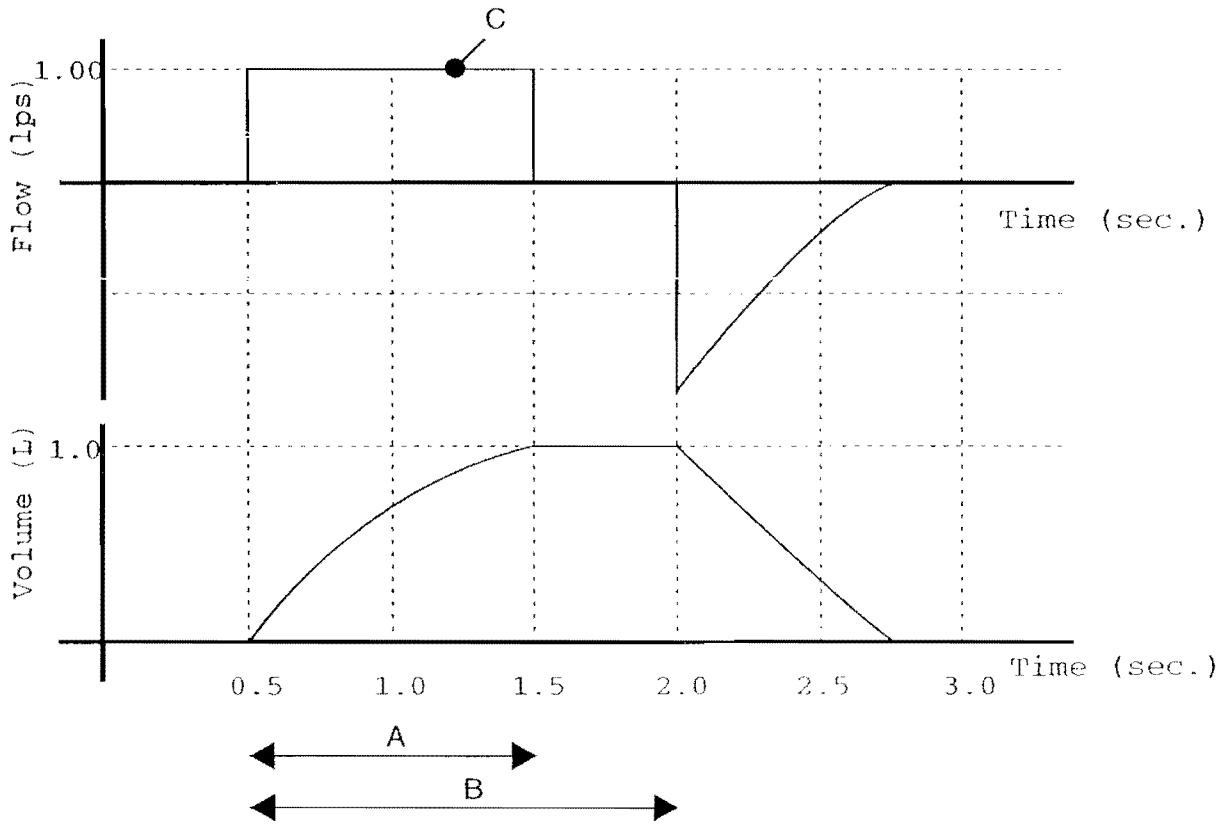
POST TEST

MECHANICAL VENTILATION WAVEFORM ANALYSIS

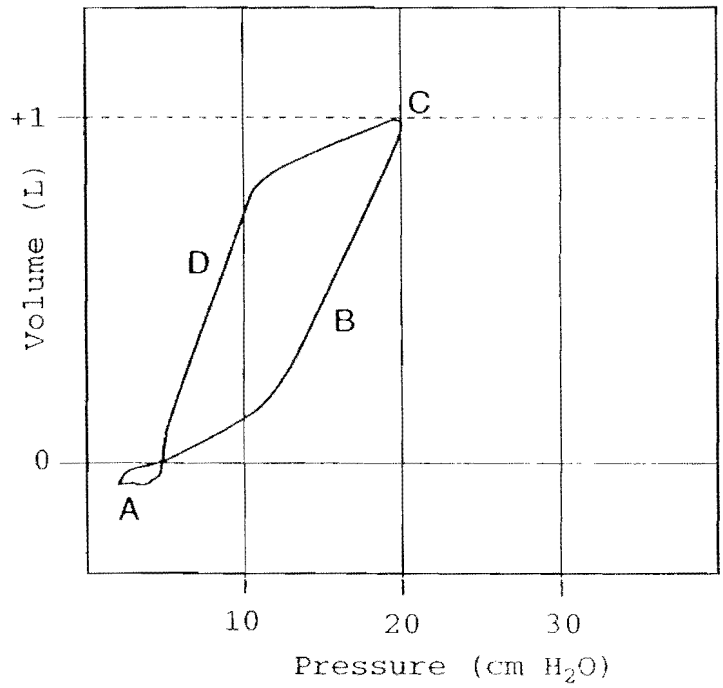
Questions 1-2 refer to the following graphic:



1. Which time duration is considered to be inspiratory time?
   a. (A 1 second)
   b. B (1.5 seconds)

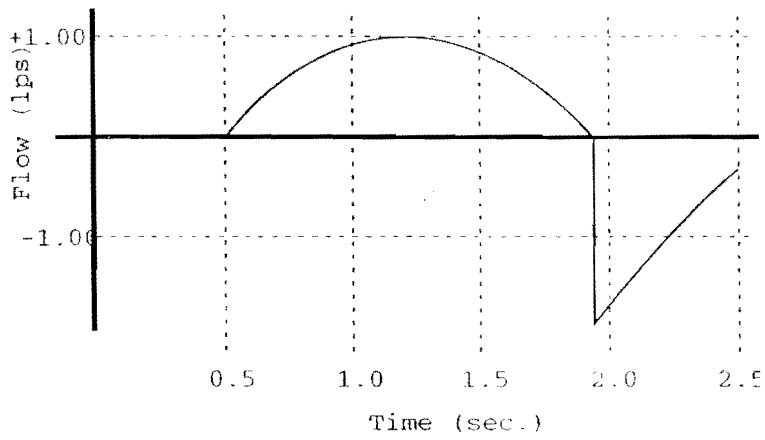
2. The peak inspiratory flow rate is equal to:
   a. 40 lpm
   b. 50 lpm
   c. 60 lpm
   d. 70 lpm

3. The expiratory limb of the following pressure/volume curve is indicated by point:



a. Point A
b. Point B
c. Point C
d. Point D

4. What type of flow pattern is used to generate the following flow tracing?

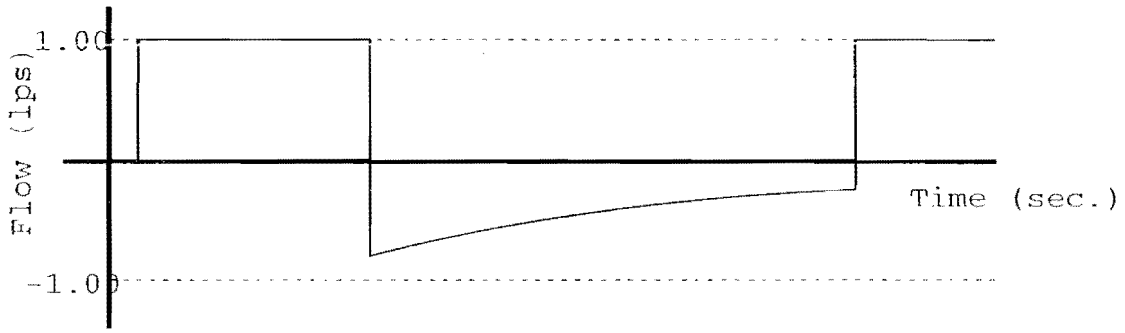


a. constant
b. decelerating
c. accelerating
d. sinusoidal

5. A patient receives a bronchodilator while receiving mechanical ventilation. What changes would you expect to see on their pressure/time, flow/time, and volume/time tracings if the treatment is effective?
   a. an increase in peak inspiratory flowrate
   b. a shorter expiratory time
   c. a smaller PIP-Pplt gradient
   d. an increase in plateau pressure

6. A patient in congestive heart failure is given furosemide. She is receiving mechanical ventilation in the volume mode. As her urine output increases, her PIP should:
   a. remain constant
   b. decrease
   c. increase

7. A patient is noted to have severe expiratory wheezing. The following flow/time tracing is indicative of a patient who is experiencing air-trapping.



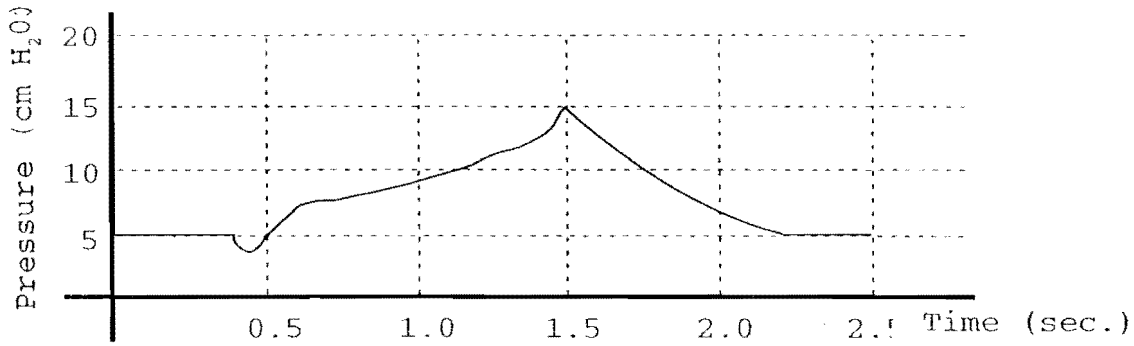
   a. true
   b. false

8. A patient is receiving volume ventilation and has air-trapping. His current blood gases on an FIO_2 of 0.4 are as follows:

   pH: 7.39
   PaCO2: 41 mm Hg
   PaO_2: 104 mm Hg

   Which of the following strategies would help decrease the severity of air-trapping?
   a. decrease the inspiratory flow rate
   b. increase the respiratory rate
   c. reintubate with a smaller ET tube
   d. decrease the tidal volume and allow $PaCO_2$ to rise

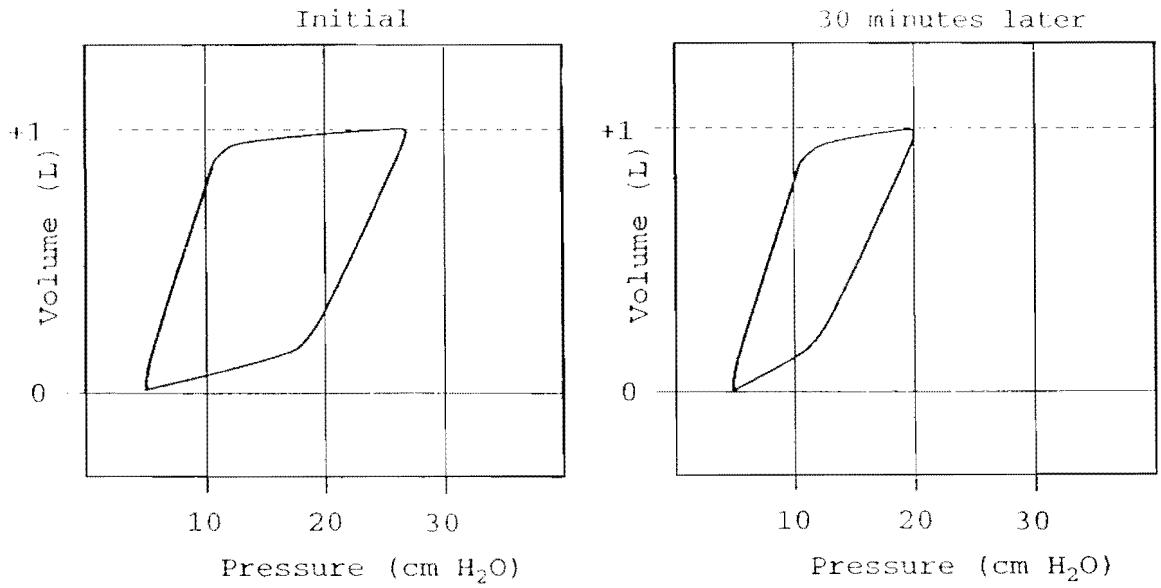
9. A respiratory care practitioner notes the following pressure/time tracing recorded from a patient with a constant inspiratory flow pattern selected.



Based on this tracing, the therapist concludes that:

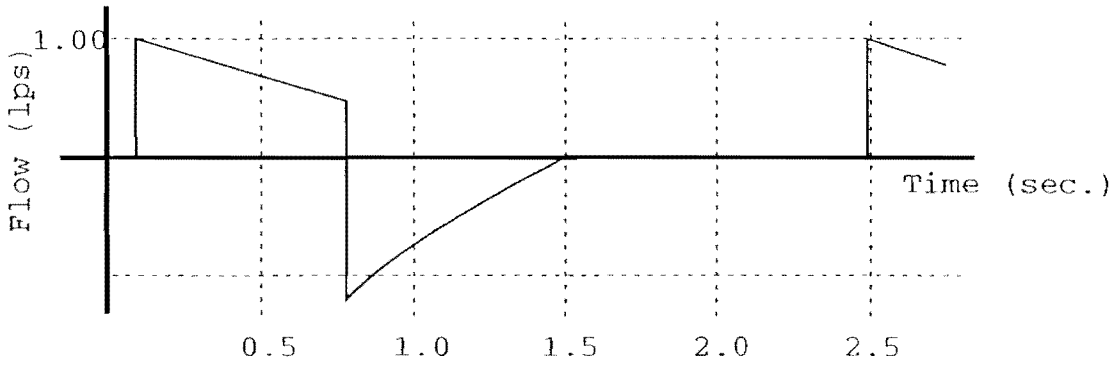
a. sensitivity is appropriately set
b. inspiratory flow pattern is actually decelerating in nature
c. inspiratory flow rate should be decreased
d. inspiratory flow is adequate to meet patient demands

10. Given the following compliance curves, determine what happened to the patient's respiratory status.



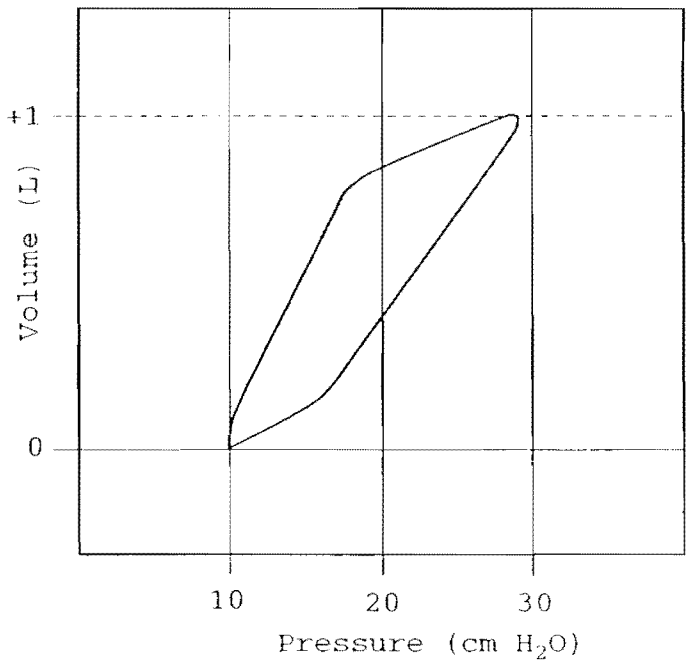
a. the patient's R_{aw} decreased
b. the patients dynamic compliance decreased
c. spontaneous tidal volume increased
d. inspiratory flow rate decreased

11. Given the following flow tracing from a patient receiving pressure control ventilation, what would you recommend to improve the distribution of airflow?



a. Decrease the mechanical respiratory rate
b. Decrease the patient's I:E ratio
c. Increase TI
d. Decrease TE

12. Based on the following pressure/volume curve, what would be the most appropriate level of PEEP (in cm H_2O) that should be maintained to prevent alveolar collapse at end-expiration?

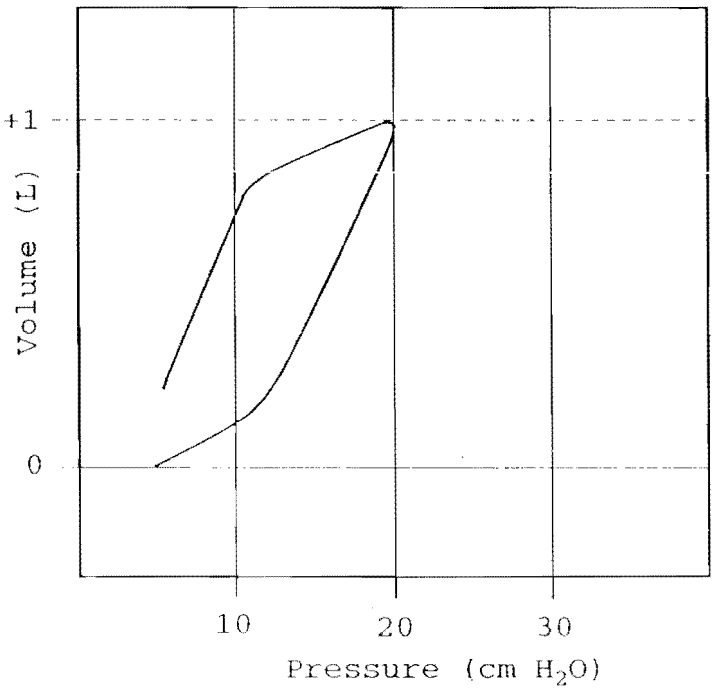


a. 10
b. 13
c. 16
d. 28

13. In general, as a patient's lung compliance falls, what will happen to PIP and Pplt?
    1. PIP will increase
    2. PIP will remain unchanged
    3. Pplt will increase
    4. Pplt will remain unchanged

    a. 1, 3
    b. 1, 4
    c. 2, 3
    d. 2, 4

14. A patient is receiving mechanical ventilation and suddenly becomes restless. You note the following pressure/volume tracing:



Based on this tracing you should:
    a. increase the level of PEEP.
    b. decrease the PIP.
    c. look for an airleak.
    d. increase the mechanical tidal volume.

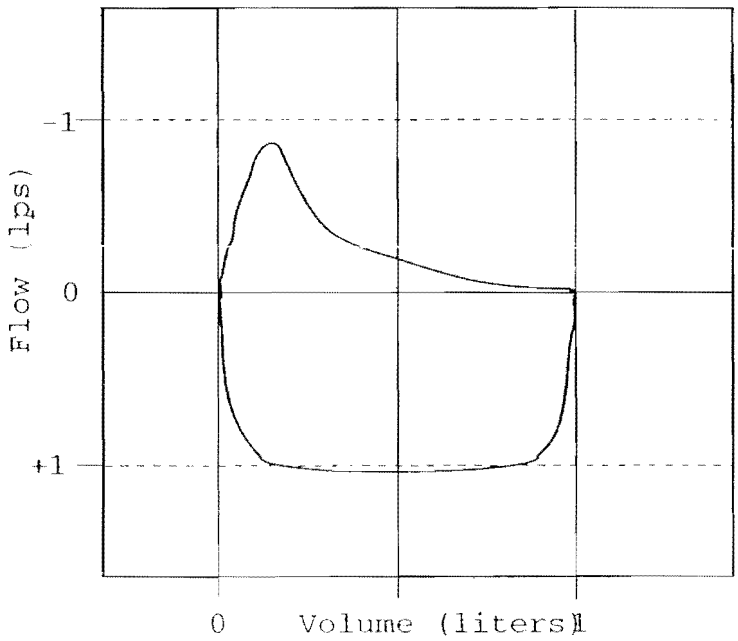
15. Which of the following types of curves may be used to determine a patient's static compliance?
    1. pressure/time plots
    2. pressure/volume curves
    3. flow/volume loops

    a. 1, 2, 3
    b. 1 and 2 only
    c. 2 and 3 only
    d. 1 only

16. Which of the following types of curves may be used to determine if a leak is present?
    1. volume/time plots
    2. pressure/volume curves
    3. flow/volume loops

    a. 1, 2, 3
    b. 1 and 2 only
    c. 2 and 3 only
    d. 3 only

17. A patient has the followng flow volume loop:



This tracing is compatible with the need for:

a. reintubation with a larger endotracheal tube.
b. correction of an airleak.
c. diuretic therapy.
d. administration of a bronchodilator.

18. In general, too small of an endotracheal tube would appear as a(n) _____ on a flow/volume tracing.

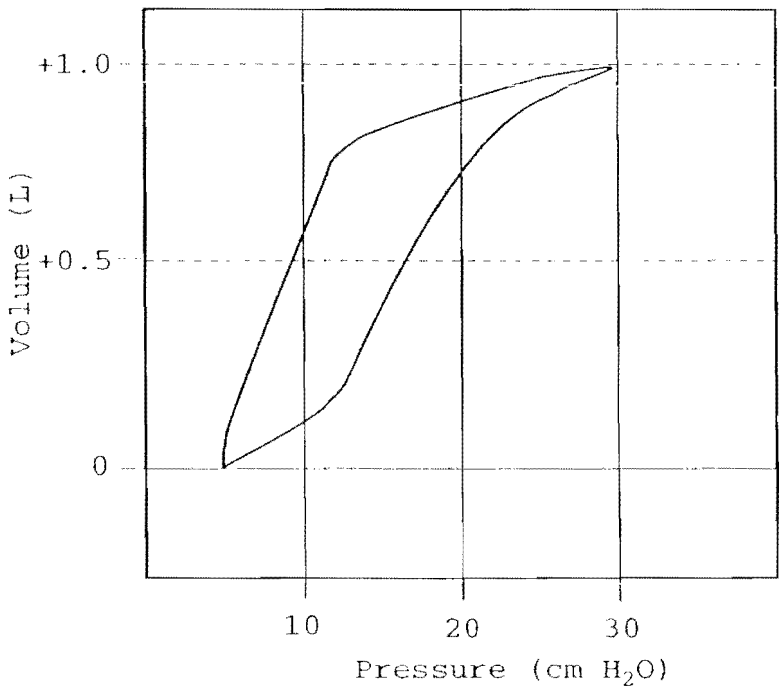
    a. fixed upper airway obstructionx
    b. obstructive drop in the peak and middle expiratory flow rates
    c. a curve in which inspiratory and expiratory flow curves do not match
    d. elevated plateau pressure value

19. On which of the following curves is it possible to measure autoPEEP levels directly?
    a. flow/time
    b. flow/volume
    c. pressure/volume
    d. none of the above

20. A patient has the following arterial blood gases on an FIO_2 of 0.40:
    pH: 7.32
    PaCO2: 51 mm Hg
    PaO_2: 88 mm Hg

$PaCO_2$

The therapist increases the patient's V_T to 1.0 L in order to normalize the patient's tidal volume. The following compliance curve is obtained:



According to the compliance curve, the therapist should:
    a. reduce the V_T to the previous level and increase the rate
    b. continue increasing the V_T
    c. increase the respiratory rate, keeping the V_T at 1.0 L
    d. decrease the respiratory rate and increase the tidal volume