CLAIMS

1. A system for monitoring one or more body parameters, comprising:

an elongate catheter defining one or more openings at or near a distal end of the catheter;

a venting mechanism coupled to a proximal end of the catheter, the venting mechanism configured to pass atmospheric air therethrough when negative pressure is applied to the venting mechanism;

a first lumen coupled to the venting mechanism and in fluid communication with the one or more openings;

a reservoir coupled to a proximal end of the first lumen and in fluid communication with the one or more openings;

a controller which is configured to connect to the reservoir and is programmed to control a pressure within the first lumen; and

a pump fluidly coupled to the reservoir via a controller pump interface,

wherein the controller is further programmed to monitor a urine output received in the reservoir from a patient,

wherein the controller is further programmed to apply a negative pressure to the first lumen at predefined intervals of time, and

wherein the controller is further programmed to actuate the pump for airlock clearance whereby a pressure within the reservoir and first lumen reduces until a meniscus of urine within the first lumen passes a minimum point in the first lumen and the pressure reaches an inflection point after which the controller reduces power to the pump to reduce a suction within the reservoir and first lumen.

2. The system of claim 1 wherein the catheter comprises a Foley-type catheter.

3. The system of claim 1 wherein the controller is further configured to store patient data.

4. The system of claim 1 wherein the reservoir comprises a cassette component having a rigid housing.

5. The system of claim 4 wherein the controller is configured to receive and interface with the cassette component.

6. The system of claim 3 wherein the patient data is stored in a memory component.

7. The system of claim 6 wherein the system is configured to transfer the patient data to a remote database.

8. The system of claim 1 wherein the controller is further programmed to analyze patient data obtained from the patient including the urine output and determine one or more trends or relationships between one or more parameters of the patient data as a predictor of infection or patient behavior.

9. The system of claim 1 wherein the venting mechanism comprises a vent which is configured to pass air into the venting mechanism upon application of a negative pressure within the first lumen.

10. The system of claim 9 wherein the venting mechanism comprises a one-way valve which is configured to prevent air from exiting the first lumen.

11. The system of claim 1 wherein the venting mechanism comprises a vent having a hydrophobic membrane which is configured to transmit gas but not liquid therethrough.

12. The system of claim 11 wherein the membrane comprises a PTFE or ePTFE membrane.

13. The system of claim 1 wherein the first lumen defines an inner diameter of less than or equal to about 0.25 inches.

14. The system of claim 1 wherein the first lumen defines an inner diameter of less than or equal to about 0.25 inches.

15. The system of claim 1 wherein the controller is further programmed to sense one or more physiological parameters of the patient comprising a respiratory rate or a heart rate.

16. The system of claim 1 wherein the controller is further programmed to determine a presence of an infection.

17. The system of claim 1 wherein the controller is further programmed to determine a presence of acute kidney injury in a patient based in part on a measurement of urine output.

18. The system of claim 1 further comprising a light transmitter and receiver in proximity to the reservoir, wherein the reservoir defines an optically clear section.

19. The system of claim 18 wherein the receiver is in communication with the controller which is further programmed to detect one or more wavelengths transmitted through the reservoir and through a volume of urine contained within.

20. The system of claim 19 wherein the controller is further programmed to analyze the one or more wavelengths for a presence of bacteria, red blood cells, plasma, or white blood cells as indicative of an infection.

21. The system of claim 1 further comprising a collection bag hook configured to measure strain exerted by a collection bag in fluid communication with the reservoir.

22. A method of monitoring one or more body parameters from a patient, comprising:

positioning an elongate catheter within a bladder filled at least partially with urine;

receiving the urine through one or more openings defined at or near a distal end of the catheter;

further receiving the urine within a reservoir located external to the bladder and which is in fluid communication with the one or more openings via a fluid lumen;

venting atmospheric air by actuating a pump fluidly coupled to the reservoir via a controller pump interface and through a venting mechanism which is in communication with the fluid lumen when negative pressure is applied to the fluid lumen at predefined intervals of time, wherein the pump is actuated via the controller pump interface until a meniscus of urine within the fluid lumen passes a minimum point in the fluid lumen and the pressure reaches an inflection point and thereafter reducing power to the pump via the controller to reduce a suction within the reservoir and fluid lumen; and

analyzing a volume of the urine received within the reservoir via the controller which is programmed to control the negative pressure to the venting mechanism.

23. The method of claim 22 wherein positioning an elongate catheter comprises positioning a Foley-type catheter within the bladder of a patient.

24. The method of claim 22 wherein the reservoir comprises a cassette component having a rigid housing.

25. The method of claim 22 further comprising storing one or more parameters of patient data within a memory component in communication with the controller.

26. The method of claim 25 wherein the system is configured to transfer the patient data to a remote database.

27. The method of claim 22 further comprising determining one or more trends or relationships between one or more parameters of patient data obtained from the patient including the urine as a predictor of infection or patient behavior.

28. The method of claim 22 wherein venting air comprises applying a negative pressure to the fluid lumen to pass air into the venting mechanism.

29. The method of claim 22 wherein venting air comprises transmitting the air through the venting mechanism while preventing transmission of urine therethrough.

30. The method of claim 22 wherein analyzing a volume of the urine comprises sensing one or more physiological parameters of a patient comprising a respiratory rate or a heart rate.

31. The method of claim 22 wherein analyzing a volume of the urine comprises determining a presence of an infection.

32. The method of claim 22 wherein analyzing a volume of the urine comprises determining a presence of acute kidney injury in a patient based in part on a measurement of urine output.

33. The method of claim 22 wherein analyzing a volume of the urine comprises transmitting a light through an optically clear section of the reservoir and through the volume of urine and receiving a reflection of the transmitted light.

34. The method of claim 33, further comprising detecting one or more wavelengths from the transmitted light indicative of a presence of bacteria, red blood cells, plasma, or white blood cells as indicative of an infection.