

Grade Five: Integration with Science and Technology Understanding Life Systems: Human Organ Systems

Key Understandings of Asthma

Developing a basic understanding of asthma

- Asthma is a disease of the airways
- One in five Canadian children suffer from asthma. In a class of 30 children, three are likely to have asthma
- Asthma has two components:
 - The muscles surrounding the airways tighten, narrowing the airways, making it difficult to breathe. When this occurs you get the symptoms of asthma. These symptoms are treated with "rescue" medications on an as-needed basis.
 - The muscles that surround the airways become sensitive and start to twitch and tighten, causing the airways to narrow. This usually occurs if inflammation is not treated. Airway inflammation is treated with daily anti-inflammatory medication.
- When inflammation is not properly addressed, airways react to common triggers of asthma including cold air, flu or upper respiratory infection, exercise, tobacco smoke, perfume and exposure to allergens such as pollen, dust and animal dander
 - 85% of exacerbations are triggered by colds in young children
- Common symptoms of asthma include difficulty breathing, wheezing, coughing and chest tightness
- Asthma cannot be cured, but it can be controlled
- Controlling usually requires several medications. One or several types of "controllers" may be needed to fully address the underlying inflammation and "rescue" medications for asthma attacks.

Developing a basic understanding of the September Asthma Peak

- Asthma attacks increase in September. With the start of a new school year kids are in close contact with each other and germs, like the common cold. Also, low use of appropriate asthma medications may fuel the September Asthma Peak and can increase asthma attacks throughout the school year.
- The viruses responsible for the majority of September asthma exacerbations include the rhinovirus, coronavirus, influenza virus, parainfluenza virus and respiratory syncytial virus
- 20-25% of annual hospital admissions for asthma of children in Canada occur in September
- On average, the hospitalization rate for school-age children peaks 17.7 days after Labour Day

What parents and children can do to prevent the September Asthma Peak

1. Reduce cold transmissions
 - School-aged children have an average of eight colds per year which is equivalent to one asthma flare-up per month if asthma is not controlled
 - **To reduce cold transmissions children should practice consistent and correct hand washing, obtain enough rest and eat a balanced diet**
2. See the doctor before the child goes back to school
 - If a child tends to catch a lot of colds and has asthma, mention this to the doctor

- Ask the doctor for medication that will help prevent asthma attacks caused by the common cold

Science and Technology: Understanding Life Systems-Human Organ Systems

Specific Expectations:

1.1 Assess the effects of social and environmental factors on human health, and propose ways in which individuals can reduce the harmful effects of these factors and take advantage of those that are beneficial

3.4 Identify common diseases and the organs and/or body systems that they affect (e.g. asthma and emphysema affect the lungs [respiratory system])

Three-Part Lesson

Activating Prior Knowledge

- The teacher will ask students to arrange themselves into two groups. One group is the inner circle and the other group is the outer circle.
- Each person in the inner circle will be assigned the task of asking one question they have about asthma and the outer circle will be assigned the task of stating one or more facts they currently know about asthma.
- The students will stand facing one another and the teacher will begin the movement and sharing of information by positioning one student to be standing facing another. The teacher can then ask students in the outer or inner circle to rotate once or multiple times, ensuring the other circle remains still and encouraging students to speak with more than one student asking a question and sharing their idea.
- After multiple rotations the teacher can then chart the questions and facts on a KWL chart. The first two columns will be completed and throughout the study of asthma the third column can be filled in.

What I know about asthma	What I wonder about asthma	What I have learned about asthma

Working on It

The teacher will display a poster of the respiratory system with the appropriate labels indicating how oxygen and carbon dioxide are exchanged in the process of breathing and demonstrate to the students what happens when an asthmatic episode occurs. Students will brainstorm with a partner different ways to create a model of a lung to demonstrate how it functions in the human body and what happens when there is asthma. Students will make a list of the materials required and draft a diagram of their model. The creation of the model can be three dimensional or two dimensional, depending on what the students plan.

Students with a partner can chart all of the environmental factors that could contribute to asthmatic episodes, focusing on the common cold. The teacher can escort the students to various locations within the school: lunchroom, library, office, schoolyard, washrooms and any other high use areas. Students with a partner can list of how germs can be transferred from

student to student within these high use areas. Students will be encouraged to generate as many ideas within the timeframe of the lesson.

Consolidation

Students will gather into groups of four, share their lists and create a how-to-list of preventative measures in the classroom/school building to prevent students from becoming ill. Preventative measures can include a constant supply of tissue available in the classroom, maintenance of plants to assist with air quality, paper towels and hand sanitizer available within the classroom, posters about correct hand washing, etc. This activity will be implemented during the early part of the school year, so the measures can be established as classroom norms that can be practiced throughout the school year. They can also be posted in the classroom throughout the year to remind students.

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