Goertzel algorithm. The frequency analysis can comprise a sampling rate of between about 71 Hz to about 2 Hz, or between about 50 Hz to about 2.5 Hz, or between about 40 Hz to about 3 Hz, or between about 25 Hz to about 4 Hz, or between about 20 Hz to about 5 Hz, or about 10 Hz. The flow rate sensor can comprise an acoustic sensor or a thermistor flow sensor. The thermistor flow sensor can be configured to run the thermistor at a constant target temperature when the gases flow around and past the thermistor. The thermistor flow sensor can be configured to maintain a plurality of target temperatures on a thermistor when the gases flow around and past the thermistor. The thermistor flow sensor can be configured to maintain first and second target temperatures. The system can comprise a patient interface, the patient interface being a nasal cannula, a face mask, a nasal mask, an endotracheal tube, or a tracheostomy interface. The system can comprise a humidifier configured to humidify the gases flow to the patient. The system can comprise a display configured to receive from the one or more processors and display information related to the patient's respiratory rate. The method further comprises determining whether the patient has removed the patient interface or disconnected from the system based at least in part on the signal. The method further comprises recording compliance data based at least in part on determination of whether the patient is connected to the system. The method further comprises activating or deactivating a motor speed control in the respiratory device based at least in part on determination of whether the patient is connected to the system. The method further comprises activating or deactivating an oxygen supply control in the respiratory device based at least in part on determination of whether the patient is connected to the system.

[0025] In some configurations, a respiratory system configured to deliver a respiratory therapy to a patient and also configured to provide information related to the patient can comprise a respiratory device configured to deliver nasal high flow therapy, the respiratory device comprising a controller, wherein the controller can be configured to: receive measurements of a first parameter of a flow of gases or representative of performance of a component of the respiratory device, wherein the first parameter is a flow rate; receive measurements of a second parameter of a gases flow or representative of performance of a component of the respiratory device, wherein the second parameter can have an assumed effect on the first parameter, wherein the first parameter is calculated independent of the second parameter; determine whether the assumed effect is valid; and discard the first parameter from a validated first parameter dataset in response to

the assumed effect being invalid, the controller configured to use the validated first parameter dataset to estimate a respiratory rate of the patient.

[0026] In some configurations, the estimate can include an estimate of the patient's respiratory rate. In some configurations, the estimate can include an estimate of whether the patient is wearing a patient interface of the system.

[0027] In some configurations, the first parameter can be flow rate.

[0028] In some configurations, the device can further comprise a blower including a motor and the second parameter can be motor speed.

[0029] In some configurations, the assumed effect can be invalid if the motor speed is below a first threshold. In some configurations, the assumed effect can be invalid if recent changes in the motor speed are above a second threshold.

[0030] In some configurations, the second parameter can be pressure.

[0031] In some configurations, the first parameter can be flow rate, pressure, motor speed, power to motor, flow resistance, carbon dioxide data, humidity, variants thereof, or any combinations thereof.

[0032] In some configurations, the flow of gases can comprise ambient air.

[0033] In some configurations, the flow of gases can comprise a supplementary gas.

[0034] In some configurations, the supplementary gas can comprise oxygen.

[0035] In some configurations, the controller can be configured to measure a composition of the flow of gases after the ambient air and the supplementary gas have been mixed.

[0036] In some configurations, the assumed effect can be invalid if recent changes in the composition of the flow of gases are above a third threshold.

[0037] In some configurations, the controller can be configured to measure a flow rate of the supplementary gas into the device.

[0038] In some configurations, the assumed effect can be invalid if recent changes in the flow rate of the supplementary gas are above a third threshold.

[0039] In some configurations, the controller can be configured to control the flow rate of the supplementary gas into the device.