

## Grade Six: Integration with Mathematics Data Management and Probability

### 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

### **Mathematics: Data Management and Probability Strand**

Given the statistical information about asthma the connection to this strand in mathematics was quite evident. The teacher would share the information with her students by question and answer or charting key points.

#### Overall Expectations:

- Collect and organize discrete or continuous primary data and secondary data and display the data using charts and graphs, including continuous line graphs
- Read, describe and interpret data and explain relationships between sets of data

#### Specific Expectations:

Demonstrate through investigation an understanding of how data from charts, tables and graphs can be used to make inferences and convincing arguments (e.g. describe examples found in newspapers and magazines)

### **Three-Part Lesson**

#### Activating Prior Knowledge

##### *Think, Pair, Share*

The teacher will ask students to think aloud with a partner and discuss the following:

- What is asthma?
- What happens to the respiratory system when an asthmatic episode occurs?
- Who suffers from asthma?
- What can trigger an asthma attack?
- What are the treatments for asthma?
- How can asthma attacks be prevented?

Students will record ideas in pictures, words or sentences in small groups using chart paper. The teacher can post these charts as reference for students.

#### Working on It

- Students will collect data from their classmates by creating a survey, collecting the data and presenting it in the appropriate graph. Students need to create a tally chart.
- Some possible questions students may want to include in their surveys:
  - Do you feel short of breath?
  - Do you cough a lot?
  - Do you get wheezy or make a whistling sound when you breathe?
  - Do you get a tight or tickly feeling in your chest?
  - If you answered yes to any of these questions: Have you ever visited a doctor about these feelings?

- Have you ever heard of asthma?
- Do you know anyone who suffers from asthma?
- Keep track of the number of students surveyed as the sample, consider the variety of responses you might receive and from how many students
- Students will create bar graphs or pie charts to best represent the data collected and explain their choice of graphs for the data collected

### Consolidation

Using the statistical information provided students must analyze and discuss the implications with their partner and be prepared to share with the class.

1. One in five Canadian children suffer from asthma
2. 60% of children admitted to hospital with asthma suffered from the common cold
3. 85% of childhood asthma attacks may be triggered by viral infections
4. In class of 30 children three children will likely have asthma
5. 20-25% of annual hospital admissions for asthma of children in Canada occur in September

*Made possible through the contribution of a research-based pharmaceutical company, member of Rx&D.  
Endorsed by The Asthma Society of Canada.*