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**Service Category Definition - Ryan White Part B Grant
April 1, 2017 - March 31, 2018**

Local Service Category:	Oral Health Care
Amount Available:	To be determined
Unit Cost:	
Budget Requirements or Restrictions (TRG Only):	Maximum of 10% of budget for Administrative Costs
Local Service Category Definition:	<p>Restorative dental services, oral surgery, root canal therapy, fixed and removable prosthodontics; periodontal services includes subgingival scaling, gingival curettage, osseous surgery, gingivectomy, provisional splinting, laser procedures and maintenance. Oral medication (including pain control) for HIV patients 15 years old or older must be based on a comprehensive individual treatment plan. Prosthodontics services to HIV infected individuals including but not limited to examinations and diagnosis of need for dentures, crowns, bridgework and implants, diagnostic measurements, laboratory services, tooth extraction, relines and denture repairs.</p> <p>Emergency procedures will be treated on a walk-in basis as availability and funding allows. Funded Oral Health Care providers are permitted to provide necessary emergency care regardless of a client's annual benefit balance. If a provider cannot provide adequate services for emergency care, the patient should be referred to a hospital emergency room.</p>
Target Population (age, gender, geographic, race, ethnicity, etc.):	HIV/AIDS infected individuals residing within the Houston HIV Service Delivery Area (HSDA).
Services to be Provided:	<p>Services must include, but are not limited to: individual comprehensive treatment plan; diagnosis and treatment of HIV-related oral pathology, including oral Kaposi's Sarcoma, CMV ulceration, hairy leukoplakia, xerostomia, lichen planus, aphthous ulcers and herpetic lesions; diffuse infiltrative lymphocytosis; standard preventive procedures, including oral hygiene instruction, diet counseling and home care program; oral prophylaxis; restorative care; oral surgery including dental implants; root canal therapy; fixed and removable prosthodontics including crowns and bridges; periodontal services, including subgingival scaling, gingival curettage, osseous surgery, gingivectomy, provisional splinting, laser procedures and maintenance. Proposer must have mechanism in place to provide oral pain medication as prescribed for clients by the dentist.</p> <p>Limitations:</p> <ul style="list-style-type: none"> • Cosmetic dentistry for cosmetic purposes only is prohibited. • Maximum amount that may be funded by Ryan White/State Services per patient is \$3,000/year. <ul style="list-style-type: none"> • In cases of emergency, the maximum amount may exceed the above cap • In cases where there is extensive care needed once the procedure has begun, the maximum amount may exceed the above cap. • Dental providers must document <i>via approved waiver</i> the reason for exceeding the yearly maximum amount.
Service Unit Definition(s) (TRG Only):	General Dentistry: A unit of service is defined as one (1) dental visit which includes restorative dental services, oral surgery, root canal therapy, fixed and removable prosthodontics; periodontal services includes subgingival scaling, gingival curettage, osseous surgery, gingivectomy, provisional splinting, laser procedures and maintenance. Oral medication (including pain control) for HIV patients 15 years old or older must be

**Service Category Definition - Ryan White Part B Grant
April 1, 2017 - March 31, 2018**

	<p>based on a comprehensive individual treatment plan.</p> <p>Prosthodontics: A unit of services is defined as one (1) Prosthodontics visit.</p>
Financial Eligibility:	Income at or below 300% Federal Poverty Guidelines. Maximum amount that may be funded by Ryan White/State Services per patient is \$3,000/year.
Client Eligibility:	HIV positive; Adult resident of Houston HSDA
Agency Requirements (TRG Only):	<p>To ensure that Ryan White is payer of last resort, Agency and/or dental providers (clinicians) must be Medicaid certified and enrolled in all Dental Plans offered to Texas STAR+PLUS eligible clients in the Houston EMA/HSDA. Agency/providers must ensure Medicaid certification and billing capability for STAR+PLUS eligible patients remains current throughout the contract term.</p> <p>Agency must document that the primary patient care dentist has 2 years prior experience treating HIV disease and/or on-going HIV educational programs that are documented in personnel files and updated regularly. Dental facility and appropriate dental staff must maintain Texas licensure/certification and follow all applicable OSHA requirements for patient management and laboratory protocol.</p>
Staff Requirements:	State of Texas dental license; licensed dental hygienist and state radiology certification for dental assistants.
Special Requirements (TRG Only):	<p>Must comply with the Houston EMA/HSDA Standards of Care.</p> <p>The agency must comply with the DSHS Oral Health Care Standards of Care. The agency must have policies and procedures in place that comply with the standards <i>prior</i> to delivery of the service.</p>

**Service Category Definition - Ryan White Part B Grant
April 1, 2017 - March 31, 2018**

FY 2018 RWPC “How to Best Meet the Need” Decision Process

Step in Process: Council		Date: 06/08/17
Recommendations:	Approved: Y_____ No: _____ Approved With Changes:_____	If approved with changes list changes below:
1.		
2.		
3.		
Step in Process: Steering Committee		Date: 06/01/17
Recommendations:	Approved: Y_____ No: _____ Approved With Changes:_____	If approved with changes list changes below:
1.		
2.		
3.		
Step in Process: Quality Assurance Committee		Date: 05/18/17
Recommendations:	Approved: Y_____ No: _____ Approved With Changes:_____	If approved with changes list changes below:
1.		
2.		
3.		
Step in Process: HTBMTN Workgroup		Date: 04/25/17
Recommendations:	Financial Eligibility:	
1.		
2.		
3.		

FY 2017 Houston EMA/HSDA Ryan White Part A/MAI Service Definition

Oral Health/Rural (Last Review/Approval Date: 6/3/16)	
HRSA Service Category Title: RWGA Only	Oral Health
Local Service Category Title:	Oral Health – <u>Rural (North)</u>
Budget Type: RWGA Only	Unit Cost
Budget Requirements or Restrictions: RWGA Only	Not Applicable
HRSA Service Category Definition: RWGA Only	Oral health care includes diagnostic, preventive, and therapeutic services provided by general dental practitioners, dental specialists, dental hygienists and auxiliaries, and other trained primary care providers.
Local Service Category Definition:	Restorative dental services, oral surgery, root canal therapy, fixed and removable prosthodontics; periodontal services includes subgingival scaling, gingival curettage, osseous surgery, gingivectomy, provisional splinting, laser procedures and maintenance. Oral medication (including pain control) for HIV patients 15 years old or older must be based on a comprehensive individual treatment plan. Prosthodontics services to HIV-infected individuals including, but not limited to examinations and diagnosis of need for dentures, diagnostic measurements, laboratory services, tooth extractions, relines and denture repairs.
Target Population (age, gender, geographic, race, ethnicity, etc.):	HIV/AIDS infected individuals residing in Houston Eligible Metropolitan Area (EMA) or Health Service Delivery Area (HSDA) counties other than Harris County. Comprehensive Oral Health services targeted to individuals residing in the northern counties of the EMA/HSDA, including Waller, Walker, Montgomery, Austin, Chambers and Liberty Counties.
Services to be Provided:	Services must include, but are not limited to: individual comprehensive treatment plan; diagnosis and treatment of HIV-related oral pathology, including oral Kaposi's Sarcoma, CMV ulceration, hairy leukoplakia, xerostomia, lichen planus, aphthous ulcers and herpetic lesions; diffuse infiltrative lymphocytosis; standard preventive procedures, including oral hygiene instruction, diet counseling and home care program; oral prophylaxis; restorative care; oral surgery including dental implants; root canal therapy; fixed and removable prosthodontics including crowns, bridges and implants; periodontal services, including subgingival scaling, gingival curettage, osseous surgery, gingivectomy, provisional splinting, laser procedures and maintenance. Proposer must have mechanism in place to provide oral pain medication as prescribed for clients by the dentist.
Service Unit Definition(s): RWGA Only	General Dentistry: A unit of service is defined as one (1) dental visit which includes restorative dental services, oral surgery, root canal therapy, fixed and removable prosthodontics; periodontal

FY 2017 Houston EMA/HSDA Ryan White Part A/MAI Service Definition

	<p>services includes subgingival scaling, gingival curettage, osseous surgery, gingivectomy, provisional splinting, laser procedures and maintenance. Oral medication (including pain control) for HIV patients 15 years old or older must be based on a comprehensive individual treatment plan.</p> <p>Prosthodontics: A unit of services is defined as one (1) Prosthodontics visit.</p>
Financial Eligibility:	Refer to the RWPC's approved <i>Financial Eligibility for Houston EMA/HSDA Services</i> .
Client Eligibility:	HIV-infected adults residing in the rural area of Houston EMA/HSDA meeting financial eligibility criteria.
Agency Requirements:	<p>Agency must document that the primary patient care dentist has 2 years prior experience treating HIV disease and/or on-going HIV educational programs that are documented in personnel files and updated regularly.</p> <p>Service delivery site must be located in one of the northern counties of the EMA/HSDA area: Waller, Walker, Montgomery, Austin, Chambers or Liberty Counties</p>
Staff Requirements:	State of Texas dental license; licensed dental hygienist and state radiology certification for dental assistants.
Special Requirements: RWGA Only	<p><u>Agency and/or dental providers (clinicians) must be Medicaid certified and enrolled in all Dental Plans offered to Texas STAR+PLUS eligible clients in the Houston EMA/HSDA.</u></p> <p><u>Agency/providers must ensure Medicaid certification and billing capability for STAR+PLUS eligible patients remains current throughout the contract term.</u></p> <p>Must comply with the joint Part A/B standards of care where applicable.</p>

FY 2017 Houston EMA/HSDA Ryan White Part A/MAI Service Definition

FY 2018 RWPC “How to Best Meet the Need” Decision Process

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Recommendations:	Financial Eligibility:	
1.		
2.		
3.		



ORAL HEALTH CARE SERVICES
2016 CHART REVIEW

PREFACE

DSHS Monitoring Requirements

The Texas Department of State Health Services (DSHS) contracts with The Houston Regional HIV/AIDS Resource Group, Inc. (TRG) to ensure that Ryan White Part B and State of Texas HIV Services funding is utilized to provide in accordance to negotiated Priorities and Allocations for the designated Health Service Delivery Area (HSDA). In Houston, the HSDA is a ten-county area including the following counties: Austin, Chambers, Colorado, Fort Bend, Harris, Liberty, Montgomery, Walker, Waller, and Wharton. As part of its General Provisions for Grant Agreements, DSHS also requires that TRG ensures that all Subgrantee's comply with statutes and rules, perform client financial assessments, and delivery service in a manner consistent with established protocols and standards.

As part of those requirements, TRG is required to perform annual quality compliance reviews on all Subgrantee's. Quality Compliance Reviews focus on issues of administrative, clinical, consumer involvement, data management, fiscal, programmatic and quality management nature. Administrative review examines Subgrantee operating systems including, but not limited to, non-discrimination, personnel management and Board of Directors. Clinical review includes review of clinical service provision in the framework of established protocols, procedures, standards and guidelines. Consumer involvement review examines the Subgrantee's frame work for gather client feedback and resolving client problems. Data management review examines the Subgrantee's collection of required data elements, service encounter data, and supporting documentation. Fiscal review examines the documentation to support billed units as well as the Subgrantee's fiscal management and control systems. Programmatic review examines non-clinical service provision in the framework of established protocols, procedures, standards and guidelines. Quality management review ensures that each Subgrantee has systems in place to address the mandate for a continuous quality management program.

QM Component of Monitoring

As a result of quality compliance reviews, the Subgrantee receives a list of findings that must be address. The Subgrantee is required to submit an improvement plan to bring the area of the finding into compliance. This plan is monitored as part of the Subgrantee's overall quality management monitoring. Additional follow-up reviews may occur (depending on the nature of the finding) to ensure that the improvement plan is being effectively implemented.

Scope of Funding

TRG contracts with two Subgrantees to provide oral health care services in the Houston HSDA.

INTRODUCTION

Description of Service

Restorative dental services, oral surgery, root canal therapy, fixed and removable prosthodontics; periodontal services includes subgingival scaling, gingival curettage, osseous surgery, gingivectomy, provisional splinting, laser procedures and maintenance. Oral medication (including pain control) for HIV patients 15 years old or older must be based on a comprehensive individual treatment plan. Prosthodontics services to HIV infected individuals including but not limited to examinations and diagnosis of need for dentures, crowns, bridgework and implants, diagnostic measurements, laboratory services, tooth extraction, relines and denture repairs.

Emergency procedures will be treated on a walk-in basis as availability and funding allows. Funded Oral Health Care providers are permitted to provide necessary emergency care regardless of a client's annual benefit balance. If a provider cannot provide adequate services for emergency care, the patient should be referred to a hospital emergency room.

Tool Development

The TRG Oral Healthcare Review tool is based upon the established local and DSHS standards of care.

Chart Review Process

All charts were reviewed by Bachelors-degree registered nurse experienced in treatment, management, and clinical operations in HIV. The collected data for each site was recorded directly into a preformatted computerized database. The data collected during this process is to be used for service improvement.

File Sample Selection Process

File sample was selected from a provider population of 2,949 clients who accessed oral healthcare services in the measurement year. The records of 212 clients were reviewed, representing 7% of the unduplicated population. The demographic makeup of the provider was used as a key to file sample pull.

NOTE: DSHS has changed the file sample percentage which will result in a lower number of files being reviewed in 2016.

Demographics- Oral Healthcare Services

2015 Annual

Total UDC: 3125 Total New: 576

Age	Number of Clients	% of Total
Client's age as of the end of the reporting period		
Less than 2 years	0	0.00%
02 - 12 years	0	0.00%
13 - 24 years	89	2.85%
25 - 44 years	1173	37.54%
45 - 64 years	1669	53.41%
65 years or older	194	6.21%
Unknown	0	0.00%
	3125	100%
Gender	Number of Clients	% of Total
"Other" and "Refused" are counted as "Unknown"		
Female	807	25.82%
Male	2295	73.44%
Transgender FTM	1	0.03%
Transgender MTF	22	0.70%
Unknown	0	0.00%
	3125	100%
Race/Ethnicity	Number of Clients	% of Total
Includes Multi-Racial Clients		
White	586	18.75%
Black	1595	51.04%
Hispanic	894	28.61%
Asian	40	1.28%
Hawaiian/Pacific Islander	3	0.10%
Indian/Alaskan Native	7	0.22%
Unknown	0	0.00%
	3125	100%

From 01/01/15 - 12/31/15

2016 Annual

Total UDC: 3153 Total New: 2088

Age	Number of Clients	% of Total
Client's age as of the end of the reporting period		
Less than 2 years	0	0.00%
02 - 12 years	0	0.00%
13 - 24 years	66	2.09%
25 - 44 years	1155	36.63%
45 - 64 years	1719	54.52%
65 years or older	213	6.76%
Unknown	0	0.00%
	3153	100%
Gender	Number of Clients	% of Total
"Other" and "Refused" are counted as "Unknown"		
Female	846	26.83%
Male	2288	72.57%
Transgender FTM	1	0.03%
Transgender MTF	18	0.57%
Unknown	0	0.00%
	3153	100%
Race/Ethnicity	Number of Clients	% of Total
Includes Multi-Racial Clients		
White	554	17.57%
Black	1600	50.75%
Hispanic	950	30.13%
Asian	37	1.17%
Hawaiian/Pacific Islander	3	0.10%
Indian/Alaskan Native	9	0.29%
Unknown	0	0.00%
	3153	100%

From 01/01/16 - 12/31/16



RESULTS OF REVIEW

Health History

Percentage of HIV-positive client records that had client initial health history

	Yes	No	N/A
Client records that showed evidence of a client initial health history.	210	2	-
Clients in oral health services that were reviewed.	212	212	-
Rate	99%	1%	-

Health History Update

Percentage of HIV-positive client records that had client health history updated in the past 12 months.

	Yes	No	N/A
Client records that showed evidence of a client health history updated every 6 months.	203	9	-
Clients in oral health services that were reviewed that had over 6 months of oral care.	212	212	-
Rate	96%	4%	-

Allergies and Drug Sensitivities

Percentage of HIV-positive client records that had allergies and drug sensitivities documented.

	Yes	No	N/A
Number of client records that showed evidence of a client's allergies and drug sensitivities.	212	0	-
Number of HIV-infected clients in oral health services that were reviewed.	212	212	-
Rate	100%	0%	-

Vital Signs Assessment

Percentage of HIV-positive client records that showed vital signs assessed at every visit

	Yes	No	N/A
Client records that showed evidence of vital signs assessment at every visit.	212	0	-
Clients in oral health services that were reviewed.	212	212	-
Rate	100%	0%	-

Medication Review

Percentage of HIV-positive client records that had HIV and NON-HIV medication documented

	Yes	No	N/A
Client records that showed evidence of client medication documentation.	212	0	-
Clients in oral health services that were reviewed.	212	212	-
Rate	100%	0%	-

Primary Care Provider (PCP) Contact Information

Percentage of HIV-positive client records that had client PCP contact information

	Yes	No	N/A
Client records that showed evidence of client PCP contact information.	212	0	-
Clients in oral health services that were reviewed.	212	212	-
Rate	100%	0%	-

Clinical Tooth Chart

Percentage of HIV-positive client records that had a clinical tooth chart marked and up to date

	Yes	No	N/A
Client records that showed evidence of a client clinical tooth chart marked and up to date.	205	7	-
Clients in oral health services that were reviewed.	212	212	-
Rate	97%	3%	-

Hard and Soft Tissue Exam

Percentage of HIV-positive client records that had a hard and soft tissue exam in the last 12 months

	Yes	No	N/A
Client records that showed evidence of an intraoral exam.	203	9	-
Clients in oral health services that were reviewed.	212	212	-
Rate	96%	4%	-

Annual X-Rays

Percentage of HIV-positive client records that had annual x-rays taken

	Yes	No	N/A
Client records that showed annual x-rays in medical chart.	201	11	-
Clients in oral health services that were reviewed.	212	212	-
Rate	95%	5%	-

Annual Oral Health Education and Instructions

Percentage of HIV-positive client records that had annual oral health instructions documented

	Yes	No	N/A
Client records that showed evidence of oral health instructions.	196	11	5
Clients in oral health services that were reviewed.	207	207	-
Rate	95%	5%	-

Alcohol Use Assessment

Percentage of HIV-positive client records that had been assessed for alcohol consumption

	Yes	No	N/A
Client records that showed evidence assessment for alcohol.	212	0	-
Clients in oral health services that were reviewed.	212	212	-
Rate	100%	0%	-

Recreational Drug Use Assessment

Percentage of HIV-positive client records that had evidence of assessment for Recreational drug use

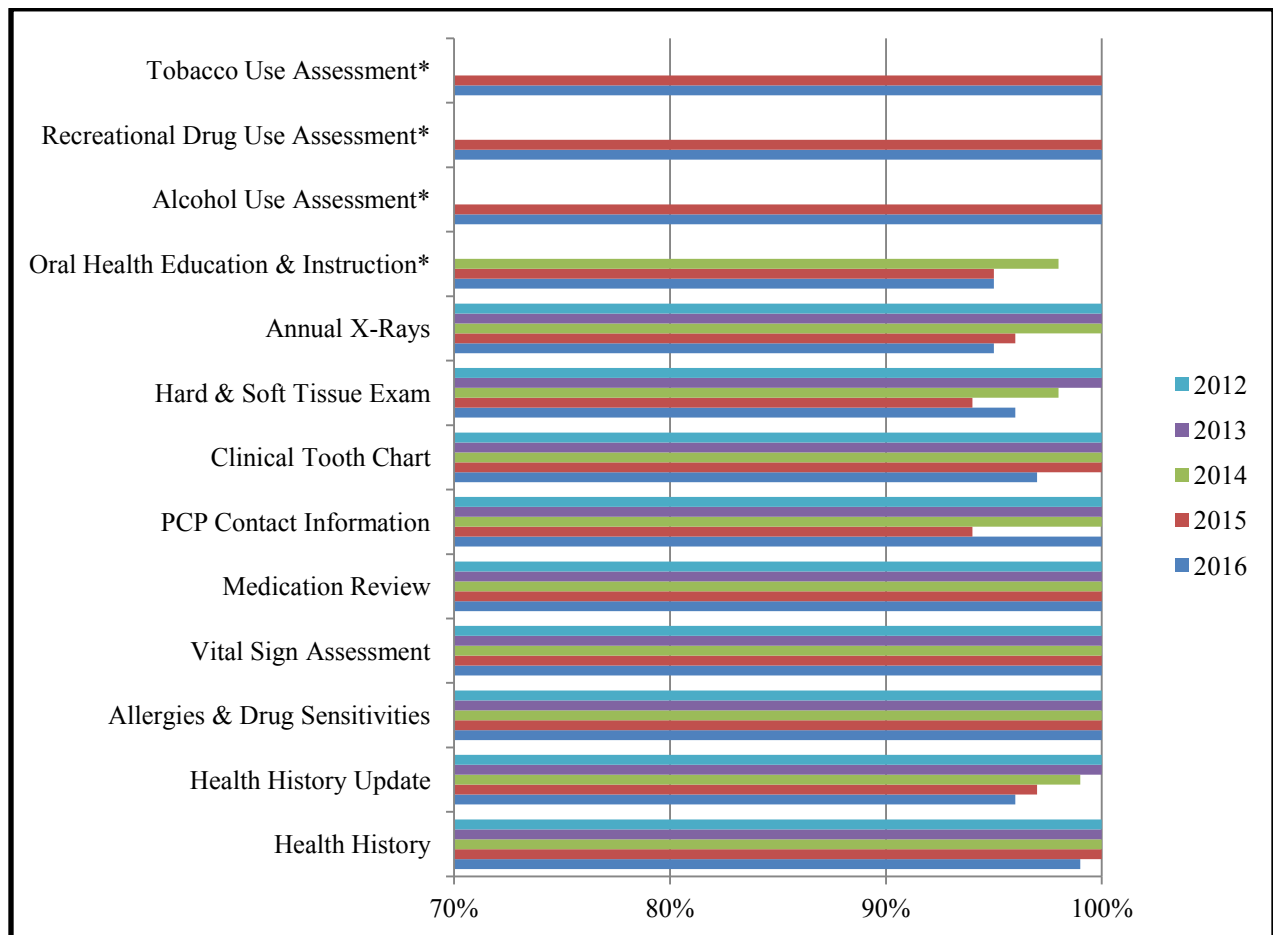
	Yes	No	N/A
Client records that showed evidence assessment of recreational drug use.	212	0	-
Clients in oral health services that were reviewed.	212	212	-
Rate	100%	0%	-

Tobacco Use Assessment

Percentage of HIV-positive client records that had assessment of tobacco use

	Yes	No	N/A
Client records that showed evidence assessment of tobacco use.	212	0	-
Clients in oral health services that were reviewed.	212	212	-
Rate	100%	0%	-

HISTORICAL OVERVIEW



CONCLUSIONS

The 2016 data shows a continuation of excellent overall oral healthcare services. Seven (7) data elements reviewed were completed at a rate of 100%, including all assessments and medication review. The data elements reviewed (*Annual X-rays and Oral Health Education and Instruction*) at the lowest completion were completed at a rate of 95%. Health history and updates, while not completed at 100%, were appropriate and timely. Allergies and medication sensitivities were well documented. The newest data elements (*Assessment for Tobacco Use, Recreational Drug Use and Alcohol Use*) were completed at a rate of 100%.

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Oral Health Care-Rural Target Chart Review FY 2015

Ryan White Part A Quality Management Program–Houston EMA

January 2017

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HCPH is the local public health agency for the Harris County, Texas jurisdiction. It provides a wide variety of public health activities and services aimed at improving the health and well-being of the Harris County community.

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Introduction

Part A funds of the Ryan White Care Act are administered in the Houston Eligible Metropolitan Area (EMA) by the Ryan White Grant Administration Section of Harris County Public Health & Environmental Services. During FY 15, a comprehensive review of client dental records was conducted for services provided between 3/1/15 to 2/28/16. This review included one provider of Adult Oral Health Care that received Part A funding for rural-targeted Oral Health Care in the Houston EMA.

The primary purpose of this annual review process is to assess Part A oral health care provided to persons living with HIV in the Houston EMA. Unlike primary care, there are no federal guidelines published by the U.S Health and Human Services Department for oral health care targeting individuals with HIV/AIDS. Therefore, Ryan White Grant Administration has adopted general guidelines from peer-reviewed literature that address oral health care for the HIV/AIDS population, as well as literature published by national dental organizations such as the American Dental Association and the Academy of General Dentistry, to measure the quality of Part A funded oral health care. The Ryan White Grant Administration Project Coordinator for Clinical Quality Improvement (PC/CQI) performed the chart review.

Scope of This Report

This report provides background on the project, supplemental information on the design of the data collection tool, and presents the pertinent findings of the FY 15 oral health care chart review. Any additional data analysis of items or information not included in this report can likely be provided after a request is submitted to Ryan White Grant Administration.

The Data Collection Tool

The data collection tool employed in the review was developed through a period of in-depth research and a series of working meetings between Ryan White Grant Administration. By studying the processes of previous dental record reviews and researching the most recent HIV-related and general oral health practice guidelines, a listing of potential data collection items was developed. Further research provided for the editing of this list to yield what is believed to represent the most pertinent data elements for oral health care in the Houston EMA. Topics covered by the data collection tool include, but are not limited to the following: basic client information, completeness of the health history, hard & soft tissue examinations, disease prevention, and periodontal examinations.

The Chart Review Process

All charts were reviewed by the PC/CQI, a Master's-level registered nurse experienced in identifying documentation issues and assessing adherence to published guidelines. The collected data for each site was recorded directly into a preformatted database. Once all data collection was completed, the database was queried for analysis. The data collected during this process is intended to be used for the purpose of service improvement.

The specific parameters established for the data collection process were developed from HIV-related and general oral health care guidelines available in peer-reviewed literature, and the professional experience of the reviewer on standard record documentation practices. Table 1 summarizes the various documentation criteria employed during the review.

Table 1. Data Collection Parameters

Review Area	Documentation Criteria
Health History	Completeness of Initial Health History: includes but not limited to past medical history, medications, allergies, substance use, HIV MD/primary care status, physician contact info, etc.; Completed updates to the initial health history
Hard/Soft Tissue Exam	Findings—abnormal or normal, diagnoses, treatment plan, treatment plan updates
Disease Prevention	Prophylaxis, oral hygiene instructions
Periodontal screening	Completeness

The Sample Selection Process

The sample population was selected from a pool of 288 unduplicated clients who accessed Part A oral health care between 3/1/15 and 2/28/16. The medical charts of 75 of these clients were used in the review, representing 26% of the pool of unduplicated clients.

In an effort to make the sample population as representative of the actual Part A oral health care population as possible, the EMA's Centralized Patient Care Data Management System (CPCDMS) was used to generate a list of client codes to be reviewed. The demographic make-up (race/ethnicity, gender, age) of clients accessing oral health services between 3/1/15 and 2/28/16 was determined by CPCDMS, which in turn allowed Ryan White Grant Administration to generate a sample of specified size that closely mirrors that same demographic make-up.

Characteristics of the Sample Population

The review sample population was generally comparable to the Part A population receiving rural-targeted oral health care in terms of race/ethnicity, gender, and age. It is important to note that the chart review findings in this report apply only to those who received rural-targeted oral health care from a Part A provider and cannot be generalized to all Ryan White clients or to the broader population of persons with HIV or AIDS. Table 2 compares the review sample population with the Ryan White Part A rural-targeted oral health care population as a whole.

	Sample		Ryan White Part A EMA	
	Number	Percent	Number	Percent
Race/Ethnicity				
African American	29	38.7%	110	38.2%
White	44	58.7%	172	59.7%
Asian	1	1.3%	2	.7%
Native Hawaiian/Pacific Islander	0	0%	0	0%
American Indian/Alaska Native	0	0%	1	.4%
Multi-Race	1	1.3%	3	1.4%
	75		288	
Hispanic Status				
Hispanic	18	24%	78	27.1%
Non-Hispanic	57	76%	210	72.9%
	75		288	
Gender				
Male	49	65.3%	197	68.4%
Female	26	34.7%	90	31.3%
Transgender	0	0%	1	.4%
	75		288	
Age				
18 – 24	4	5.3%	16	5.6%
25 – 34	14	18.7%	64	22.2%
35 – 44	23	30.7%	90	31.3%
45 – 54	21	28%	78	27.1%
55 – 64	11	14.7%	33	11.5%
65+	2	2.7%	7	2.4%
	75		288	

Findings

Clinic Visits

Information gathered during the 2015 chart review included the number of visits during the study period. The average number of oral health visits per patient in the sample population was seven.

Health History

A complete and thorough assessment of a patient's medical history is essential among individuals infected with HIV or anyone who is medically compromised. Such information, such as current medication or any history of alcoholism for example, offers oral health care providers key information that may determine the appropriateness of prescriptions, oral health treatments and procedures. The form that is used by the agency to assess patient's health history captures a wide range of information; however, for the purposes of this review, this report will focus on the assessment of information that is of particular importance among HIV/AIDS patients compared to patients in the general population.

Assessment of Medical History

	2013	2014	2015
Primary Care Provider	79%	67%	88%
Dental Health History*	73%	97%	93%
Medical Health History*	72%	81%	83%
Medical History 6 month Update	57%	59%	94%
Medication Review	85%	61%	91%
Allergies Recorded	87%	81%	93%
Documentation of HIV Status	92%	6%	71%
Documentation of Opportunistic Infection Status	71%	53%	93%
Tobacco Use	88%	81%	95%
Substance Abuse	87%	80%	95%

*HIV/AIDS Bureau (HAB) Performance Measures

Health Assessments

	2013	2014	2015
Vital Signs	99%	96%	99%
CBC documented	80%	59%	63%
Screening for Antibiotic Prophylaxis	91%	83%	91%

Prevention and Detection of Oral Disease

Maintaining good oral health is vital to the overall quality of life for individuals living with HIV/AIDS because the condition of one's oral health often plays a major role in how well patients are able to manage their HIV disease. Poor oral health due to a lack of dental care may lead to the onset and progression of oral manifestations of HIV disease, which makes maintaining proper diet and nutrition or adherence to antiretroviral therapy very difficult to achieve. Furthermore, poor oral health places additional burden on an already compromised immune system.

	2013	2014	2015
Oral Health Education*	85%	87%	80%
Clinical Tooth Chart	99%	100%	99%
Intraoral Exam	95%	92%	88%
Extraoral Exam	95%	91%	88%
Periodontal screening*	91%	91%	92%
X-rays present	95%	94%	92%
Treatment plan*	93%	89%	81%

*HIV/AIDS Bureau (HAB) Performance Measures

One client presented with oral pathology, but had not yet returned for evaluation by the dentist.

Procedures Performed

	2014	2015
Extractions	32%	29%
Fillings	59%	60%
Root Canals	7%	11%
Dentures	13%	11%
Crowns	11%	17%

Conclusions

Overall, oral health care services continues its trend of high quality care. The Houston EMA oral health care program has established a strong foundation for preventative care and we expect continued high levels of care for Houston EMA clients in future.

Appendix A – Resources

Dental Alliance for AIDS/HIV Care. (2000). *Principles of Oral Health Management for the HIV/AIDS Patient*. Retrieved from: http://aidsetc.org/sites/default/files/resources_files/Princ_Oral_Health_HIV.pdf.

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Review Article

HIV and Dental Treatment

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Abstract

Approximately 1.1 million people are living with HIV, but 17 to 25 percent of these infected individuals are unaware of their disease status and as a result are not getting appropriate medical treatment. Many of those who are untreated need dental care for caries, periodontal disease, and other oral pathologies. Although HIV positive individuals undergoing medical treatment pose a significantly reduced risk for disease transmission, given the numbers of untreated HIV infected, providers of dental care must continue to be vigilant with respect to their preventative infection control measures. This article presents information on the epidemiology of HIV-infected patients and practical clinical considerations that need to be utilized when treating the AIDS patient.

OVERVIEW

According to the Morbidity and Mortality Weekly Report (*MMWR*) [1] and other reports (<http://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-report-us.pdf>) there were over 1.1 million adults and adolescents infected with HIV in the United States and individuals newly infected per year ranged from 48,200 to 64,500 persons. Also reported is a disproportionate burden of the disease within racial and ethnic minorities, except for individuals who define themselves as Asians. These statistics also indicate that gay and bisexual men of all races are the ones most affected by HIV infection [2]. Although the incidence of HIV infection does not appear to be increasing, Dental personnel need to be aware that of the 1.1 million people living with HIV, approximately one individual in six is thought to be unaware that they have the infection and as a result are not getting treatment. These individuals, if they need oral care, can potentially spread the disease in the dental setting [3].

Even though the above statistics are distressing, additional *MMWR* statistics from a recent 2014 study [4] are encouraging in that they reveal that of those patients knowing they are HIV infected, most (88.7%) are taking prescribed antiretroviral therapy (HAART) and as a result 71.6% demonstrate a virtually undetectable viral load when tested (<200 copies/mL). Further, of those self-identifying themselves as sexually active, many have also been assessed for other diseases such as syphilis, gonorrhea, and Chlamydia. Less encouraging, however, are the findings of another study assessing behaviors among injecting drug users where 70% of men and 73% of women report having unprotected vaginal sex and lesser numbers (25% and 21% respectively) unprotected anal sex. Further, many subjects in this latter study had not been checked for Hepatitis C. These statistics underscore the importance of effective infection control in the dental setting, particularly in practices located where there may be IV drug [5] use.

Another statistic is of significance in relation to dental health.

In the 2014 *MMWR* survey cited above assessing behavioral and clinical characteristics of persons receiving medical care for HIV infection it was found that 22.8% of patients had unmet dental care needs. And in another HIV Cost and Services Utilization Study (HCSUS) conducted by the RAND Corporation, an even much higher 58 percent of the interviewed participants indicated that they did not receive regular dental care [6]. Research suggests that barriers to the pursuit of dental care in the HIV-infected patient include educational level (lack of a college education), not having dental insurance, ethnicity (being African American), and "how HIV was contracted" (e.g. as a consequence of blood transfusion). Discrimination by dental health care providers is another factor that has been identified as a barrier to appropriate care of the HIV patient [7].

The above *MMWR* and other reports suggest that HIV patients being treated with antiretroviral therapy pose a limited risk to dental personnel but a substantial number of individuals with HIV remain untreated via HAART and thus pose a risk to dental staff and other patients. They also suggest that there is a significant unmet dental need in the HIV-infected community with barriers to treatment both patient as well as practitioner dependant.

DENTAL INTERVENTION OF THE HIV PATIENT

Several published references are available to guide dental health care providers in the development of general office procedures relating to the treatment of HIV-infected (and other potentially infective) patients [8-11]. Dental personnel involved in treating HIV-infected patients should be well aware of the current literature and evidence based science that has accumulated since 1983, when AIDS first came upon the scene. Some important highlights from the literature include the following:

1. With the development of antiviral drug strategies, AIDS is now a chronic disease. Highly active antiretroviral therapy (HAART) has significantly reduced deaths and people with HIV can survive more than 20 years with the

disease. This means that more HIV-infected individuals are likely to present for dental treatment over time [12].

2. One in five (20%) of HIV-infected persons do not know that they are infected [12].
3. With the exception of a well publicized case of an HIV-infected Florida dentist who exposed patients to HIV and several other isolated anecdotes [13] the number of reports documenting practitioner to patient spread of HIV come from care delivered outside the USA. It is reported that thousands of patient records reviewed for 75 HIV-infected dentists and physicians have not identified a single problem with HIV transmission of practitioner to patient [14] in the USA.
4. Exposure to blood borne pathogens is significantly reduced via the use of personal protective equipment (PPE) during dental treatment but the use of PPE does not prevent all possible exposures (i.e. needle sticks); hence proper needle technique and disposal remains extremely important.
5. Cross contamination from one HIV patient to another can occur via contaminated instruments or equipment surfaces.
6. Systematic literature review indicates that at this time it cannot be said with reasonable certainty that HIV patients are at a greater risk for the development of treatment complications following invasive dental treatments such as orthognathic surgery, periodontal therapy, dental implants, prophylaxis, scaling, or endodontic therapy (in comparison with non-HIV patients) [15].
7. The Americans with Disabilities Act (ADA), enacted in 1990, designated HIV-infected people, even if they are asymptomatic, as handicapped, and as such patients with HIV are protected by law against discrimination, including that which might occur in a dental office, for example, by refusal of treatment. Unfortunately a lack of education regarding the disease has been found to lead five percent of dentists in one US city surveyed to refuse treatment to HIV patients, in violation of law [16]. The risk of suit may be greater than the risk of disease transmission.

CLINICAL CONSIDERATIONS IN TREATING THE HIV-INFECTED PATIENT

Risk management

Risk management includes the development and implementation of office procedures for identification of possible HIV-infected individuals, protective measures to prevent cross infection of HIV from patient to staff, staff to patient, and patient to patient, reporting of exposures should they occur, and referral for additional medical care and counseling of a suspected HIV-infected patient in accordance with the most current United States Public Health Services (USPHS) recommendations. Every dental office should have available to staff a comprehensive written program for preventing and managing occupational exposures to blood and other potentially infectious agents and a designated compliance officer (typically an assistant or hygienist) that

provides regular updates of the current science and procedural regulations related to HIV (and other viral pathogens that can be transmitted through dental care).

Infection control

Infection control includes identification of potential risk based on patient history, protection of personnel via barrier techniques, instrument and treatment room sterilization, and decontamination of laboratory materials (e.g. models, impressions, etc.). In general, every patient should be considered as a possible transmitter of disease and treated the same in terms of infection control procedures.

Patient history related to risk

There are certain factors within the medical history that can indicate greater risk of HIV or other contagious infection. Unfortunately, in the dental setting, some of the questions necessary to get at information related to risk of infection with HIV are difficult for clinicians and staff to pose to patients. Nonetheless, while these important pertinent questions may not be asked of patients, they should be appreciated. Historical factors which are associated with increased HIV (and some other infectious diseases such as Hepatitis C) risk include: men having sex with men, more than one sex partner – particularly if one of them injects drugs, use of and sharing of needles, syringes, cookers or other equipment used to inject drugs, and recent infection with another sexually transmitted disease.

Other less personally invasive questions that can be more easily asked of a patient in the dental setting to access for possible HIV (via verbal history or questionnaire) include the presence of symptoms indicating illness such as fever, weight loss, shortness of breath or diarrhea, the occurrence of frequent fungal or yeast infections, liver infection (e.g. hepatitis), frequent recurrent cold sores or oral herpes or other sexually transmitted diseases, prior blood transfusion, and whether the patient is caring for an HIV patient who has hemophilia [17].

Laboratory and screening tests

If HIV infection is suspected it is best to refer the patient for medical evaluation and laboratory assessment where appropriate screening tests can occur. The standard recommended CDC screening test for HIV infection is the *EIA* or enzyme immunoassay which evaluates the presence of HIV antibodies. This test is performed on a blood draw which is a procedure not typically provided in the dental setting. Two tests are required to confirm a positive diagnosis. Other tests include the evaluation of oral fluid (not saliva) collected by a special collection device and evaluation of urine with the latter less sensitive and less specific than the saliva test. In addition to the above, a home collection test kit has been developed for patients suspecting HIV [18].

Barrier techniques

In 1993, to facilitate infection control and reduce risk of transmission of infection (generally and not necessarily related to HIV), the CDC published specific infection control criteria for treating dental patients [19]. These recommended procedures and subsequent modifications (in 2003) [20] are now incorporated into many State dental practice acts and have

become the standard of care in the management of all patients and not just those with infectious disease. The cited document (above) can be used to develop a manual on infection control for office use. A PDF e-book has also been released outlining current recommendations [21]. Some of the many recommended procedures include the following.

For protective attire and barrier techniques

1. Latex or vinyl gloves must be used when there is potential for contacting blood, blood-contaminated saliva, or mucous membranes (although not stated - gloves should be worn for all procedures and for all patients). Non-sterile gloves can be used for examinations and other nonsurgical procedures; sterile gloves should be used for surgical procedures.
2. Hand washing needs to occur before placement of gloves and before placement of new gloves between patients. Old gloves need to be discarded. Washing or attempts at disinfection or sterilization of previously worn gloves is not approved as these efforts are ineffective, will destroy the integrity of the gloves, and can easily cause cross-contamination.
3. Chin-length plastic face shields or surgical masks and protective eyewear need to be worn to protect the eyes from splatter during dental treatment. Masks need to be replaced between patients and during patient care if they become wet or moist. Face shields/eyewear should be washed with an appropriate cleaning agent and disinfected between patients.
4. Protective reusable or disposable gowns, laboratory coats, or uniforms must be worn when treating patients. These items should be removed prior to exiting the treatment area and before initiation of laboratory or other non-treatment patient-care activities. It is recommended that reusable protective clothing be washed using a normal laundry cycle and changed daily if visibly dirty.
5. Impervious-baked paper, aluminum foil, or plastic covers should be placed on light handles or x-ray unit heads and other equipment where cleaning and disinfection is problematic. These materials should be removed, discarded, and replaced between patients (after the removal of contaminated gloves and hand washing).
6. Rubber dams, high-velocity air evacuation, and proper patient positioning is recommended to reduce the formation of salivary particles and aerosols during treatment.
7. Splash shields need to be used in the dental laboratory.

For sharp instrument and needle management

1. Potentially infective needles, scalpel blades, wires, and other sharp instruments must be handled very carefully.
2. A one-handed 'scoop' technique or a mechanical device designed for holding the needle sheath during recapping is the recommended approach for recapping (all needles need to be recapped after use or when replacing on the

operative tray or prior to disposal). Syringes and needles, scalpel blades, and other sharp items must be placed in puncture-resistant containers for later disposal (there are several companies that provide containers and pick up services). Needles should not be bent or broken prior to disposal.

For sterilization or disinfection of dental instruments

1. EPA-registered hospital disinfectant with tuberculocidal activity (intermediate-level disinfectant) is recommended.
2. It is important to pay attention to the category of items needing disinfection: those in the critical category are ones that penetrate soft tissue, contact bone, enter into or contact blood; semicritical items contact mucous membranes or non-intact skin but do not contact bone or blood; and noncritical items are ones that contact intact skin. The latter includes, for example, the radiograph head/cone, blood pressure cuff, face bow or other hardware used in restorative care, and the pulse oximeter.
3. Each dental office should have a designated central processing area divided into sections for receiving, cleaning and decontamination, preparation and packaging, sterilization, and storage.
4. Heat-tolerant dental instruments must be sterilized by autoclaving, dry heat, or unsaturated chemical vapor. For heat-sensitive critical and semi-critical instruments and devices, liquid chemical germicides registered by the FDA as sterilants can be used. Liquid chemical sterilants are highly toxic and must be handled carefully.
5. The dental office should establish and use some type of monitoring system (a simple pad or software program) to make sure that the sterilization equipment is effective.
6. Manufacturer's instructions need to be followed for the cleaning and sterilization of hand pieces; and after operative use the dental hand piece should be run for a minimum of 20-30 seconds to clear the water lines.
7. Appropriate barriers should be used on dental components that are permanently attached to dental units such as saliva ejectors, high-speed evacuators, and the air/water syringe followed by disinfection with an EPA-registered disinfectant (intermediate-level).

Dental unit water quality

1. Each dental office should develop a strategy for the cleaning and disinfection of blood spills, medical waste disposal, and utilization of state-approved treatment technologies for containing blood and saliva discharge into the sewer system.
2. To reduce the possibility of virus and other microorganisms contaminating treatment water within dental hand pieces, ultrasonic scales, or air/water syringes, these items should be discharged for 20-30 seconds after each patient's visit and before next use (even if a device is equipped with an antiretraction valve).

3. It is important to consider water quality monitoring.
4. Sterile solution systems should be used to cool and irrigate during oral surgical procedures (including implants). Other delivery devices that can be considered to deliver sterile solution include bulb syringes or other single-use disposable products.

Infection control related to laboratory supplies and materials and biopsy specimens

1. It is important to disinfect materials that will be sent to a laboratory. These include impression materials, models, appliances, and other materials that have been potentially contaminated by blood or saliva. Disinfection begins with thorough removal of blood and saliva.
2. An EPA-registered hospital germicide labeled with antimyobacteria (tuberculocidal) activity (defined as an intermediate-level disinfectant) is recommended for use on laboratory supplies and materials.
3. Materials returned from the dental laboratory need to be cleaned and disinfected prior to placement in the patient's mouth.
4. The dental office must communicate with the dental laboratory instructions regarding handling of contaminated materials [11].
5. Biopsy specimens need to be handled with care. When placing a specimen for transfer to pathology it is important to make sure that the outer surface area of the container is not contaminated. If contamination is suspected, the container needs to be disinfected prior to mailing or transfer.

The 2003 guidelines also provide additional sterilization information on a variety of topics such as the handling of extracted teeth, laser/electrosurgery plumes or surgical smoke, and dental radiology. Additional infection-control internet resources are also provided in the document. The Organization for Safety and Asepsis Procedures (osap.org) has also published a good reference source describing CDC guidelines [22].

OTHER CLINICAL CONSIDERATIONS

Needle placement

If needles are to be used repeatedly they should be recapped and placed in a sterile area on the instrument tray. Techniques for recapping have been previously described.

Syringe systems designed to reduce needle stick injury

To reduce needle stick exposure associated with conventional syringes several manufacturers have marketed devices designed to automatically cap the needle post-use. Many of these 'safety' dental syringes have been removed from the market because of user dissatisfaction (and at least one study suggesting they may be no safer than traditional needles [23]) but several are still available. They include the Ultra safety Plus XL Syringe (Septodont, Lancaster, PA, USA), the Ultrasafe Syringe (Safety Syringes Inc, Carlsbad, CA, USA), the HypoSafety

Syringe (Dentsply MPL Technologies, Susqueanna, PA, USA), the SafetyWand (Milestone Scientific Inc, Livingston, NJ, USA) which is touted as the first injection device to be fully compliant with OSA regulations under the federal Needlestick Safety Act, and the RevVac safety syringe. Few of these devices have been subjected to stringent study related to purported prevention efficacy but they might be considered if there is concern regarding needle stick injury.

Sharps injury and HIV exposure

Sharps injuries and other forms of exposure can occur during dental treatment and if the patient is known to be HIV-infected, appropriate post exposure management is critical. The CDC has published information on their web site [24]: <http://www.cdc.gov/niosh/topics/bbp/emergnedl.html>.

It is suggested that post needle stick the affected area should be immediately washed with soap and water; splashes to the nose, mouth (with contact with mucosa), or skin should be flushed with water; the eyes should be irrigated with clean water, saline, or sterile irrigating solutions post exposure by fluids. Any exposure incident should be immediately reported and medical treatment should be quickly pursued (within one to two hours). Even given exposure by percutaneous needle stick, the risk of contracting AIDS is small (estimated from a number of studies to be in the range of 0.32%) [25,26]. Mixed risk results are reported for mucous membrane exposure with one source indicating an estimated risk of .09% [27] and another less than .03% [28].

Reported factors that increase the risk of HIV infection following exposure include: deep penetrating injury, visible blood on the injury device, injury from a needle placed in a patient's artery or vein, and inoculation by a terminal HIV-related patient not on therapy or with a very high viral load [29].

It is important to note that the risk of infection by needle exposure from an untreated HIV-infected patient is low to begin with [30] and if the patient is on HAART and has minimal HIV virus at the time of the needle stick injury it may be essentially nonexistent. Further, it should be appreciated that pure saliva not contaminated by blood has not been implicated in the transmission of HIV [31]. The virus, however, has been isolated from subgingival biofilm [32] in HIV-infected patients. Hence, to be on the safe side the above precautions should be used in case of any type of exposure involving contact with oral fluids.

Managing dental Apprehension in the HIV patient

Fear of dental procedures including injections and subsequent numbness is common in both healthy [33] and HIV infected patients. But HIV infected patients experience other fears related to dental care not typically encountered by healthy patients. In a qualitative study assessing HIV-related stigma in the dental setting [34], 45 percent of 60 HIV-infected individuals interviewed indicated that they anticipated judgment, stigmatization, or disrespectful treatment in the dental office because of their HIV status. Thirty-five percent endorsed a fear of the dentist and an equal number concerns about confidentiality and receiving humane treatment. Some were concerned with giving HIV to the dentist. The authors of this study conclude that dental "providers should be aware of and better manage these issues".

Management of dental fear may require counseling, sedation, and sometimes cognitive behavioral psychology. Several strategies related to local anesthesia and oral sedation may be helpful in managing the fearful patient. These include the use of vibration injection syringes, the use of lidocaine and prilocaine dental gel to produce a profound topical anesthesia during deep scaling and root planning, and the use of the sedative/anxiolytics for sedation [35]. Articaine hydrochloride has also been recommended if repeated injections are anticipated but recent research suggests that there are toxicity issues (paresthesia) associated with this anesthetic [36] so it should be used with caution.

SUMMARY

Dental patients have an expectation that appropriate infection control measures will be taken by their dental health care providers. The primary concerns identified in one study relate to the possible transmission of infectious diseases such as HIV (as well as hepatitis B, hepatitis C, and tuberculosis). It is expected that dental personnel will wear masks, gloves, and glasses [37], but as indicated in this written article, CDC and ADA guidelines extend far beyond these simple measures; and it is recommended that these more extensive measures be implemented in clinical practice. While clinical personnel should take comfort in knowing that in the age of HAART – patients receiving HIV treatment pose little risk of exposure to other patients or staff. But precautions still need to be taken to prevent exposure from those patients not knowing that they are HIV-infected (and not receiving HAART). Given the risk of infectious disease transmission in general all dental patients should be treated using the recommended CDC infection control guidelines. This article discusses important clinical considerations helpful in managing the dental needs of HIV-infected patients.

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Dental Anxiety and the Use of Oral Health Services Among People Attending Two HIV Primary Care Clinics in Miami

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ABSTRACT

Objectives. We examined factors associated with dental anxiety among a sample of HIV primary care patients and investigated the independent association of dental anxiety with oral health care.

Methods. Cross-sectional data were collected in 2010 from 444 patients attending two HIV primary care clinics in Miami-Dade County, Florida. Corah Dental Anxiety Scores and use of oral health-care services were obtained from all HIV-positive patients in the survey.

Results. The prevalence of moderate to severe dental anxiety in this sample was 37.8%, while 7.9% of the sample was characterized with severe dental anxiety. The adjusted odds of having severe dental anxiety were 3.962 times greater for females than for males (95% confidence interval [CI] 1.688, 9.130). After controlling for age, ethnicity, gender, education, access to dental care, and HIV primary clinic experience, participants with severe dental anxiety had 69.3% lower adjusted odds of using oral health-care services within the past 12 months (vs. longer than 12 months ago) compared with participants with less-than-severe dental anxiety (adjusted odds ratio = 0.307, 95% CI 0.127, 0.742).

Conclusion. A sizable number of patients living with HIV have anxiety associated with obtaining needed dental care. Routine screening for dental anxiety and counseling to reduce dental anxiety are supported by this study as a means of addressing the impact of dental anxiety on the use of oral health services among HIV-positive individuals.

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Oral health care ranks among the highest unmet health-care needs for individuals infected with human immunodeficiency virus (HIV), as demonstrated in several national studies.¹⁻⁶ Heslin et al.¹ reported that in a probability sample of 2,864 HIV-positive adults, unmet dental needs were twice as prevalent as unmet medical needs. Data from Weinert et al.⁷ and other studies have indicated that during the era before highly active antiretroviral therapy (HAART) was available, 90% of HIV-positive individuals developed at least one oral lesion through the duration of their disease.⁷⁻⁹ Patton et al.¹⁰ and others¹¹⁻¹³ have observed that with HAART, the prevalence of oral manifestations of HIV infection has generally decreased to 33%–54% of individuals over the duration of their disease. Moreover, because the occurrence of specific opportunistic oral lesions is strongly associated with lower CD4 cell counts^{7,14,15} and higher viral loads,^{14,15} the oral cavity has played an important role in monitoring the progression of HIV infection,^{15,16} immune reconstitution inflammatory syndrome,¹⁷ and the effectiveness of HAART.^{18,19} Of particular concern are HIV-infected individuals with impaired immune systems because the risks associated with compromised oral health can have negative repercussions on the general health of these patients, potentially leading to serious and life-threatening consequences.⁷ Studies have shown that dental examiners were more successful than medical examiners in identifying oral lesions associated with HIV and acquired immunodeficiency syndrome (AIDS).^{20,21} Together, these findings show that utilization of oral health-care services is an imperative for HIV-positive individuals.

The identification and mitigation of barriers to oral health care for HIV-infected adults is an important component of the overall management of this disease. Barriers to oral health-care access and utilization have been identified in studies of general populations. Fear, cost of treatment, lack of insurance, education, embarrassment, age, race/ethnicity, and gender are among the barriers commonly described.²²⁻²⁷ Dental anxiety in general populations has long been associated with delay or avoidance in seeking dental care.²²⁻²⁵ A construct investigated by Armfield et al. concerned “a vicious cycle of dental fear,” whereby individuals with dental anxiety avoid dental care, the avoidance contributes to deterioration of their dental condition, awareness of their worsening conditions leads to more anxiety regarding pending treatment needs, and the increased anxiety reinforces the avoidance behaviors.²⁶

Dental anxiety has also been identified as a barrier to receiving dental health care among HIV-infected individuals, although it has not been measured with a validated scale of dental anxiety. Patton et al.²⁸ and

Shiboski et al.⁴ both found that the odds of not utilizing dental care were more than three times higher among HIV-positive patients who were anxious or fearful about dentists compared with those who were not fearful. The prevalence of moderate to severe dental anxiety in various samples of general populations worldwide ranges from 4.6% to 21.1%, with severe dental anxiety leading to dental avoidance.^{24,29-34} Much less is known regarding the prevalence of dental anxiety among HIV-positive populations.

Within this context, the specific aims of this study were to (1) identify factors associated with dental anxiety among a sample of HIV primary care patients and (2) investigate the independent association of dental anxiety with use of oral health-care services.

METHODS

Participants

The current study used cross-sectional data collected from a sample of patients who were attending two HIV primary care clinics in Miami-Dade County, Florida. Individuals were eligible for the study if they were at least 18 years of age and attending the Jackson Memorial Hospital Special Immunology (JMHSI) Clinic in Miami or the Jackson Health Systems Prevention Education and Treatment (PET) Center in Miami Beach during the study period of March–October 2010. All patients attending these two clinics are HIV-positive.

Study staff approached every third person who had entered one of the two clinics and had checked in for receipt of HIV health-care services any day the clinics were open. The clinics operated four days a week, and two trained study staff were present at each clinic during normal operating hours. Strict ethical guidelines regarding professional conduct were enforced for all project staff, all of whom were trained in appropriate conduct for obtaining informed consent and strict maintenance of participant confidentiality. If the patient was interested in participating in the study and eligible, staff accompanied the potential participant to a secure and confidential room where the research study was described. Those patients who were still interested proceeded to the informed consent process. As part of the recruitment and screening process, study personnel informed all potential participants of their right not to enroll in the study if not interested and to withdraw from the study at any time. Additionally, all study participants signed a statement attesting to their understanding that the information they provided would be kept confidential. The Institutional Review Board of the University of Miami and the Jackson Memorial Hospital Oversight Committee reviewed

and approved the study protocol prior to the study's commencement.

Procedures

A total of 476 individuals were approached for participation in the study, with 413 recruited at the JMHSI Clinic and 63 at the PET Center. Recruitment of participants occurred at each clinic from March–October 2010. The current analysis was based upon 444 survey respondents; 32 enrollees declined to participate or presented incomplete data for the dependent variables studied, resulting in an overall participation rate of 93.3%.

After providing informed consent, the participants completed the survey instrument administered by trained study personnel. Study activities were conducted in either English or Spanish, according to the preference of the participant. The survey instrument collected demographics, dental anxiety scores, oral and general health status, utilization of oral health-care and HIV primary health-care services, alcohol- and drug-using behaviors, and questions about the participants' relationships and discussions with their HIV care providers. On completion of the survey, participants were compensated \$10 for their time and effort during the 15-minute interview.

Dependent and independent variables

Two dependent variables were analyzed in this study: the first variable described dental anxiety using the Corah Dental Anxiety Scale (DAS), and the second variable was utilization of oral health-care services, measured as the time since the last dental care visit. The DAS is a scale comprising four questions relating to situational dental anxiety, where each question can be scored from 1 (lowest anxiety) to 5 (highest anxiety); the scale and questions have been published elsewhere.³⁵ The sum of the four questions determines the DAS score, which can range from four to 20. Corah reported a high internal consistency coefficient of 0.86 and test-retest reliability of 0.82 for the DAS.³⁵ In our study, Cronbach's alpha as a measure of internal consistency of DAS was 0.88, which is comparable to previous studies.^{35–37} Following Corah's³⁵ classification of severe anxiety, we dichotomized the scores to DAS ≥ 15 (severe anxiety) vs. DAS < 15 (less-than-severe anxiety) for this analysis.

Utilization of oral health-care services was determined by asking the participants, "When was the last time you visited the dentist?" For the purposes of this analysis, responses were dichotomized to the last dental appointment occurring within the past 12 months vs. longer than 12 months ago. Independent variables,

listed in Table 1, included individual demographic characteristics, dental care measures, HIV primary care measures, and measures of alcohol and tobacco use.

Statistical analysis

Univariate analyses were performed to provide summary statistics of the individual, dental, and HIV primary care characteristics. Associations between each independent variable and both severe dental anxiety and utilization of oral health-care services were examined by bivariate analysis using Chi-square tests (Table 1). We began multivariable logistic regression analysis of each of the dependent variables by including independent variables with a bivariate p -value ≤ 0.20 in an initial model. Each of the models were further reduced in a stepwise fashion to include only those independent variables with a p -value ≤ 0.05 , while still retaining a subset of the demographic variables independent of p -value (that is, age, ethnicity, gender, and education), following the method outlined in Hosmer and Lemeshow³⁸ (Tables 2 and 3).

RESULTS

Demographics; DAS scores; health-care experiences for the sample; and Pearson's Chi-square tests of association among severe dental anxiety, utilization of oral health-care services, and selected independent variables are presented in Table 1. Approximately 60% of the participants were male, and about 60% identified as non-Hispanic black and 34% as Hispanic race/ethnicity; 58% were born in the U.S. Slightly more than one-third of the respondents had not completed high school or a general equivalency diploma. The median age was 47 years for males and 46 years for females. Approximately 76% of the respondents were unemployed and 10% had unstable housing (data not shown).

Oral health was perceived as fair or poor by more than 48% of participants. Half of the participants had a regular dentist, but almost two-thirds reported that it had been longer than 12 months since their last dental appointment. Slightly more than 30% reported that they had needed dental care in the past 12 months but did not get it, and almost 44% had received help from someone in attempting to get dental care. The prevalence of moderate to severe dental anxiety (DAS ≥ 9) was 37.8%, the prevalence of high dental anxiety (DAS=13–14) was 7.6%, and the prevalence of severe dental anxiety (DAS ≥ 15) was 7.9%.

Table 2 shows the multivariable logistic regression model for severe dental anxiety vs. less-than-severe dental anxiety. After controlling for age, ethnicity, gender,

Table 1. Individual characteristics and associations with dental anxiety and utilization of oral health care in a study of patients attending two HIV primary care clinics in Miami, Florida, March–October 2010

Characteristic	Overall (n=444)	Severe dental anxiety (DAS \geq 15) ^a		Last appointment within past 12 months	
	N (percent)	Percent	P-value	Percent	P-value
Prevalence of dental anxiety (DAS scores) ^a			NA		0.014
Low to high (DAS<15)	409 (92.1)	NA		66.4	
Severe (DAS \geq 15)	35 (7.9)			45.7	
Gender			0.002		0.905
Male	264 (59.5)	4.6		65.0	
Female	180 (40.5)	12.8		64.4	
Age (in years)			0.976		0.595
18–24	8 (1.8)	12.5		50.0	
25–34	33 (7.5)	6.1		63.6	
35–44	125 (28.3)	8.0		60.0	
45–54	208 (47.1)	7.7		67.2	
\geq 55	68 (15.4)	8.8		67.6	
Race/ethnicity ^b			0.778		0.877
Hispanic	151 (34.1)	6.7		63.8	
Non-Hispanic white or other	21 (4.7)	9.5		61.9	
Non-Hispanic black or African American	271 (61.2)	8.5		65.8	
Education level			0.102		0.933
<High school graduate	164 (36.9)	10.4		64.4	
High school graduate or general equivalency diploma	163 (36.7)	4.4		66.8	
>High school graduate	117 (26.4)	9.4		63.8	
Place of birth			0.808		0.239
United States	257 (57.9)	8.2		62.5	
Other country	187 (42.1)	7.6		67.9	
Utilization of oral health-care services			0.014		NA
Last appointment \leq 12 months ago	287 (35.2)	5.6		NA	
Last appointment >12 months ago	156 (64.8)	12.3			
Oral check by HIV provider in past 12 months ^c			0.952		<0.001
No	155 (34.9)	7.7		46.5	
Yes	288 (64.9)	8.0		74.4	
Ease of receiving dental care ^{b,d}			0.733		<0.001
Very easy	152 (34.3)	9.9		77.6	
Somewhat easy	113 (25.5)	6.3		74.8	
Somewhat difficult	85 (19.2)	7.1		54.1	
Very difficult	67 (15.1)	9.1		40.9	
Don't know	26 (5.9)	3.9		42.3	
Did not get needed dental care in past year ^e			0.047		<0.001
No	308 (69.4)	6.2		74.0	
Yes	136 (30.6)	11.8		44.1	
Received help getting dental care in past 12 months			0.400		0.001
No	249 (56.1)	8.8		57.4	
Yes	195 (43.9)	6.7		74.2	
Has a regular dentist			0.568		<0.001
No	220 (49.5)	8.7		40.6	
Yes	224 (50.5)	7.2		88.7	

continued on p. 40

Table 1 (continued). Individual characteristics and associations with dental anxiety and utilization of oral health care in a study of patients attending two HIV primary care clinics in Miami, Florida, March–October 2010

Characteristic	Overall (n=444)	Severe dental anxiety (DAS≥15) ^a		Last appointment within past 12 months	
	N (percent)	Percent	P-value	Percent	P-value
Number of lost or missing teeth ^{b,f}			0.846		0.008
0	25 (5.6)	4.0		32.0	
1–4	207 (46.6)	7.8		65.6	
5–9	100 (22.5)	7.0		69.7	
≥10	111 (25.0)	10.0		67.3	
Self-rated oral health ^g			0.056		0.247
Excellent	35 (7.9)	8.6		74.3	
Very good	61 (13.8)	0.0		73.7	
Good	133 (30.1)	6.0		63.6	
Fair	142 (32.1)	11.3		62.7	
Poor	71 (16.1)	11.3		57.8	
Self-rated general health ^h			0.025		0.601
Excellent	84 (19.0)	6.0		67.9	
Very good	100 (22.7)	3.0		67.7	
Good	139 (31.5)	7.9		59.7	
Fair	100 (22.7)	12.0		67.7	
Poor	18 (4.1)	22.2		61.1	
Alcohol use ^a			0.822		0.189
≥1 drink per day during last four weeks	134 (30.1)	7.5		60.2	
None during last four weeks	309 (69.4)	8.1		66.7	
Cigarette use ^b			0.672		0.020
≥1 cigarette per day during last four weeks	175 (39.5)	8.6		58.1	
None during last four weeks	268 (60.5)	7.5		69.1	
Years attending HIV clinic ^b			0.124		0.153
<1	53 (12.0)	5.8		53.9	
1 to <5	107 (24.2)	7.6		71.7	
5 to <10	85 (19.2)	14.1		61.9	
≥10	198 (44.7)	6.1		65.2	
Self-rated HIV clinic attendance ^g			0.003		0.104
Excellent	235 (53.2)	4.7		68.8	
Very good	100 (22.6)	8.0		58.0	
Good	81 (18.3)	14.8		65.4	
Fair	21 (4.8)	9.5		61.9	
Poor	5 (1.1)	40.0		20.0	

^aSource: Corah NL. Development of a dental anxiety scale. *J Dent Res* 1969;48:596.

^bResponse missing for one individual

^cSurvey instrument questions corresponding to the referenced characteristic: "In the past 12 months, did your HIV provider check your mouth, teeth, or gums?"

^dSurvey instrument questions corresponding to the referenced characteristic: "How easy do you feel it is for people with HIV to get dental care?"

^eSurvey instrument questions corresponding to the referenced characteristic: "In the past 12 months, have you needed dental care and did not get it?"

^fSurvey instrument questions corresponding to the referenced characteristic: "How many adult teeth have you ever lost, from extraction by a dentist or falling out?"

^gResponse missing for two individuals

^hResponse missing for three individuals

HIV = human immunodeficiency virus

DAS = Dental Anxiety Scale

NA = not applicable

Table 2. Logistic regression model: severe vs. less-than-severe dental anxiety among a sample of patients attending two HIV primary care clinics in Miami, Florida, March–October 2010

<i>Independent variable (n=436)</i>	<i>AOR (95% CI)</i>
Age ^a	1.000 (0.959, 1.043)
Ethnicity ^a	
Hispanic vs. non-Hispanic white or other	0.641 (0.120, 3.412)
Non-Hispanic black/African American vs. non-Hispanic white or other	0.542 (0.108, 2.718)
Gender ^a	
Female vs. male	3.962 (1.688, 9.130)
Education ^a	
>High school vs. <high school	1.699 (0.683, 4.231)
High school diploma vs. <high school	0.450 (0.173, 1.173)
Self-rated attendance at HIV clinic (scale: poor to excellent)	0.648 (0.463, 0.905)
Self-rated general health (scale: poor to excellent)	0.672 (0.475, 0.951)

^aAge, ethnicity, gender, and education were forced into models.

HIV = human immunodeficiency virus

AOR = adjusted odds ratio

CI = confidence interval

education, HIV health clinic attendance, and general health, the adjusted odds of having severe dental anxiety were 3.962 times greater for females than for males (95% confidence interval [CI] 1.688, 9.130). For each unit higher on the scale of self-rated attendance (from poor to excellent) at the HIV primary care clinic where patient recruitment occurred, the adjusted odds of having severe dental anxiety vs. less-than-severe dental

anxiety were 64.8% lower (adjusted odds ratio [AOR] = 0.648, 95% CI 0.463, 0.905). Additionally, for each unit higher on the scale of self-rated general health (from poor to excellent), the adjusted odds of having severe dental anxiety vs. less-than-severe dental anxiety were 67.2% lower (AOR=0.672, 95% CI 0.475, 0.951).

The multivariable regression model for utilization of oral health-care services is presented in Table 3.

Table 3. Logistic regression model: utilization of oral health-care services—last dental visit less than 12 months ago vs. more than 12 months ago, among a sample of patients attending two HIV primary care clinics in Miami, Florida, March–October 2010

<i>Independent variable (n=436)</i>	<i>AOR (95% CI)</i>
Age ^a	0.987 (0.959, 1.016)
Ethnicity ^a	
Hispanic vs. non-Hispanic white or other	0.602 (0.190, 1.906)
Non-Hispanic black/African American vs. non-Hispanic white or other	0.763 (0.248, 2.347)
Gender ^a	
Female vs. male ^a	0.514 (0.294, 0.898)
Education ^a	
>High school vs. <high school	0.990 (0.508, 1.929)
High school diploma vs. <high school	0.763 (0.430, 1.354)
Dental anxiety	
Severe vs. less-than-severe dental anxiety	0.307 (0.127, 0.742)
Access to dental care	
Easy for HIV-positive individuals (scale: easy to very difficult)	0.761 (0.654, 0.884)
Have regular dentist (yes vs. no)	12.146 (6.891, 21.408)
HIV clinic experience	
In past 12 months, an HIV provider checked oral health	2.942 (1.769, 4.895)
Years attending HIV clinic (scale: newer to older patients)	0.767 (0.599, 0.983)

^aAge, ethnicity, gender, and education were forced into models.

HIV = human immunodeficiency virus

AOR = adjusted odds ratio

CI = confidence interval

After controlling for age, ethnicity, gender, education, access to dental care, and HIV primary clinic experience, participants with severe dental anxiety had 69.3% lower adjusted odds of utilizing oral health-care services within the past 12 months (vs. longer than 12 months ago) than participants with less-than-severe dental anxiety (AOR=0.307, 95% CI 0.127, 0.742). Respondents who reported that an HIV primary care provider had checked their mouth, teeth, or gums within the past 12 months were almost three times as likely to use oral health-care services as those who had not had an oral checkup from their HIV provider in the past year (AOR=2.942, 95% CI 1.769, 4.895). Similarly, participants who reported having a regular dentist were about 12 times as likely to have had a dental visit in the past year compared with those who did not have a regular dentist (AOR=12.146, 95% CI 6.891, 21.408). For the scale measuring perceived ease of getting dental care for HIV-positive individuals (from easy to very difficult), the adjusted odds of using oral health-care services were 23.9% lower for each unit of greater difficulty on the scale (AOR=0.761, 95% CI 0.654, 0.884). The adjusted odds of using oral health-care services were lower for females than for males (AOR=0.514, 95% CI 0.294, 0.898). Lastly, patients with a longer history of attending an HIV primary care clinic were less likely to have had a dental visit in the past 12 months (AOR=0.767, 95% CI 0.599, 0.983).

DISCUSSION

Our study represents one of the first attempts to characterize dental anxiety among HIV-positive individuals utilizing a standardized scale. Corah's DAS³⁵ has been reported as the most widely used psychometric measure of dental fear for adults.^{39,40} DAS was selected for use in this study in part to provide wide comparison with previously published studies.

Our findings suggest that 7.9% of HIV-positive patients recruited from two HIV primary care clinics in Miami exhibit severe dental anxiety and 15.5% are characterized as presenting high to severe dental anxiety. These findings are higher than the prevalence of dental anxiety reported among general population (unspecified HIV status) patients in the U.S. in studies that similarly utilized the Corah DAS.^{35,41} Woodmansey³² reported the prevalence of severe dental anxiety as 5%; the prevalence of high to severe dental anxiety reported by Sohn and Ismail²⁵ and Doerr et al.⁴² was 10%. While studies conducted outside the U.S. generally confirm this pattern of lower prevalence among the HIV-negative population,^{20,39} two exceptions have been found. In each of their respective studies (HIV status

unknown among study participants), McGrath and Bedi⁴³ observed a prevalence of severe dental anxiety of 11% and Thomson et al.³⁰ measured the prevalence of high dental anxiety at 21.1%, both higher than the prevalence found in our study. No clear explanation can be offered for these observations, except perhaps in the case of Thomson et al.,³⁰ in which the study sample was evaluated at 18 and 26 years of age; our study sample exhibited a mean age of 46.2 years (standard deviation = 9.3 years). Studies conducted across wide age groups have found that the prevalence of dental anxiety seems to peak at younger ages. For example, in two studies in Europe, prevalence of dental anxiety was greatest among Dutch females aged 26–35 years⁴⁴ and among Swedes aged 20–39 years.⁴⁵

Another consideration is that 37% of our study participants had less than a high school education (a proxy for low socioeconomic status), while 42% of our participants were from countries outside of the U.S. and may have had significantly different cultural perceptions regarding the importance of maintaining dental health. Shiboski et al.⁴ reported that both low income and nonwhite ethnicity are barriers to dental care. Lack of dental care may lead to a deteriorated state of oral health that may prompt such individuals to seek dental care only when experiencing acute pain. A history of urgent dental care encounters may predispose people to being fearful of the dentist because previous experiences with the dentist may have been painful. However, neither the associations between education nor ethnicity with severe dental anxiety or utilization of oral health-care services (i.e., fear or barrier to care) were significant in our study when controlling for other factors (Tables 2 and 3).

Higher prevalence of dental anxiety among HIV-positive patients raises concern because of the well-documented negative impact that dental anxiety has upon keeping timely and regular dental appointments^{4,22–25,33} and the potential for serious health consequences resulting from not maintaining oral health.⁷ Our findings support this concern, as dental anxiety was associated with decreased use of oral health-care services. These findings suggest that there should be increased efforts to screen people living with HIV for dental anxiety.

The HIV-positive patients in our study with the greatest odds of utilization of oral health-care services had received an oral examination by their HIV primary care provider in the past 12 months, were male, had a regular dentist, and exhibited less-than-severe dental anxiety (Table 3). These associations reinforce Armfield's concept of a "vicious cycle" involving negative reinforcement, fear, and lack of dental care.²⁶ However,

it is equally important not to overlook the potential role of HIV primary care providers, who may be the key to interventions that positively affect behaviors among these patients. Our findings suggest that patients with better HIV primary care clinic attendance have less dental anxiety. HIV primary care settings offer opportunities for providers to impress upon their patients the importance of maintaining regular appointments at the dentist and/or dental hygienist. Parallel to these efforts, HIV-positive patients should be encouraged to discuss oral health and unmet oral health needs with their primary care clinicians to address these needs in such settings as well as to provide referrals to oral health-care specialists. Clinical guidelines from the Health Resources and Services Administration's HIV/AIDS Bureau recommend that both initial and interim physical examinations of all HIV-positive patients include examinations of the oral cavity.⁴⁶ Additionally, routine administration of the DAS³⁵ as both a quick and reliable measure to identify the level of dental anxiety among patients may be helpful in the primary care setting to facilitate subsequent use of oral health-care services. For example, providers may refer anxious patients for counseling to reduce dental anxiety,^{47,48} perform routine examinations of the oral cavity, increase referrals to dental care providers, reinforce that dental care is easily available to people with HIV, encourage patients to establish a regular dental relationship, and help to improve patients' understanding of the importance of oral health relative to their HIV status.

Such intervention strategies could break the vicious cycle barrier to dental care services. Additionally, simple and straightforward quality-control measures—such as including an area on patients' medical charts to note completion of an oral exam by the HIV primary care provider, referral to a dentist, and a follow-up confirmation that the patient has a dentist of record—may be helpful. Providing a “grand rounds” presentation for primary care providers on this topic could be another approach to sharpen the focus within the HIV primary care settings on the importance of routine dental care for HIV-infected individuals. Such interventions appear both inexpensive and practical to employ.

Limitations

Several study limitations should be recognized. First, these data are from a sample of HIV-positive patients recruited from HIV primary care clinics in a large urban area. Therefore, generalizations to other HIV-positive individuals in rural areas or other countries should be made with caution. Second, these data are based upon self-reports, and differential recall may have been a factor regarding events of the past year;

therefore, data may be affected by under- or over-reporting. Third, because the data are cross-sectional, neither the temporal relations nor causal relations are provided for the associations found.

CONCLUSION

This study is one of many⁴⁹⁻⁵¹ that suggest the need for continued, increased focus on oral health in the HIV primary health-care setting. In this article, we outline time-efficient and cost-effective mechanisms to positively address the effects of dental anxiety on the utilization of dental health-care services. Efforts can be made to encourage HIV primary care clinicians, who already deal with the many obligations of care for the needs of their HIV-positive patients, to routinely address the oral health care of their patients. In addition, completing the circle by empowering HIV-positive patients to actively address oral health care with their primary care provider can establish a positive framework of referral to dentists and oral health-care services and break the vicious cycle of dental fear, treatment avoidance, and unmet dental health-care needs.

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The Institutional Review Board of the University of Miami and the Jackson Memorial Hospital Oversight Committee approved this study.

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