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LUNG

THE SEQUENCE OF WORKFLOW ,,,

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CONDUCTING = NOSE,LARYNX AND TRACHEA (large roadways)
 DISTRIBUTING = BRONCHI,BRONCHIOLES (distributors or distributing streets or small roads)
  TRADING = ALVEOLI (tradepoint)
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Respiratory physiology »> pulmonary ventilation »» forced expiratory flow rate »> maximal expiratory flow rate Respiratory physiology »> pulmonary ventilation »» forced expiratory flow rate »> peak expiratory flow rate Respiratory physiology »> pulmonary ventilation »» forced expiratory volume

respiratory physiology »> total lung capacity »» functional residual capacity »» residual volume respiratory physiology »> total lung capacity »» functional residual capacity »» expiratory reserve volume respiratory physiology »> total lung capacity »» vital capacity »> expiratory reserve volume respiratory physiology »> total lung capacity »» vital capacity »> inspiratory capacity »> tidal volume respiratory physiology »> total lung capacity »» vital capacity »> inspiratory capacity »> inspiratory reserve volume

LUNG IS NOT A HOLLOW ORGAN AND NOT A SOLID ORGAN RATHER IT IS AN ELASTIC AND COMPACT ORGAN DIFFERENT FROM OTHER LANDS.HENCE IT IS A CONGESTED PLACE FILLED WITH INHABITANTS WHO LIVE IN A C SHAPE SERIES OF GROUP OF PEOPLE WITH A CENTRAL SPACE OR TANK CALLED GAS TANK THROUGH WHICH EXCHANGE OF GASES TAKES PLACE.ALVEOLAR SEPTA DIVIDES THE TWO WORKPLACE OR ALVEOLI SIMILAR TO THE HEART LAND WHERE ATRIAL SEPTA AND VENTRICULAR SEPTA DIVIDE THEM.

traffic = air inspiration = inward movement of traffic expiration = outward movement of traffic inspiration and expiration both cannot occur at same time ,similarly outward movement of traffic and inward movement of traffic cannot occur at same time but outward movement of traffic occurs after the inward movement and these two are repeated again and again in a cycle manner. this cycle is called breathing and is regulated by muscles (this land is governed by communication(nervous system).

IMAGINE alveoli as small gas balloons which are connected through pipes for filling and pumping A balloon is a flexible bag that can be inflated with a fluid, such as helium, hydrogen, nitrous oxide, oxygen, air or water. However, balloons have a certain elasticity to them that needs to be taken into account. The act of stretching a balloon fills it with potential energy. When it is released, the potential energy is converted to kinetic energy and the balloon snaps back into its original position, though perhaps a little stretched out. When a balloon is filled with air, the balloon is being stretched. While the elasticity of the balloon causes tension that would have the balloon collapse, it is also being pushed back out by the constant bouncing of the internal air molecules. The internal air has to exert force not only to counteract the external air to keep the air pressures even, but it also has to counteract the natural contraction of the balloon. Therefore, it requires more air pressure (or force) than the air outside the balloon wall.

balloons = alveoli single balloon is connected to single pipe all single balloon with pipes connect together to form bronchi all these bronchi connect to the main road called trachea the terminology to be understood here is

residual = remaining space occupied by traffic (after maxmimum traffic outflow) expiratory reserve = stock space (after normal traffic outflow the maximum space which can be emptied by exhalation) inspiratory reserve = stock space (after normal traffic inflow the maximum space which can be filled by inhalation) capacity = available space inspiratory capacity = total available space for filling the stocks (stock space filled normally(TIDAL VOLUME) + stock space filled forcefully(INSPIRATORY RESERVE VOLUME)

vital capacity = important available space after emptying , forced volume = forcibly increasing space tidal or flowing in the form of tides = quiet breathing (quiet movement of traffic) forced flow =

TLC(Total lungland space) - Total lung capacity: the volume(space) in the lungs(lungland) at maximal inflation, the sum of VC and RV.

TV Tidal volume: that volume of air(traffic) moved into or out of the lungs(lungland space) during quiet breathing(normal traffic without external force)

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                 (TV indicates a subdivision of the lung; when tidal volume
is precisely measured, as in gas exchange calculation,
                  the symbol TV or VT is used.)
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RV Residual volume: the volume of air(traffic) remaining in the lungs(lungland) after a maximal exhalation(outflow of traffic)

ERV Expiratory reserve volume: the maximal volume of air(traffic) that can be exhaled(moved out) from the end-expiratory position(ending outflow traffic position)

IRV Inspiratory reserve volume: the maximal volume(traffic) that can be inhaled(moved in) from the end-inspiratory level(end inflow traffic level)

IC Inspiratory capacity: the sum of IRV and TV

IVC Inspiratory vital capacity: the maximum volume of air(traffic) inhaled(coming inwards) from the point of maximum expiration(outflow)

VC Vital capacity: the volume of air breathed out after the deepest inhalation.

VT Tidal volume: that volume of air moved into or out of the lungs during quiet breathing

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                 (VT indicates a subdivision of the lung; when tidal volume
is precisely measured, as in gas exchange calculation,
                  the symbol TV or VT is used.)
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FRC Functional residual capacity: the volume in the lungs at the end-expiratory position

RV/TLC% Residual volume expressed as percent of TLC

VA Alveolar gas volume

VL Actual volume of the lung including the volume of the conducting airway.

FVC Forced vital capacity: the determination of the vital capacity from a maximally forced expiratory effort

FEVt Forced expiratory volume (time): a generic term indicating the volume of air exhaled under

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                   forced conditions in the first t seconds
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FEV1 Volume that has been exhaled at the end of the first second of forced expiration

FEFx Forced expiratory flow related to some portion of the FVC curve; modifiers refer to amount of FVC already exhaled

FEFmax The maximum instantaneous flow achieved during a FVC maneuver

FIF Forced inspiratory flow: (Specific measurement of the forced inspiratory curve is denoted by nomenclature

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                 analogous to that for the forced expiratory curve.
                For example, maximum inspiratory flow is denoted FIFmax.
                Unless otherwise specified, volume qualifiers indicate the
volume inspired from RV at the point of measurement.)
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PEF Peak expiratory flow: The highest forced expiratory flow measured with a peak flow meter

MVV Maximal voluntary ventilation: volume of air expired in a specified period during repetitive maximal effort

lungland also has smallrooms called exchangepoint. the rooms are present opposite to one another,they are present with windows and doors through which the exchange of materials takes place . cells are always arranged in series ,so the rooms are also present adjacent to one another

$\dot{V}$ or V — ventilation — the air that reaches the alveoli (source »> path »» goal (reaching the alveoli) $\dot{Q}$ or Q — perfusion — the blood that reaches the alveoli via the capillaries (reaching the alveoli via capillaaries) goal

when the two goals(trading zones) coincide with each other it results in a process of exchange, when the two goals(depart) from each other it results in a process of removal (plan for action)

The V/Q ratio can therefore be defined as the ratio of the amount of air reaching the alveoli per minute to the amount of blood reaching the alveoli per minute—a ratio of volumetric flow rates. These two variables, V & Q, constitute the main determinants of the blood oxygen (O_2) and carbon dioxide (CO_2) concentration.

Extreme alterations of V/Q An area with perfusion but no ventilation (and thus a V/Q of zero) is termed shunt. An area with ventilation but no perfusion (and thus a V/Q undefined though approaching infinity) is termed dead space.