

Application of an HIV Information System to Assess and Improve HIV Oral Health Care

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Workshop Introduction



- * The Broward County Human Services Department Part A Program commissioned an assessment of the quality of oral health services funded by the Part A program in the Fort Lauderdale Eligible Metropolitan Area (EMA)
- * A longitudinal cohort study design was applied to analyze data in the Provide Enterprise (PE) System, a client-level relational database
- * A longitudinal cohort of 4,693 HIV+ oral care adult patients were followed in FYs 2009 – 2011 to assess the extent to which funded subgrantees (providers) met HAB and Broward Part A oral health standards, identify disparities in use of oral health care, and determine the relationship between use of medical and oral health care
- * The Part A Program funds one service-focused assessment each year to assess quality, identify disparities, and evaluate the cost effectiveness of the service
- * The quality assessment demonstrates use of a client-level information system to assess the quality of HIV oral health care and identify disparities
- * The assessment is an example of the application of client-level data systems maintained by Ryan White (RW) HIV/AIDS Program grantees and providers to conduct quality assessment, program evaluation, outcome studies, and cost analyses
- * We also address the strengths and limitations of client-level data systems

HIV/AIDS Epidemic's Impact on Broward County and Part A Funds



- * The HIV/AIDS epidemic has severely impacted Broward
- * An estimated 17,389 Broward residents live with HIV/AIDS
- * In 2011, newly reported AIDS cases increased 7% and newly reported HIV cases rose 25% over the prior year, or an average of 4.5 new HIV/AIDS cases per day
- * At least 1 in every 101 Broward residents is HIV+
- * The CDC reports that the Broward ranked highest in the US for population-adjusted living AIDS rates in 2010, and ranked second only to Miami/Dade County for population-adjusted HIV (not-AIDS) rates
 - * The FL Department of Health reports that the 2011 Broward population-adjusted living AIDS and HIV (not-AIDS) case rates exceeded Miami/Dade
- * In FY 2011, 7,022 clients received Part A-funded services
- * Due to increasing HIV+ Broward residents and decreasing inflation-adjusted Part A funds, average Part A per client funds dropped 20% between FY 2008 and FY 2011

Rationale for Funding the Assessment: A Grantee's Perspective



- * Early recognition and management of oral conditions associated with HIV infection are important to sustain the health and quality of life of HIV+ persons
- * Due to the highly constrained Part A funds in Broward County, the Part A grantee and Planning Council must ensure that funded services are cost effective, result in high quality care and improved clinical outcomes, and reduce health disparities
- * Over \$2 million in Part A funds are allocated per year to oral health services in Broward
- * The FL Medicaid Program funds only emergency dental services for adults, the FL Part B Program does not fund oral health in Broward, and unmet need for oral health services among HIV+ indigent Broward residents is substantial
- * The Fort Lauderdale EMA ranked first in total FY 2010 core service funds allocated for oral health and second in the percentage of core service funds allocated to oral health among Part A grantees

2012 Broward County Part A Oral Health Assessment



Assessment Goals



- * Ensure access to high quality oral health services among medically indigent HIV+ Broward County residents by eliminating disparities in the use of HIV oral health services
- * Reduce rates of AIDS among HIV+ Broward residents by providing routine screening of oral manifestations of HIV infection
- * Improve quality of life, prevent co-morbidities, and reduce HIV-related mortality through good oral health among HIV+ Broward residents by providing high quality oral health services

Assessment Objectives



- * Assess the quality and completeness of client-level data reported in Provide Enterprise (PE)
- * Use client-level Part A billing records to assess
 - * Differences in utilization patterns among oral health patients, time required to complete oral care plans, extent to which Part A-funded providers meet or exceed HAB and grantee performance measures and the Part A Service Delivery Model, HIV oral health outcomes, relationship between use of medical and oral health care, retention in oral health services, disparities in outcomes, and costs of care
- * Interview key staff of Broward County Part A-funded HIV oral health programs and review program-related materials to understand better:
 - * Their programs' design and staffing
 - * Dental service cost structure
 - * Quality management (QM) methods and the results of quality improvement projects (QIPs)
 - * Current or planned activities to expand access to their services, refine their programmatic service delivery models, and/or improve individual dental provider performance
- * Identify and contact other Part A and Part B-funded grantees that fund HIV oral health services, and obtain information about their methods for delivering and financing those services

Oral Health Service Providers: Clinic 1



- * Setting: Public health HIV oral health program with four clinical sites
- * Geographic location: four Broward County sites with high HIV rates
- * Staff: 3 dentists, 1 dental hygienists, 7 dental assistants, and 2 front desk positions
- * Open weekdays only
- * Payment model: negotiated per diem flat fee
- * Service model:
 - * Initial screening with a perioral, head and neck exam, oral cancer screening, and oral hygiene assessment
 - * A treatment plan is completed and routine dental procedures are undertaken including diagnostic, preventive, basic restorative, and prosthodontic services (i.e., dentures)
 - * Capacity to provide same day appointments for emergency patients if they are willing to wait at the clinic
 - * Extractions and root canals available at some but not all four sites
 - * Patients are referred to Clinic 2 for endodontic and periodontal services
 - * University-based faculty and fellows provide oral surgery and emergency procedures on referral
 - * Patients are discharged when the treatment plan is completed
 - * Patients are given follow-up appointments for prophylaxis, on a 6 to 12 month recall basis

Oral Health Service Providers: Clinic 2



- * Setting: University dental school, community-based “store-front”
- * Geographic location: Epicenter of the HIV epidemic in Broward County
- * Staff:
 - * Two full-time faculty, one part-time faculty member employed one day per week, six adjunct faculty, one hygienist, and three full-time dental assistants, and full-time front desk positions
 - * Approximately 40 to 42 senior student dentists rotate through the Clinic per academic term, with 12 students are on site per day
 - * All dentists are expected to rotate through the HIV clinic
- * Open: Monday – Friday, 9:00 am to 5 pm, Saturday 9:00 am to 2:00 pm
- * Faculty and students treat patients throughout the year except for several weeks in April, one week in August, and one week at the end of December
- * Payment model: Fee for service with fee schedule established by the Part A grantee

Oral Health Service Providers: Clinic 2



- * Service model:
 - * Comprehensive routine and special oral health services
 - * Faculty and students provide preventive (exams, x-rays, regular cleaning), restorative services (fillings), dental hygiene, oral health education, periodontics (advanced gum disease treatment), endodontics (root canals), and prosthodontics (dentures)
 - * Faculty and fellows provide oral surgery by referral for tooth extractions and other procedures
 - * Hospital-based faculty and fellows at oral surgery and emergency procedures
 - * Emergency services are provided on a 24 hour, seven-day per week basis through referral to oral and maxillofacial surgical residents

Provide Enterprise (PE)



- * Client demographic, epidemiologic, clinical, health insurance, household membership, and other characteristics
- * Enhanced Care Functionality
 - * Automated Medicaid Verification
 - * Mental Health Assessments and DSM-IV Multi-axial Assessments
 - * TOPS and ACCESS Applications
 - * Ride Scheduling
 - * PAP Application and Enrollment Tracking
 - * Automated Lab and EMR Interfaces
 - * Antiretroviral and Other Medication Data Submitted by Outpatient/Ambulatory Medical Care (OAMC) Providers and Local AIDS Pharmacy Assistance Program Claims
 - * Linkage to FL ADAP system to Identify Enrollment Status
- * Centralized Intake and Eligibility Determination
 - * Captured Scanned Copies of Proof of Eligibility (Identification, Residency, HIV Status, Income, Signed Consent)

Provide Enterprise (PE)



- * Enhanced Billing System
 - * Service Category-Specific Eligibility Management
 - * Line-Item Reject Capabilities
 - * Grant to Budget to Allocation to Contract Management
 - * Budget/Contract Amendment Management
 - * Three Tier Part A Medication Formulary
- * Enhanced Reporting Functionality
 - * Part A-Defined Outcome Measures
 - * HAB HIV Performance Measures
 - * InCare+ Campaign Report
 - * IOM Monitoring HIV Care Report
 - * HAB Clinical Outcome Measures Report
- * City of Fort Lauderdale HOPWA Program Data
- * Future Plan: Integration of HIV Counseling and Testing Data For HIV+ Individuals Referred to Care

PE Billing Record Structure



- * The Part A program uses a mixed reimbursement system: fee for service and per diem
- * Longitudinal PE billing records captured since FY 2008
 - * Using unique client identifiers, billing records can be analyzed longitudinally
- * PE billing records formatted similarly to health insurance claim records
 - * Client identifiers, subgrantee identifiers, service date, provider name, procedure, ADA Common Dental Terminology (CDT) code, CDT procedure class, charge and payment amount, general accounting variables
 - * Linked to client characteristic, other service bills, laboratory reports, and other files by unique client identifiers
- * Unit of analysis: submitted claim/bill for each billed procedure
 - * Can sum the claims to aggregate files (e.g., summary services provided per visit, per time period)
- * A base patient characteristic file can be created with summed service units, charges, payments, etc. appended to the base file

Analytic Methods



- * Oral health patients served in 2009 through 2011 were selected for analysis
 - * A cohort of outpatient/ambulatory medical care (OAMC) patients was similarly selected and a service utilization file was created based on PE OAMC billing records
- * A base record of patient demographic, epidemiologic, clinical, and other characteristic data was created for oral health and/or OAMC patients
- * The patient characteristics studied fall into several domains: demographic (gender, age, race, and ethnicity, being Haitian, marital status, sexual identity), socioeconomic (educational attainment, literacy level, household income, health insurance enrollment, housing status), epidemiologic (years infected with HIV, HIV risk factor, HIV stage), and access to clinical services and treatment (being in medical care, use of HIV therapeutics)
- * PE claims data were used to compute utilization, procedure, and cost variables
- * Cross-sectional and longitudinal analyses were conducted
- * Univariate, bivariate, and multivariate analyses were conducted using SPSS

Oral Health Patient Characteristics



- * A total of 4,690 HIV+ patients were treated by the two HIV dental clinical providers in Broward County in 2009 to 2011
- * 51% of patients were served by Clinic 1, 39% by Clinic 2, and 9% by both Clinic 1 and Clinic 2
- * Among HIV+ patients served in the three-year period
 - * 3% were Hispanic females, 3% were White non-Hispanic females, 20% were Black non-Hispanic females, 13% were Hispanic males, 25% were Black non-Hispanic males, and 36% were White non-Hispanic males
 - * Over two-thirds of patients were permanently housed
 - * Almost one-half (48%) were heterosexual, 44% were homosexual or lesbian
 - * Less than 1% of patients were reported to be illiterate, while 1% had a fourth grade or lower literacy level, 7% had a fifth to eighth grade literacy level, 48% had a ninth to twelfth grade literacy level, and 40% had a literacy level greater than the twelfth grade level
 - * 7% had eighth grade or lower educational attainment, 61% had between eighth and twelfth grade educational attainment, and 31% had attended college
 - * 36% of patients were permanently or temporarily disabled, 30% unemployed, 15% employed full-time, and 15% employed part-time

Oral Health Patient Characteristics



- * 57% were HIV+ but did not have AIDS, 22% had AIDS, and 22% were HIV+ but their AIDS status was unknown
- * 50% of patients were infected with HIV through male-to-male transmission and 45% through heterosexual transmission
- * 81% received HAART, 5% were on dual therapy, 2% were on monotherapy, and 9% were not receiving ARV
- * Almost two-thirds of patients were reported to receive OAMC, while 39% were reported not to be in OAMC
 - * Some of patients may receive OAMC outside of the Part A-funded HIV care continuum, and their OAMC visits were not noted in PE files
 - * 53% of patients had health insurance, while 47% were uninsured
- * 31% of patients were enrolled in Medicare, 12% in Medicaid, 8% in private health insurance
 - * Insured patients may be eligible for Part A-funded services because their insurer does not cover most adult dental procedures (e.g., Medicaid)
 - * Alternatively, a patient may have medical benefits but not dental insurance
- * Statistically significant differences were found in patient characteristics among Clinic 1 only patients, Clinic 2 only patients, and patients served by Clinic 1 and Clinic 2

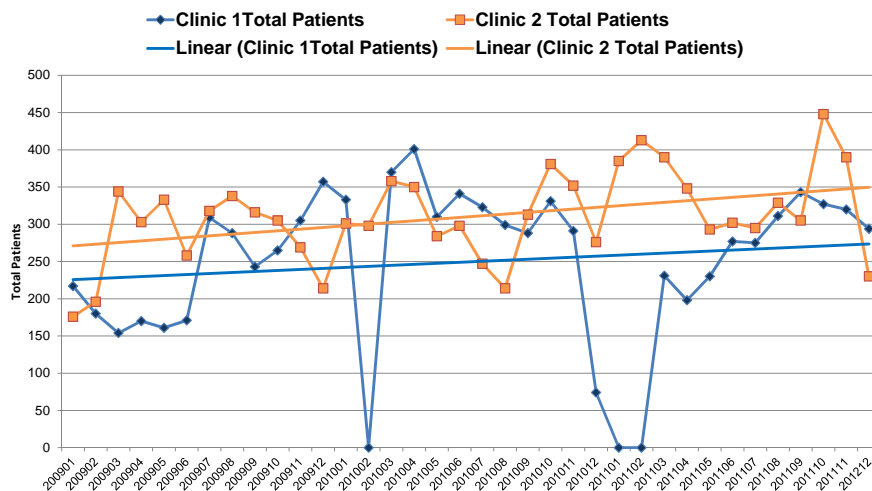
Oral Health Service Utilization

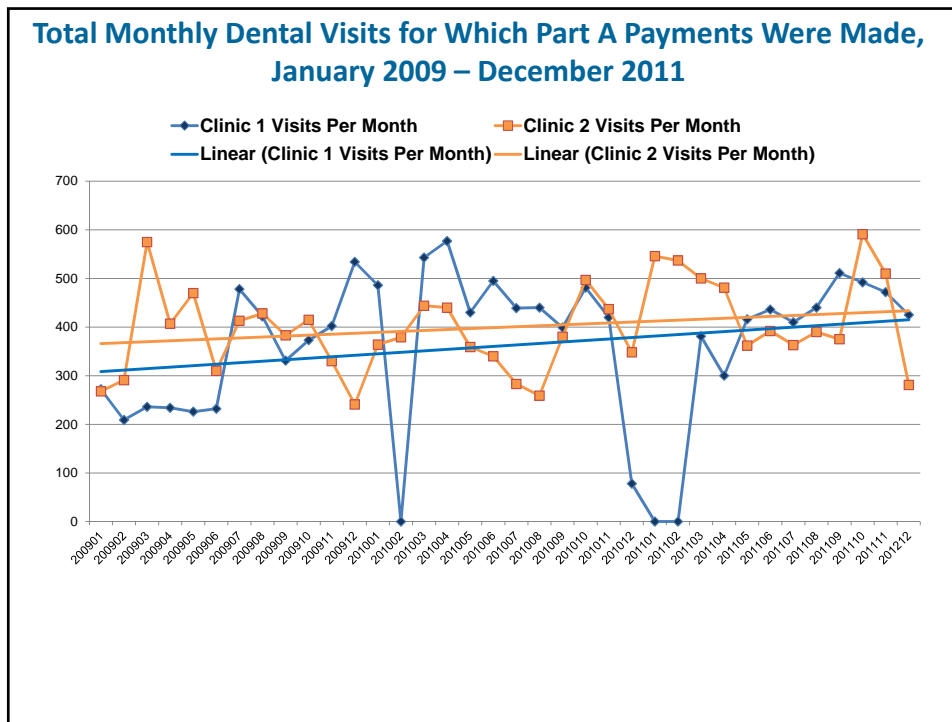


- * The 4,690 HIV+ oral health patients served by Clinic 1 and Clinic 2 had a total of 31,279 visits between 2009 and 2011, with a mean of 6.7 visits per patient and visits ranging from 1 to 63 visits
- * Clinic 1 patients had 15,953 between 2009 and 2011, compared to 15,326 visits at the Clinic 2
- * Mean visits were statistically significantly associated with patient characteristics among the three clinic groups

Oral Health Program and Year of Service		Total Unduplicated Patients	Range		Total Visits	Mean Visits Per Patient	SD
			Minimum	Maximum			
Total Patients		4,690	1	63	31,279	6.7	5.8
Clinic 1	2009	1,307	1	14	3,968	3.0	2.2
	2010	1,603	1	20	6,530	4.1	3.0
	2011	1,534	1	17	5,455	3.6	2.5
Clinic 2	2009	1,013	1	30	4,970	4.9	3.7
	2010	1,339	1	19	4,650	3.5	2.7
	2011	1,442	1	25	5,706	4.0	3.3

Total Unduplicated Dental Patients For Which Part A Payments Were Made, January 2009 – December 2011





Oral Health Patients With Only One Visit



- * 18% of Clinic 1 and 19% of Clinic 2 had only one visit in the study period
- * We compared the characteristics of patients with only one oral health visit with patients with two or more visits
 - * Only 2% of patients with only one visit had an extraction during the visit
- * Patients with only one oral health visit were
 - * Slightly more likely to be White non-Hispanic females, Black non-Hispanic females, and slightly less likely to be male than patients with more than one visit
 - * Significantly more likely than other patients to be non-permanently housed, be enrolled in Medicare, have ninth grade level literacy or higher, have a high school or college education, have HIV but not AIDS than other patients, be on dual ARV therapy or not receive HIV therapy
 - * Significantly more likely than other patients to not be in OAMC

Differences Found in Types of Procedures Conducted



Following aggregation of procedure records into CDT classes, 35% of procedures for services provided in 2010 or 2011 were diagnostic, 22% preventive, 17% restorative, 9% periodontics, 6% removable prosthodontics, 4% adjunctive general services, 6% oral and maxillofacial surgery, 2% endodontics, and less than 1% were implant services

Percentage of Dental Procedures Provided in 2010 and 2011, by Dental Procedure Class, Provider, and Year of Service	Clinic 1			Clinic 2		
	2010	2011	Total	2010	2011	Total
Total Procedures	7,880	12,786	20,666	5,119	6,251	11,370
Diagnostic	30.0%	39.8%	36.0%	33.6%	33.3%	33.4%
Preventive	28.7%	29.8%	29.4%	6.9%	7.2%	7.1%
Restorative	17.1%	10.7%	13.1%	22.2%	24.3%	23.3%
Endodontics	0.4%	0.5%	0.4%	4.7%	4.4%	4.6%
Periodontics	6.5%	7.7%	7.3%	10.0%	12.4%	11.3%
Removable Prosthodontics	6.6%	3.7%	4.8%	9.6%	8.6%	9.1%
Implant Services				0.2%	0.0%	0.1%
Oral and Maxillofacial Surgery	4.8%	4.0%	4.3%	9.2%	6.6%	7.8%
Adjunctive General Services	5.8%	3.9%	4.6%	3.4%	3.2%	3.3%

Adoption of Primary Dental Care Versus Specialty Dental Care Models Identified



Percentage of Dental Procedures Ineligible for Payment by the Part A Program in 2010 and 2011, by Procedure Class and Provider	Clinic 1	Clinic 2
Diagnostic	54.0%	46.0%
Preventive	91.6%	8.4%
Restorative	69.5%	30.5%
Endodontics	33.3%	66.7%
Periodontics	75.4%	24.6%
Removable Prosthodontics	50.4%	49.6%
Oral and Maxillofacial Surgery	54.1%	45.9%
Adjunctive General Services	80.0%	20.0%
Total	59.7%	40.3%

Quality of Oral Health Services



- * HAB has published five oral health performance measures that include the percentage of HIV+ oral health patients
 - * Who had a dental and medical health history (initial or updated) at least once in the measurement year
 - * Who had a dental treatment plan developed and/or updated at least once in the measurement year
 - * Who received oral health education at least once in the measurement year
 - * Who had a periodontal screen or examination at least once in the measurement year
 - * With a Phase 1 treatment plan that is completed within 12 months

- * <http://hab.hrsa.gov/deliverhivaidscafe/files/habpmsoralhealth.pdf>

Broward County Ryan White Part A Program QM Oral Health Care Service Delivery Model Standards

1. Provider reviews a patient completed medical and dental health history annually.
1.1 – 100% of patient charts have evidence that provider reviewed medical and dental health history.
2. Patient receives a periodontal screening or exam annually.
2.1 – 100% of clients will receive a periodontal screening or exam annually.
3. Documented treatment plan developed based on a comprehensive or periodic examination of the patient.
3.1 – 100% of patients who have a comprehensive or periodic exam (D0150, D0120, and D0180) have a documented treatment plan.
4. Patient treatment plans are to be developed and/or updated within the measurement year.
4.1 – 100% of patient treatment plans will be updated and/or developed at least annually.
5. Patient has a phase I treatment plan 5.1 – 100% of patients will have a phase 1 treatment plan completed within 12 months.
6. Patients are referred to specialty care in accordance with the patient’s needs and treatment plan.
6.1 – 100% of patient charts show referral to specialty care for patients needing this service.
7. Patients referred to specialty services are followed-up.
7.1 – 100% of patient charts have documentation of referral follow-up.
8. Provider delivers oral health education. 8.1 – 100% of patients receive oral hygiene instruction annually.
9. Provider delivers nutritional counseling as indicated.
9.1 – 100% of patients who present with caries or report decreased salivary flow will receive nutritional counseling.

Broward County Ryan White Part A Program QM Oral Health Care Service Delivery Model Standards

9. Provider delivers nutritional counseling as indicated.
9.1 – 100% of patients who present with caries or report decreased salivary flow will receive nutritional counseling.
10. Provider delivers counseling about tobacco cessation.
10.1 – 100% of patients who report tobacco use will receive counseling about tobacco cessation.
11. Provider will review patient's prescription, OTC, and herbal medications.
11.1 – 100% of client charts will contain documentation of medications.
12. Provider will review CD4 and viral load values within the last six months.
12.1 – 100% of client charts will contain documentation of lab values.
13. Prior to surgical procedures, provider will review CBC values.
13.1 – 100% of client charts will contain documentation of lab values.
14. Prior to surgical procedures, provider will review platelets values.
14.1 – 100% of client charts will contain documentation of lab values.
15. Provider will measure blood pressure and review medical history prior to surgical procedures.
15.1 – 100% of client charts will contain recorded blood pressure and medical history.

Measuring Annual Visit Rates



- * Implicit in both the HAB performance measures and the Broward Part A standards is that oral health patients will have at least one visit annually
- * Establishing a denominator to calculate the number of HIV+ that should be in oral health services is challenging
- * Some HIV+ individuals receive oral health services at Clinic 1 or Clinic 2, but no other services in the RW Program care continuum
- * Alternatively, some HIV+ patients receiving RW Program-funded services may receive oral health services in private dental practices or at the Clinic 2 Part F Program oral health clinic or other Clinic 2 dental clinics
- * To develop an accurate denominator, patients served in 2009 at Clinic 1 or Clinic 2 were followed longitudinally to determine the rate of patients receiving at least one oral health in 2010
 - * Similarly, patients with visits in 2010 were followed to determine the rate of patients that received a visit in 2011
- * Among Clinic 1 patients with an oral health visit in 2009, 56% of patients had a subsequent visit in 2010 compared to 65% of Clinic 2 patients
- * Among Clinic 1 patients with an oral health visit in 2010, 58% of patients had a subsequent visit in 2011 compared to 73% of Clinic 2 patients
- * **If the HAB performance measure and Broward County standard of 100% of HIV+ should have at least one oral health visit, considerable improvement in engagement of HIV+ patients will be required by both HIV oral health providers**

Retention in Oral Health Care



- * We assessed retention in care among HIV+ patients served by Clinic 1 and/or Clinic 2 in 2009 to 2011
- * HIV+ patients were identified as being retained in care if they had at least one dental visit in both 2009 and 2010, in both 2009 and 2010, or in all three years studied
- * **Among all patients studied, 39% were retained in care in both 2009 and 2010, 41% were retained in both 2010 and 2011, and 19% were retained throughout the three-year study period**
- * The characteristics of patients retained in dental care differed significantly when controlling for oral health program
- * Among Clinic 1 patients, there was no statistically significant difference in the gender, race, or ethnicity of retained and non-retained patients in the 2009 to 2010 or 2010 to 2011 retention periods
- * In contrast, Clinic 2 patients retained in the 2009 to 2010 and 2010 to 2011 retention periods tended to be more likely than non-retained patients to be White non-Hispanic males

Two-Year Retention Rates of Dental Patients	Clinic 1			Clinic 2		
	2009 - 2010	2010 - 2011	2009 - 2011	2009 - 2010	2010 - 2011	2009 - 2011
Total Patients	1,094	1,170	2,397	922	932	1,854
Not Retained in Care	44.3%	41.6%	84.6%	35.2%	26.6%	79.7%
Retained in Care	55.7%	58.4%	15.4%	64.8%	73.4%	20.3%

Summary Of Part A Oral Health Payments

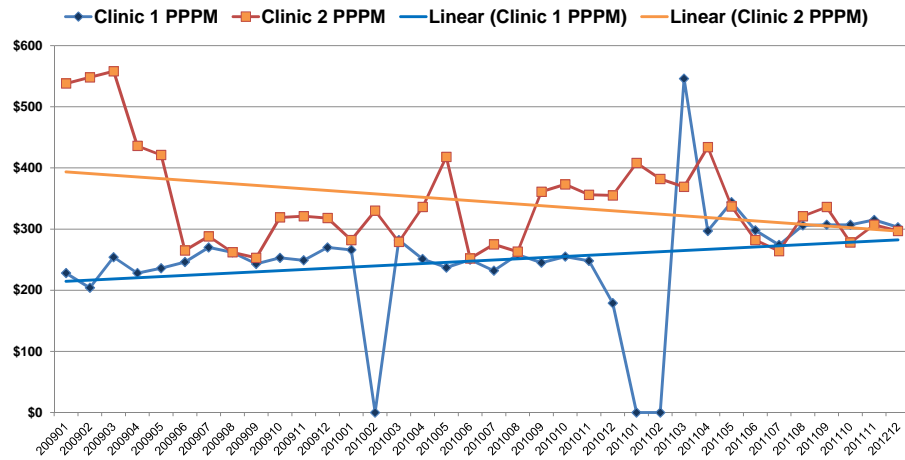


Summary of Part A Payments Made for Oral Health Services, 2009-2011	Number of Patients	Total Part A Payments	Minimum Payment Per Patient	Maximum Payment Per Patient	Mean Payment Per Patient	Std. Deviation	Median Payment Per Patient
Total	4,541	\$6,292,899	\$166	\$22,787	\$1,386	\$1,608.866	\$836
Clinic 1 Only	2,288	\$2,095,016	\$166	\$6,295	\$916	\$826.871	\$668
Clinic 2 Only	1,815	\$3,263,314	\$166	\$22,787	\$1,798	\$2,067.340	\$1,011
Clinic 1 & Clinic 2	438	\$934,570	\$166	\$13,069	\$2,134	\$1,774.458	\$1,671

Trends in Per Patient Per Month Payments



Mean Per Patient Per Month (PPPM) Part A Payments, January 2009 – December 2011



Challenges Encountered in Using Billing Data For Quality Assessment



- * Data entry errors were encountered
 - * CDT procedure codes were commonly mistyped by one of the clinics
- * Missing and unknown data presented substantial limitations in the ability to complete some of the analyses
 - * For example, incomplete episode of care data hampered the assessment of quality, allowed for accurate differentiation between dental and hygienist visits, and episode of care analyses
 - * We were unable to fully address the relationship between oral health service utilization and being in OAMC, as some patients receive OAMC outside the RW Program
 - * Attainment of the HAB performance measures and Broward County standards could not be assessed, as the types of data required are not reported in PE
 - * Chart review is necessary to assess attainment of the performance measures and the Broward County standards
 - * Future changes in PE to incorporate more oral health clinical data may be able to reduce the need for chart review.

Grantee Comments: Next Steps



- * Activities to be undertaken to disseminate the assessment results
 - * Oral Health Quality Network, QM Committee, Dissemination with the Part B Oral Health Workgroup, other mechanisms
 - * Revisit the Part A payment system
 - * Consider changes to PE to add additional clinical items to address the HAB and Grantee quality measures
 - * Oral health record review using oral health expert reviewers
 - * Undertake quality improvement projects to improve performance

Questions
And
Discussion

