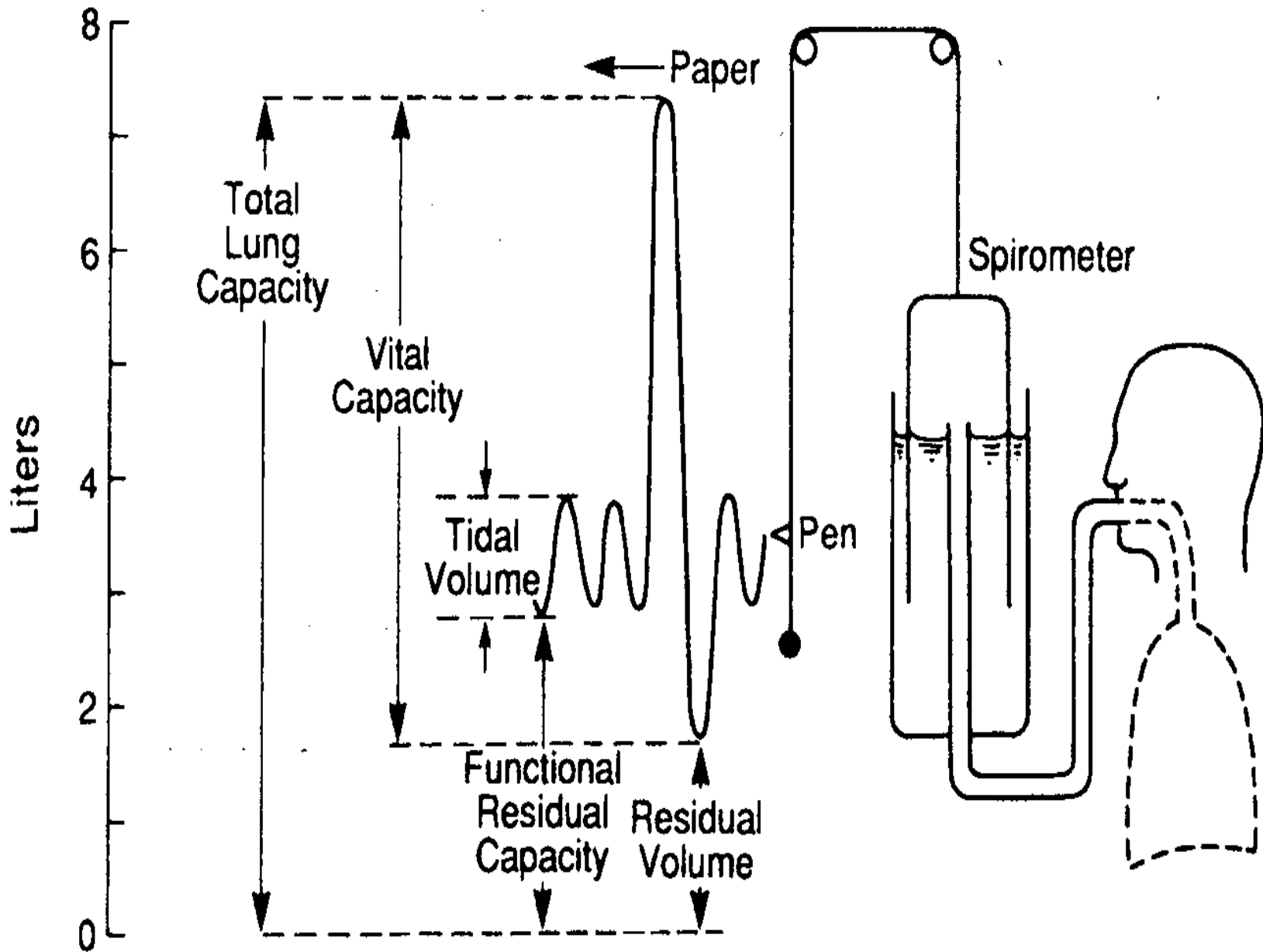


Respiratory system

**Measurement of lung
volumes and capacities
by spirometry.**

Spirometry :

is a method for measuring lung volumes during ventilation or respiration or breathing.



The spirometry consist from two chamber;

1.large chamber which filled with water and a piece mouth attached to it.

2. small chamber which inverted inside the first one.

Air blown into the inverted chamber causes it to rise and move an indicator along a scale.

The scale is calibrated in liter to give lung volume measurement.

3.pen.

4.paper speed.

Lung volumes:

1. Tidal volume: TV the air entering the lung during a single inspiration is equal to the volume leave the lung during expiration. (500ml)

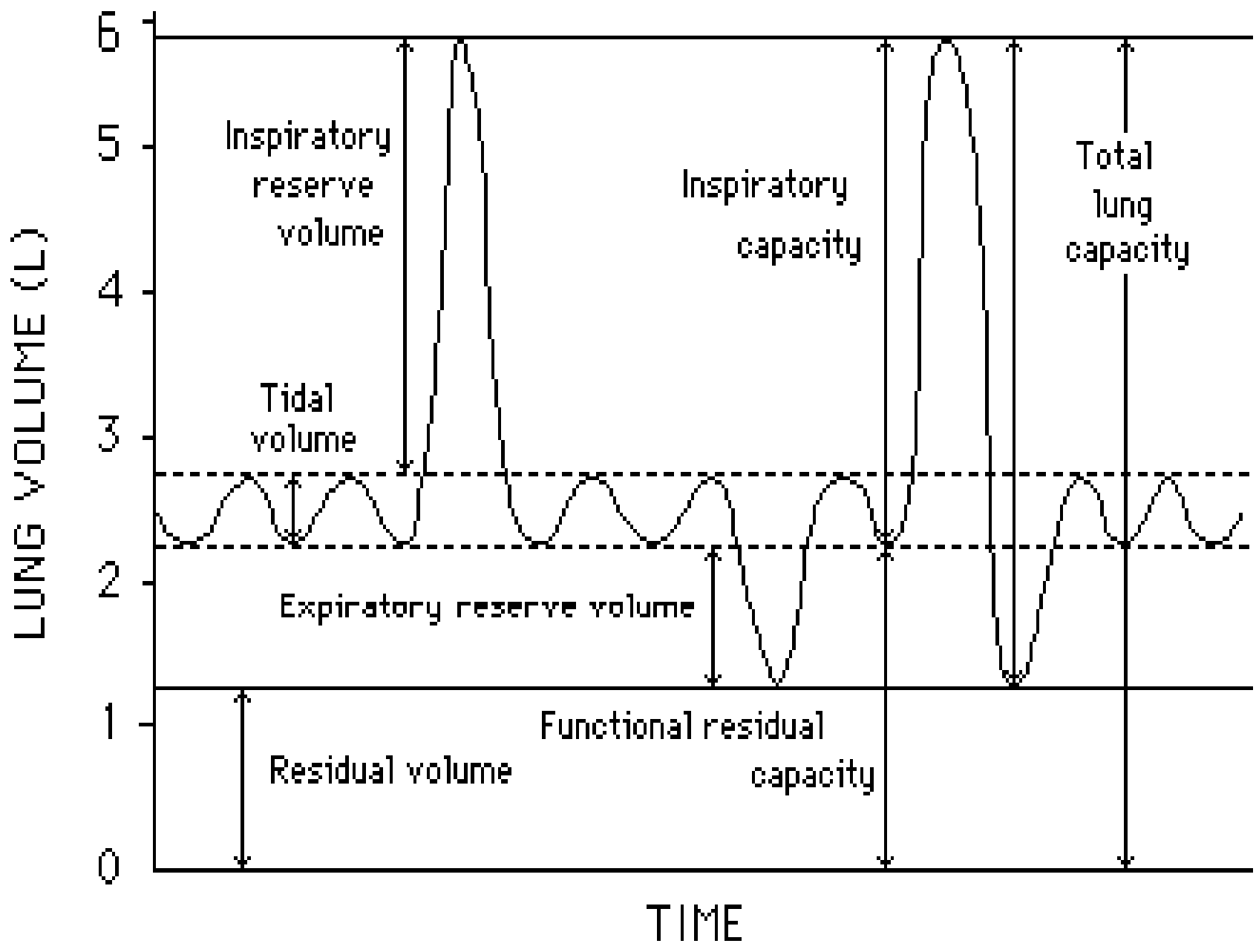
2. inspiratory reserve volume:(IRV)
the maximum amount of air that
can be inspired above normal
inspiration during deep
inspiration.(3000ml)

3. expiratory reserve volume:

(ERV) the maximum amount of air that can be expired after normal expiration. (1200ml)

4.residual volume(RV):

even after active expiration air still remain in the lung , this for aerated the alveoli between inspiration and expiration.(1000ml).



Lung capacities:

1.vital capacity:(VC)

IRV+TV+ERV

2.Total lung capacity:(TLC)

VC+ residual volume RV

3. inspiratory capacity: (IC)

TV+IRV

**4. functional residual
capacity(FRC):
ERV+RV**

Medical application:

Two type of lung disorder can be identical by spirometry

1.obstruction lung disorder: such as bronchitis and asthma, decrease ability to empty lung quickly during a forced expiration

2.restricted lung disorder: decrease in lung compliance such as emphysema.





