



Asthma in the Athlete

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Sports Medicine

Objectives

- Understand how we diagnose asthma
- Be familiar with proper use of asthma medications
- Know how to help your athletes with asthma



Sports Medicine

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15 y.o., female, cross country

- Having difficulty breathing at the end of workouts
- Reporting chest pain, shortness of breath
- Used inhaler as young child, told she would "outgrow it"



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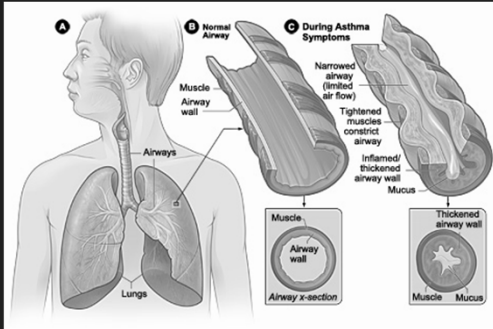


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Shortness of Breath in an Athlete

- Asthma – chronic disease, marked by recurrences, often resting or nighttime cough, allergy sx
- Acute illness (cold, flu) – may last 2-3 wks
- Poor conditioning – difficult to prove, harder training (new grade, new school, new coach), lack of objective findings, lack of response to meds
- Heart problem – crushing, dull, pressure-like pain
- Other lung disease (e.g., cystic fibrosis)
- Other airway disease (e.g., VCD)

Asthma Pathophysiology



Pulmonary Function Tests (Spirometry)

- Most objective & reliable way to diagnose asthma
- Non-invasive, objective, cost-effective
- Many offices have equipment
- Can be performed on children as young as 6 years with appropriate coaching
- Detects airflows, lung capacity

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Spirometry

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Volume-Time & Flow-Volume

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Peak Flow Meter

- Measure forced peak expiratory flow (PEF)
- Can be taught to children 4 years and up
- Provides objective measurement of the degree of airway obstruction
- Decrease peak flow predicts onset of an exacerbation, allows early intervention

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Peak Flow Meter



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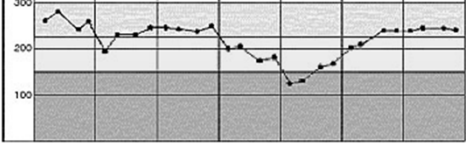
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Peak Flow Chart

Jane Doe Height: 49" Predicted norm: 240 Patient's personal best: 290

Instructions

| Date | Jan 18 | Jan 19 | Jan 20 | Jan 21 | Jan 22 | Jan 23 | Jan 24 |
|-------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Drugs | 7 a.m. 7 p.m. | 7 a.m. 7 p.m. | 7 a.m. 7 p.m. | 7 a.m. 7 p.m. | 7 a.m. 7 p.m. | 7 a.m. 7 p.m. | 7 a.m. 7 p.m. |
| Time | | | | | | | |



* On black & white copies of this chart, green is represented by light gray, yellow by medium gray and red by dark gray.

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Diagnosis by History

- 2 or more episodes of coughing & wheezing, especially if assoc/w difficulty breathing, chest tightness, cough, decreased oxygen saturation (O2 sat)
- Chronic nighttime cough
- History of recurrent, cough, wheezing, SOB with exercise

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15 y.o., female, cross country

- Feel's she is in better shape
- Had PFT's that showed decrease in airway flow, improved with bronchodilator
- Started her on inhaler before exercise
- Sx much improved



Asthma is a chronic disease

girlies
O'Connor student dies after breathing problem

By KAREN AAKER
O'Connor news staff writer

A freshman at O'Connor High School died Tuesday afternoon after he had trouble breathing in gym class.

Alexander Garcia, 14, became ill about 3 p.m. and was taken by helicopter to Methodist Children's Hospital, a spokesman for the Northside School District said. He died at the hospital at 2:45 p.m., officials with the Beauregard County medical center said.

Garcia had asthma and carried an inhaler, Coachman said. His parents were called immediately and Assistant Principal Brian Lawrence escorted him to the hospital, Gonzalez said.

Mike Houlahan, the physical education teacher, administered emergency resuscitation before Garcia was taken to the hospital, Gonzalez said.

The students were walking or standing a lap when Garcia became ill.

Teachers and coaches spoke with the other 35 students in the class and informed them of their classmate's death, Gonzalez said.

A counselor will be available to speak with students today, he said.

Family members were not available for comment Tuesday. One Garcia neighbor, Anthony Sanchez, recalled that the teen often was outdoors, riding his bike around the neighborhood, and took the time to play with Sanchez's 5-year-old son.

"He was the most courteous, polite kid I've ever had the pleasure of meeting," Sanchez said.

*kaaker@progress-news.net
Staff Writer Vincent T. Dancer contributed to this report.*

- Don't assume because asthma symptoms have been absent for a long time that breathing difficulty isn't asthma

19 y.o., female, soccer

- Known asthmatic
- Using inhaler (albuterol) before exercise, often needs 1-2 puffs during practice, games
- Reporting nighttime cough >2x/wk
- Not sure if she's ever been on controller meds
- Not using spacer



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Asthma – Poor Control

- Not taking enough medicine
- Non-exercise symptoms not well-controlled
- Needs controller med
- Needs additional pre-exercise meds
- Needs to use spacer
- Allergies – needs allergy meds
- Needs better control of triggers

Asthma – Accurate Diagnosis

| Severity | Days with Symptoms | Nights with Symptoms | Peak Flow |
|------------|--------------------|----------------------|-----------|
| severe | continual | frequent | ≤ 60% |
| moderate | daily | > 5/month | 60-80% |
| mild | 3-6/week | 3-4/month | ≥80% |
| intermitt. | ≤ 2/week | ≤ 2/month | ≥80% |

Asthma – Graded Treatment

| Severity | Treatment |
|--------------|----------------------------------------------------------------------------------------------------------------------|
| Severe | Inhaled steroid (high dose) + Long-acting beta agonist (salmeterol) ± Leukotriene receptor agonist – LRA (Singulair) |
| Moderate | Inhaled steroid (medium dose) ± Long-acting beta agonist |
| Mild | Inhaled steroid (low dose) or LRA or cromolyn |
| Intermittent | No daily medications |

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Precipitating Factors - Triggers

- Viral upper respiratory infections
- Environmental allergens
 - Indoor (mold, house dust mite, cockroach, pet dander)
 - Outdoor (pollen, pollutants)
- Exercise
- Tobacco smoke

19 y.o., female, soccer

- Started med dose inhaled steroid
- Started nasal steroid to control allergy symptoms
- Had her use spacer
- Pre-exercise inhaled albuterol. Eliminated need for inhaler during



16 yo football, asthma, spring ball

- Uses inhaler (albuterol) "sometimes"
- "sometimes" seems to be sucking air, sometimes not
- Could stand to lose some weight



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Maximizing Management

- Is the albuterol expired?
- Is he using a spacer?
- Has he seen his doctor lately (in the last 3 months)? Does he have an asthma action plan?
- Is he on controller meds? Does he take them regularly? Does he taken them at the same time everyday? Who reminds him to take them
- Is he frequently exposed to smoke, dust?

Asthma Actions Plans

Asthma Action Plan form with fields for patient name, date, and various instructions for managing asthma symptoms.

- Lead to fewer visits for acute symptoms
- Better overall control
- Should be updated every school year

Asthma Action Plan Essential Elements

- Name of medications
- Clear instructions for when to take controller meds, how much, how (inhaler, nebulizer)
- Clear instructions for when to use rescue meds
- Can carry inhaler?
- Instructions for poor air quality days

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Air Quality Index (AQI)

| Air Quality Index Levels of Health Concern | Numerical Value | Meaning |
|--------------------------------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Good | 0-50 | Air quality is considered satisfactory, and air pollution poses little or no risk. |
| Moderate | 51-100 | Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution. |
| Unhealthy for Sensitive Groups | 101-150 | Members of sensitive groups may experience health effects. The general public is not likely to be affected. |
| Unhealthy | 151-200 | Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects. |
| Very Unhealthy | 201-300 | Health alert: everyone may experience more serious health effects. |
| Hazardous | > 300 | Health warnings of emergency conditions. The entire population is more likely to be affected. |

16 yo football, asthma, spring ball

- Hasn't seen doctor since previous August – push him to see his doctor
- Not using spacer – make sure he has one and uses it
- Dad smokes
- Encourage safe weight loss



Summary

- Spirometry is the best method for diagnosing asthma
- The athlete who is well controlled should not need to use inhaler during exercise
- Most asthmatics need to use a spacer
- The athlete with asthma should have regular follow-up with their doctor, & up-to-date asthma action plan
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