The burden of asthma on the US Healthcare system and for the State of Texas is enormous. The causes of asthma are multifactorial and well known. There are also indications that rural counties have a higher rate of admissions for asthma than urban counties. In this study we will look at and compare asthma discharge diagnosis for Texas and the United States using HCUP data. We will also look at the burden of asthma for some specific Texas counties and speculate on causes. We have chosen to look primarily at 2008 data since that is the most recent year that has complete data available.
Learning Objectives

- Discuss why is important to talk about asthma
- Identify the sources asthma triggers at home and school
- List low-cost modifications at schools
- Analyze different ways to reduce exposure to air pollution
- Discuss the importance of an integrated asthma case management
Asthma is one of the most prevalent chronic diseases in Texas and a growing health concern. According to the Texas Behavioral Risk Factor Surveillance System Survey (BRFSS) in 2008, an estimated 2.2 million (12.2%) and 1.3 million (7.3%) adult Texans (18 years or older) had self-reported lifetime and current asthma, respectively. Asthma affects more children than any other chronic disease and is one of the most frequent reasons for hospital admissions among children. There were 921,000 (14.3%) and 593,000 (9.2%) Texas children (0-17 years of age) with reported lifetime and current asthma, respectively.* In Texas, the large number of persons affected by asthma results in major economic and social burdens. The hospitalization rate for Texas in 2007 was 10.9 per 10,000 Texas residents, accounting for more than 25,000 hospitalizations and an estimated $446.8 million in total hospital charges. From 2002 through 2006, there were a total of 1,202 deaths in Texas with a mortality rate of 1.23 per 100,000 residents.
Texas asthma mortality is about the same as the U.S.
Pediatric asthma is the one of the most frequent reasons for hospital admissions among children. Millions of missed school days and parental workdays are attributed to pediatric asthma. Children with asthma have airways that are overly sensitive to certain asthma triggers, which differ from child to child. Some common triggers are exercise, allergies, viral infections, and smoke. Adherence to treatment guidelines – which emphasize appropriate diagnosis of asthma, a physician-patient relationship, management of asthma symptoms with medications, appropriate preventive and maintenance therapy, and adequate follow-up care – can reduce hospital admission rates. Children need to follow a customized asthma management plan to control their symptoms. The severity of a child’s asthma can both worsen and improve over time, placing him in a new asthma category that requires different treatment.
Why Talk About Asthma?

- Asthma can be deadly.
- Children with asthma account for almost 15 million missed school days a year, and miss more days on average than their friends who don’t have asthma.¹
- Most asthma episodes can be prevented.

What Happens During an Asthma Attack?

- During an asthma attack the breathing tubes in your lungs, called *bronchi* and *bronchioles*, swell up.
- The muscles around these tubes tighten.
- The tubes make large amounts of a thick fluid called mucus.
Symptoms of Asthma

- Wheezing
- Cough
- Difficult Breathing
- Tight chest/chest pain
- Retractions (neck area and/or muscles in ribs move inward with breathing) more noticeable in children
Asthma episodes can be triggered by many substances or conditions, and triggers differ from person to person. Some of the most common asthma triggers include infections, allergens, irritants and behaviors.

To complicate matters, many people with asthma have more than one trigger. So, they will need a health care provider’s help to isolate them. This may include blood or skin testing or keeping a detailed diary. When symptoms occur, the diary can help the health care provider find patterns in their behavior or exposures that point to a specific trigger.

Asthma episodes may start suddenly or take many days to develop. So it may take some time, along with trial and error to identify known triggers. But the payoff is worth the wait. After one knows what triggers their symptoms they can take active steps to lessen the impact of asthma on their life.
• Viral infections such as colds or viral pneumonia can trigger or aggravate asthma, especially in young children. These infections can irritate the airways (nose, throat, lungs, and sinuses) and this added irritation often triggers asthma flare-ups.

• Hand washing is the single most effective way to prevent the spread of communicable diseases.

• Some of the best ways to prevent getting an infection include:
  • Washing hands often
  • Using paper towels during cold and influenza season
  • Not sharing cups, toothbrushes, towels, or tissues
  • Keeping hands away from face
  • Getting an influenza shot yearly
Major Asthma Triggers

- Animals:
  - Cats, dogs, birds, mice
- Cockroaches
- Dust mites
  - Carpets/upholstery
- Mold
Asthma Triggers

- Dust Mites: are too small to be seen, but can be found in almost every home in mattresses and bedding materials, carpets, upholstered furniture, stuffed toys and curtains.
Asthma Triggers

- Mold: can grow indoors when mold spores land on wet or damp surfaces. In the home, mold is most commonly found in the bathroom, kitchen and basement.
- Cockroaches and other Pests: body parts, secretions and droppings, and the urine, droppings and saliva of pests, such as rodents, are often found in areas where food and water are present.
Major Asthma Triggers

- Pollens
  - Weeds, grass, trees

- Foods/additives
  - Peanuts, shrimp, tree nuts, milk.

- Medical Condition

- Latex
  - Gloves, balloons
Irritants

- Smoke/Second Hand Smoke
- Dust and Chalk dust
- Strong Odors
- Cold Air
• What can one do to reduce or eliminate exposure to behavior types of triggers?
  • Exercise—with good asthma management, you should exercise regularly.
  • Use quick reliever medication before exercise, if directed by health care provider.
  • Warming-up before and cooling down after exercise may be beneficial.
  • Monitor air quality and only exercise outside when air quality is good.
  • Quit smoking. Talk with healthcare provider or call the American Lung Association’s Lung HelpLine at 800-LUNG-USA (800-586-4872).
  • Do not allow anyone to smoke in the house, garage, car, or near open windows.
  • If someone smokes, recommend wearing the same jacket (smoking jacket) each time they smoke, and leave it outside (or in garage); it reduces the amount of smoke on clothes.
Infants and young children whose parents smoke in their presence are at increased risk of lower respiratory tract infections (pneumonia and bronchitis) and are more likely to have symptoms of respiratory irritation like cough, excess phlegm, and wheeze.

EPA estimates that passive smoking annually causes between 150,000 and 300,000 lower respiratory tract infections in infants and children. 7,500 and 15,000 hospitalizations each year and these children may also have a build-up of fluid in the middle ear, which can lead to ear infections.
Second Hand Tobacco Smoke

- Direct link to asthma
  Also . . . .
- Ear infections
- Poor performance in school
- Childhood cancer (leukemia & brain tumors)

Also known as Environmental Tobacco Smoke (ETS)
Common Triggers Found at School

- Dust and Chalk
- Strong Odors
- Animals
- Mold
- Dust Mites
- Foods/additives
- Latex (gloves/balloons)
Low Cost– Modifications for Schools

- Tobacco–free laws for schools and school property
- Fragrance–free environment policy for school building
- Use odor–free cleaning chemicals
- Reduce or eliminate exposure to classroom pets
Low Cost– Modifications for Schools

- Use fragrance-free markers
- Reduce or eliminate chalk dust
- Use vinyl gloves (non-latex products); allow only mylar balloons
- Use HEPA-filtered vacuum cleaners if your school has carpet
IAQ – Asthma Connection

- Indoor Air Quality (IAQ)
- Americans spend approximately 90% of time indoors
- Indoor pollutants can be asthma triggers
- Reducing asthma triggers can reduce asthma symptoms
Keep it Smoke Free

- Don’t smoke in the house.
- Wear a smoking jacket if you smoke outside.
- Don’t smoke in the car.
- Don’t let others smoke around you or your children.
- If you want to quit, get help.
Central Air Handling Systems

Can become breeding grounds of biological contaminants and distribute them throughout the home.
Sick Building Syndrome

- Refers to new or remodeled buildings in which a large number of occupants experience irritant effects, congestion, headache, fatigue, or other symptoms, with no obvious cause.
- The symptoms improve when the people are away from the building.
Source Control is the most reliable approach to assuring good indoor air quality. Source control includes using alternative products with lower emissions, removing sources, and modifying sources at the manufacturing level through reformulation or engineering approaches.

Ventilation is essential for assuring good indoor quality and comfort, even if the major pollutant sources have been reduced. Most commercial buildings have mechanical ventilation systems that filter and condition the air. Homes usually rely on natural ventilation through windows and doors, but it is not always sufficient.

The proper operation and maintenance of buildings is critical to maintain healthy air quality. Professional training and public education programs are useful tools that can lead to better choices that minimizes adverse health impacts.
School Mitigation Options

- Improving Indoor Air Quality
- Healthy Homes Program
- Integrated Pest Management – which is mandated in Texas in all schools.
Asthma medications are essential to asthma management. They are important in both preventing an asthma episode from occurring and in treating an asthma episode already underway.

Many asthma medications are in the form of sprays or powders that are breathed in through the mouth and work best when they can get deep down into the lungs.

A variety of medications are prescribed in the management of asthma. Some medications reduce inflammation and prevent asthma episodes. These are controller medications. They are taken on a daily basis, even when feeling well.

Quick relief medications are used to treat asthma. Many of these medications are inhaled and start to work within a few minutes.
Asthma Medications

- They are important in both preventing an asthma episode from occurring and in treating an asthma episode already underway.
- Some medications reduce inflammation and **prevent** asthma episodes. These are controller medications. They are taken on a daily basis, even when feeling well.
- Quick relief medications are used to **treat** asthma. Many of these medications are inhaled and start to work within a few minutes.
Controllers (anti-inflammatory)

- Help to prevent an asthma episode
- Are taken daily
- Does not eliminate the need for quick relief medications
Quick relief medications

- Inhaled bronchodilators
- Fast acting
- Relieve symptoms during an asthma episode
- Are taken daily if needed
Basic Asthma Management

- Remain Calm and reassure the person while providing assistance
- Stop the person’s physical activity and make sure he/she remains calm
- Remove the person from exposure to known asthma triggers
Actions to Take for an Asthma Episode

- Have someone stay with the person
- Follow the person’s Asthma Action Plan
- Make certain quick relief medicine is available and used properly
- Observe person to ensure he/she improves
- Communicate with emergency contacts if the person with asthma has experienced breathing difficulties while engaging in physical activity
Asthma Action Plan

My Asthma Action Plan

Name: ____________________________  Date: ____________

Pulmonary Function: ____________________________  Medical Record #: ____________

Phone for healthcare provider: ____________________________  Phone for taI or fax: ____________________________

Feel GOOD:
- Everything is okay
- Can sleep on schedule
- Can run, play

Peak Flow Number: ____________

20 minutes before exercise or sports, take _______ puffs of this medicine:

Medication: ____________  Doses: 2 puffs x 2 times/day

Feel NOT FEEL GOOD:
- Cough
- Wheeze
- Shortness of breath
- Can’t sleep
- Headache

Peak Flow Numbers: ____________

Take _______ puffs of quick-relief medication. Keep back in the room. Take between 2-6 puffs:

Adverse Reaction: ____________  When: ____________  How much: ____________

KEEP VIGILANT for long-term control medication:

Medication: ____________  Doses: ____________  When: ____________

Call healthcare provider if quick-relief medicine does not work off if these symptoms happen more than once a week.

Feel NOTIFY:
- Breathing is hard and noisy
- Can’t sleep
- Can’t talk
- Find any sound

Peak Flow Numbers: ____________

Call 911 if can’t walk or talk because it is too hard to breathe or if wheezes OR if skin is soaked in a sweat and this. Bring inhaler DPI/MDI or nebulizer can gly or if bee.

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Goals of Asthma Control

- Sleep thought the night
- Not cough or wheeze during the day or night
- Be physically active
- Not miss school or work due to asthma
- Not have asthma-related visits to emergency room or hospitalization
Control of Asthma Depends on:

- Being able to get medical care
- Having good self-management skills
- Having good communication between the person with asthma and those around them (parents, coaches, teachers, child care providers, friends and co-workers).
Preventing and Controlling Asthma Episodes

- You need a medical plan that:
- prevents symptoms
- Reduces contact with triggers
- Prepares for any changes in symptoms
- Determines when a health care provider’s help is needed and when to seek immediate help
Is your School Asthma Friendly?

- Does your school require an Asthma Action Plan for each student with asthma?
- Does your school have an emergency plan to handle severe asthma episodes and asthma emergencies?
- Are emergency communication devices provided in each area of your school’s buildings and grounds?
Is your School Asthma Friendly?

- Does your school enforce tobacco-free facilities?
- Does your school maintain good indoor air quality and take measures to reduce asthma triggers, such as allergens and common irritants?
- Does your school have pets?
- Does your school provide asthma education programs for faculty, full-time and part-time staff, bus drivers and support staff, and volunteers?
Other Issues

- Who is responsible for asthma medications during a field trip?
- Who is responsible for administering medications if the nurse is not present?
- Does every teacher know the students in their classroom who have asthma?
Peak flow testing is one way to increase awareness of asthma in a community.
Parents seeking millions against school district for asthma attack death

Kris Sherman
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Comments (171) Recommend (65)

Fifth-grader Mercedes Mears lay gasping for breath on the health room floor at Clover Creek Elementary School.

"I'm gonna die," she said.

Four school employees gathered around the dark-eyed, gap-toothed 10-year-old, giving comfort, working to calm her, urging puffs on an Albuterol inhaler, reports show.

But Mercedes' asthmatic lungs were unable to pump oxygen. Her 94-pound body went into convulsions.

When medics arrived at the Spanaway area school, she was in "full arrest," their records say.

Less than an hour later, she was dead.

Bethel School District officials call her sudden illness and death on Oct. 7 sad and say they grieved the loss.

Mercedes' parents, Mike and Jeanette Mears, call it negligence.

Last week they filed a $15 million legal claim against the district, charging that staff members were ill-prepared to handle the emergency. They say staff failed to administer potentially life-saving medicine kept in the very health room where the gi
Conclusions

- Asthma is a complex illness. Although great strides have been made over the past few years in elucidating mechanisms and understanding the role of environmental and genetic influences, we still do not know whether if the extent the reported increases in asthma can be attributed to indoor as well as outdoor exposures.
Thank you!

Questions?