Smell It Like It Is: Addressing Halitosis

Addressing The Elephant In The Room
- 50-80% adults experience halitosis
- Ancient Egyptians used herbs and spices
- Jewish text, Talmud granted rights for divorce over bad breath

Halitosis
- Most common dental concern
- 90% originates from oral cavity
  - 13% results from gingivitis or periodontitis
- 10% systemic
  - 5% sinus
  - 5% other etiologies

Old Paradigm

Halitophobia
Pseudo-Halitosis
Genuine Halitosis
Pathologic Halitosis
Physiologic Halitosis
Blood Borne
Non-Blood Borne

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Physiologic <-> Pathologic Relativity

- Subject to variations
- May fluctuate within hours
- Multi-factorial

Classifications

1) Oral Halitosis
   - Tongue
   - Periodontal Pockets >4mm

2) Airway Halitosis
   - Respiratory Tract
     ⇒ Rhinosinusitis
     ⇒ Tonsillitis
     ⇒ Pharyngitis
     ⇒ Laryngitis
     ⇒ Bronchitis
     ⇒ Pneumonia
   - Post Nasal Drip
   - Rhinorrhea
   - Tonsils
     ⇒ Tonsilloliths aka Tonsil Stones

3) Gastroesophageal Halitosis
   - Odor from stomach leakage
   - Gastric reflux: reflux of gastric juice, bacteria and digested food into pharynx
   - Some studies reveal a correlation btw H. pylori and halitosis

4) Blood borne Halitosis: volatile chemicals in systemic circulation transfer to exhaled breath
   1. Systemic Diseases
     ⇒ Lung Diseases: Lung Carcinoma, Chronic Obstructive Pulmonary Disorder
     ⇒ Sickle Cell Anemia
     ⇒ Sleep Apnea
     ⇒ Cirrhosis
     ⇒ Kidney Disease & Failure
     ⇒ Some Cancers i.e. Breast Cancer
4) Blood borne Halitosis: volatile chemicals in systemic circulation transfer to exhaled breath

II. Metabolic Disorders
   ⇒ Diabetes
   ⇒ Trimethylaminuria TMAU: body is unable to break down TMAU, a compound derived from diet that has a strong odor of rotting fish.

III. Food
   ⇒ Temporary Halitosis: spicy foods, garlic, onions, coffee, alcohol
   ⇒ Crash Diets or Fasting
   ⇒ Protein Digestion

IV. Medications
   ⇒ Antibiotics
   ⇒ Anti-depressants
   ⇒ Anti-Hypertensives
   ⇒ Anti-Allergic
   ⇒ Sedatives/Hypnotics
   ⇒ Alcohol/Tobacco
   ⇒ Recreational Drugs (Amphetamines)

5) Subjective Halitosis: complaint without an objective confirmation by someone else or a halimeter.
   • Psychologic—Obsessive Compulsive Disorder
   • Neurologic-Side effects of medications, hypothyroidism, hyposalivation, nutrient deficiency, trauma or tumors of brain, nerve damage, neurodegenerative diseases, environmental pollutants, drug abuse, diabetes, GERD, blood-borne stimulation of taste and smell receptors in blood circulation.

Call to Action:
Update health questionnaire to inquire about halitosis concerns.
Volatile Sulfur Compounds (VSC)

- Gases produced from gram (—) bacteria on tongue surface
- Responsible for 80-90% of oral malodor
- Primary Gases:
  - Hydrogen Sulfide (HS) = Rotten Egg Smell
  - Methyl Mercaptan (MM) = Feces Smell
  - Dimethyl Sulfide (DS) = Cabbage/Gas Smell

Did you know methyl mercaptan is associated with the smell of periodontal disease?

Subjective Diagnosis Method

1) Organoleptic (Human Nose)
2) Spoon Test
3) Floss Test

Rosenberg Scale

0 1 2 3 4 5
No Odor Barely Noticeable Slight but Clearly Noticeable Moderate Strong Extremely Strong

Objective Diagnosis Method

Instrumental Assessment

1) Gas Chromatography
   - Measures all gases
   - Highly sensitive
   - Large equipment
   - Expensive
Objective Diagnosis Methods

Instrumental Assessment Continued

2) Sulfide Monitors
   - OralChroma™
     ⇒ Detects/differentiates primary VSCs
     ⇒ Highly sensitive to VSCs
   - Halimeter® - Not sensitive to VSCs
   - Breathtron® - Detects total VSCs

Disadvantages
- Cost $2,400—$5,000
- Needs routine calibration
- Sensors need replacement every 2 years

Chemical Sensors-Electronic Nose
- VSCs generate electrochemical voltage
- Voltage is measured by electronic unit
- Measures all VSCs separately

Saliva Test
- BANA - detects treponema denticola, P. gingivalis, and T. forsythensis
- Amine - detects protein breakdown
- Beta-galactosidase - detects glycoproteins
- Saliva Incubation - organoleptic measures are performed after incubation

Advantages: inexpensive, can detect periodontal pathogens and/or halitosis

Disadvantage: pathogens mainly linked to periodontitis, not all who have periodontal disease suffer from halitosis and vice versa.

Hiding Behind The Mask
- $2 billion/year for short-term effects
- 49% rinse with mouthwash
- 70% chew gum
- 75% brush teeth
Treatment Regimen
TN—1: Explanation of halitosis and OHI
TN—2: Prophylaxis, SRP, necessary dental tx
TN—3: Referral to physician and/or specialist
TN—4: Halitosis education, instructions, and reassurance
TN—5: Referral to psychologist or psychiatrist

Treatment Solutions
- Oral
  • TN-1, TN-2
- Airway
  • TN-3, TN-4
- GI
  • TN-3
- Subjective
  • TN-1, TN-4, TN-5

Homeopathic
- Herbs-mint, parsley, fennel seed, cinnamon
- Zinc-lozenges to neutralize VSCs
- Oil Pulling-lauric acid in coconut oil has antimicrobial properties
- Probiotics-studies show helpful to reduce oral malodor

Chemical Solutions
- Prescription Rx
  ⇒ Chlorhexidine Gluconate
- OTC
  ⇒ VSC Neutralizers: Zinc, Chlorine Dioxide
  ⇒ Antibacterial Agents: CPC, Essential Oils, Triclosan

Mechanical Solutions
- Tongue coating = 80-90% halitosis
- Tongue brushing and cleaning lowers VSC levels

Most Effective System: Brush → Scrape → Rinse

Call to Action:
Incorporate A Breath Management System
Resources

9. www.jpofamericanscience.org
44. http://www.researchgate.net/profile/Vinicius_Pedrazzi/publication/273648298_Tongue-Cleaning_Methods_A_Comparative_Clinical_Trial_Employing_a_Toothbrush_and_a_Tongue_Scraper/links/5508100f0cf26ff55f7fcba5.pdf