Thus in one aspect, the present invention is said to consist in a respiratory therapy system comprising:

a flow generator adapted to provide pressurized gases to a patient,

a sensor adapted to measure at least one characteristic capable of being used to determine one or more traits of a sleep-disordered breathing event (SDBE) of the patient, and

a hardware controller configured to:

receive the at least one characteristic measured by the sensor,

determine the one or more traits of the SDBE of the patient by analyzing the at least one characteristic,

repeatedly adjust a pressure window comprising a minimum pressure limit and a maximum pressure limit in response to pressure delivered during the course of the current therapy session and/or one or more previous therapy sessions; and

control the flow generator to deliver pressurized gases, the pressure of the pressurized gases being at least in part based on the determined one or more traits of the SDBE, and the pressure of the pressurized gases being greater than or equal to the minimum pressure limit and less than or equal to the maximum pressure limit,

wherein the minimum pressure limit is less than the maximum pressure limit, and

wherein if the patient experiences a number of delivered pressure increases greater than a predetermined number over a predetermined period of time at or near the minimum pressure limit, the minimum pressure limit is increased.

In one configuration, the characteristics capable of being used to determine the one or more traits of the SDBE include one or more of the following: gas pressure, gas flow, sound, flow generator current, flow generator speed, flow generator motor torque, motion, tidal volume, heart rate, lung volume, EEG signal, breath composition, blood oxygen concentration, and blood CO2 concentration.

In one configuration, the traits of the SDBE include one or more of the following: presence of the SDBE, absence of the SDBE, type of the SDBE, severity of the SDBE, length of the SDBE, and latency of the SDBE.

In one configuration, the controller may make a decision to maintain or adjust the minimum pressure limit or the maximum pressure limit on an event-by-event basis.

In one configuration, the therapy sessions comprise only the current therapy session.

In one configuration, the therapy sessions comprise only one or more previous therapy sessions.

In one configuration, the therapy sessions comprise both the current therapy session and one or more previous therapy sessions.

In one configuration, the minimum pressure limit or the maximum pressure limit is adjusted in response to the pressure delivered during one or more previous therapy sessions.

In one configuration, the delivered pressure at which the patient spent a percentage of time at or below over the course of one or more previous therapy sessions is recorded, and the minimum pressure limit or the maximum pressure limit is adjusted to a function of the recorded pressure.

In one configuration, if the patient spends a time at the maximum pressure limit that is greater than or equal to a threshold percentage of time at the maximum pressure limit over the course of one or more previous therapy sessions, the maximum pressure limit is increased.

In one configuration, if the patient spends a time at the maximum pressure limit that is less than or equal to a threshold percentage of time at the maximum pressure limit over the course of one or more previous therapy sessions, the maximum pressure limit is decreased.

In one configuration, the respiratory system comprises an automatic positive airway pressure therapy system.

In one configuration, the minimum pressure limit or the maximum pressure limit is adjusted during a therapy session.

In one configuration, both the minimum pressure limit and the maximum pressure limit are adjusted during the therapy session.

In accordance with at least one of the embodiments disclosed herein, a respiratory therapy system is disclosed. The respiratory therapy system is configured to adjust the operational pressure range of the system based on sensed information about the treatment of the patient as described herein. The respiratory therapy system may comprise a flow generator. The respiratory therapy system may comprise a sensor. The sensor may be adapted to measure at least one characteristic capable of being used to determine one or more traits of a sleep-disordered breathing event (SDBE) of the patient. The respiratory therapy system may comprise a controller. The controller may be configured to receive the at least one characteristic measured by the sensor. The controller may be configured to analyze the at least one characteristic. The at least one characteristic may be analyzed to determine one or more traits of an SDBE of the patient. The controller may control the flow generator to maintain or adjust a pressure delivered by the flow generator between a minimum and a maximum pressure, inclusive. The maintaining or adjusting may be at least in part based on the determined one or more traits of an SDBE. The minimum and/or maximum pressures may be adjusted in response to one or more parameters recorded during the course of the current therapy session and/or one or more previous or past therapy sessions. The parameters may include at least one of the following: the pressure delivered and the one or more traits of the SDBE. In some configurations, the controller may control the flow generator to maintain or adjust the pressure delivered by the flow generator between a minimum and a maximum pressure, inclusive, on an event-by-event basis. In other words, the controller may react to individual SDBEs as they are detected. In some configurations, the controller may make the decision to change or not change the minimum and/or maximum pressures on a session-by-session basis, a time period-by-time period basis, a night-by-night basis, or on some other basis.

In some configurations, the characteristics capable of being used to determine the one or more traits of an SDBE may include one or more of the following: gas pressure (e.g. delivered gas pressure), gas flow (e.g. delivered gas flow), sound, flow generator current (e.g. flow generator motor driving current), flow generator speed (e.g. flow generator motor speed), flow generator motor torque, motion (e.g. patient motion), tidal volume, heart rate, lung volume, electroencephalograph signal, EEG signal, EKG/ECG signal, breath composition, blood oxygen concentration, and blood CO_2 concentration. The traits of an SDBE may include one or more of the following: the presence of an SDBE, the

CLAIMS:

1. A respiratory therapy system comprising:

a flow generator adapted to provide pressurized gases to a patient,

a sensor adapted to measure at least one characteristic capable of being used to determine one or more traits of a sleep-disordered breathing event (SDBE) of the patient, and

a hardware controller configured to:

receive the at least one characteristic measured by the sensor,

determine the one or more traits of the SDBE of the patient by analyzing the at least one characteristic,

repeatedly adjust a pressure window comprising a minimum pressure limit and a maximum pressure limit in response to pressure delivered during the course of the current therapy session and/or one or more previous therapy sessions; and

control the flow generator to deliver pressurized gases, the pressure of the pressurized gases being at least in part based on the determined one or more traits of the SDBE, and the pressure of the pressurized gases being greater than or equal to the minimum pressure limit and less than or equal to the maximum pressure limit,

wherein the minimum pressure limit is less than the maximum pressure limit, and

wherein if the patient experiences a number of delivered pressure increases greater than a predetermined number over a predetermined period of time at or near the minimum pressure limit, the minimum pressure limit is increased.

2. The respiratory therapy system of claim 1, wherein the characteristics capable of being used to determine the one or more traits of the SDBE include one or more of the following: gas pressure, gas flow, sound, flow generator current, flow generator speed, flow generator motor torque, motion, tidal volume, heart rate, lung volume, EEG signal, breath composition, blood oxygen concentration, and blood CO2 concentration.

3. The respiratory therapy system of claim 1, wherein the traits of the SDBE include one or more of the following: presence of the SDBE, absence of the SDBE, type of the SDBE, severity of the SDBE, length of the SDBE, and latency of the SDBE.

4. The respiratory therapy system of claim 1, wherein the controller may make a decision to maintain or adjust the minimum pressure limit or the maximum pressure limit on an event-by-event basis.

5. The respiratory therapy system of claim 1, wherein the therapy sessions comprise only the current therapy session.

6. The respiratory therapy system of claim 1, wherein the therapy sessions comprise only one or more previous therapy sessions.

7. The respiratory therapy system of claim 1, wherein the therapy sessions comprise both the current therapy session and one or more previous therapy sessions.

8. The respiratory therapy system of claim 1, wherein the minimum pressure limit or the maximum pressure limit is adjusted in response to the pressure delivered during one or more previous therapy sessions.

9. The respiratory therapy system of claim 8, wherein the delivered pressure at which the patient spent a percentage of time at or below over the course of one or more previous therapy sessions is recorded, and the minimum pressure limit or the maximum pressure limit is adjusted to a function of the recorded pressure.

10. The respiratory system of claim 8, wherein if the patient spends a time at the maximum pressure limit that is greater than or equal to a threshold percentage of time at the maximum pressure limit over the course of one or more previous therapy sessions, the maximum pressure limit is increased.

11. The respiratory system of claim 8, wherein if the patient spends a time at the maximum pressure limit that is less than or equal to a threshold percentage of time at the maximum pressure limit over the course of one or more previous therapy sessions, the maximum pressure limit is decreased.

12. The respiratory system of claim 1, wherein the respiratory system comprises an automatic positive airway pressure therapy system.

13. The respiratory therapy system of claim 1, wherein the minimum pressure limit or the maximum pressure limit is adjusted during a therapy session.

14. The respiratory therapy system of claim 13, wherein both the minimum pressure limit and the maximum pressure limit are adjusted during the therapy session.