

Pathology Class 5:

Signals, Surfaces, and Silent Risks (Ages 10-13yo)

1. Which nutrient deficiency is most strongly associated with bleeding gums and poor wound healing?
A. Vitamin C
B. Vitamin D
C. Vitamin B12
D. Zinc
2. The RDA (Recommended Dietary Allowance) is primarily designed to:
A. Optimize long term health for each individual
B. Prevent classic deficiency diseases in most people
C. Maximize sports performance
D. Match genetic needs
3. Which pattern is most associated with niacin (vitamin B3) deficiency?
A. Night blindness and dry eyes
B. Bone deformities
C. Dermatitis, diarrhea, and dementia
D. Easy bleeding
4. Which feature makes a mole more concerning as a warning sign?
A. It is small and light colored
B. It appeared in childhood
C. It is perfectly round
D. It changes over time in size, shape, or color
5. Warts are caused by:
A. A virus
B. A mineral deficiency
C. Sun damage
D. An autoimmune reaction only
6. Athlete's foot is best described as:
A. A nerve condition
B. A fungal skin infection
C. A vitamin deficiency
D. A pressure injury
7. Why can modern diets still produce nutrient deficiencies even with enough calories?
A. Calories automatically block vitamin absorption
B. Cooking always destroys all nutrients
C. Food is often less nutrient dense and highly processed
D. The body stops absorbing minerals after age 30
8. High blood pressure is called a silent condition because it:
A. Only happens at night
B. Makes no sound in arteries
C. Only affects older adults
D. Can cause damage without obvious symptoms

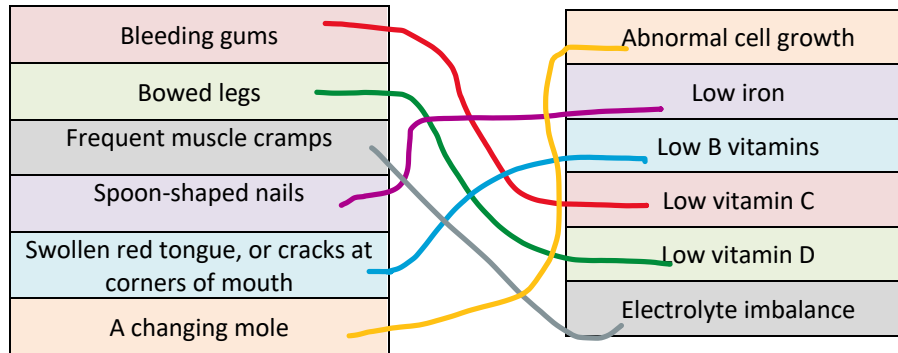
9. Which hygiene habit most helps reduce infection spread from hands?
- A. Regular handwashing and short clean nails**
 - B. Using lotion
 - C. Using antibacterial hand gel
 - D. Rinsing with water only
10. The lesson emphasizes that repeated small risks and exposures:
- A. Rarely matter
 - B. Only affect skin
 - C. Always cause immediate symptoms
 - D. Can accumulate into long term damage**

Home Activity – Answer Key

Activity 1: Clue → Cause Mapping

What to do:

Match the body clue to the most likely underlying issue.



Activity 2:

What to do:

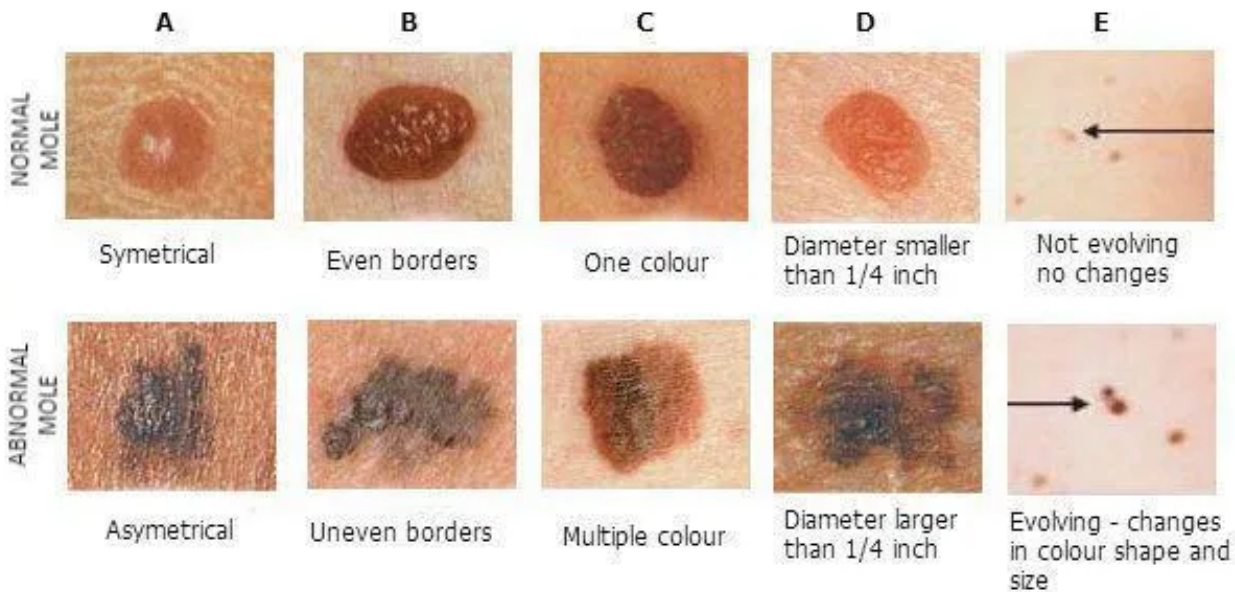
With a grown-up, review the ABCDE rule:

Look at 2–3 moles on yourself and a (willing) family member.

Are they:

- Symmetrical?
- One color?
- Stable over time?

We are practicing **noticing** — not diagnosing.



Activity 3:

What to do:

After a bath, look at your feet. Check between toes, on your heels. Is the skin smooth? Is it cracked? Is itchy or red? Talk about why keeping feet clean and dry matters! And putting on fresh socks every day! Sometimes multiple times a day (if you're doing sports or outdoor activities and sweating a lot).



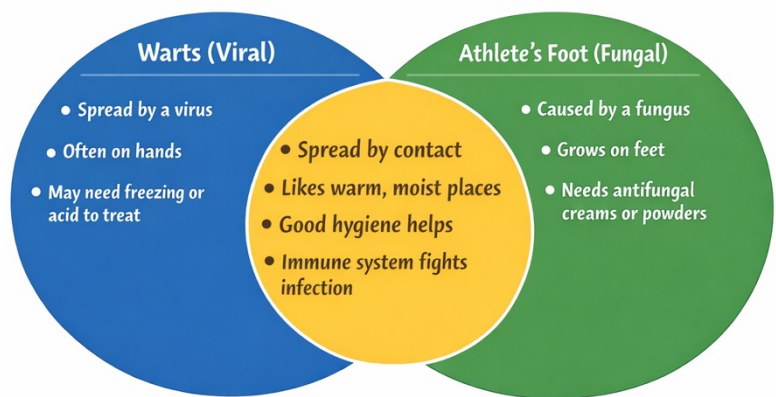
Activity 4:

What to do:

Compare warts and athlete's foot. If you want, draw a Venn Diagram that shows how they are the same and different.

- How are each transmitted?
- How contagious are each?
- Can the immune system fight them?
- What is the role of hygiene?
- What are the treatment differences?

Warts and athlete's foot are both infections that spread through contact, especially in warm, moist places like locker rooms or shared showers. Warts are caused by a virus, while athlete's foot is caused by a fungus. Both can be contagious, but athlete's foot often spreads more easily in damp environments. The immune system can fight both infections, although warts may take longer to go away on their own. Good hygiene helps prevent both, but treatment is different: warts may need freezing or special acids, while athlete's foot is treated with antifungal creams or powders.



Case Study Box

Barrier Failure → Viral Entry → Immune Clearance

As a child, one student frequently had “skinned knees” from playing outside. Instead of stopping to fully clean the scrapes, the blood was wiped off and play continued. Years later (around ages 13–17), a cluster of plantar-type warts developed on one knee where the skin had repeatedly healed from abrasions.

The warts were frozen off several times, but each time they returned and the patch became larger. Then, within about six months of starting college, the warts suddenly disappeared on their own and never returned.

What likely happened?

Warts are caused by a virus (HPV) that can enter through small breaks in the skin. Repeated abrasions may have allowed the virus to enter before the skin fully healed. The freezing treatments removed surface tissue, but if virus-infected cells remained deeper in the skin, the wart could regrow.

Years later, the immune system likely mounted a stronger, more targeted response and cleared the infected cells. Once the immune system recognizes the virus effectively, warts can disappear without further treatment.

Discussion Questions:

1. **What failure mode allowed the virus to enter?**
Barrier failure. The repeated abrasions (skinned knees) created small breaks in the skin, which allowed the virus to enter before the tissue fully healed.
2. **Why might freezing remove the wart but not the virus completely?**
Freezing destroys the visible surface tissue, but if virus-infected cells remain in deeper layers of the skin, the virus can continue multiplying and the wart can grow back.
3. **Why can the immune system sometimes clear warts years later?**
Over time, the immune system may better recognize the virus and activate a stronger targeted response. Once immune cells identify and attack the infected skin cells effectively, the wart can disappear.
4. **What does this case teach us about hygiene and barrier protection?**
It shows that cleaning and protecting skin injuries helps prevent viruses from entering. Intact skin is an important barrier, and proper wound care reduces infection risk.

Key Principle:

The body gives signals, but it also has the capacity to correct problems when the immune system becomes strong enough to respond effectively.