

The Role of Dental Hygienists in Conducting Rapid HIV Testing

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Introduction

In the U.S., over half a million people are living with Human Immunodeficiency Virus (HIV) or Acquired Immune Deficiency Syndrome (AIDS).¹ The Centers for Disease Control and Prevention (CDC) estimates that approximately 50,000 people are newly infected with HIV each year in the U.S. In 2009 (the most recent year that data are available), there were an estimated 48,100 new HIV infections. Of those infected with HIV, 21% are unaware of their serostatus because they have not been recently tested for HIV.² Data from the 2005 National Health Interview Survey found that 3.6 million Americans report that they are at significant risk for contracting HIV, yet have never been tested.³ Of importance, 75% of these individuals have seen a dental provider within the past 2 years. Another national survey found that 64% of the general population see an oral health professional in the course of a year compared to 39% who went to a medical office.⁴ Thus, the dental office may be a suitable setting to expand rapid HIV testing. Dental office staff, specifically the dental hygienist, may be able to engage patients and, if willing, perform HIV rapid tests.⁵ The published literature includes scholarly articles on the roles and attitudes of dentists on conducting rapid HIV testing in the dental setting, but there is little research and information on the roles of dental hygienists in providing HIV testing.^{6,7}

Background

HIV Testing

Early detection through HIV pre-screening of patients in health care settings is imperative to receiving the necessary treatment and care. To facilitate timely detection, the CDC revised HIV testing guidelines in 2006 to recommend routine HIV testing in all health care settings for patients aged 13 to 64 years.⁸ HIV

Abstract

Purpose: In the U.S., an estimated 21% of people living with HIV/AIDS do not know their positive HIV status. Expanding rapid HIV testing in the dental setting may increase the number of individuals who are aware of their HIV status and can begin medical care and social support services if seropositive and appropriate. As a member of the dental team, the dental hygienist, with the proper knowledge and training, may be suitable to conduct rapid HIV testing.

Keywords: HIV, AIDS, HIV Testing, Oral Hygiene, Dental Hygiene Education

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can be detected using reliable, inexpensive and non-invasive screening tests. HIV seropositive individuals have increased longevity if treatment regimens are initiated early before the appearance of symptoms.⁹

Conducting HIV rapid tests is an important part of the HIV disease management continuum — from primary and secondary prevention to care and treatment. HIV-infected individuals who are aware of their seropositive status may practice risk reduction strategies such as using condoms consistently and correctly, reducing the number of sexual partners, using clean syringes if injecting drugs and learning about their disease to prevent further transmission.¹⁰ In response for the growing demand in evidence-based strategies for “prevention with positives,” the CDC developed the Serostatus Approach to Fighting the HIV Epidemic (SAFE) strategy, which not only increases the availability of prevention services for HIV-infected people but also teaches clinicians to perform HIV and sexually transmitted infection risk assessments.¹⁰ It is possible to extend these screenings and assessments into the dental setting. Finally, it is important to engage and retain HIV-infected persons in primary care so that their disease is appropriately managed with regards to primary medical care and social services.^{8,11}

Table I: Food and Drug Administration Rapid HIV Antibody Screening Tests

Test Name	Date of FDA Approval	Specimen Type	CLIA Category	List Price per Device (Price for recipients of CDC Grants)	Manufacturer
OraQuick ADVANCE Rapid HIV-1/2 Antibody Test	November 2002	Oral fluid	Waived	\$17.50	OraSure Technologies, Inc.
		Whole blood (finger stick or venipuncture)	Waived		
		Plasma	Moderate Complexity		
Uni-Gold Recombigen HIV	December 2003	Whole blood (finger stick or venipuncture)	Waived	\$15.74 (\$8.00)	Trinity Biotech
		Serum and Plasma	Moderate Complexity		
Reveal G-3 Rapid HIV-1 Antibody Test	April 2003	Serum	Moderate Complexity	\$14.00	MedMira, Inc.
		Plasma	Moderate Complexity		
MultiSpot HIV-1/HIV-2 Rapid Test	November 2004	Serum	Moderate Complexity	\$25.00	BioRad Laboratories
		Plasma	Moderate Complexity		
Clearview HIV 1/2 STAT-PAK	May 2006	Whole blood (finger stick or venipuncture)	Waived	\$17.50 (\$8.00)	Inverness Medical Professional Diagnostics
		Serum and Plasma	Non-waived		
Clearview COMPLETE HIV 1/2	May 2006	Whole blood (finger stick or venipuncture)	Waived	\$18.50 (\$8.00)	Inverness Medical Professional Diagnostics
		Serum and Plasma	Non-waived		

Source: U.S. Centers for Disease Control and Prevention, <http://www.cdc.gov/hiv/topics/testing/rapid/#chart>

Although the first AIDS case was reported in 1981, and the first HIV case in 1984, it was not until 1985 that the first HIV test kit, the enzyme-linked immunosorbent assay (ELISA), was developed.¹² In 1987, the first Western Blot test kit was released. Rapid tests have changed over time, resulting in the first rapid oral fluid test in 2004. Currently, there are also home "do it yourself" HIV test kits.¹²

The Clinical Laboratory Improvement Amendments (CLIA) of 1988 established quality standards for laboratory testing. CLIA requires that any facility which handles specimens for diagnosis, prevention or treatment of a disease must register with the Centers for Medicare and Medicaid Services and obtain a CLIA certification or waiver. The Food and Drug Administration (FDA) has approved several rapid HIV tests as waived tests under CLIA. Waived rapid HIV tests are defined as "simple laboratory examinations and procedures that have an insignificant risk of erroneous result."¹³ Waived tests must use unprocessed speci-

mens (whole blood or oral fluid), be easy to use and have little risk of an incorrect result. Dental settings are eligible to receive this waiver or certification from CLIA to conduct rapid HIV tests.¹³

HIV rapid testing is completed using a relatively simple process. The provider swabs the patient's buccal mucosa and gingiva. Next, the provider places the end of the swab device in a vial that holds an enzyme solution that reacts to any antibody-antigen binding. As the oral fluid and the enzymes make their way up the test strip, they encounter the HIV-antigen substance. If there are HIV antibodies in the oral fluid, they start to bind to the antigens, and the enzyme reacts, causing a color change on the strip. This produces a line on the read-out portion of the device. This line indicates a reaction, but is not considered to be a definite positive. As with all other HIV tests, rapid tests require a repeat test before a patient is considered to be HIV positive.¹⁴ Table I provides information on the current FDA approved HIV rapid tests.^{15,16}

Dental Hygiene Student Exposure to HIV Education

A dental hygiene student will first encounter HIV-infected patients when taking an initial medical history or reviewing an established patient's record. He or she will be educated to ask state-of-health questions and utilize established protocol for possible medical clearance, which is taught didactically in the classroom. The Commission on Dental Accreditation (CODA) sets the standards all accredited programs must follow to "ensure the quality and continuous improvement of dental and dental-related education and reflect the evolving practice of dentistry."¹⁷ Any program change, whether at the associate, bachelors or Masters degree level, must reflect CODA guidelines. Such foundation knowledge, which includes both cognitive skills and clinical applications for patients with HIV and other diseases and conditions, is integral to dental hygiene education, as is the connection between oral health and total health and the effects each has on the other. This is established early and continuously reinforced in the dental hygiene curriculum.¹⁸

All basic dental related core curricula include HIV as a topic or sub-topic.¹⁹ Much of the prevention and counseling efforts of the HIV testing process are rooted in psychology, psychoanalytic and behavioral approaches, and sociology, where students learn sociological theory as a means for understanding human behavior and the human condition.²⁰ Other general education course work, such as math, English, chemistry, biology and microbiology, among others, are necessary for degree completion.

Dental specific courses include such courses as principles of dental hygiene, oral pathology, epidemiology, pharmacology, immunology, disease etiology, nutrition, preventive dentistry, periodontics, public health and pharmacology. Specific to oral pathology is the recognition of many oral manifestations that occur in both disease and health that may exhibit in the earliest stages of disease.²¹ In pharmacology, antiretroviral therapy (ART), among other HIV and viral related pharmacologic agents, are included.²² This enhanced knowledge prepares the dental hygienist to establish an appropriate treatment plan, make informed decisions and collaborate on referrals when necessary.

Patient assessment, asepsis, disease transmission prevention, professionalism and ethics are applied in a day-to-day clinical setting where direct supervised patient care in ongoing and didactic learning is integrated within the clinical setting. Students are continuously exposed to a variety of patient types presenting with a broad range of

systemic conditions and diseases. Students are expected to apply the American Dental Hygienists' Association (ADHA) Code of Ethics to all interactions with patients, colleagues and the public at large, along with understanding established legislation relative to protecting and aiding patient and hygienist against discrimination in dentistry.¹⁷

Education of dental hygienists in the U.S. already addresses HIV in significant depth including the infection, its transmission, the life cycle of the virus, the disease classifications in children, adolescents and adults, the clinical categories, the clinical course, the oral manifestations, the treatment and management of an infected patient and modes of prevention.²² Coupled with their knowledge and mandated compliance in the use of standard precautions, with proper training in the administration of the rapid HIV test and in appropriate counseling skills and protocol, the dental hygienist is ideally positioned to engage their patients in a conversation that might result in the earliest detection of a serious health matter needing attention by the medical community at large.

The Potential Role of Dental Hygienists' in HIV Prescreening and Referral

Dental Hygienists' Professional Roles and Oral-Systemic Disease Manifestations

A dental hygienist is a member of the dental team whose primary role is a public health advocate in the prevention and maintenance of oral health and disease.²³ This encompasses multifaceted functions that are inter-related and include clinician, educator, researcher, administrator and advocate (Figure 1). As clinicians, dental hygienists screen and assess oral health conditions and plan and implement treatment on a patient-to-patient individualized needs basis.²⁴ All of these services are important and applicable skill sets if dental hygienists were to routinely provide HIV rapid tests.

Common oral manifestations of AIDS and HIV include Kaposi sarcoma, candidiasis (thrush), herpes simplex and oral hairy leukoplakia.²⁵ Since the initiation and use of HAART, there has been decreased occurrence of HIV-related oral lesions, although some still occur.^{25,26} Current oral manifestations associated with HIV disease include human papillomavirus and xerostomia.²⁷ Many signs and symptoms of HIV infection are exhibited initially in the mouth and the dental hygienist is most often the dental care provider scheduled with the patient initially and thus the first to detect any

noticeable signs and symptoms during a thorough recall assessment.²⁶

HIV Testing and New York City and State Health Care

The New York City Comprehensive Strategic Plan for HIV/AIDS Services 2009–2012, New York Eligible Metropolitan Area, fulfills the Ryan White HIV/AIDS Treatment Modernization Act with the development of a plan for the organization and delivery of HIV-related services. Goal 1 is to increase the number of individuals who are aware of their HIV status. Objective 1A states: “To increase the number of individuals receiving voluntary HIV rapid testing across health care and social support service providers, by 2010.”²⁸ “The Bronx Knows” and most recently “The Brooklyn Knows” projects administered by the New York City Department of Health and Mental Hygiene illustrates that when HIV becomes a routine part of medical care, the number of people who know their status increases and the stigma surrounding HIV and testing declines.²⁹

On July 30, 2010, former Governor David Paterson signed S8227 into law simplifying the informed consent process and requiring health professionals to offer voluntary HIV tests to all patients from 13 to 64 years old. “This State law will have its greatest impact here in New York City, where more than 107,000 residents are living with HIV/AIDS and thousands more do not know they are infected,” said Dr. Thomas Farley, New York City Health Commissioner. Patients must still provide written consent for HIV testing for results that go beyond an hour and still allows patients the opt-out of HIV testing.³⁰

Dental Hygienists’ Role on HIV Testing and Referral

Rapid HIV testing in the dental health care environment would be advantageous because the screening technology allows individuals to learn their HIV status in approximately 20 minutes, within the scheduled time frame that a patient is treated by a dental hygienist. The dental hygienist could easily incorporate this procedure in their appointment schedule and begin during the review of the patient’s medical history form. The established and often long-term patient-provider relationship (patient/hygienist) will facilitate the likelihood of a patient consenting to the test when offered by the dental staff who treats them regularly.³¹

As oral hygiene specialists, dental hygienists

Figure 1: Professional Roles of the Dental Hygienist



This graphic is used with the permission of the American Dental Hygienists’ Association

play a principal role in educating patients and would be the ideal personnel in the office to perform the HIV rapid testing with support from the dental team. Previous barrier concerns were lack of test training, lack of knowledge and training in HIV, counseling confidentiality and reimbursement.³² The New York/New Jersey AIDS Education and Training Center offers clinicians and dental facilities training and certification on how to accurately perform the rapid HIV test and an understanding of the significance of preliminary results, counseling measures and referral recommendations.³³ This tested training program may be suitable for incorporation in dental hygiene curricula.

Conclusion

Advancements in technology, specifically biomarker research, recognize saliva as a diagnostic medium that can be collected simply and non-invasively, and oral fluid-based screening tests for systemic diseases are becoming more widespread.³⁴ This, coupled with the fact that dental hygiene students receive a scientific education and basic knowledge about HIV/AIDS, makes dental hygienists an appropriate profession to conduct HIV rapid tests. These new diagnostic tools have the potential for expanding and enhancing the role of the dental team in HIV testing with the dental hygienist positioned to provide HIV rapid tests and refer HIV infected persons to medical care and social services, as appropriate. This also enhances their participation in promoting the advancement of total health and well-being of all

patients. With minimum effort, dental hygienists can learn the test techniques and protocols to fulfill this role. Ethical, legal, consent, confidentiality protocols and training need further exploration and research.^{31,35} In addition, this topic requires additional research, including nationwide data collection to ascertain dental hygienists' knowledge of HIV/AIDS, comfort level with treating people with HIV/AIDS and testing those unaware of their possible disease status. Rapid HIV testing by dental hygienists remains an important oral health and public health issue. Further collaborations among these 2 professions may yield acceptance of this practice. By collaborating in a synergistic manner and by clearly delineating the roles and responsibilities of each profession, there is hope for advancing the science of rapid HIV testing in the dental setting.

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Table II: CODA dental hygiene standards

Number	Name	Areas of Compliance	Application to HIV Education
1	Institutional Effectiveness	Planning & Assessment Financial Support Institutional Accreditation Community Resources	
2	Educational Program	Instruction Admissions Curriculum Patient Care Competencies Curriculum Management Plan	X X X
3	Administration, Faculty and Staff	Program Administrator Faculty Support Staff	
4	Educational Support Services	Clinical Facilities Radiography Facilities Laboratory Facilities Extended Campus Facilities Classroom Space Office Space Learning Resources Student Services	X X
5	Health and Safety Provisions	Infectious Disease/Radiation Management Emergency Management	X
6	Patient Care Services	Patient Care Quality Assurance	

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