[0480] While the principles of the invention have been described herein, it is to be understood by those skilled in the art that this description is made only by way of example and not as a limitation as to the scope of the invention. Other embodiments are contemplated within the scope of the present invention in addition to the exemplary embodiments shown and described herein. Modifications and substitutions by one of ordinary skill in the art are considered to be within the scope of the present invention.

What is claimed is:

1. A medical liquid delivery system comprising:

a user interface assembly comprising at least one of a vibratory signal and an audible signal;

a liquid delivery device comprising:

a wireless module in communication with the user interface assembly;

a rigid structure and a membrane variably defining a dispensing chamber, the dispensing chamber receiving liquid and covered by a membrane; and

a volume sensor mated to the membrane and defining a metering volume, the volume sensor capable of measuring a volume of the metering chamber; and

a processor in communication with the communication module and the volume sensor, the processor configured receive volume measurements from the volume sensor, to update a sum of positive volume changes in the metering volume, to compare the updated sum to a predetermined value and control an action of at least one of the liquid delivery device and user interface assembly based on the comparison.

2. The medical liquid delivery system of claim **1** wherein the user interface assembly is separate from the liquid delivery device and capable of wireless communication with the liquid delivery device.

3. The medical liquid delivery system of claim **1**, wherein the user interface assembly is integrated into at least one of a computer, a cell phone, and a consumer device.

4. The medical liquid delivery system of claim **1** wherein the processor is further configured to receive an additional volume measurement when the updated sum is substantially equivalent to a model of normal flow.

5. The medical liquid delivery system of claim **1** wherein the processor is further configured to trigger an alarm at the user interface assembly when the updated sum is less than a predetermined value.

6. The medical liquid delivery system of claim **1** wherein the processor is further configured to trigger an alarm at the user interface assembly when the updated sum is less than a predicted value.

7. The medical liquid delivery system of claim **1** wherein the processor is further configured to trigger an alarm at the user interface assembly when the updated sum is outside a predetermined range.

8. The medical liquid delivery system of claim **1** wherein the processor is configured to detect a leak when the updated sum decreases at a rate above a predetermined threshold.

9. The medical liquid delivery system of claim **1**, wherein the liquid delivery device further comprises an adhesive patch configured to attach to a user.

10. A medical liquid delivery system comprising:

a user interface assembly comprising at least one of a vibratory signal and an audible signal;

a liquid delivery device comprising:

a wireless module in communication with the user interface assembly;

a rigid structure and a membrane variably defining a dispensing chamber, the dispensing chamber receiving liquid and covered by a membrane; and

a volume sensor mated to the membrane and defining a metering volume, the volume sensor capable of measuring a volume of the metering chamber; and

a processor in communication with the communication module and the volume sensor, the processor configured receive volume measurements from the volume sensor, to update a sum of negative volume changes in the metering volume, to compare the updated sum to a predetermined value and control an action of at least one of the liquid delivery device and user interface assembly based on the comparison.

11. The medical liquid delivery system of claim **8** wherein the user interface assembly is separate from the liquid delivery device and capable of wireless communication with the liquid delivery device.

12. The medical liquid delivery system of claim **8**, wherein the user interface assembly is integrated into at least one of a computer, a cell phone, and a consumer device.

13. The medical liquid delivery system of claim **8**, wherein the processor is further configured to receive an additional volume measurement when the updated sum is substantially equivalent to a model of normal flow.

14. The medical liquid delivery system of claim **8**, wherein the processor is further configured to trigger an alarm at the user interface assembly when the updated sum is less than a predetermined value.

15. The medical liquid delivery system of claim **8**, wherein the processor is configured to detect a leak when the sum of positive volume changes is less than a predetermined value.

16. The medical liquid delivery system of claim **8**, wherein the liquid delivery device further comprises an adhesive patch configured to attach to a user.

17. A medical liquid delivery system comprising:

a user interface assembly comprising at least one of a vibratory signal and an audible signal;

a liquid delivery device comprising:

a wireless module in communication with the user interface assembly;

a rigid structure and a membrane variably defining a dispensing chamber, the dispensing chamber receiving liquid and covered by a membrane; and

a volume sensor mated to the dispensing chamber and capable of measuring a volume of the dispensing chamber; and

a processor in communication with the communication module and the volume sensor, the processor configured receive volume measurements from the volume sensor, and control an action of at least one of the liquid delivery device and user interface assembly based on a comparison of the volume measurements to a model.

18. The medical liquid delivery system of claim **1** wherein the user interface assembly is separate from the liquid delivery device and capable of wireless communication with the liquid delivery device.

19. The medical liquid delivery system of claim **1**, wherein the user interface assembly is integrated into at least one of a computer, a cell phone, and a consumer device.