle carrier and the injection needle; and

an indicator for separately indicating when the injection needle is in the initial position, the use position, and the shielded position;

wherein the indicator comprises an indicator tab disposed on and movable with the needle actuator and the needle actuator closes the needle opening when the injection needle is in the shielded position.

2. The device of claim 1, wherein the housing includes at least one indicator lens, and wherein the indicator is visible from an exterior of the housing via the indicator lens.

3. The device of claim 1, wherein the indicator provides a visual and tactile indication of the position of the injection needle.

4. The device of claim 3, wherein the indicator comprises an indicator post disposed on the needle actuator, and the housing defines an indicator opening, the indicator post being disposed within the housing when the injection needle is in the initial

position and the use position, the indicator post extending through the indicator opening when the injection needle is in the shielded position.

5. The device of claim 1, wherein the indicator comprises at least one indicator lens permitting visual inspection of the needle actuator to separately indicate when the injection needle is in the initial position, the use position, and the shielded position.

6. The device of claim 5, wherein the indicator comprises first through third indicator lenses, each permitting visual inspection of the needle actuator, and respectively indicating when the injection needle is in the initial position, the use position, and the shielded position.