

‘DUAL-ING’ DIAGNOSES: A CASE STUDY ON INTEGRATION AND INTERPROFESSIONALISM

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Alice, an unemployed 47-year old woman, presents to a Family Medicine practice in rural North Carolina for severe pain due to a molar abscess with gingival drainage on the left side of the mouth as well as an elevated hemoglobin A1C level (measure of diabetes control) well outside of the therapeutic range.

ORAL HEALTH’S IMPACT ON CHRONIC DISEASE MANAGEMENT

The mouth serves as the gateway to one’s overall health, as poor oral health can often reveal underlying systemic pathologies, with each exacerbating the severity of the other. For instance, oral bacteria may infiltrate a compromised immune system and cause infections in other parts of the body (e.g. endocarditis, of the inner lining of the heart), while other ailments such as Crohn’s disease or blood disorders can be characterized by their oral symptoms- ulcers and bleeding gums, respectively.

One of the most notable examples of the synergistic relationship between oral and systemic health is the clinical link between periodontitis- a chronic inflammatory gum disease resulting in the destruction of gingival tissue and alveolar bone- and diabetes. Both conditions are pervasive throughout the United States, with severe periodontitis (i.e. threatening tooth loss) afflicting 8.9% of adults, and diabetes affecting a similar proportion of 9.4% of the population (Eke et al., 2015; CDC, 2017). Diabetes has proven to be a significant risk factor for periodontitis, as diabetic individuals are three times as likely to develop gingival disease compared to their non-diabetic counterparts due to their poor glycemic control, defined as

having a pathological hemoglobin A1C, or average bloodstream glucose level, above 6.5% (Chavarry et al., 2009; Mealy et al., 2007). However, in a reciprocal manner, recent studies have shown that severe periodontitis’ negative longitudinal impact on glycemic control renders it a risk factor for diabetes as well (Preshaw et al., 2012).

Pathologically, the two diseases are similar in that they provoke an inflammatory response and promote the secretion of common proinflammatory markers. Long-term subgingival biofilm periodontal disease and hyperglycemia due to poorly-managed diabetes can both trigger pathways that increase systemic inflammation and further the other’s disease state. The deadly concurrence of both periodontitis and diabetes greatly increases the risk for other chronic conditions, as afflicted individuals are three times more likely to develop end-stage renal disease and cardiorenal morbidity (convergence of ischemic heart disease and nephropathy), posing major, systematic harm on one’s overall health (Preshaw et al., 2012).

ENVIRONMENTAL IMPACT

Region-specific issues, often exacerbated in rural areas, may compound challenges with managing dual diagnoses. Diabetes rates in North Carolina have doubled in the past two decades, and rural healthcare is severely limited due to the low number of dental practitioners, especially those who accept Medicaid in highly impoverished areas (Morgan et al., 2014; HRSA, 2014). Additionally, systemic challenges in oral health literacy, transportation, inadequate access to nutritious foods, and dental workforce shortages restrict rural providers’ abilities to provide high-quality care fulfilling individual patient needs- demonstrating an urgent need for interprofessional collaboration and care to address the intersectionality of co-occurring illness and environmental influences.

ALICE

Alice presented to her regular doctor at the Family Medicine Practice with significant, recurrent jaw pain. Upon arrival, she was examined and appropriately triaged by a nurse, who noted Alice’s elevated blood pressure of 131/87 and hemoglobin A1C of 16%- well above normal values (<5.7%). Alice herself then admitted that she endured difficulties in managing her diabetes and its complications.

TABLE 1:
Vital Signs

| Weight (lb) | Height (in) | Temperature (°F) | Blood Pressure | Heart Rate (bpm) | Pain Scale |
|-------------|-------------|------------------|----------------|------------------|------------|
| 165.6 | 62 | 98.1 | 131/87 | 106 | 10 |

She was then seen by her primary care physician who completed a visual oral health exam and confirmed a left upper molar abscess with gingival drainage and mild to moderate swelling. The physician also noted pus drainage from the gum line which was visually evident. The doctor also observed tooth discoloration indicative of Alice’s heavy smoking habit. After performing a more general physical exam, the physician registered that although Alice’s heart rate and rhythm were regular, and her lungs clear both anteriorly and posteriorly, her left cervical lymph node was tender, then referred to the following chart listing Alice’s previous medical and surgical history.

TABLE 2:
Previous Medical and Surgical History

| | |
|---------------------|--|
| Medical History | - Hypertension - Myocardial Infarction - Type II Diabetes - Eczema |
| Surgical History | - Cardiac stents x2 in 2015 - Gamma Ray for brain tumor in 2018 |
| Lifestyle/Behaviors | - Tobacco use: current heavy smoker (20 – 39 cigs/day) - Drugs: none other than prescribed - Alcohol: none |

For treatment, Alice was instructed to refill her Hydrocodone-Acetaminophen Tablets- a combination narcotic and non-opiate for moderate to severe pain relief- and prescribed Clindamycin HCl Capsules to treat the bacterial infection thought to be responsible for the inflammation. In addition, she was tasked to follow-up with a family medicine attending physician.

Although Alice had health insurance through her state’s Medicaid program, she had no ongoing dental provider and rarely received oral health care. Moreover, she had been unemployed for quite some time and thus experienced hardships finding adequate transportation to receive her regular and emergency healthcare services.

INTERPROFESSIONAL PRACTICE FOR ‘DUELING’ DIAGNOSES

Interprofessional practice (IPP) is a growing trend of collaborative patient care through the cooperation of healthcare providers with medical and non-medical professionals as well as patients and their families. This relationship is especially important in facilitating the integration of oral and general health programs, as primary care practitioners and interprofessional healthcare teams are being called upon to enhance oral health competency training and assimilation into general practice as to mitigate drastic national oral health disparities due to inaccessible dental care. To this end, the U.S. Department of Health and Human Services has

defined five core domains of oral health clinical competencies for primary care practitioners: risk assessment, oral health evaluation, preventative interventions, communication and education, as well as interprofessional collaborative practice (HRSA, 2014).

Alice's case is compelling opportunity for interprofessional practice, given her ongoing diabetes and oral health need. Given the correlation between periodontal therapy and glycemic control, effectively targeted dental care and interprofessional practice could vastly improve the prognosis and quality of life for diabetic patients like Alice (Preshaw et al., 2012).

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