

# Medication Adherence and Intervention Outcomes in a Ryan White AIDS Drug Assistance Program

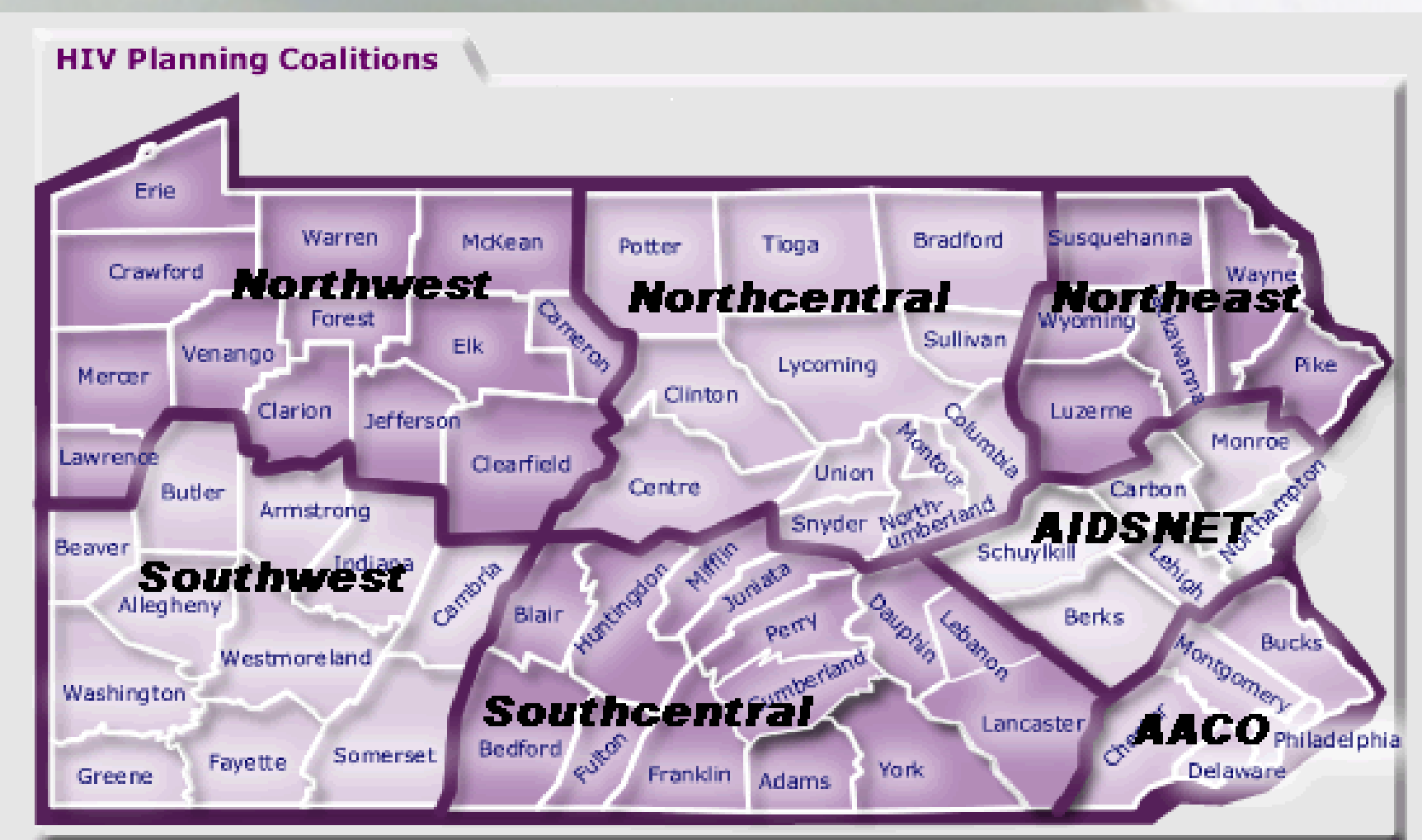
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## Introduction

Medication adherence has been shown to be sub-optimal in the general population and is especially concerning for patients with HIV. Poor medication adherence with antiretrovirals (ARV) significantly contributes to drug resistance, increased viral load, decreased CD4 counts, and an overall increase in morbidity and mortality. Current issues surrounding medication adherence and medication adherence rates in Pennsylvania's AIDS Drug Assistance Program will be examined.

The following map shows the regional HIV treatment coalitions in Pennsylvania. The PA ADAP covers prescription medications for HIV positive individuals throughout the entire Commonwealth. The majority of ADAP members are located in Southeast PA.



\*Adapted from the Pennsylvania Department of Health, Regional HIV Planning Coalitions Map

## Objectives

- Review the importance of medication adherence
- Discuss reasons for non-adherence
- Calculate medication adherence rates
- Provide practical ways to increase medication adherence in a prescription benefit program

## Importance of Medication Adherence

Previous analysis of drug claims has shown that adherence to medications by PA ADAP recipients has been sub-optimal. Properly adhering to prescribed regimens is even more important for HIV patients on antiretrovirals because those who do not adhere to the prescribed regimen are at a much greater risk of developing drug resistance and increase the likelihood of morbidity and mortality. In fact, most clinicians will delay starting antiretroviral therapy in someone who they feel cannot adhere to the medications prescribed unless the patient is already clinically compromised or has other indications for starting therapy. PA ADAP collects claims data from multiple pharmacies for the same individual which is a benefit that no single pharmacy chain has access to and therefore ADAP's have the ability to review claims data from multiple sources.

## Reasons for Non-adherence <sup>1</sup>

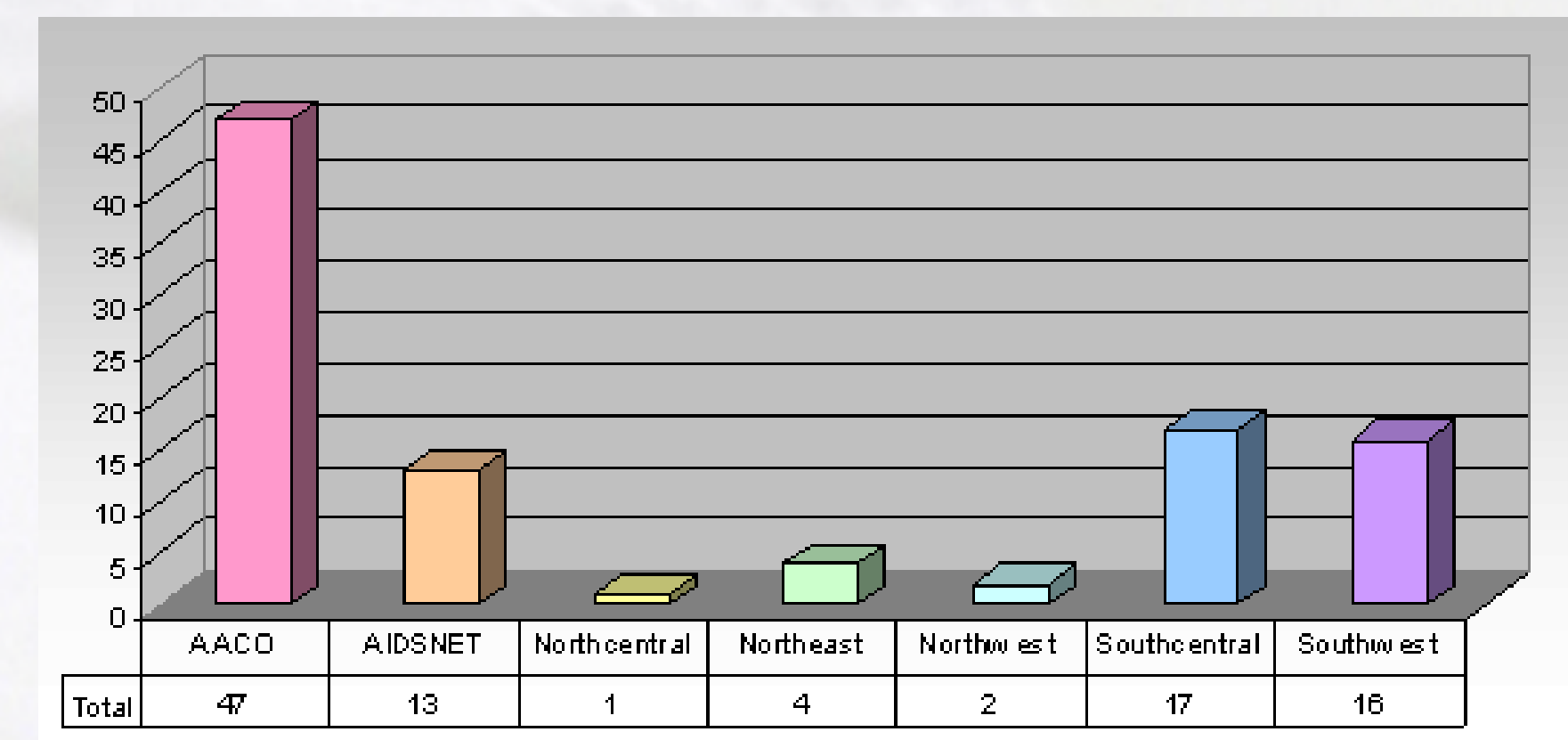
- Complex regimens - multiple medications, large pill burden, multiple daily doses
- Adverse effects
- Forgetfulness

- Difficulty swallowing
- Failure to understand dosing instructions
- Busy schedule or travel away from home
- Lack of drug coverage or covered drugs
- Skepticism about use of medications
- Drug or alcohol abuse
- Stigma and risk of disclosure of diagnosis

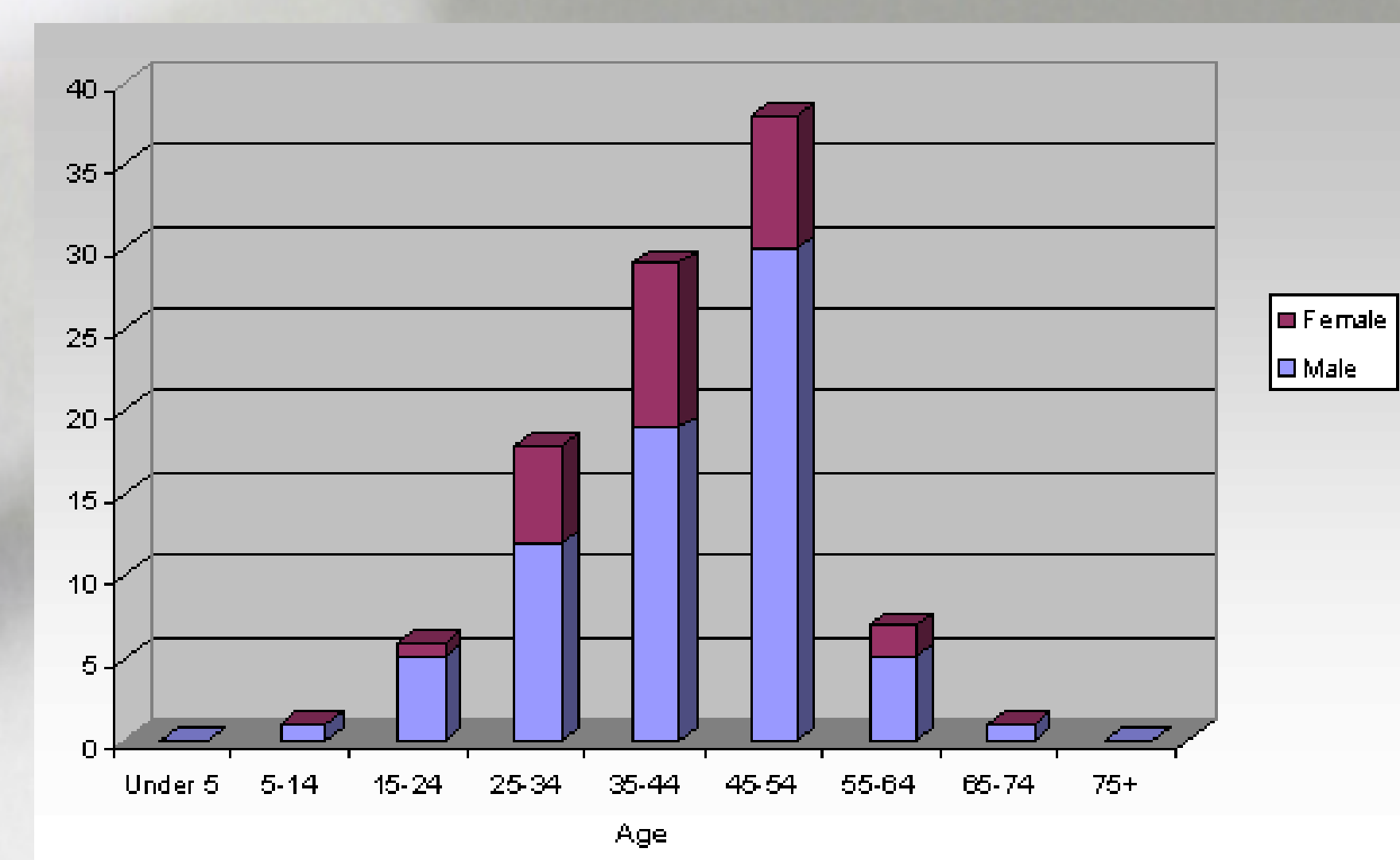
## Materials & Methods

The calculations used to determine medication adherence rates have evolved for PA's ADAP from what was initially the reporting of the number of members within a given time period that filled at least one medication per month. To what is now a more accurate and detailed calculation of medication adherence by using Continuous Measure of Adherence (CMA). CMA is basically a Medication Possession Ratio (MPR) extended out over a longer time period than just one month. Prescription claims data can be used to determine how often a person refills their medication on time or whether a person misses doses during the reporting time period.

ADAP members by Region (n=100)



ADAP members by Age and Sex (n=100)



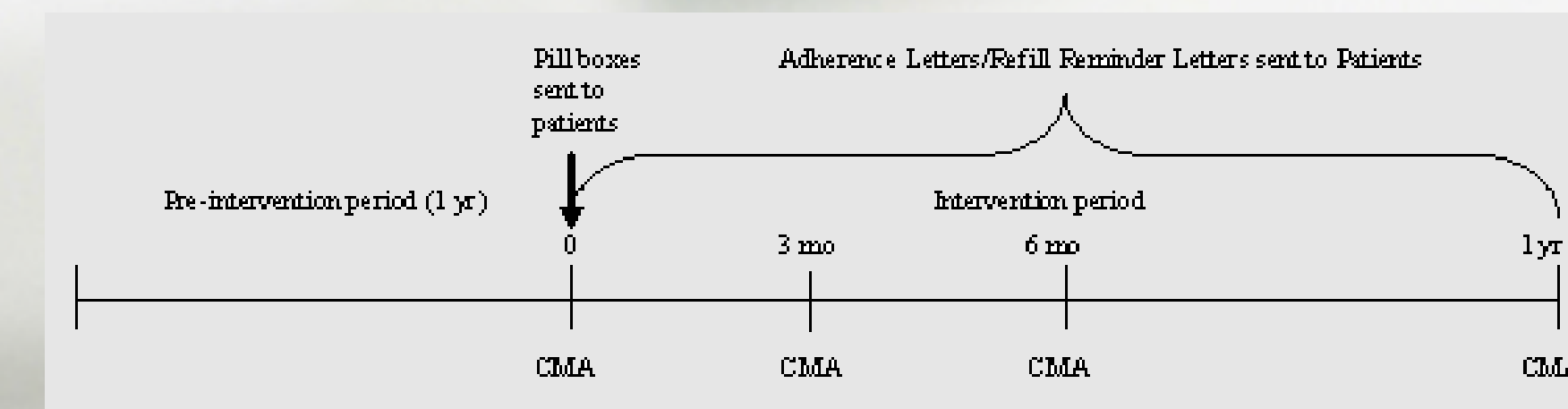
PA ADAP is currently developing a medication adherence program that will potentially use pill boxes and send refill reminder letters to sub-optimally adherent or non-adherent members. Along with the implementation of the medication adherence program, PA ADAP will study the outcomes of the interventions to determine whether or not the program was successful and could potentially be used by other programs around the country. The study will utilize CMA calculations to determine pre-intervention and post-intervention medication adherence rates and to determine if the intervention was successful. Also, a patient self reporting questionnaire will be used to compare the outcomes of CMA results to patient self-reporting results.

### Inclusion Criteria

- Patients 18 years of age or older
- Patients who only have prescription coverage through the ADAP

- Patients who have been enrolled for at least 1 year prior to the intervention period

The following graphic depicts the proposed intervention timeline for the study.



## Calculating Medication Adherence

Use of Continuous Measure of Adherence (CMA) to calculate adherence rates

- CMA < 0.80 = Non-adherence (Missed more than 6 days of therapy in 1 month)
- CMA > 0.80 but < 0.95 = Sub-optimal adherence (Missed more than 1.5 days but less than 6 days of therapy in 1 month)
- CMA > 0.95 = Optimal adherence (Missed less than 1.5 days of therapy in 1 month)

Adherence Rate Calculation Examples - Note: The CMA must be calculated for each medication specific to drug and strength.

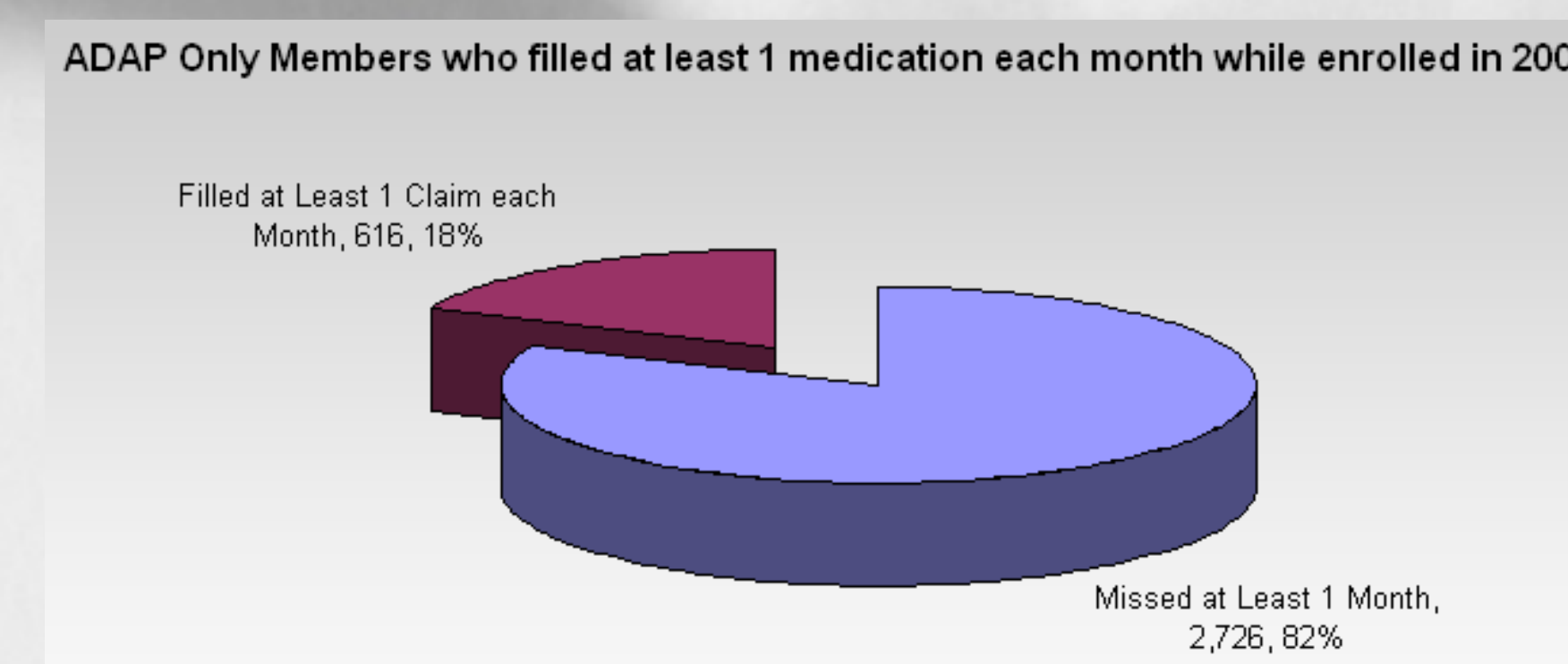
Date	Drug	Strength	Quantity	Days Supply	Days Elapsed Between 1st & Last Fill	Days Supplied Between 1st & Last Fill	Calculation	CMA	Result
7/1/10	Atripla	600/200/300	30	30					
7/28/10	Atripla	600/200/300	30	30	50	60	60/50	1.03	Optimal Adherence
8/27/10	Atripla	600/200/300	30	30					

Date	Drug	Strength	Quantity	Days Supply	Days Elapsed Between 1st & Last Fill	Days Supplied Between 1st & Last Fill	Calculation	CMA	Result
7/1/10	Atripla	600/200/300	30	30					
8/9/10	Atripla	600/200/300	30	30	67	60	60/67	0.90	Sub-optimal Adherence
8/6/10	Atripla	600/200/300	30	30					

## Results

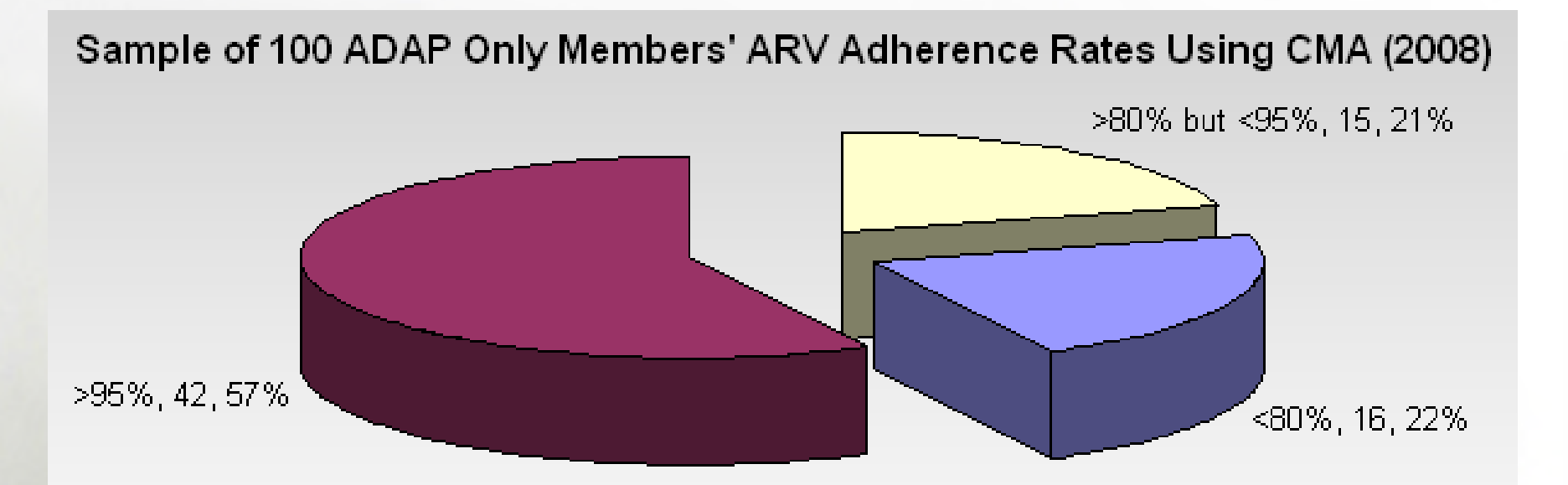
Using percent of individuals who have filled at least one medication each month while enrolled to determine medication adherence



Analysis of 100 random PA ADAP only members in 2008

n=100		Avg. # of Months in 2008 with at least 1 medication filled	
Age	Range 5-70 Years	All Chronic Medications	5.4 Months
	Average 42 Years	ARV's Only	5.1 Months
	Median 43 Years		
Sex		CMA (2008)	
	Male 73 73%	≥95%	40 52.6%
	Female 27 27%	≥80% but <95%	16 21.1%
Avg. Months Enrolled	Total 46.6 Months	<80%	20 26.3%
	During 2008 8.2 Months	No claims	24
		ARV's Only	
		≥95%	42 57.5%
		≥80% but <95%	15 20.5%
		<80%	16 22.0%
		No claims	27

Approximately 57.5% of members are optimally adherent to ARV therapy while the remaining 42.5% of members are either sub-optimally adherent or non-adherent to their ARV therapy.



## Medication Adherence Interventions <sup>1,2</sup>

- Patient education and adherence counseling
- Simplified treatment regimens
- Use of medications with less adverse effects and drug interactions
- Pill boxes
- Alarms/reminder devices
- Reminder letters
- Automated refills
- Address psychosocial issues
- Treat drug and alcohol problems

## Lessons Learned

Poor medication adherence is an issue that directly impacts patients and can dramatically affect their overall health by not adhering to the regimen prescribed to them. Prescription benefit programs such as an AIDS Drug Assistance Program have the unique ability to collect drug claims data from multiple pharmacies that are independent of one another. Normally, individual pharmacies will only have drug claim information that pertains to medications filled within their chain of pharmacies. Implementing medication adherence programs at the payer level allows for a more comprehensive approach to gathering claim information from multiple pharmacies. Also, medication adherence can be calculated in different ways and multiple factors influence the outcomes of the adherence data. The use of adherence rate calculations such as Continuous Measure of Adherence or Medication Possession Ratios by AIDS Drug Assistance Programs are effective ways to accurately measure medication adherence across a large population. Hopefully, the information presented can help other AIDS Drug Assistance Programs analyze medication adherence rates and can be used as a tool to develop and implement medication adherence intervention programs.

## References

1. Panel on Antiretroviral Guidelines for Adults and Adolescents. Guidelines for the Use of Antiretroviral Agents in HIV-1-Infected Adults and Adolescents. Department of Health and Human Services. December 1, 2009; 1-161. Available at <http://www.aidsinfo.nih.gov/content-files/adultandadolescentgl.pdf>. Accessed 8/3/10.
2. Machtiger E, et al. Adherence to HIV Antiretroviral Therapy. UCSF HIV InSite. January, 2006. Available at <http://hivinsite.ucsf.edu/InSite?page=kb-00&doc=kb-03-02-09>. Accessed 3/24/10.