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FAST FACTS AND CONCEPTS #147

Author(s): Drew A Rosielle MD

Background Oropharyngeal candidiasis (*thrush*) occurs commonly in seriously ill and dying patients.

Risk Factors Risk factors include a) defects of cell-mediated immunity: acquired (HIV-AIDS) or drug-induced (chemotherapy, inhaled or systemic glucocorticoids); b) disruption of the oropharyngeal mucosa by cytotoxic chemotherapy (See *Fast Fact* # 121) or irradiation that includes the oropharynx; c) xerostomia (dry mouth) from any cause; d) diabetes mellitus; e) recent antibiotic use; f) dentures; and g) advanced age.

Diagnosis Thrush is often asymptomatic but can lead to oral pain, oropharyngeal dysphagia, halitosis, alterations in taste, diminished appetite, and reduced oral intake. Thrush may or may not be present in cases of esophageal candidiasis, which presents as odynophagia and esophageal dysphagia. Most cases of thrush are caused by *Candida albicans*; *C. krusei*, *glabrata*, or *tropicalis* are sometimes implicated in AIDS and cancer patients. Diagnosis is made on clinical findings: white, cottage-cheese like plaques on the buccal mucosa, tongue or palate. The plaques are easily removed, leaving a red or bleeding and often painful base. A less common presentation – seen in AIDS or in patients with poorly fitting dentures – involves red, edematous, and sometimes eroded mucosal lesions, but without plaques. If diagnostic doubt exists, confirmation can be made by KOH staining a wet-prep of a plaque scraping, revealing pseudohyphal Candidal forms. Culture is not recommended as *Candida* species are common colonizers of the mouth.

Treatment The decision to treat thrush should be based on the patient's overall condition, prognosis, symptoms, and goals of care. Treatments include either systemic or topical anti-fungal drugs. All regimens should be continued for 10-14 days. Meticulous attention to denture cleaning, if applicable, is important to prevent recurrence. If esophageal candidiasis is suspected, systemic therapy is necessary as topical treatment is ineffective.

- **Topical drugs** are the most commonly used but problems can occur due to patient objections to taste and compliance with multiple daily dosing.
 - **Nystatin** suspension (“swish and swallow”) is dosed as 200,000-400,000 Units 4 - 5 times a day. It is substantially less effective in immunocompromised patients than the azole anti-fungals (30-50% vs 70-90% effective) and should not be used in this population.
 - **Clotrimazole** (10 mg troches 5 times a day) is nearly as effective as the systemic azole anti-fungals; however, it is associated with a higher recurrence rate of thrush.
- **Systemic drugs** are more effective than the topicals. However they are more expensive and have significant drug-drug interactions—especially with macrolide antibiotics, anticonvulsants, benzodiazepines, methadone, and coumadin.
 - **Fluconazole** is the systemic treatment of choice; it is more effective with fewer drug interactions than ketoconazole. Many dosing regimens have been described: 200 mg once, then 100 mg daily for 13 days is most commonly used.
 - **Itraconazole** suspension (200 mg daily) is an alternative to fluconazole. It is better absorbed and more effective than itraconazole capsules.
 - **Note:** Fluconazole resistant candidiasis is rare, but becoming more common. Itraconazole, IV or oral amphotericin, voriconazole, and caspofungin have all been used with success.

Recommendations Clotrimazole troches are a reasonable first line therapy for patients in the palliative care

setting if the troches are tolerable and 5 times a day dosing is acceptable. If not, and/or if the patient has problems with recurrent thrush, fluconazole should be used.

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Fast Facts and Concepts are edited by Drew A Rosielle MD, Palliative Care Center, Medical College of Wisconsin. For more information write to: drosiell@mcw.edu. More information, as well as the complete set of Fast Facts, are available at EPERC: www.eperc.mcw.edu.

Version History: This Fast Fact was originally edited by David E Weissman MD and published in December 2005. Current version re-copy-edited in April 2009.

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ACGME Competencies: Medical Knowledge, Patient Care

Keyword(s): Non-Pain Symptoms and Syndromes

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8701 Watertown Plank Road, Milwaukee, WI 53226

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