

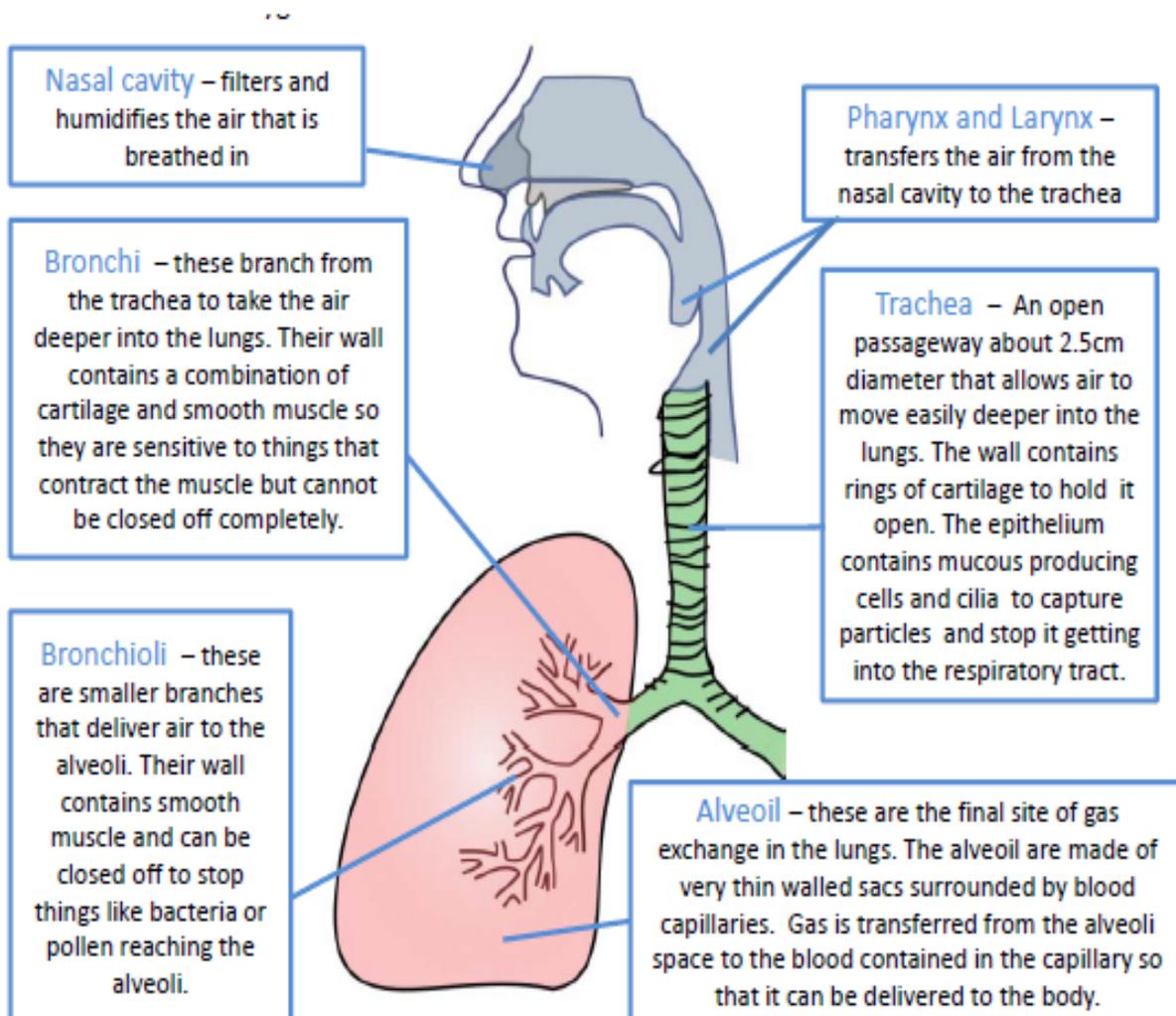
18th March 2020

Title: Infection Prevention and Control - Article No 2

Aim

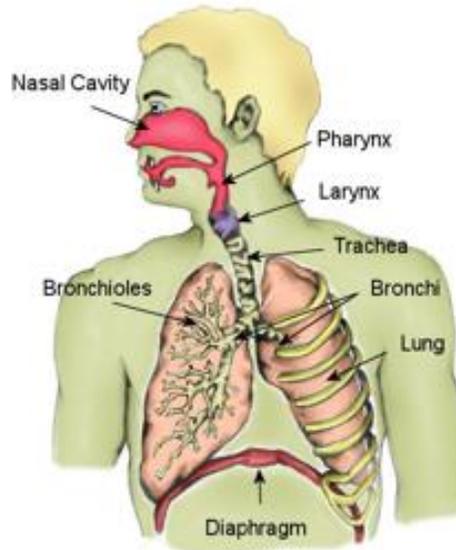
1. Review of the respiratory system.
2. Chain of infections.
3. Breathing exercises.
4. Air Diffusers and the use of Essential oils in them.

The Respiratory System Overview

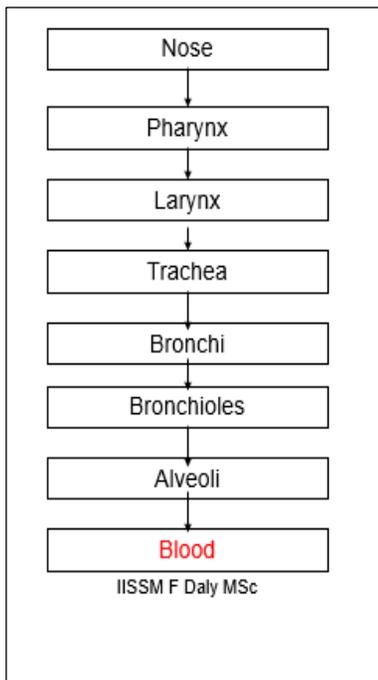


The Respiratory System

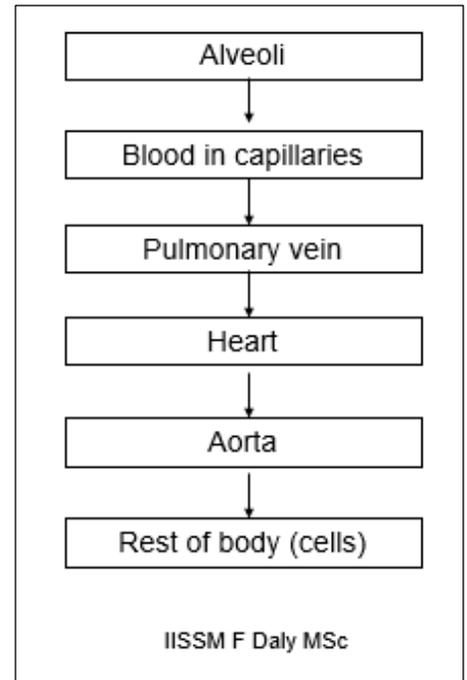
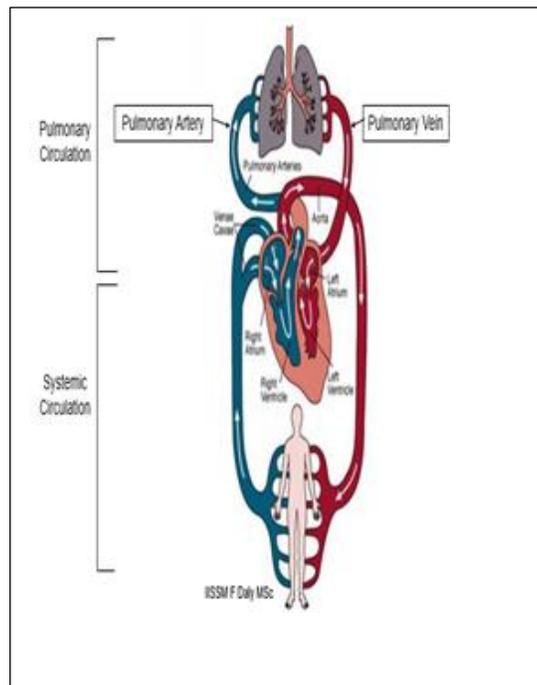
- What is it?
 - Breathing equipment
- What does it do?
 - Takes air (O₂) from outside body circulates through cells and tissues and excretes excess and waste (CO₂)
- Essential for life
 - Cannot live without it for more than a couple of minutes



Passage of Air from Nose to Lung



Passage of gases within the body



It is very important that we revise the respiratory system. I am only including pictures as they are an easy way to revise the system. If you require the theory lecture, please email me.

2. Chain of infection.

An infection is an invasion of a harmful micro-organism into the body, that can result in a disease or an illness.

This is dependant of three main factors:

1. **Number of Microbes:** each micro-organism has a set contagious dose. If a person has a weak immune system (immunosuppressed), the infective dose required to cause an infection will be lower. Therefore, with Covid-19 they say that some people are more at risk, who have underlying medical conditions
2. **Virulence:** This is the capacity for a microbial strain to produce a disease.
3. **Immune status of the person:** Important factors include extreme age, immunosuppressant patients, transplant patients, cancer patients, cardiac, diabetic to name but a few. People who are immunized for certain infectious diseases are less likely to get the same disease.

I need to stress that contact with a microbe does not always automatically lead to an infection.

For an infection to occur, a chain of events occurs. They are subdivided into 6 links.

1. **Causative agent or infectious agent.** These microorganism (microbes) can be a fungus, bacteria, virus, protozoa, rickettsia or helminths Any microorganism can cause an infection if all the links are present. Microbes are found in the environment on humans and animals.
2. **Reservoir/ Host:** this is the place where an infectious agent lives and reproduces. This could be an infected person, animal, food, item/equipment or environment. Wherever the microbe can survive and multiply. A “human reservoir” can be either an “infected case” or a “carrier”. An “infected case” is a person with an acute clinical infection, while a “carrier” is a person who is colonized with a specific pathogenic microbe.

A carrier falls into 4 categories:

“**incubatory carrier**” – a person who has the infection, incubating the illness but has not shown the symptoms. “Incubation periods” can vary from one disease to another and person to person

“**Convalescent carrier**” is a person in the recovery stage but may continue to shed the pathogen.

“An **intermittent carrier**” occasionally sheds the pathogen from time to time.

“**Asymptomatic carrier**” presents a risk of cross-infection because their illness/infection go unrecognised.

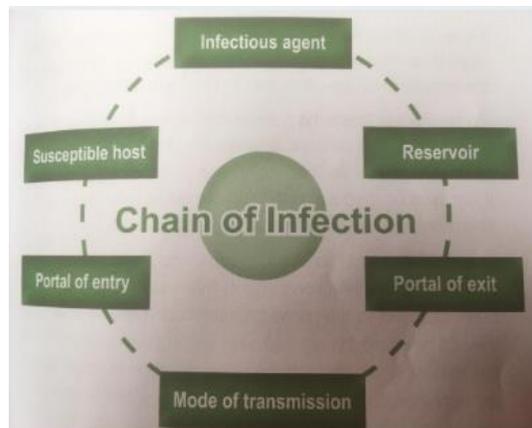
Adherence to a accepted standard to infection management is vital if the link of an infection is to be broken.

3. **Portal of Exit.** this is the means by which the infection leaves the host. This can be the site where the micro-organism grows. Common Portals in the human body include the skin. the respiratory tract, genitourinary, gastrointestinal tract, mucous membranes (eyes, nose and mouth), broken skin.

- 4. Mode of transmission.** This is the way in which the microorganism travels from the reservoir to the host. This can be either direct or indirect.
- Direct contact** is where there is physical contact with a person. Hand washing is the most effective way to prevent transmission.
- Indirect Contact** occurs when a infectious agent is transmitted through a contaminated intermediate object. (item and equipment) Appropriate environmental cleaning methods are required.
- Droplet transmission** where microorganisms come inContact with the mucous membrane of a person’s nose, mouth eye’s etc.
- Airborne transmission,** where pathogens are transmitted through inhalation of small droplets into the respiratory system. 06
5. **Portal entry** This is where the infected agent enters a new “host” this is usually the same as “**Portal of exit**” No 3
6. **Susceptible host.** This is the person who is about to become contaminated by the infectious agent. We must remember that the body has many defence mechanisms for resisting entry and multiplication of pathogens. Certain people are classified more vulnerable to infections, these include the elderly, the very young, pregnant women, and those with underlying medical health problems. Those whose immune system is compromised are also classified as vulnerable.

The chain of infection can be broken in the following ways:

- Correct hand washing
- Segregation of healthcare linen
- Segregation of healthcare risk and non-risk waste.
- Control of Dust
- Cleaning of equipment and environmental cleaning.



Nifast 2013

3. Breathing exercises.

While many of us have good immune systems and have healthy respiratory systems in the present covid-19 virus it would be a good idea to practice “**breathing exercise**”

Exercises for improve Lung Capacity

Pushing Out: To do this, stand upright on flat ground. Then bend over the waist, keeping both knees loose and exhaling as much as you can. Follow this up by regaining your stature and inhaling in the same speed. Fill in the maximum possible amount of air in your lungs and hold it for around 20 seconds. In case you cannot manage this, see how much time suits you. During this counting, extend your arms overhead completely. Then finally, relax, exhale and lower your arms gradually. Do this a minimum of 4 times.

The Oriental Breath: For this, inhale in three short bursts first through the nose. Do not exhale. Now, while you inhale for the first time, raise your arms at shoulder level in front of you. On the next one, open your arms outward and by the third inhale, your arms should be overhead. After this, when you exhale, get back your arms in their original position in a circular motion. Try doing it for around 10 times.

Rib Stretch: This is a good exercise for improving lung capacity. Exhale the last bit of air out of your lungs while standing erect. Breathe in gradually and expand your lungs to the fullest. Hold your breath for around 20 seconds. During the counting, keep your hands on your hips with your thumbs in the front and little finger on the small of your back. Exhale slowly and relax and repeat it at least 3 times.

Abdominal Breathing: Begin with lying on your back in a comfortable posture. Put one hand on your chest and another on your abdomen. Inhale deeply and slowly and feel the pull at your mid section. Ideally, while you do this, the hand on your belly will rise higher than the one on your chest. Now exhale only through your mouth. Then breathe in from your nose and hold it for around 7 seconds. Breathe out till you finish counting up to 8. As you come close to finishing this, squeeze your abdominal muscles to make sure there is no residual air.

Numbered Breaths: With eyes closed take a deep breath and then breathe out the last bit of air in your lungs. Inhale once again. Now as you do that imagine the number 1 in your mind and concentrate on inhalation at the same time. Breathe out, after holding your breath for 2 seconds. Again, exhale and as you do that, picture the number 2 in your mind. Similarly, breathe in visualizing number 3. Hold the breath for 3 seconds. Likewise exhale saying 4 and inhale saying 5 and continue respectively till the count of 8. Finally, repeat the entire procedure from 1 to 8 and open your eyes slowly.

4. The use of Air diffusers with essential oils may be of benefit in the home.

I have used an Ultrasonic Essential Oil Diffuser for years and my regime at present is in the morning I put on the diffusers in both the bedroom end and the kitchen for about an hour. Depending on the size and recommendation of the company re your diffuser, I put between 6-10 drops in with the water. I alternate the oils between:

Tea Tree (*Melaleuca alternifolia*), **Be cautious using this oil near animals.**

Rosemary (*Rosemary officinalis*)

Lemon (*Citrus limon*)

Lavender spike (*Lavandula Lactifolia*)

I also use other oils, but they are not as easily available and or have gone up in price. Make sure the oil you choose **is high in anti-viral properties for the present medical climate**

All these oils are easily available, I interchange oils, I never use the same oils every day.

When anyone calls, I put on the diffuser immediately, I explain why, and no one has any issues with this.

Keep safe everyone.

Our next article includes the immune system and includes advice on the use of herbs and recopies to protect and or improve the immune system. Due on the 20th-21st March