GUIDEBOOK

Planning and Implementing a Successful Collaborative in a Rural Area

How the Eastern Virginia Medical School (EVMS) Patient Safety and Clinical Pharmacy Services Collaborative is changing Pharmacy Services in the Eastern Virginia

Foreword

It has been gratifying to see the enthusiasm, support, and interest of the many individuals who contributed to this GUIDEBOOK. The time and energy given by so many to develop and implement Patient Safety and Clinical Pharmacy Services, is a testimony to the importance of this issue. It is a reflection of a growing recognition that the Eastern Virginia Team is doing so much to generate knowledge that will accelerate progress toward the health, safety, and quality of life we all seek. Among those who deserve special mention are members of the Eastern Virginia Medical School Patient Safety Clinical Pharmacy Collaborative (PSPC) team, who have volunteered, in their individual capacities, to work together over a period of two years. They actively participated in extensive discussions, gathered data, made presentations, and grappled constructively, patiently, and deliberately. Throughout, they have been attentive to both the big picture and the small details, and their commitment is appreciated.

The hard work of the individuals who participated in consultations and submitted written comments deserves credit and appreciation. All these thoughtful contributions will help readers understand the problems of learning about what works, provide a wealth of ideas about possible solutions, and push future users of this information to refine the team understanding of the issues and the practicalities.

Of special note, Safere Diawara, MPH, the Virginia Department of Health (VDH) HIV Care Services Quality Management Coordinator, provided essential support and continuity to this initiative through his many intellectual and organizational contributions. The Guidebook was edited, designed, and laid out by him with contributions from the Eastern Virginia Medical School team. The heart of success of this endeavor to improve the care and safety of our patients rests with this team of dedicated people.

Diana L. Jordan, RN, MS, ACRN

Director, HIV Care Services
Division of Disease Prevention
Virginia Department of Health

ACKNOWLEDGEMENTS

Thank you to the many people who contributed to this document. We acknowledge the Eastern Virginia Medical School Patient Safety and Clinical Pharmacy Services Collaborative members who initiated the development of this document. Thank you to the participant organizations' leadership members who consistently supported these efforts.

The following individuals provided extensive time, effort and dedication to the development of this document:

Judy Wessell
Judy A. Wessell MSN, APRN, BC, ACRN, AACRN, AAHIVS. Ms. Wessell has been an HIV Nurse Practitioner for 13 years and a Registered Nurse for greater than 36 years. She received her diploma of Nursing from the Newport Hospital School of Nursing in Newport, RI, her BSN and MSN at Old Dominion University, Norfolk, VA. Ms. Wessell is currently the Nurse Practitioner Supervisor at the Eastern Virginia Medical School (EVMS), Center for Care of Immune Deficiency (C3ID), Infectious Disease Clinic. She is an HIV Health Educator with the EVMS AIDS Resource and Consultation Center, providing professional and community educational programs. She is a member of the quality improvement committee and a member of the EVMS Patient Safety and Clinical Pharmacy Collaborative.

Tanya Kearney
Tanya K. Kearney, MPA, has eight years of experience as Director for the AIDS Resource Center at Eastern Virginia Medical School. She works with health care providers, community-based AIDS service organizations, government agencies, professional associations and academic and community health care providers, to offer multidisciplinary educational programs on HIV/AIDS and other related topics. She establishes/maintains working relationships and communications with individuals and community resources and faith-based organizations committed to responding to the HIV epidemic. Ms. Kearney also assures responsibility of the Center's contracts and oversees supervision of the Ryan White Part B program. She is the team leader for the EVMS PSPC Leadership component and is responsible for the administrative functions of the project to include fiduciary responsibilities.

Rosalind Jones
Rosalind Jones is a Project Director at Eastern Virginia Medical School and works at the AIDS Resource Center. She has a Bachelor's Degree in Sociology with a concentration in Criminal Justice and a Master's Degree in Gerontology both from Norfolk State University. She has over 15 years of experience as a social worker, counselor and case manager at numerous human services agencies.
Ms. Jones processes daily Medicare co-pays and monthly billing requisitions to vendors. She manages the Eastern Consortium Ryan White Part B budget and assists with educating providers, case managers and consumers about a variety of topics that are HIV/AIDS related. She is working on a business plan for the Patient Safety & Clinical Pharmacy Services Collaborative Program (PSCPSC). She attends PSPC meetings to work closely with other committee members in making decisions that will provide safety measures for patients who are receiving PSPC services**.**

Vicki S. Johnson
Vicki S. Johnson received her B.A. in Urban Studies in 1984 from Antioch University in Santa Barbara, California. She has worked as an Administrative Assistant at the AIDS Resource Center at Eastern Virginia Medical School in Norfolk, Virginia since January 2007. Ms. Johnson was recently selected by local AIDS service organizations to receive a Star Performer award for the work she does as Administrative Assistant. Additionally, she does administrative support for the Patient Safety & Clinical Pharmacy Services Collaborative meetings by notifying staff of meetings, taking minutes of meetings, and completing other duties requested of her.

Cindy Lewis
Cindy Lewis, BSN, RN, ACRN received her BSN from Duquesne University in Pittsburgh, PA. She then worked in the OB unit at Harrisburg Hospital in Harrisburg, PA for 17 years as a staff nurse and clinical educator. The last 13 years, she has been working in the field of HIV/AIDS in several different capacities. She has worked as a nurse educator/Ryan White Part B treatment adherence nurse at the AIDS Resource Center, Eastern Virginia Medical School. She has also worked as a clinical research nurse at the Center for Comprehensive Care of Immune Deficiency (C3ID) at EVMS and as an HIV Care Coordinator in the Disease Management department at Amerigroup.
Ms. Lewis has been part of the Patient Safety Collaborative focusing on the Patient Centered Care component. Patient centered care has been concentrating on health literacy and the implementation of Peer Educators in the clinic settings.

Allison Gray
Allison Gray, RN received her RN Diploma from Obici Hospital in Suffolk VA. She then worked for seven years on the Medical-Surgical Unit at Southampton Memorial Hospital in Franklin, VA. She worked as a Clinical Supervisor at the Eastern Virginia Medical School (EVMS), Center for Comprehensive Care of Immune Deficiency (C3ID), Infectious Disease Clinic for seven years. Since 2007, Allison has worked as the Nursing Clinical Quality Coordinator for EVMS Health Services. Allison also provides support for the Electronic Health Record (EHR) at EVMS Health Services. Allison is a member of the C3ID Quality Improvement Committee and a member of the EVMS Patient Safety and Clinical Pharmacy Collaborative.

Virginia Walker
Virginia Walker PharmD, RPH, BCPS, of First Light Group, LLC, received her BS in Pharmacy from Virginia Commonwealth University in Richmond, Virginia and PharmD from the University of Florida in Gainesville. She has practiced in the community pharmacy setting since 1981. She pioneered on demand clinical pharmacy services in the ambulatory community setting and most recently, via First Light Group, LLC, integrated clinical pharmacy services into a rural clinic practice as a team member of the EVMS Patient Safety and Clinical Pharmacy Services Collaborative (PSPC). First Light Group, LLC, provided on site clinical pharmacy services as well as off site consultation via phone. These services were tailored to meet the particular needs of the underserved rural HIV positive population in the Three Rivers Health District and included continuous quality improvement initiatives and health promotion. In addition, First Light Group, LLC, provided financial support for Dr. Walker's participation at the HRSA national PSPC meetings and Learning Sessions.

Richard Hall
To fulfill a need for continued public service, Mr. Hall became fascinated with the medical needs of the uninsured and medically underserved residents of the Gloucester area. In the early 1990s, Mr. Hall, among others, helped to establish the Three Rivers AIDS Coalition as an attempt to mitigate the health barriers and stigma of persons living with HIV infection. With the assistance of federal Ryan White Part B funding and a contractual agreement with the Eastern Virginia HIV Care Consortium, the Gloucester County Health Department provides infectious disease treatment and medical case management to all eligible residents. Richard Hall has actively participated in the development of a multi-disciplined team to establish the collaborative known as the EVMS PSPC. Recently, he was designated the Virginia Department of Health Star Employee of 2009 and he was invited by HRSA to become a field faculty member for future national PSPC efforts.

Pam Lane
Pam Lane, MPH, Senior Health Educator, Three Rivers Health District (TRHD). Pam received her degree from Loma Linda University. She heads the District's Community Health Advocacy Team (CHAT), which conducts a variety of grant funded community projects addressing health issues such as youth tobacco use prevention, teen pregnancy, and HIV/AIDS prevention education and case management. Her role in PSPC includes administrative oversight within TRHD and the possible spread of the "Plan-Do-Study-Act" (PDSA) technique to other CHAT endeavors.

Pierre Diaz
Pierre Diaz received an Associate Degree in Business Management from Commonwealth College in Norfolk in 1992. Mr. Diaz is Senior Chair of the Greater Hampton Roads Transition Grant Area (TGA) Planning Council which administers Ryan White Part A funding for southeastern Virginia and Currituck County in North Carolina. Mr. Diaz monitors resident's daily life skills at the Hope House Foundation in Portsmouth, Virginia. His interest in the PSPC is that he wishes to play a major role in assisting consumers through education and care while health providers evolve into patient-centered care. Mr. Diaz is a Peer Coach co-located at the Gloucester County care site and participates in the TRHD's Community Advisory Board (CAB) for HIV services and quality improvement.

Janet Hall
Janet Lynn Hall has been a resident of Hampton Roads since 1986 and received a Bachelor of Science in Accounting from Norfolk State University in 1992. She is Chair of the Eastern Virginia HIV Care Consortium Ryan White Part B (2009-2010). She facilitates support groups at the Norfolk Community Health Center (e.g., Phenomenal Women-2008). Her interest in the PSPC is that she can play a major role in assisting consumers through education and care while health providers evolve into patient-centered care.

Safere Diawara, MD, MPH
Mr. Diawara's background lends itself to multi-cultural opportunities with a focus on HIV/AIDS including prevention, care, program development and implementation, quality improvement (QI) activities, public health, and clinical practice. His received his Medical Doctorate (MD) from the University of Conakry (Guinea) in 1987 and his Master's of Public Health Administration

(MPH) from the University South Carolina (USC) in 2000. Mr. Diawara has spent the past nine years working with the Virginia Department of Health managing several Health Resources and Services Administration (HRSA), Center for Disease Control (CDC) and Virginia State HIV/AIDS funded grants and programs. As the HIV Care Services Quality Management Coordinator, he is currently coordinating and participating in several national Quality Improvement Collaborations for the state including the Patient Safety and Clinical Pharmacy Services Collaboration and Ryan White Cross-Part Collaborative. He provides leadership for national initiatives and serves as a liaison with external parties.

Table of Contents

LIST OF FIGURES & TABLES

USE of GUIDE

Purpose

The purpose of the Guidebook is to assist HIV/AIDS providers in building a collaborative team or to improve patient safety and clinical pharmacy services. The Guidebook explains how the Eastern Virginia Medical School team is changing pharmacy services in the Eastern Virginia rural area. Included are best practices; tips; recommendations; steps to plan, implement and evaluate a collaborative project; and tools that can be adapted to meet specific needs.

Structure

The Guidebook is divided in sections as follows:

Introduction
Getting Started
Pre-Implementation
Implementation
Results
Sustainability
Things to Know

Each section provides details on what has been done and what might be done.

I. INTRODUCTION

A. Overview

In a community where components of the safety net are fragmented, a significant percent of high risk patients may not be achieving the health outcomes that are possible, and many may suffer from medication errors and adverse drug events as a result.

The Patient Safety Clinical Pharmacy Collaborative (PSPC) is a Health Resources and Services Administration (HRSA) initiative to improve patient safety and health outcomes by integrating clinical pharmacy services into the care and management of patients with chronic diseases.

Many patients live with multiple chronic conditions that require them to be in contact with a number of health care providers and institutions. The scale of this at-risk population is enormous and growing, and the opportunity for improvement is great.

The Institute of Medicine[1] found that the safety and quality of risks associated with medications are severe:

- Adverse healthcare events continue to be a leading cause of death and injury
- 1.5 million people are injured each year as a result of medication-related complications
- Nearly 25% of ambulatory patients reported adverse drug events (ADEs)
- "…for every dollar spent on ambulatory medications, another dollar is spent to treat new health problems caused by the medication."

B. Opportunity for impact

The primary emphasis in this Collaborative is the improvement and integration of healthcare delivery systems which maximize use of clinical pharmacy services and safe medication practices that ultimately result in improved patient outcomes.

Clinical pharmacy services are defined as patient-centered services that promote the appropriate selection and utilization of medications to optimize individualized therapeutic outcomes.[2]

Health Resources and Services Administration (HRSA)'s Patient Safety and Clinical Pharmacy Services Collaborative (PSPC) is designed to spread leading practices that have been proven to improve patient safety and health outcomes and have successfully implemented clinical pharmacy services. During the 24-month process of the PSPC, Learning Sessions, Action Periods, web trainings and listservs were used to measure, report, and track improvement. Expert faculties have helped teams adapt, test, and implement successful practices selected from the "Change Package".

C. Collaborative aim

This Collaborative employs interdisciplinary, patient-centered approaches to integrate the provision of clinical pharmacy services and safe medication practices at each point of

care. In Virginia, the specific aims of the Eastern Virginia Medical School (EVMS) PSPC team includes:

1) Improving communication between all participants in the healthcare process;
2) Maintaining a seamless continuum of care in rural areas;
3) Establishing responsive linkages between local service providers and the delivery of patient care, addressing the unique needs of an HIV positive population;
4) Increasing patient health literacy and self-care involvement;
5) Ensuring that patient care delivered by safety-net organizations and their partners becomes the safest;
6) Reducing Adverse Drug Events and potential Adverse Drug Events due to errors;
7) Meeting or exceeding standards of care for HIV positive individuals.

D. Collaborative goals

The goal of the Collaborative is to ensure that patient care delivered by all partners serving uninsured, underserved and vulnerable populations becomes the safest.

In Virginia, the primary emphasis in the EVMS PSPC is on the improvement and integration of healthcare delivery systems that maximize use of clinical pharmacy services and safe medication practices that ultimately result in improved patient outcomes which:

1) Increase cost-effective clinical pharmacy services;
2) Ensure patient safety;
3) Develop a sustainable and replicable care system;
4) Mentor other collaboratives;
5) Provide patient-centered care with substantive consumer involvement in planning and evaluation of their care.

E. Collaborative methods

The Collaborative uses an "action learning system" designed to disseminate leading practices that have been shown to produce the intended results. This Collaborative is modeled on the Institute for Healthcare Improvement's (IHI) methodology as adapted by the Health Resources and Services Administration (HRSA). HRSA has pulled together teams of healthcare providers from communities across the nation to learn, replicate, test, and adopt specific practices in patient safety and clinical pharmacy services to improve health outcomes and reduce adverse drug events. In a 24-month process, improvement efforts are organized around regular Learning Sessions where teams come together for several days to learn leading practices. Between each Learning Session are Action Periods where teams bring these leading practices into their practice settings for testing and adapting.

Teams use the Model for Improvement called Plan, Do, Study, and Act (PDSA)-a fast paced, repetitive improvement method. Continuous, small scale, rapid testing leads to adaptation of leading practices to fit local conditions.

F. Collaborative leadership

The Collaborative is also being directed by HRSA, National Quality Center and the Healthcare Systems Bureau's Office of Pharmacy Affairs. Nationally recognized leaders comprise the expert faculty drawn from the safety-net community and individuals experienced in primary health care, and those who have participated and implemented successful disease management system design improvements. In addition, many national and state-based organizations (pharmacy organizations, federal partners, quality organizations, nursing organizations, safety-net organizations, educational institutions and others) are partnering with HRSA in this effort.

HRSA leadership included:

(1) Programmatic support to a local and state infrastructure, national knowledge management and result-sharing websites, and ability to participate in many Learning Sessions.

(2) National faculty support to guide implementation of the improvement and performance changes, and to sustain and to disseminate these improvements to all systems of patient care.

(3) A virtual Help Desk to improve management of technical assistance provided to Service Delivery Organizations and their community partners.

Local leadership is provided by the EVMS Collaborative participants and is an organic, on-going synergy of communication, dedication and huge effort to achieve the aims and goals of the process. Of particular merit and importance is the high level of dedicated members, resources, and time provided. Five partners from Virginia participate in the EVMS PSPC representing five different types of settings: EVMS including the Center for Comprehensive Care of Immune Deficiency (C3ID) and HIV/AIDS Resource and Consultation Center (ARC); Three Rivers Health District (TRHD), consumers, First Light Group, LLC, and the Virginia Department of Health (VDH). While the projects are different in their settings, they all see an excellent opportunity to impact and improve patient safety and reduce medication errors. They are really doing great work and are very dedicated to their mission.

Additionally, the Virginia Department of Health (VDH) brings to the process its long-standing leadership in quality assurance as well as financial and technical support. Funding is a significant issue (VDH has been using Ryan White Part B grant money to help support team members' participation at required Learning Sessions). The HIV Care Services Quality Management Coordinator has been assigned to continue enhancing patient safety activities by providing direction, essential support, leadership, and encouragement to this initiative through his many organizational contributions.

II. GETTING STARTED

Driving the collaborative are inter-professional teams of community-based health providers who are learning to achieve measurable improvements in patient safety and health outcomes and then implementing these practices to improve care in their own communities.

Clinical pharmacy services are patient-centered services that promote the appropriate selection and use of medications with the aim of optimizing individual therapeutic outcomes. Clinical pharmacy services are provided by a multidisciplinary health care team through individualized patient assessment and management. These services are best provided by a pharmacist or by another health care professional in collaboration with a pharmacist.

In Virginia, the EVMS PSPC team began pre-work on July 15, 2008. Prior to the first Learning Session held in August 2008, the team identified a defined patient population, recruited core team members based upon relevance to providing clinical pharmacy services, and set quantitative aims guided by the goals of the PSPC.

A. Introducing the PSPC to your agencies and gaining support

Through the Eastern Virginia HIV Care Consortium's lead agency, Virginia Department of Health (VDH) was able to disseminate HRSA's recruiting for participation in the PSPC efforts. Eastern Virginia Medical School including the AIDS Resource and Consultation Center (ARCC) and Center for Comprehensive Care of Immune Deficiency (C3ID), Three Rivers Health District (TRHD), and First Light Group, LLC, came on board and accepted the challenge to develop a local partnership. The lead agency contacted and brought these agencies to the collaborative table and the effort was expanded to include consumers who are recipients of the services to be improved. All partners took the information to their organizations, informed them of this great opportunity, engaged those that were interested, and sought approval from their individual leadership.

Engaging partners at this level initially was one of the tasks that contributed heavily to the success of this collaborative. Interested parties were able to hear the message not only from HRSA and VDH but also from their own staff members who had embraced the collaborative idea and supported its goals. The EVMS PSPC team members have been committed to sharing their experiences with the rest of the staff at their work places and making safety initiatives contagious and integrated into practice models.

Team members shared information and solicited leadership support for the collaborative within their agencies: EVMS (including C3ID and ARCC), Three Rivers Health District, consumer representatives, First Light Group, LLC, and VDH. The PSPC was introduced initially to different directors to support the time and effort of their respective staff who would be needed to attend earning sessions and local group planning meetings. Also, permission was requested from the TRHD leadership to utilize clinic space at the Gloucester Health Department to access the Collaborative's population of focus. The concept and goals of the collaborative were also presented during staff meetings, Eastern Virginia HIV Consortium quarterly meetings, and Ryan White Part B Contractor meetings. One-on-one communication between team members was also paramount to effective communication.

All partners were encouraged by HRSA to attend the first learning session, where they interacted with and listened to peers from around the country discuss the PSPC and exchange ideas from other states. Learning sessions offer unique, ongoing opportunities in an all-teach/all-learn environment. Participants may benefit from all of the knowledge-sharing and sharing of best practices, tools and resources, plus have an opportunity to evaluate Web-based data and conference calls that occur during the intervening action periods. Consultation with practice sites regarding recruitment and retention strategies as well as promotion of best practice opportunities to physicians, pharmacists and students are also valuable exchanges.

B. Characteristics of agencies that made the implementation successful

The EVMS PSPC collaborative works well together as a team because everyone brings different energies, perspectives, ideas and experiences to the effort. Frequent contact through monthly team meetings and e-mail communication help to keep the team on track. Team members have historically worked together to improve the quality and quantity of HIV primary care and supportive services to various high risk rural populations. Team members were encouraged that the PSPC process would lead to better protocols, healthful outcomes and an increase in quality of life for patients. It was also a collective hope that lessons and experiences obtained from this PSPC process would be replicated at other rural care sites.

EVMS-Center for Comprehensive Care of Immune Deficiency (C3ID)
C3ID has a long history of providing infectious disease care to both urban and rural populations. It is the largest provider of Ryan White Part A and Part B care in the Tidewater area of Virginia and sees private, Medicare, Medicaid and Ryan White patients. It has its main operation on campus in Norfolk but operates eight off-site satellite clinics. The school provides the clinical staff and the satellite clinics most frequently provide care coordination, medical case management, referrals and support services. C3ID has been very active in forward thinking processes as to how the team could adapt to other clinics larger in size and with different dynamics. They also raise the bar with the peer training program and the treatment adherence services provided to patients including one-on-one treatment adherence education.

EVMS-AIDS Resource and Consultation Center (ARCC)
The lead agency for the Eastern Virginia Ryan White Part B program volunteered to staff the PSPC's meetings, including arranging for meeting space, taking minutes, collecting data and retaining all records. Additionally, it represents the "Leadership" of the team, responsible for developing organizational relationships that promote safe medication use systems and optimal health outcomes, forming partnerships to achieve a shared compelling vision by aligning and leveraging resources, and building a business case and foundation for the sustainability of integrated clinical pharmacy services.

Three Rivers Health District (TRHD)
The care site at Gloucester County Health District has been operational for many years and is the only HIV care site servicing the ten rural counties which comprise the health district. TRHD facilitates HIV clinics at its Gloucester Health District and is the primary site of clinical pharmacy services. Team meetings are held after each clinic in order to communicate emergent problems or successes. The Health Department is also the site of referral by community partners, private care offices and local AIDS Service Organizations (ASOs).

Being linked to the continuum of testing sites, free clinics, and regional hospitals provide a seamless recruitment and referral source for the collaborative effort.

Consumers
Two consumers attend regularly scheduled EVMS PSPC meetings. Through their work with the PSPC, consumer involvement has had a significant impact on clinical pharmacy services and how the treatment adherence works in the area. Strategies for recruitment of Peer Coaches are ongoing and consumers' input is accessible through a suggestion box at the clinic site and the Community Advisory Board. Peer Coaches are being integrated into the clinic setting. They will actively participate at HIV clinics as mentors and facilitators assisting with HIV care and prevention efforts. Through the PSPC and HRSA learning sessions and other activities, consumers are beginning to have a more active role and impact both within the clinic and the community.

First Light Group, LLC
The First Light Group, LLC, provides clinical pharmacy services for the collaborative at the TRHD clinic. An on-site pharmacist (PharmD) is regularly scheduled for all clinics and is available for phone consultation on an as needed basis between clinic visits. The pharmacist's services are currently contracted under the Ryan White Part B funding to support the development and sustainability of comprehensive clinical pharmacy services for the population of focus. Clinical pharmacy services are built upon the standards of care for the infectious disease specialty and tailored to meet the specific dynamics of the population of focus. Within the clinic setting, the pharmacist monitors emergent patient needs to maintain therapies and health outcomes. Within the collaborative, the pharmacist's role is to chair "safe medication use systems" and contribute to the "Change Package" model.

Leadership from VDH
VDH has the distinction of having the EVMS team accepted into this collaborative that strives to improve patient safety and to fully integrate clinical pharmacy services into the primary care system and the continuum of HIV care. The team is participating in this national effort along with a wide variety of healthcare organizations, including private practices, hospitals, integrated care delivery systems and more. VDH offers assistance to the EVMS PSPC, often on-site, to strengthen their health care delivery systems. Assistance is offered with financial issues, data management, team building and conflict resolution.

All stakeholders work together to come up with ground rules and meeting structure. The entire collaborative team meets at least monthly, usually on a face-to-face basis, or via conference call or communicates through e-mails. The front-line service providers meet after each HIV clinic. All team meetings are supported by an agenda, with review of task specific assignments, and follow-up summaries are sent to all participants.

C. Population of focus (FoF)

The target population of focus for this project is fifty (50) high risks, rural HIV positive residents of the Northern Neck and Middle Peninsula of Eastern Virginia who are seen at the EVMS/TRHD Gloucester County Health Department HIV Clinic. This site was chosen as the collaborative for the PSPC because of the existing clinic and its practice of co-locating clinical pharmacy services.

Implications of serving this population included:

- The population of focus (POF) for this project is the high-risk, rural HIV/AIDS population residing in the Middle Peninsula of Eastern Virginia. This population tends to be medically underserved, impacted by limited access to services, uninsured, with low health literacy, affected by poverty, stigma and barriers to care, or have other challenges that place them at high risk for co-morbidity and mortality.
- This group of patients also experiences a seemingly disproportionate incidence of cardiac, renal and hepatic co-morbidities which are complicated by HIV antiretroviral treatment and require clinical pharmacy interventions. For these patients, education and development of support networks is vitally important.
- Poly-pharmacy and multiple prescriptive sites require a high level of communication and coordination to affect patient safety.
- Substance abuse and mental health, incarceration and transportation barriers are some of the problems that lead to treatment interruptions and potential disease progression.
- Patient co-pays, third party payer concerns, varying drug formularies and other barriers to accessing care frequently require treatment changes and good communication between patients, case managers, clinicians and a clinical pharmacist.
- In Gloucester, accessibility is a challenge; HIV clinic is held twice a month and is often a 1 ½ hour drive one way, thereby making follow up with patients difficult.
- The TRHD provides an environment that offers privacy, confidentiality and compassion in a private clinic setting that promotes patients' continued participation in active care and therapy.

D. Logic model

The "Change Package" model was selected to analyze and quantify improvements above baseline for the five core components to achieve accountability for results:

I. Leadership Commitment: Develop organizational relationship that promotes safe medication-use systems and optimal health outcomes.
   A. Foster a culture of quality and safety with a vision of integrated clinical pharmacy services to improve safety and health outcomes.
   B. Form a partnership to achieve a shared compelling vision by aligning and leveraging resources.
   C. Build the business case and foundation for the sustainability of integrated clinical pharmacy services.

II. Measurable Improvement: Achieve change using the value and power of data-driven improvements.
   D. Share, analyze, and disseminate the data that are necessary to guide improvement in process and results.
   E. Manage the delivery system on safety improvement by implementing safe practices and tracking safety outcomes.
   F. Manage the delivery system for tracking improvements in health outcomes for high-risk patients.

III. Integrated Care Delivery: Build an integrated health care system across providers and settings that produce safety and optimal health outcomes.

G. Develop an integrated multi-professional care team that includes clinical pharmacy services.
H. Develop a delivery system with an established primary health care home and linkages with other providers and settings.
I. Coordinate care transitions among providers and settings, with medication reconciliation at each care transition.

IV. Safe Medication Use Systems: Develop and operate using safe medication-use practices

J. Systematically introduce and institutionalize safe medication-use practices and monitoring procedures.
K. Establish on-site clinical pharmacy services
L. Implement pharmacy services and safe medication practices in the absence of an on-site pharmacist.

V. Patient-Centered Care: Build a patient-centered medication-use system

M. Engage patients and families in achieving safe care and optimal health outcomes
N. Establish patient self-management as a practice that is tracked and improved over time.
O. Provide culturally appropriate services by developing the understanding and competencies that providers need to engage their patients.

The strategy for change was based upon the establishment of commitments, progressing through the change process, and concluding with results. The methodology for testing change and/or improvement was a continuous rotation process of Plan/Do/Study/Act (PDSA) cycles.

For further information on the Change Package go to: http://www.hrsa.gov/patientsafety/changepackage.htm

E. Key characteristics that have been adapted by the EVMS team to meet the needs of providers and target populations:

- Health literacy was one of the major concerns with this population. The team worked hard to present working tools and information sheets in a simpler form, having patients teach back the information given to them, looking at lifestyle factors and issues that could impact adherence and the ability to process communication.
- Peer Coaches brought an additional support network for clients and a way to address issues such as prevention, disclosure, medication adherence, and health literacy in a supportive environment with another HIV positive individual.
- Team building and collective ownership of need was essential to developing communication and implementation of efforts to increase patient safety.

- A history of co-locating clinical pharmacy services at the TRHD clinic eased the transition into integrated and measurable processes and outcomes.
- The concurrent transition from paper medical records to electronic charting was an advantage to the process and added additional layers of safety and easily retrievable data.
- The development and utilization of a clinic flow sheet helped with communication and improving levels of service and standards of care.
- Developing a standardized format and timetable for verification and tracking of standards of care for Highly Active Antiretroviral Therapy (HAART) and treatment of opportunistic infections (OIs), lab review for systems analysis of therapy efficacy and toxicity, and drug utilization review were very helpful.
- HIV/AIDS providers in the Norfolk and Gloucester areas who interact with the HIV/AIDS target population were contacted and selected for focus in the collaborative.
- Information about the Collaborative available on the Knowledge Management System (KMS) web-site (http://www.healthdisparities.net/) was shared with stakeholders to access at their convenience.

F. Key agency capacities that are necessary for implementation (staff, data, system, etc)

- The first predicate for a successful collaborative is agency commitment from the top down – administrators to frontline providers.
- Suggested participants for this project include: Pharmacists, case managers, patients who are HIV-infected or affected, providers, administrators and secretarial support staff.
- Clinic staff "buy-in" to the project, availability of a pharmacist at clinic, support from all partners, and Peer Educators.
- Electronic Medical Record (EMR) system supports increased communication.
- Electronic prescriptions decrease pharmaceutical errors and prevention of drug interaction through medication reconciliation processes.
- Members of the PSPC team work communally to evaluate needed change, implement needed changes, assess and analyze processes and health outcomes. Team members will seamlessly interact to establish and maintain all efforts.

II. PRE-IMPLEMENTATION

This section focuses on the necessary activities to prepare and implement a collaborative project. In this section we will cover topics such as staffing requirements, resources needed, intervention adaptations, evaluations, resources/staff, training, and partners.

A. Resources/staff

It is necessary to have staff members who support the mission of patient safety. Medical, case management and pharmacy providers, information technology support, administrative staff, consumers, and Peer Educators are needed. The team works together to develop or

change strategies. Peers assist in developing the simplified medication literature by serving as reviewers. Staff needs and responsibilities include:

- Oral and written communication skills, the ability to work together as a team, the ability to think "outside the box", experience working with the population of focus, cultural sensitivity, and committed support staff are essential.
- Develop an "all-teach, all-learn" environment wherein providers identify success and failures without blame or criticism.
- Agree to serve as mentors and trainers for future enrollee pharmacies as the program expands.
- Have an established relationship with patients who may be provided patient safety and clinical pharmacy services.
- Plan to have electronic access sufficient to access patient electronic information as needed.
- Complete required trainings and learning sessions.
- The pharmacist is a key partner and should be available to respond to individual questions and requests from clients and providers. Clinical pharmacists served as a resource to physicians and nurse practitioners in providing medication-related information, a role that was described as an effective means of establishing rapport and trust.
- Pharmacies will have policies and procedures in place documenting that the following are in place:
  - Medication reconciliation for all patients.
  - Consistent verification and documentation of allergies and adverse drug reactions.
  - Consistent profile review of all patients in order to identify medication errors, changes in manufacturer and/or patient confusion.
  - Utilization of a check-off form during consultation that describes what the pharmacist did.
  - Standards of care from national association including safety initiatives applicable to a care setting
  - Quality assurance component based on patient survey including clinical pharmacy services.

B. Budget required for implementation (costs for staffing, training, materials etc)

The typical time commitment needed is estimated to be the equivalent of approximately .50 to 2.0 FTE per team. This usually translates to about 20-40 hours per week, for the entire duration of the Collaborative (24 month action period) depending on the size of the team and the number of organizations who participate as a team. This does not mean to imply that organizations have one full time person committed to the Collaborative. The estimate is based on the aggregate time of multiple team members participating at learning sessions, on monthly conference calls, interacting with the Collaborative listserv and peers, and travel time for the lead team.

Teams should be composed of travel members and non-travel members, with each participant clearly knowledgeable of their collaborative team duties and responsibilities. Traveling team members should anticipate participating in each of the eight learning sessions and expect to travel to most of them.

Travel costs to the learning sessions will be the primary direct expense related to participation. For the EVMS PSPC, VDH agreed to cover those expenses with Ryan White Part B funds. Travel costs would include transportation, lodging and per diems for the EVMS travel team. In addition, many non-financial resources, such as technology, administrative staff, and access to topic and quality improvement experts, are necessary for a successful learning collaborative.

C. Training

Some team members attended trainings on Quality Improvement Training-of-Trainers (ToT), Quality Management Leadership Training and Effective Skills for Diverse Populations (Cultural Competency) Training. All participants should be knowledgeable of health literacy and cultural sensitivity issues. Additionally, all team members must be aware of The Health Insurance Portability and Accountability Act (HIPAA) requirements and respective institutional guidelines for Institutional Review Board (IRB) requirements (if necessary). Specific educational tools and training programs will be provided to participating pharmacies in order to facilitate the consistent implementation of these best practices.

Three members attended Learning Session 1, six members attended Learning Session 2, five members attended Leaning Session 3 and three members attended Learning Session 4.

The EVMS team is planning its peer coach program implementation, and with that, EVMS has policies in place that must be followed including attending HIPAA training, and review of medical policies that the peers must meet such as documentation of screening for tuberculosis infection.

Peer Coaches will be Certified HIV Positive Peer Educators. These individuals will have completed a five week training program through the AIDS Resource and Consultation Center (ARCC) at EVMS. All will become recognized volunteer staff at EVMS and will have completed the HIPAA training program.

D. Measures

Overview of PSPC Measurement Approach
HRSA performance measurement indicators enable the EVMS Team to see and manage improvement in safety and health outcomes for a high risk population of focus. The EVMS team met several times to define data collection and reporting for the collaborative. Teams are expected to have measurement programs showing "improvement compared to a previous baseline."

The process of establishing and reporting data is summarized in five steps as follows:

Step 1. Team Intent

- Define your population of focus.
- Define your clinical pharmacy service program (CPS) for that population.
- Select safety measures, ADEs and pADEs that team will track.

- Identify the improvement in measurable health outcomes as a result of the CPS program.

Step 2. Prepare and Test "Operational Case Definitions" For Measures

- Use the PDSA cycle to rapidly develop the case definitions that will define your performance measurement program.

Step 3. Collect and Report the Baseline Data That Will Define Improvement

- To report the data that will be your baseline for the population of focus.

Step 4. Measure Post-Intervention Performance For Team Management and Reporting

- Track patient visits with the delivery system for the population of focus.
- Routinely assess the degree of implementation of your intended clinical pharmacy program. (e.g., rating scale)
- Track the CPS encounters for the population of focus.
- Track the health outcome trends on the selected measures for the population (Are outcomes improving?)
- Track the patient safety trends on the selected measures for the population. (ADEs, pADEs - is safety improving?)

This data will be reported monthly to the collaborative.

Step 5. Over time, Add New Measures to Reflect New Interventions and Broader, More Refined Measurement Approaches

- Notify the PSPC faculty and HRSA Knowledge Gateway if new measures are being added**.**

E. Measures *that HRSA/Faculty Are Requesting that PSPC Teams Report*

To access related documents go to: Library area of the HRSA Knowledge Gateway at http://www.HealthDisparities.net

IV. IMPLEMENTATION

As a result of time constraints, full-time job responsibilities, and taking on a project such as the PSPC Collaborative, the EVMS team chose to focus on one specific area (initially, HIV/AIDS patients in the Gloucester area).

Data-supported outcome results show improvements and help to get the support from administration to cover the actual delivery of the intervention and expand the project. This section will cover the actual delivery of the intervention and focus on the five strategies and activities that the team utilized.

A. Leadership

According to Oakley and Krug (2006), the goal of leadership is to simplify the challenges faced by the work group into a useable, understandable and actionable framework. Leadership is something everyone is responsible for at given times of the process. A select group of core team members were chosen for this project in response to a request from the

VDH, and to align with HRSA's strategies to foster a culture of quality and safety with a vision of integrated clinical pharmacy services to improve safety and health outcomes, form partnerships to achieve a shared compelling vision by aligning and leveraging resources and build a foundation for the sustainability of integrated pharmacy services. As time has evolved additional members have been added for the development of organizational relationships that promote safe medication-use systems and optimal health outcomes (PSPC Collaborative, 2008).

The AIDS Resource and Consultation Center is the lead agency for the Ryan White Part B Program. Its responsibilities for the PSPC are to staff the meetings and supply the space for meetings, take minutes, collect all data, and retain all records. This is in addition to recruiting medical case managers, patients who are infected or affected, other clinical providers, key administrators, and supplying data analysis and secretarial support.

The PSPC reinforces the important role of leadership in setting priorities. The EVMS worked to include strategies supporting the concept of PSPC among the Eastern Virginia HIV Care Consortium organizational culture, aim and vision. "**The Consortium will promote the provision of patient safety centered treatment and support the establishment of an integrated network of public and private healthcare providers**".

Leadership efforts included building a PSPC business case for the sustainability of integrated clinical pharmacy services. The business case has been built by documenting and tracking cost savings and outcome data, such as the pharmacist time and effort, savings resulting from the identified ADEs and pADEs, medication reconciliations, and avoidance of hospitalizations.

Leadership achievements included identifying goals for improving safety, quality, and efficiency by seeking direct input from staff and community members through staff meetings, provider and patient satisfaction surveys, needs assessments, and ADE and pADE reports.

The importance of giving equal access to leadership and decision making to each group of providers was stressed.

Aligning resources through partnerships was an effective strategy in achieving a mission for PSPC. Leaders of all participant organizations participated in local, state, and/or national learning sessions.

B. Measurable improvement

The EVMS PSPC Team monitored patient outcomes, safety, and process improvements to demonstrate the effectiveness of medication use systems. Typical ways used to collect patient outcomes and process improvements data involved use of the Virginia Client Reporting System (VACRS), Electronic Medical Records (EMRs) and home–built systems based on software platforms (e.g., Microsoft Access, Excel). Common ways to track process-related data were to use random audits of charts, conduct root cause analyses for identified adverse events, and complete patient satisfaction surveys.

In order to implement and effectively measure Clinical Patient Safety into the care package, clinical baselines had to be abstracted from paper charts and electronic medical records for the HIV population of focus.

The following data (among others) were charted for the HIV/AIDS population of focus:

- Highest HIV Viral Load and CD4 Nadir
- Current HIV Viral Load and CD4 Count
- Most recent Rapid Plasma Reagin (RPR)
- Most recent Purified Protein Derivative (PPD)
- Most recent Papanicolaou (PAP) Screening
- Lipid Abnormalities
- Hepatitis B Vaccinations (HBV)
- Hepatitis C Screening
- Influenza Vaccination and Pneumovax Status
- Renal Function
- Hepatic Function
- Allergies

To standardize and document service by inclusion or omission, a clinic flow sheet was developed and piloted by the PDSA process. The flow sheet also becomes a tool for increased communication between the inter-disciplinary providers on the team. Baseline medical data reside in the patient's electronic medical record. Updates and trends are reviewed quarterly and annual improvements can be analyzed.

C. Integrated care delivery

The EVMS PSPC reinforced internal teamwork by bringing interdisciplinary groups together to develop, implement, evaluate, and improve quality improvement initiatives. The team participated in informal networks with providers of other organizations through meetings and e-mail communications to share the strategies to make the PSPC process more efficient.

EVMS is in the process of building a better system by communicating on a regular basis. One of the insights for including patients in Quality Improvement efforts, and evaluation of such efforts is the use of paid, certified Peer Coaches at the care site. Protocols are being developed to co-locate patients and Peer Coaches for empowerment, inclusivity, and the undertaking of Quality Improvement activities such as needs assessment, patient satisfaction surveys and peer-to-peer mentoring. Coaches will have specific tasks and algorithmic tools that will quantify and assess data needed by the care team, funding entities and collaborating partners.

In order to better communicate patient care through the progress notes, the team first needed to know the identity of the primary care provider. The Intake Coordinator added that question (identity of the primary care provider) to the intake process and all clients who are new to the clinic now have that documented if they have a primary care provider. The team then needed to make sure the medical team knew how to transmit progress notes, appropriate medical records, test results and updated medication lists. The Electronic Medical Records (EMR) liaison held a lunch time learning session that highlighted the use of the EMR for this collaborative. Strategies to improve communication at the points of care included EMR

systems that generate reports on newly discharged patients and outpatient medical records, accessing data from various providers within the collaborative, and e-prescribing.

D. Safe medication use system

Pharmacy is one of the most challenging aspects in the Eastern community health system. The EVMS staff works to secure the most affordable price for patient medications through medication assistance programs, local or chain discounts (Wal-Mart and others).

The clinic works with a private pharmacist who is a strong part of the patient care team as far as monitoring and helping with medication distribution, looking at the clinical aspects of drugs and how they're used, evaluating patient medication lists to see if medications are appropriate, monitoring lab values associated with medications, and helping to manage different health conditions along with the physicians.

The Eastern Virginia Medical School PSPC Collaborative utilizes several methodologies in doing medication reconciliations:

- For retrospective reconciliations, patients are asked to bring in all medicines in the original bottles; drugs are compared to a review of drugs listed in the EMR at the care site, and a review of all other prescriptions, over-the-counter (OTC) drugs, herbals, supplements, etc. are included.
- Prospectively, to mitigate poly-pharmacy and poly-prescriber problems, every patient has to sign a charted consent authorizing the pharmacist to access all prescriptive and dispensing sites utilized by the patient. The intent is to receive dispensing records on a twice-yearly basis and as needed for Quality Assurance auditing.
- Verification of medication list accuracy in EMR was accomplished with what became a flow sheet for all providers to utilize at each clinic. This information was verified and when appropriate (errors/omissions) transcribed into the EMR at each clinic.
- Verification of standards of care for HAART and opportunistic infections (OI) treatment, lab review for systems analysis of therapy efficacy and toxicity, drug utilization review, drug monitoring and management when needed.

  Several interventions have been planned to ensure effective medication monitoring including:

- **Focused adherence intervention**: Includes consultation with a patient regarding a significant lack of adherence in order to enhance the patient's understanding of their medication regimen. An adherence tool or referral for a comprehensive medication review and assessment will be provided (e.g. possible drug misadministration, inability to correctly split tablets, inability to afford medications, presence of adverse drug reaction(s), misunderstanding of prescribed instructions, sharing of unauthorized medications, presence of an uncontrolled disease state, prescription of an inappropriate dosage form) for concerns related to

health literacy or other concerns as determined by the pharmacist and treatment adherence nurse.

- **Therapeutic duplication intervention**: This is a recommendation to discontinue a potential therapeutic duplication. (e.g., patient obtains prescriptions from more than one pharmacy, receives sample medications, shares medications with another individual, orders medications from the internet or via mail order pharmacy, takes over-the-counter or herbal medications which interfere with prescription therapy, receives prescriptions from multiple providers or duplication as noted by the pharmacist and the treatment adherence nurse.) The PSPC required providers to reconcile the list of medications, over-the-counter medicines, and herbal supplements at each visit or point-of-care transition for existing patients and for all new patients.

- **Medication additions or deletions intervention**: This includes recommendation of the addition or deletion of a medication based on clinical guidelines, indication, adverse drug reaction, contraindication, Food and Drug Administration (FDA) safety alert, additive toxicity, drug-drug interaction, drug-food interaction, drug allergy, or other reason as determined by the pharmacist and treatment adherence nurse.

E. Patient centered care

The Patient Centered Care team is focusing on strategies that deal with health literacy and the implementation of Peer Coaches in the clinic:

- The first action step that clinics can undertake to move toward "patient centeredness" is to solicit patient participation in planning and evaluation of the services at the clinic. Providers bring academic and professional resources to the process, but the correct patient can bring an experiential, personal relationship to needs, compliance and maintenance.
- To a patient, patient centered care looks like a delivery mechanism that is inclusive of his/her opinions; empowers him/her as an integral member of the care team; and starts at the initial care visit by the attending clinician soliciting the patient's needs rather than triaging objective and care plans. From the start, ownership by the patient and negotiated health outcomes establish equality in the relationship and position the patient for behavioral change and maintenance of effort.
- Development of a Medication Adherence Assessment form to be used with patients changing or starting new HAART regimens.
- Development of the "Ask Me Three (3)" DVD for use in the clinic, which empowers patients with improved patient provider communication and patient understanding of self care and health care concerns.
- Incorporations of a "Teach Back" section into the Intake/Screening tool.
- Addition of the question "What is the best way for you to learn new things?" to the Medication Adherence Assessment Form.
- Implementation of Peer Coaches in the clinic setting to provide education and support for clients. Additional training is being developed for the Peer Coaches on

communication skills, including active listening techniques, confidentiality, creating boundaries, the importance of self care, and working in the clinic setting.

F. Timeline for the implementation of the PSPC

The PSPC is a 24-month process. Within the 24-months, teams will work to improve their patient safety practices.
Below is the anticipated timeline for the Learning Sessions. Dates are subject to change. Teams begin pre-work on July 15, 2008.

- Winter – 2008: HRSA studies high performing health care organizations and the leading practices they use to achieve exceptional health outcomes and reductions in adverse events.
- Spring 2008: The Collaborative team establishes ambitious quantitative and qualitative aims to guide improvement in clinical pharmacy services, patient safety, and health outcomes.
- Spring 2008: A faculty of health care providers is identified in the study phase and experts from world-class Quality Improvement organizations convened.
- June – July 2008: HRSA recruits teams of community-based practitioners and safety-net organizations to enroll in the Collaborative.
- August 2008: The first Learning Session will be held in which enrolled teams will receive peer-to-peer technical assistance and opportunities for collaboration guided by the Collaborative faculty and the national network that evolves from this process.
- September 2008 – December 2009: Enrolled teams generate rapid improvements using the leading practices shared during four Learning Sessions using the Collaborative rapid-cycle quality improvement process.

Learning Session #1	August 14-15, 2008
Learning Session #2	December 2008
Learning Session #3	Spring, 2009
Learning Session #4/1	September 16-17, 2009
Learning Session #5/2	First quarter 2010
Learning Session #6/3	Spring 2010
Learning Session #7/4	Fall 2010

V. RESULTS

Mechanisms used for data collection include but are not limited to telephone communication with another collaborative, research on the Internet on health literacy tools and information, talking with patients and peers, meetings, Electronic Medical Record, chart reviews, client interviews and surveys.

In addition, documentation for PSPC services has been carried out via use of the Virginia Client Reporting System (VACRS) to ensure uniformity in the ability to collect standardized data for evaluation of the program.

A. Quality assurance

Stakeholders have access to the PSPC data warehouse for auditing purposes. Clinical pharmacy services document standards of care via a flow sheet in the patients chart and task providers electronically about discrepancies (see Attachment #2).

B. The Results

The EVMS team has established a multi-discipline health care site that routinely practices its PSPC motto of communication, collaboration and commitment. At the Gloucester care site, they successfully embedded clinical pharmacy services into the treatment of HIV and have started a model that EVMS seeks to implement at other sites. As a functional team, they are one of the most compliant and productive PSPCs nationwide.

In such rural communities where health care providers face unique barriers including providers' shortfall, the PSPC is helping to address and overcome these challenges. The PSPC offers valuable networking opportunities and resources for rural providers who often are isolated and lack access to such resources.

The VA EVMS PSPC efforts have seen significant results in decreasing medication errors and increasing patient compliance through the following:

1. Improved medication use among enrolled patients as evidenced by attaining specific patient care outcomes.

2. Improved patient safety (decreased numbers of medication errors and adverse drug events).

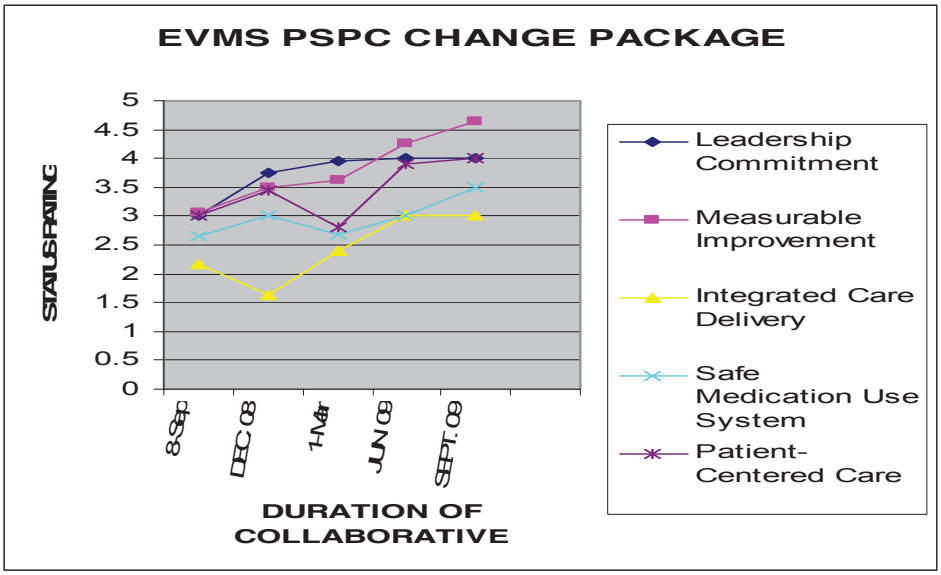
3. Reduced health care costs for participating clients and providers.

Because participant providers and consumers see value in what has been accomplished, buy-in has increased.

Transitioning data from the chart to the Electronic Medical Record is improving, and agencies are gaining more confidence in their electronic output.

Through ongoing participation, agencies have identified areas for improvement and have been able to assess that their PDSAs are impactful. (i.e. improved health outcomes). The schedule or reporting to HRSA and participants makes team members more aware of their performance rates and stay on top of issues.

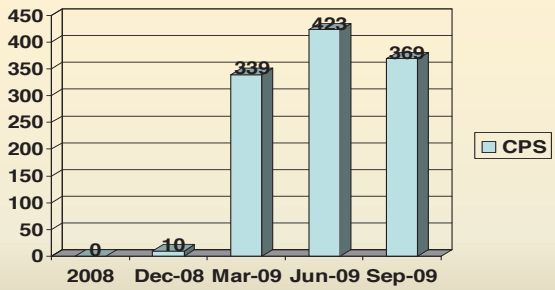
Opportunity for team members to share information through accessing EMR, including laboratory values, the ability to profile patients, and effectively communicating inside the care team (either in person or through EMRs) have been additional strategies that strengthen the integration and effectiveness of services provided by clinical pharmacists and other team members.



	September 09	December 08	March 09	June 09	September 09
Leadership	3	3.75	3.95	4	4
Measurable	3.05	3.5	3.63	4.25	4.65
Integrated care	2.16	1.63	2.4	3	3
Safe Medication	2.65	3	2.67	3	3.5
Patient C. Care	3	3.45	2.81	3.9	4

Trends shown above demonstrate that all the EVMS PSPC stakeholder representatives provide an innovative and promising avenue through which employers, technicians, nurses, administrators, doctors and consumer advocates can join in offering both a patient safety standard and system for healthcare delivery to patients — and also offers a more efficient and cost-effective delivery model.

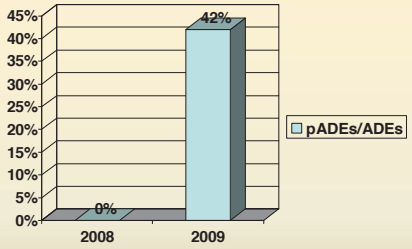
EVMS PSPC Health Improvement and Patient Safety
Assertion on provided Clinical Pharmacy Services (CPS)



CPS	Number
09/01/08 (baseline)	0
09/01/08-12/31/08	10
01/01/09-03/31/09	339
04/01/09-06/30/09	423
07/01/09-09/30/09	369

The clinical pharmacy services actively contribute to the quality use of medicines within the Gloucester HIV/AIDS clinic, and have demonstrated and quantified the benefits of clinical pharmacy services to patient care.

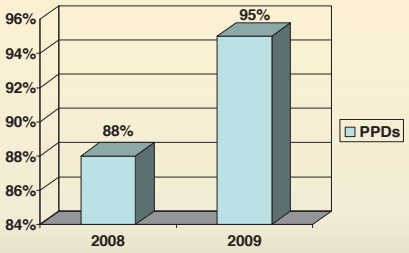
EVMS PSPC Health Improvement and Patient Safety
Assertion on Documented pADEs and ADEs



pADES/ADES	#	%
09/01/07-08/31/08 (n=0)	0	0
09/01/08-08/31/09 (n=43)	18 (12 ADEs 6 pDEs)	42

The clinical pharmacy services have a significant impact on reducing cost, improving patient safety/care, and reducing the compliance burden. The causes of adverse drug events in the Gloucester HIV Clinic can be attributed to a combination of patients, providers, and system factors as well as barriers associated with medication adherence, effective patient-provider communication, health literacy and patient use of multiple pharmacies and providers.

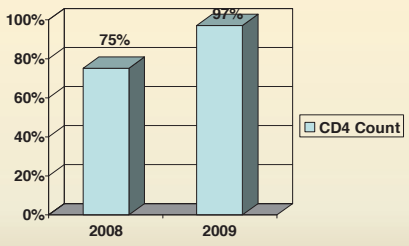
EVMS PSPC Health Improvement and Patient Safety Assertion on Administered PPDs



PPDs	#	%
09/01/07-08/31/08 (n=43)	38	88
09/01/08-08/31/09 (n=43)	41	95

It was clear from the beginning that involvement of health-care providers in tuberculosis (TB) screening and preventive treatment activities was important because most state and local TB control programs that report high TB morbidity have inadequate resources to screen all persons in high-risk groups and treat those persons who are infected. Tuberculin testing for persons infected with HIV has been conducted in Gloucester settings where HIV-infected persons or those at risk for HIV infection receive care.

EVMS PSPC Health Improvement and Patient Safety Assertion on monitoring CD4 Count



CD4 Count	#	%
09/01/07-08/31/08 (n=47)	35	75
09/01/08-08/31/09 (n=46)	44	97

Monitoring CD4 cells has been the best way to foresee problems that are developing from HIV disease. Using laboratory testing data including viral load tests, CD4 cell counts and other information about patients' health has provided a clearer picture of risk of disease progression, the state of the immune system, and the body's ability to fight HIV. Together this information helps the EVMS PSPC to monitor HIV disease and assess how well treatment regimen is working.

VI. SUSTAINABILITY

The maintenance stage addresses the continued work to adapt and evaluate the collaborative. The team will use impact of outcome data on standards of care to engage other providers in the health care community for safety initiatives and trainings.

The Patient Safety Clinical Pharmacy Collaborative (PSPC) project will be expanded to the Eastern Shore area. Pharmacist inclusion in the Eastern Shore HIV/AIDS clinic will represent an important opportunity to promote enhanced health care quality and more effective collaboration among health professionals striving to meet their patients' health care needs. The target population of the EVMS PSPC will be expanded from 50 HIV positive individuals to 100.

The impact this project will have on the existing and new safety activities will include a further reduction of patient errors, increased reporting, improved patient safety and increased staff and physician awareness, and accountability.

Organizations sustain such a Collaborative when they collect and report data demonstrating improvements in patient outcomes and cost-savings. The EVMS PSPC and any other collaborative sustaining organizational ability to provide safe, patient-centered, and efficient care that is supported by measurable data should depend on leadership commitment and ability to integrate care processes.

Proximity or availability of a clinical pharmacist on the care sites is important to successful integration and use of clinical pharmacy services.

Sustainability is also based on the followings:

- Seek out Training of Trainers (TOT) and Training of Quality Leaders (TQL) graduates in the state and tap them as a resource.
- Educate about Quality Improvement and Capacity building to garner support and enthusiasm and build confidence.
- Continually increase buy-in and commitment.
- Make available funds to sustain the Collaborative. The PSPC will identify nontraditional funding or cost-sharing opportunities such as sharing the cost of the clinical pharmacy services.
- Be realistic and involve all stakeholders and consumers.
- Conduct consistent meetings to continue measures outcomes.
- Have key stakeholders make a commitment, which is imperative to ensuring quality care and benefits the consumers and providers.
- Have staff dedicated to data entry/management.
- Continue to focus on barriers, listen and be responsive to both providers and consumers.
- Continue to query on data accuracy and completeness.
- Communicate trended data and provide positive feedback to providers.
- Create a statewide networking and support amongst providers from different PSPC Teams.

THINGS TO KNOW

Internal Buy-in strategies are necessary

- Effective collaboration must embrace the professional freedom to improve patient care from each team member's unique perspective, skills and knowledge-base held loosely by common goals.
- The Collaborative needs to be given the time and budget support to be able to attend learning sessions and meet on an ongoing basis to plan and implement their strategies of change.
- A successful strategy for achieving physicians and nurse practitioners acceptance and buy-in was to identify a physician champion from the start who would be comfortable sharing or delegating responsibility for medication management.
- Encourage team members to share individual lessons learned throughout the life cycle of the Collaborative and focus on successes, challenges and methods used to overcome challenges.
- Technical assistance and support are critical and feedback is crucial.
- Evidence-based documentation of need to change or improve was one of the key elements in persuading people to agree to the project.
- Goals for achievement were objectively set via utilization of established guidelines and standards of care.
- Having the buy-in of the organization's leaders is critical to participation on the PSPC and even more important for rural providers who often have to balance available resources.
- Make the performance measurements specific to the collaborative and written so to be easily understood by all team members.
- Instead of dividing the team into small units to address the five core components of the Change Package including: Leadership, measurable improvement, integrated care delivery, safe medication use and System and Patient Centered care, the team should work more as a whole with champions for each of the five core components of change. This approach would allow for unified goals and focus to achieve and then proceed.
- Team members need to communicate, support each other and understand what each can do to facilitate goal achievement.
- Early in the collaborative process, leaders must identify and engage stakeholders in planning discussions.
- Celebrate successes and promote sustainability.

Barriers faced in implementation, and how to resolve them

- The time commitment that is required has been difficult for certain team members.
- Lack of funding often is the major obstacle facing rural teams and requires pulling from every source possible to cover the expense of care.
- Another barrier occurs when the patient can't communicate the identity of their providers or when they changed providers.

- False or inaccurate information given by patients is a barrier to accurate medication reconciliation. The team members are working on an acceptable universal drug fill history request for their community and hospital pharmacy partners that will meet everyone's Health Insurance Portability and Accountability Act (HIPAA) protocols.
- The team members have also had issues with pharmacist access to Electronic Medical Records (EMR) and documentation. Work is currently in progress to acquire access through EVMS with similar HIPAA concerns.
- Challenges of getting some physicians to buy into certain PSPC ideas and activities. There are concerns with insurance companies and other issues, and it is important to approach them with new ideas that have been proven to work well.
- No prior local knowledge to run a PSPC quality project in a rural area.
- Patients with decreased health literacy often have difficulty providing all information that is needed to communicate all aspects of their care. Identifying these patients with screening tests has been helpful in recognizing their needs.
- Most patients do not have a medical care home and utilize Emergency Rooms or community clinics for primary care. Using the specialty clinic to bridge some of these gaps as well as referral to a primary care physician and promotion of a health care has had some good success.
- Availability of Service-Limited clinic hours and days of service. On call phone service works for the team but is not practical for a larger practice. Using the EMR and available on call support at EVMS has offered a great safety net for patients to utilize when needed.
- The involvement of HIV/AIDS peers in the clinic was expected to be a simple process, but it is a much more involved process than anticipated and will be delayed until further HIPAA assurances and training are accomplished.
- Quality Improvement goals need to be constantly updated, so when one is met, another needs to be stated and steps to achieve it to be identified. Interventions and processes need to be assessed and adjusted to meet changes in standards of care as required by public health guidelines.

SUMMARY

The inclusion of clinical pharmacy services is a culture change that supports efforts to improve patient safety and patient centered care.

The PSPC is an effective way to foster partnerships for recruiting and funding rural teams. Being able to learn from what has worked at other sites has allowed the EVMS PSPC to move forward without having to "reinvent the wheel." The team members have been able to take what worked for other teams, implement it at their site, and see outcomes very quickly. It's interesting to be part of a collaborative that is changing the role of the pharmacist from basically a dispensing role to a true critical partner with the rest of the clinical professionals.

With a clinical pharmacist's participation, the EVMS PSPC has made innovative, cost effective changes in the way health care is delivered to our patients, realized the positive impact it has on their health and encouraged others to embrace these initiatives.

Much of the clinical pharmacist's expertise was used in providing patient education and counseling in disease management, new guidelines, and regulatory requirements, as well as updates on high-alert medications.

The findings of this project will provide a model to assess safety culture and help establish an organizational culture that empowers the family and patient to be their own advocates for safety. The EVMS PSPC, by understanding processes that foster multiple strategies for safe medication use systems, will provide a helpful road map for other organizations in the implementation and sustainability of safe medication use systems throughout the state.

Attachment #1: **Clinical Pharmacy Services Assessment Scale**

Clinical Pharmacy Service Elements, Team _____

Service Element	**Description**	**Rating: Level of Service Currently Being Offered Scale 0 - 10**
1. Medication Access Services to Patients	Utilization of Drug Programs & Strategies 340B & Prime Vendor participation, Sliding Fee Schedules, PAPs, partnerships with charitable & other outside payer sources, enrollment assistance for patients into programs that increase access (such as Medicare part D or Low Income Subsidy of Medicaid, etc.) with the goal of obtaining a sustainable source of medications for patients that will improve access to care.	
2. Patient Counseling At Prescription Pick Up	Patients routinely interact with a licensed health care provider when medication is picked up.	
3. Preventive Care Programs	Measure appropriate indicator (BMI, waist circumference, BP, health questionnaire, etc) and/or administer CLIA waived test during individual or group screening encounters in order to identify and refer appropriate patients for evaluation and treatment. Administer or refer for immunization.	
4. Drug Information Services to Patients	Written or verbal, patient-friendly, and culturally competent drug information provided to consumers. Information provided based on thorough knowledge of pharmacology, path physiology, pharmaceuticals, pharmacokinetics, clinical investigations, and behavioral modification techniques.	
5. Medication Reconciliation Services	Identification of **one** accurate list of medications in combination with working directly with the patient on their medications, recommendations and changes to therapy as appropriate, facilitation of communication of accurate list of medications between patient, prescribes, and other health care professionals.	
6. Provider Education	Deliver evidence-based medical information to providers that focus on the place in therapy and adverse effects associated with the medication.	

7. Retrospective Drug Utilization Review	Periodic chart reviews in coordination with quality improvement activities for purpose of evaluating an organization's performance in areas of medication prescribing and/or monitoring. Drug Utilization Reviews can be performed on patient profiles in dispensing and medical charts in primary care environments. A summary of evaluation is presented to clinical staff to support educational efforts, clinical program development as well as development of policies and procedures regarding medication use.	
8. Medication Therapy Management	Non-drug specific, Non-disease specific and may include Polypharmacy management, high risk / high alert medication management, and/or Adherence/ Compliance Education. Practitioner considers all medication-related needs of the patient, not only those associated with a specific medical condition or therapeutic indication. May include utilization of collaborative practice agreements to create efficiency in patient management processes.	
9. Disease State Management	Provision of medication-related assessment and education within defined medical conditions or therapeutic indications (i.e. anticoagulation). May include utilization of collaborative practice agreements to create efficiency in patient management processes. May include "group visits" that focus on patient evaluation and/or disease-focused education.	
10. Prospective Chart Review and Provider Consultation	Prospective review of patients' medical charts for the purpose of providing recommendations to prescribing practitioners regarding medication adjustments on the day of a medical encounter.	
		Total Score =

*Note: Please use the rating scale below to rate the level of Clinical Pharmacy Services currently being provided

Rating scale:
- 0 = no services provided at this time
- 1-3 = initial stages, collection of resources to provide services
- 4-6 = some capability, occurs on a limited basis
- 7-9 = service is offered, availability and use not always consistent
- 10 = offered, fully implemented, provided to all or most PSPC patients

Attachment #2: EVMS ID CLINIC FLOWSHEET

PATIENTS NAME: _____ DATE: _____

EVMS/TRHD ID CLINIC Care Visit:___ Labs:___ Other:___

►**INTAKE** (Check if charted correctly/Circle if pending patient compliance)
Reviewed the following for current status and/or updated documentation:
Address and Telephone: (____) Income and proof: (____) Insurance Status: (____)

►**VITALS** Height (_____inches) Weight (_____lbs _____oz) BMI (_____) BP (_____) Temp (_____) LMP (___/____/____) O_2 Sats (_____) Heart Rate (_____) Resp (_____) Complaints: None (__); or:

_____
Since last visit has Pt. been seen by other Dr or Hospital: Y / N

_____
►**CARE VISIT / ORDERS** (For details refer to EHR.) (Check today's orders)
Renewed HAART (___) Renewed other Rx(s) (___) New Rx(s) (___) Δ Rx/dose (____)
Referral(s):_____
Labs today (_____) or prior to return (_____) Order: V.L. (_____), CD4 (_____), CBC w.dif. (_____), Fasting Lipids (_____),
Other:_____

_____

RETURN TO CARE: 10 Weeks for Labs / 12 Weeks for Appointment (_____), or As follows:

_____

►**CLINICAL PHARMACY SERVICES** (Document today's services)
Drug Allergies: _____ See: _____
▪ Medication Access Services (ADAP/Med-D & LIS/Medicaid): Y/N _____
▪ Face-to-face patient counseling at Meds Pickup: Y/N _____
▪ Preventive care programs: Immunizations Y/N; Smoker Y/N plan_____; Other:

_____
▪ Drug Info Services to Pts (written or verbal) Y/N

_____
▪ Medicine Reconciliation Services: Y / N _____
▪ Provider Education (pharmacist to physician): Y / N _____
▪ Retrospective Drug Utilization Review: Y / N _____
(ADE/ADR or pADE) Y / N Number: _____ What:_____
▪ Medication Therapy Management: Y / N 3xHAART: Y / N

_____
Renal Y/N SCr ____ CrCl ___ ,GFR___ Hepatic Y/N; AST ____, ALT ____,Child-Pugh_____
HepB/C+ Y/N_____ Anemia Y/N RBC_____ Rash Y/N_____
other_____
▪ Disease State Management (Individual/Group): Viral Load _____CD4/%
_____/_____
Lipid/metabolic evaluation TC _____, Tri _____, HDL _____, LDL _____

OI rationale: treatment Y/N___ prevention Y/N _____

▪ Prospective chart review/Provider Consult :(co-morbid disease/drug interaction/evaluation/ADR

►**PATIENT COUNSELING/ADHERENCE EDUCATION** (Check/circle)
Medication Therapy Management: Y / N # of Service Units today:

_____

Ask Me 3 (____) Teach Back (____) Treatment Adherence (____) Drug List Review (_____)
Identification (____)

Other:_____

►**CASE MANAGEMENT / DISCHARGE** (Details in CM chart or notes.)
Reviewed Flow Sheet (__) Approved Rx Co-pay(s) (__) Pt. rec'd Appt. Card(s) (__) RxPicUp___
Linked referral(s) to:
_____ Other:
_____

RECONCILED MEDICATIONS LIST ON REVERSE (CURRENT AS OF IS DATE)

Attachment #3: Define the goal population of focus

What? Describe the intervention _____

Where? Participating facilities _____ , _____ , _____

When? Expected baseline period, from _____ to _____

Expected intervention period, from _____ to _____

How? How will you and your team follow these patients?

_____

Who? Describe the population of focus _____

Define the Clinical Pharmacy Service and Service Measure

What? What type(s) of clinical pharmacy service(s) will be provided to the patient or provider populations (e.g., drug information services, medication reconciliation services, disease state management services, provider education services) _____

Where? Where in the health system is the clinical pharmacy service provided

_____

When? When will the clinical pharmacy service(s) be provided (e.g., after each patient visit, after a transition of care, after the receipt of a new prescription, during provider meetings)

_____

How? How will the clinical pharmacy service be provided (e.g., individual face-to-face patient visits, telephonic services, group visits, written materials)

_____

Who? Who will provide the Clinical Pharmacy Service (e.g., pharmacist, nurse, PA)

_____

Define the outcome to measure

What? What outcome will be measured (e.g., average A1C, No. AIDS patients on HAART, No. of patients adhering to regimen)

_____

Where? Where is this outcome identified (e.g., from lab values, new office visits, pharmacist review of charts)

_____

When? When is this outcome measured (e.g., all patients seen on first Tuesday of the month, monthly summary of all laboratory data)

_____

How? How will the outcome be collected (e.g., chart review, from a patient's self-report) _____

Who? Who is responsible for doing the measuring

_____

Define the adverse drug event (ADE) to measure (ADEs are events that result in harm or injury to the patient due to medication use)

What? What ADE will be measured (e.g., Verify triple HAART therapy, No. of patients with composite ADE measure)

_____

Where? Where is this ADE identified (e.g., adverse events at home, abnormal lab values, new office visits, ED visits, medicine reconciliation, hospitalizations)

_____

When? When is this ADE measured (e.g., all patients seen on clinic days of the month, monthly summary of all ED visits)

_____

How? How will the ADE be collected (e.g., chart review, from a patient's home glucose log, from ED admissions, from Poison Control Centers)

_____

Who? Who is responsible for measuring

_____

Define the potential adverse drug event (pADE) to measure [pADEs occur when a patient is not harmed but a situation which could lead to harm was identified and an intervention was made to avoid harm (e.g. identification and discontinuation of meds which may interact, need HAART dosage adjustment)

What? What pADE will be measured (e.g., Triple HAART therapy document, resistance genotype document)

_____

Where?	Where is this pADE identified (e.g., pharmacy dispensing, chart review, MTM visits) _____
When?	When is this pADE measured (e.g., all patients seen on first Tuesday of the month, monthly review of all laboratory data) _____
How?	How will the pADE be collected (e.g., chart review, patient interview) _____
Who?	Who is responsible for measuring _____

Attachment #4: Patient Safety and Clinical Pharmacy Services Collaborative

Senior Leader Improvement Report

Background

Team Name: **State:** **Faculty Coach:**
Date:

Team Members: Name		Organization	Travel Team	Home Team	Role	Email Address	Phone

Aim: *(This should be the Vision begun at Learning Session #1 and should be revised as it is refined by the Team)*

Population of Focus:

Key Outcome Marker for each cohort: *(Response will describe/ list the evidence-based health outcome(s) marker(s) you will use to detect improvement?)*

Health Outcome Marker (only)	POF	% of PoS	Team Goal

Refined Improvement Vision (Workbook Content from Learning Session #1)

Urgency: High Risk qualities of PoF panel

Medications per visit:	
Providers per visit:	
Largest safety issues (Up to 3):	
Largest Health status problem (Up to3):	

Focus

Medications per visit:	
Size of PoF Panel(s):	
When will the PoF closed?	
What is the defining health status condition you will be tracking?	
What are key characteristics of your PoF?	

Baseline

What % of the patient panel with the defining health status is seriously out of control at baseline?	
What percent (%) of panel with safety problems at baseline:	
Number of problems per patient per visit at baseline:	
Expected number of pADEs for the panel if no CPS:	
Number of pADEs per patient:	
What percent of the patients with pADEs?	

Clinical Pharmacy Services

Major types of CPS provided include:	
CPS services provided at each patient visit:	

Impact

What Percent (%) of the patient panel with the defining health status condition is seriously out of control one year from now?	
What percent (%) of the patient panel will have safety problems one year from now?	
What is the expected number of pADEs reported per patient one year from now?	

PSPC Measurement: PSPC teams will be tracking improvements due to CPS in two areas: health and safety. This note outlines the information that would be developed to estimate improvement. The faculty and Core Team are available to provide guidance on collection tools and strategies teams can use to capture the necessary data and how to use it to estimate improvement due to CPS.

1. Health Outcome Markers and recommended Primary Measures. Teams should choose at least one health outcome marker to track for the patients in their PoF as they receive CPS. The data will be used by the team to estimate improvements in health as they receive CPS over time.

2. Patient Safety: Adverse Drug Events (ADEs) and Potential Adverse Drug Events (pADEs). Teams should track the number of ADEs detected and pADEs detected and prevented for the patients in their PoF as they receive CPS. The data will be used by the team to estimate improvements in safety over time.

   ADEs: Events that result in harm or injury to the patient due to medication use.
   Example: Heart failure symptoms as a result of Actos (pioglitazone) administration

   pADEs: Potential harm that was identified and avoided with appropriate interventions before reaching the patient.
   Example: A care team member notices a duplication of drug therapy (Lisinopril and Ramipril) and intervenes to have one of the medications discontinued before the patient receives the medication.

3. Clinical Pharmacy Services: Teams should identify which CPS services are being provided to their PoF and to associate or link the impact of providing those services to the resulting expected improvements in health and safety as outlined above. Further guidance on the 10 CPS elements can be found in the "PSPC

Section 3: Team Generated PDSAs

Instructions: Please provide a description of the Three Tests of Changes that taught you the most this month. The chart on this and following pages is to be updated monthly.

- *Categorize each test by the appropriate Strategy in the Change Package (See table below).*

- *Make sure that you include only descriptions of cycles where changes to your system have been tested.* ***Do not include meetings and other activities that your team is engaged in or just planning****.*

- ***Be brief, but include enough detail so that the reader can determine <u>what change was tested, how many patients were involved, who was involved, what the results were, and what the next action is</u>. Add new rows as needed.***

- *There can be some overlap of these descriptions from month to month. However, <u>**focus on the significant learning each month,**</u> not just an updated report.*

- ***Enter in Bold Letters the one that was the most successful and/or that you want to share with others.***

- *You should **add at least three new changes in play each month**; they may be in different categories, and all strategies do not need to be addressed.*

PDSA #x: Describe the	**Month Year**	**Change Strategy Area, Concept &Action Item Tested**	**Improvement Outcome/ Results**
PDSA #1:			
PDSA #2:			
PDSA #3:			

PSPC Change Package

Change Package Strategy	**Component Area**	**Improvement Outcome**	**Concept and Action Item**	**Date**
Leadership Commitment	**Partnerships**			
	Safety, Quality Culture			
	Business Case			
Measurable Improvement	**Manage Health**			
	Manage Safety			
	Performance Data			
Patient Centered Care System	**Patient Engaged**			
	Self Management			
	Culturally Appropriate			

Integrated Care Delivery System	**Health Home**			
	Care Team			
	Care Transitions			
Safe Medication Use Systems	**Best Practices**			
	CPS On-site			
	CPS Networks			

Summary

Present any activities that have taken place over the last month that were not mentioned in the other categories of this quality improvement tool. Include highlights of what you are learning (i.e. successes, barriers, lessons learned from testing and implementing changes, and the impact of the collaborative on your organization). Use this category to communicate any additional information that will help to convey a clear picture of your improvement efforts.

Highlight	Organizational Effect	Next Steps

References:

[1] Institute of Medicine (IOM), (2000). To err is human: building a safer health system, Washington, DC: National Academy Press.

[2] IOM, (2004). Patient safety: Achieving a New Standard for Care, Washington, DC: National Academies Press.

Additional References:

Berwick, D.M., Godfrey, A.B., and Roessner, J. (1990) .Curing health care: new strategies for quality improvement, Jossey-Bass Inc., San Francisco, pp32.6 Section 32.

"Beyond the basics: another look at the care model", MacColl Institute for Healthcare Innovation, Center for Health Studies, Group Health Cooperative, Ed Wagner, Retrieved from: http://improvingchroniccare.org/index.php?p=The_Chronic_Care_Model&s=2

Langley, G.J., Nolan, K.M., Norman, C.L. and Provost, L.P**.** (1996). The improvement guide: a practical approach to enhancing organizational performance**,** Jossey-Bass Inc., San Francisco.

Meeting Payer Needs for Pharmacist-Provided Services: (2007) The Time is now!" – prepared by Comstock Consulting on behalf of NACDS.

Model for Improvement – Associates in process improvement. Retrieved from http://www.ihi.org/IHI/Topics/Improvement/ImprovementMethods/HowToImprove/

National Quality Forum (NQF), (2003). Safe Practices for Better Healthcare: A Consensus Report, Washington, DC.

Shin-Yi Wu and Anthony Green. *Projection of chronic illness prevalence and cost inflation*. RAND Corporation. Retrieved on October on 2000 from:

http://www.silverbook.org/fact/944

Health Resources and Services Administration (HRSA). Patient Safety and Clinical Pharmacy Services Collaborative 2008. Available at: http://www.hrsa.gov/patientsafety/

Selected Website Resources for Quality Improvement in Health Care

Below is a link to three free Patient Safety tools provided by MGMA:
http://www.mgma.com/solutions/landing.aspx?cid=24572&id1=25820&id2=1&id3.

Great website on Consumer Medication Safety by ISMP: http://www.consumermedsafety.org

Health Resources and Services Administration (HRSA): www.hrsa.gov.

Improving Chronic Illness Care: http://www.improvingchroniccare.org.

Institute for Healthcare Improvement: http://www.ihi.org.

Many Patient Safety and Clinical Pharmacy Services resources are posted in the publicly.

Accessible Library area of the HRSA Knowledge Gateway at
http://www.HealthDisparities.net

PSSC Pharmacy Technical Assistance (PharmTA):
http://pssc.aphanet.org/askpssc/needtechassistance.htm

The National Quality Center (NQC) partners with IHI to maintain the HIV/AIDS topic area, with the goal of improving the quality of HIV/AIDS care across the US:
http://nationalqualitycenter.org/

The 340B Prime Vendor Program (Managed by Apexus): https://www.340bpvp.com/public/

EVMS

Eastern Virginia Medical School