

Oral Health Fact Sheet for Dental Professionals

Adults with Respiratory Disorders: Asthma and Allergies

Asthma is a chronic respiratory disease associated with airway obstruction, with recurrent attacks of paroxysmal dyspnea, and wheezing due to spasmodic contraction of the bronchi. (ICD 9 code 493.2)

Allergy is a hypersensitivity to an agent caused by an immunologic response to an initial exposure. (ICD 9 code 995.3)

Prevalence

- Asthma affects 7.3% of adults:
 - * Females (8.6%) > males (7.0%)
 - * Blacks (9.2%) > whites (7.9%) > Hispanics (6.4%)
 - * 70% of asthmatics also have allergies
- Latex sensitivity:
 - * 8–12% of health care workers
 - * 1–6% of the general population

Manifestations

Clinical

- Constriction of bronchi, coughing, wheezing, chest tightness, and shortness of breath

Oral

- Increased caries risk, enamel defects
- Increased gingivitis and periodontal disease risk; more calculus
- Higher rates of malocclusion and increased: overjet, overbite, posterior crossbite; high palatal vault
- Oral candidiasis, xerostomia, decreased salivary flow rate and salivary pH

Other Potential Disorders/Concerns

- None

Management

Medication

Long-acting medications prevent asthma attacks; quick-acting medications used during attacks.

The list of medications below are intended to serve only as a guide to facilitate the dental professional's understanding of medications that can be used for Asthma. Medication protocols can vary for individuals with Asthma.

SYMPTOM	MEDICATION	SIDE EFFECTS/DRUG INTERACTIONS
Bronchospasm	B2-agonists – short acting <i>Albuterol</i> (Proventil, Ventolin, AccuNeb)	Oral candidiasis, xerostomia, decreased salivary flow rate, increased heart rate, nervousness, tremor, headache, palpitations, elevated blood pressure, nausea, dizziness, heartburn, throat irritation, and nosebleeds. TCAs and MAOs cause prolonged QT, cardiac arrhythmias, cardiovascular adrenergic effects (e.g., hypertension)—therefore do not prescribe.

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SYMPTOM	MEDICATION	SIDE EFFECTS/DRUG INTERACTIONS
Bronchospasm <i>continued</i>	<i>Metaproterenol</i> (Alupent)	Headache, bad taste in mouth, increased heart rate, nervousness, dizziness, nausea, throat irritation, tremor, vomiting. Do not prescribe TCAs, MAOs, or propranolol with metaproterenol.
	B2-agonists – long acting <i>Salmeterol</i> (Serevent) Always used in conjunction with a quick relief medication, such as albuterol	Xerostomia, tooth pain, sores or white patches in mouth, uncontrolled shaking, headache, nervousness, dizziness, cough, sore throat, nausea. Do not use with Erythromycin as both affect heart rhythm (prolongs QT). Interacts with beta blocker, antifungals (itraconazole, ketoconazole), biacin, TCAs, MAO inhibitors, and protease inhibitors.
	<i>Formoterol</i> (Foradil) Usually used with another controller-type asthma medication, such as inhaled corticosteroids	Xerostomia, tremor, nausea, headache, dizziness, nervousness, stomach upset, hoarseness, tiredness, irregular heart-beat, fast heartbeat. Do not use with Erythromycin as both affect heart rhythm (prolongs QT). Interacts with beta blocker, antifungals (itraconazole, ketoconazole), biacin, TCAs, MAO inhibitors, and protease inhibitors.
	Corticosteroids <i>Fluticasone propionate</i> (Flovent) <i>Beclomethasone</i> (Beclovent, Qvar, and Vanceril) <i>Triamcinolone acetonide</i> (Azmacort) <i>Budesonide</i> (Pulmicort) <i>Flunisolide</i> (AeroBid)	Oral candidiasis, dental caries, hoarseness.
	Combination <i>Salmeterol & Fluticasone propionate</i> (Advair)	See individual medications
	<i>Formoterol & Budesonide</i> (Symbicort)	See individual medications
Congestion	Leukotriene inhibitors <i>Montelukast</i> (Singulair)	Headache, dizziness, abdominal pain, sore throat, rhinitis. Phenobarbital and rifampin increase the blood concentration of montelukast.

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SYMPTOM	MEDICATION	SIDE EFFECTS/DRUG INTERACTIONS
Congestion <i>continued</i>	Zafirlukast (Accolate)	Headache, dizziness, abdominal pain, sore throat, rhinitis. Should not be used with Coumadin and should be used with caution with many medications, including erythromycin, xanax, ibuprofen, TCAs and many others. Consult a pharmacist if your patient is on this medication.
	Decongestants	Xerostomia
	Antihistamines	Xerostomia

Sedation

- Hydroxyzine and benzodiazepines recommended. Avoid narcotics and barbiturates due to their histamine releasing properties → bronchospasm and potentiated allergic response.

Intravenous sedation

- Use extreme caution due to limited control of the airway.

Avoid

- Aspirin, other salicylates and NSAIDS (due to allergies). May provoke a severe exacerbation of bronchoconstriction – use acetaminophen.

Behavioral: Stress-management techniques; may use nitrous oxide in mild to moderate asthmatics after medical consultation. Anxiety can cause acute exacerbation.

Dental Treatment and Prevention

- Assess patient's risk of acute exacerbation/anaphylaxis during dental treatment prior to examination. Ask detailed questions about asthma frequency (>2/week indicates poor control) and severity (previous hospitalization or emergency room visit), triggering agents, and management/medications (more medication indicates poorer control).
- Confirm that the patient has taken most recent dose of medication.
- Administration of a bronchodilator as premedication before dental treatment may be useful. Verify bronchodilator and EpiPen (if indicated) are readily accessible.
- Ask patient for medication updates at each appointment. Medication changes can affect the appropriate care of the patient from a medical and/or appointment management standpoint.
- Reschedule symptomatic patient (coughing, wheezing, etc.) if appropriate.
- Stimulating procedures (e.g. surgery, extractions, etc.) may provoke attack.
- Use of Nitrous Oxide analgesia is appropriate for patients with mild to moderate asthma, but is contraindicated during episodes of wheezing. Caution is advised for patients with severe asthma – medical consult may be indicated.
- Some reports indicate that dental materials may exacerbate asthma, including dentifrices, fissure sealants, tooth enamel dust, methyl methacrylate, fluoride trays, and cotton rolls.
- Have supplemental oxygen available during treatment in case of acute asthmatic exacerbation.
- Monitor breathing and avoid obstructing airway. Rubber dam will decrease chance of particulate inhalation.
- Consider prescribing fluoride rinses to use at home to reduce caries incidence, especially for patients using β_2 agonists.
- Assess orthodontic needs for malocclusion.
- Be aware that sinus pressure on maxillary nerves can cause referred tooth pain in patients with allergies.
- As needed for patients with xerostomia:
 - * Educate on proper oral hygiene (brushing, flossing) and nutrition.
 - * Recommend brushing teeth with a fluoride containing dentifrice before bedtime. After brushing, apply neutral 1.1% fluoride gel (e.g., Prevident 5000 gel) in trays or by brush for 2 minutes. Instruct patient to spit out excess gel and NOT to rinse with water, eat or drink before going to bed.
 - * Recommend xylitol mints, lozenges, and/or gum to stimulate saliva production and caries resistance.

Allergy

- Severe latex allergy: Consider all sources of latex, including gloves, rubber dams, prophylaxis cups, and orthodontic elastics. Latent allergens in air may cause anaphylactic symptoms.

Emergency Management

Discontinue dental procedure. Follow standard protocols:

Asthma

- Administer β_2 agonist (Ventolin, Proventil) via inhaler or nebulizer, and administer oxygen via face mask or nasal hood.
- If symptoms worsen or do not improve, administer epinephrine (0.3–0.5 mL, 1:1000 solution, 0.01 mg/kg body weight) subcutaneously, and alert emergency medical services.
- **In cases of anaphylaxis:** Epinephrine 0.01 mg/kg body weight (max 0.5 ml). May repeat every 15 minutes x 2 doses.

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Allergy

- In cases of milder allergic reaction: Diphenhydramine 1–2 mg/kg (max 50 mg).
- If symptoms worsen or do not improve, administer epinephrine (0.3–0.5 mL, 1:1000 solution, 0.01 mg/kg body weight) subcutaneously, and alert emergency medical services.
- Patients with severe allergy may carry an EpiPen for immediate administration of epinephrine.
- **In cases of anaphylaxis:** Epinephrine 0.01 mg/kg body weight (max 0.5 ml). May repeat every 15 minutes x 2 doses.

Additional information: [Special Needs Fact Sheets for Providers and Caregivers](#)

References

- American Lung Association. Epidemiology & Statistics Unit, Research and Program Services. Trends in Asthma Morbidity and Mortality, November 2007. American Lung Association.
- World Health Organization. Global surveillance, prevention and control of chronic respiratory diseases: a comprehensive approach, 2007. WHO – Chronic Respiratory Diseases.
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- [CDC-NIOSH](#)
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- Faria, V.C., de Oliveira, M.A., Santos, L.A., Santoro, I.L., Fernandes, A.L.G (2006) The effects of asthma on dental and facial deformities. *J Asthma*, 43(4): 307–309.
- [NIH Institute for Asthma and Allergies](#)

Additional Resources

- [NIH Institute for Asthma and Allergies](#)
- [American Lung Association](#)
- [Centers for Disease Control – Asthma](#)
- [Block Oral Disease, MA](#)
- Free of charge CDE course: [NIDCR CDE](#) (2 CDE hours)