

Patterns of Hospital Admissions and Readmissions Among HIV-Positive Patients in Southwestern Pennsylvania

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Pittsburgh Regional Health Initiative



Pittsburgh Regional Health Initiative

- Founded 1997 : 42 hospitals, 4 insurance plans, corporate and civic leadership.
- Founders:
 - **Karen Wolk Feinstein, PhD**
 - President and CEO since founding
 - **Paul O'Neill**
 - Alcoa Chairman 1987-1999
 - U.S. Secretary of Treasury 2001-2002
- Engineered breakthrough transformations in: HAls, patient safety, Lean healthcare training, electronic health record, end-of-life care, patient centered medical home, accountable care organizations
- Fiscal agent for Ryan White funding to southwestern Pennsylvania.



Why 30-day readmissions?

Why 30-Day Readmissions?

- Why “readmissions”?
 - A manageable expense
 - Sometimes driven by biology, sometimes by thoroughness of provider care
 - Up to 50% preventable

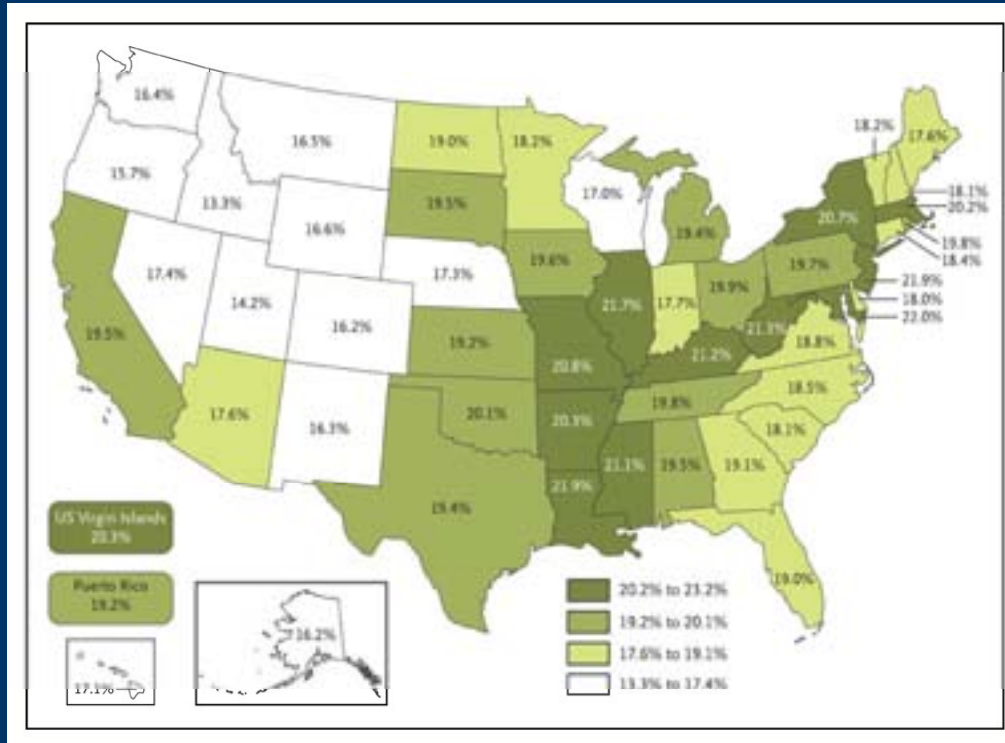
- Why “30-days”?

- Medicare: \$17 billion on readmissions
 - National AIDS research budget: \$1.6 billion
 - National cancer research budget: \$1.5 billion

- Evidence this is manageable:
 1. Readmission reduction projects
 2. State-by-state variation



National Readmission Trends in the Medicare Population



- 19.6% of Medicare FFS discharges were readmitted within 30 days, but with significant state variation (13.3-23.2%)
- Half of patients did not see their PCP before readmission

Jencks SF et al. *N Engl J Med* 2009;360:1418-1428

Readmission Rates and Health Reform Legislation

■ National

- Medicare penalties and/or nonpayment for “unexpectedly high” readmission rates
- Patient Protection and Affordable Care Act of 2010:
 - Hospitals at-risk for re-imburement reduction 10/1/12
 - *Certain* physicians/groups at-risk 1/1/15
 - *All* physicians/groups at-risk 1/1/17

■ Local

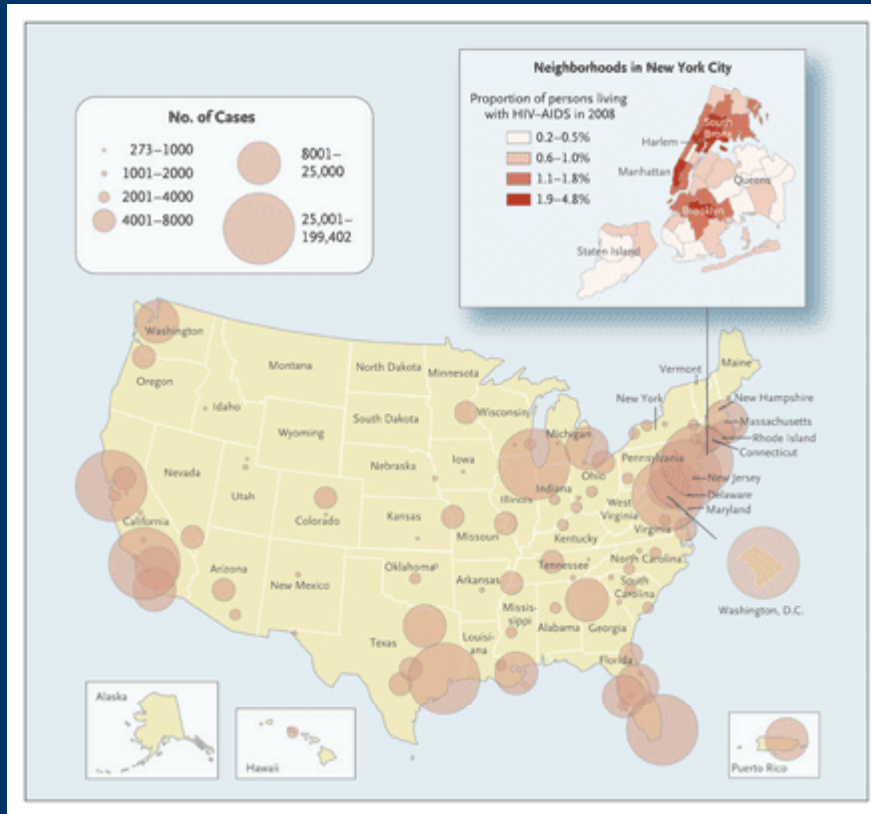
- Highmark BC/BS QualityBLUE pay-for-performance hospital incentives for low readmission rates

Cautions in Relying on Medicare Readmission Rates to Drive Quality

- Medicare patients are different
- There may be acceptable variation
- Could we be unintentionally harming people?
- The data must be accurate, timely, relevant



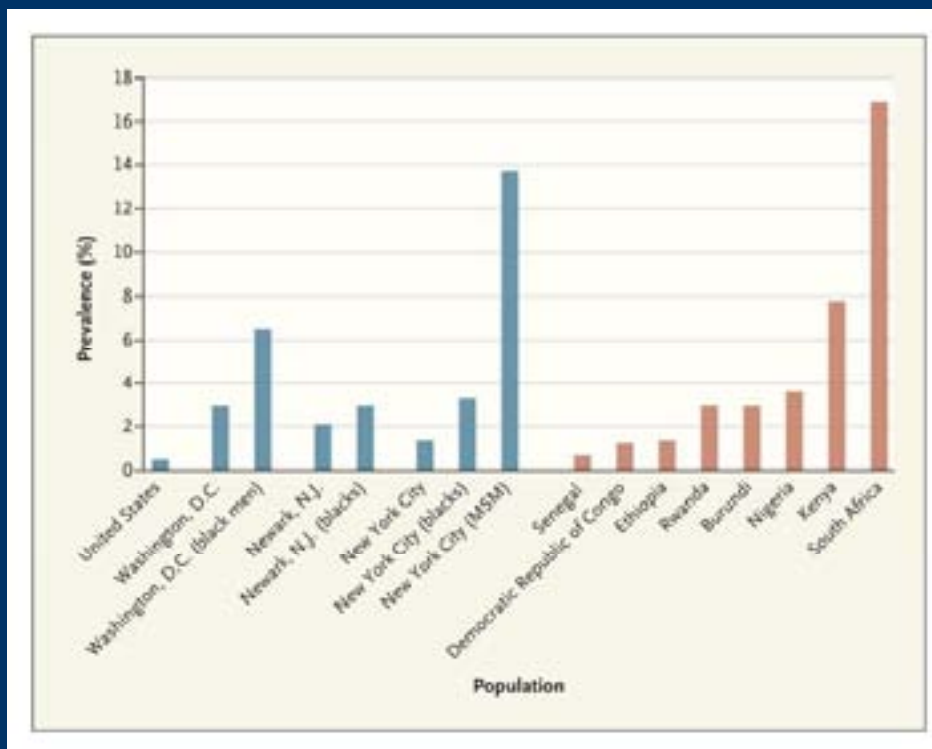
Geographic Heterogeneity of HIV Prevalence in the United States



El-Sadr W et al. *N Engl J Med* 2010;362:967-970

- Decline in HIV prevalence has stalled in the last decade – 56,000 cases last year
- Difficult to establish national prevalence trends in HIV due to regional clustering

HIV in Adults from Selected Countries in Sub-Saharan Africa and Subpopulations in the U.S.



- *New York:* 1 in 10 male homosexuals/MSM, 1 in 8 IVDAs.
- *Washington:* 1 in 30 adults (comparable to Ethiopia, Nigeria, or Rwanda)

El-Sadr W et al. *N Engl J Med* 2010;362:967-970

Pittsburgh Regional Health Initiative Readmission Research Team

■ Mission:

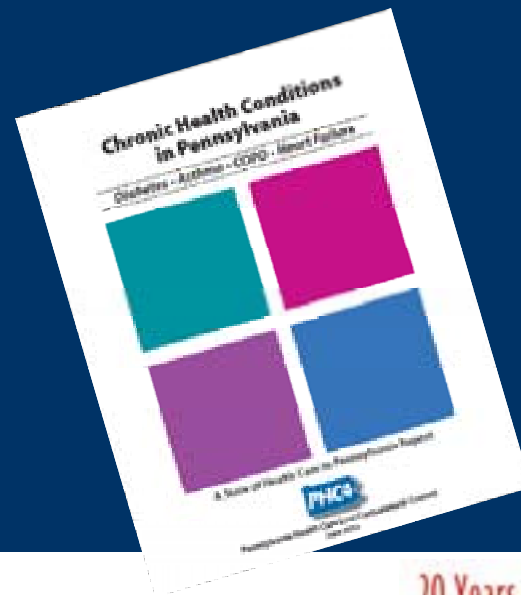
1. To analyze and disseminate data trends specific to southwestern Pennsylvania
2. To identify opportunities for quality improvement by regional stakeholders
3. To inform policy makers on the state regional healthcare

■ PRHI Readmission Brief series:

- Brief 1: Overview of Six Chronic Diseases
- Brief 2: HIV Disease
- Brief 3: Chronic Obstructive Pulmonary Disease

Pennsylvania Health Care Cost Containment Council

- Independent agency created by state legislature 1986
- All hospitals must report admission data to PHC4 within 90 days
- Unique, all-payer database offering one of the most complete sources of inpatient data in the United States



PRHI Readmission Brief 1: Overview of Chronic Medical Conditions

Targeted Condition	30-Day Readmissions			Readmissions within 12 Months		
	Number	Readmit Rate	Ranking Among Medical MS-DRGs	Number	Readmit Rate	Ranking Among Medical MS-DRGs
Heart Failure	3,392	26%	1	7,242	55%	1
COPD	2,716	23%	3	6,028	50%	3
AMI	1,010	23%	7	1,892	44%	8
Depression	640	18%	14	1,349	39%	17
Asthma	355	10%	32	1,058	31%	23
Diabetes	618	21%	16	1,351	45%	16

- Abstracted from 408,925 all-cause admissions to 44 acute care facilities in the 11 counties of SWPA, October 2007 to September 2008

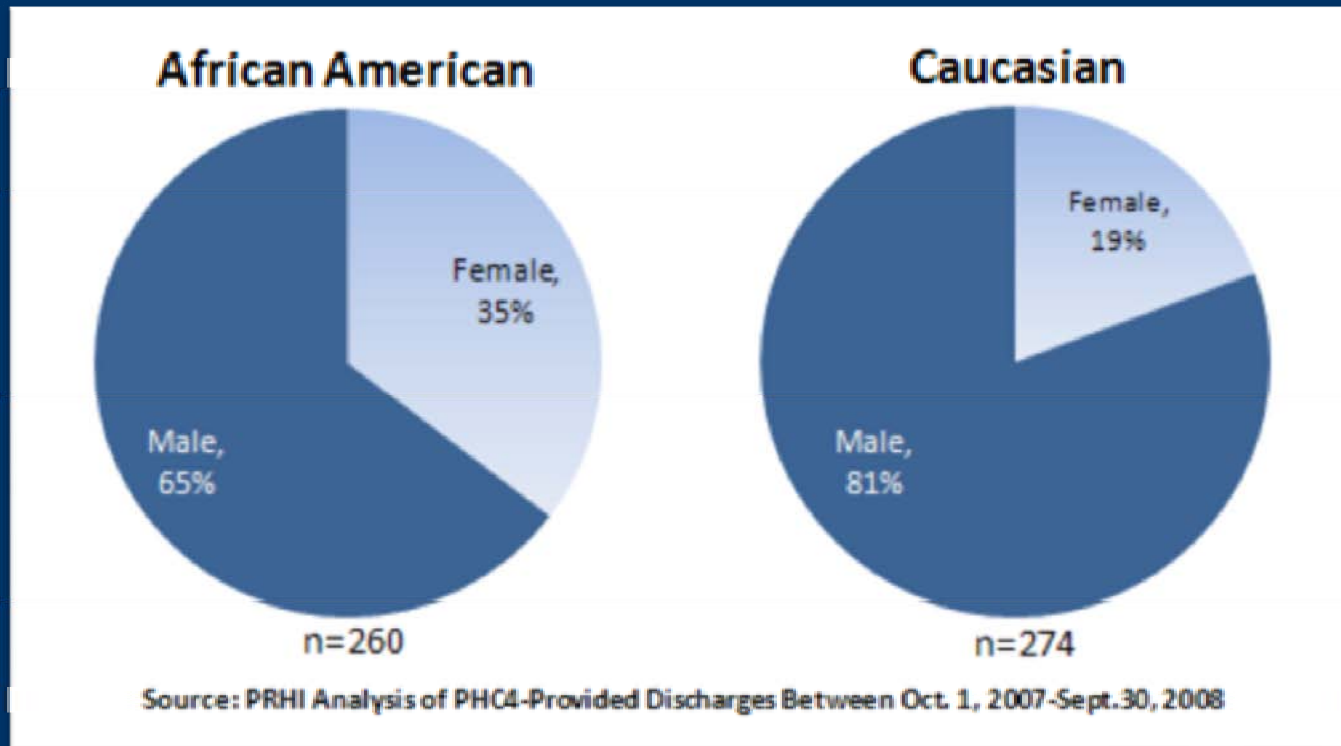
PRHI Readmission Brief 2: Patterns of Hospital Admissions and Readmission Among HIV-Positive Patients in SWPA

- Focus on all HIV-positive patients admitted to 44 acute care hospitals within the 11-counties of SWPA
- 12 month sample (October 2007 to September 2008)
- Patients (over age 18):
 - 562 HIV positive patients admitted for inpatient care.
 - 1072 discrete admissions
- All data de-identified
- PHC4 data unable to distinguish HIV-positive and AIDS patients

PRHI Readmission Brief 2: Patterns of Hospital Admissions and Readmission Among HIV-Positive Patients in SWPA

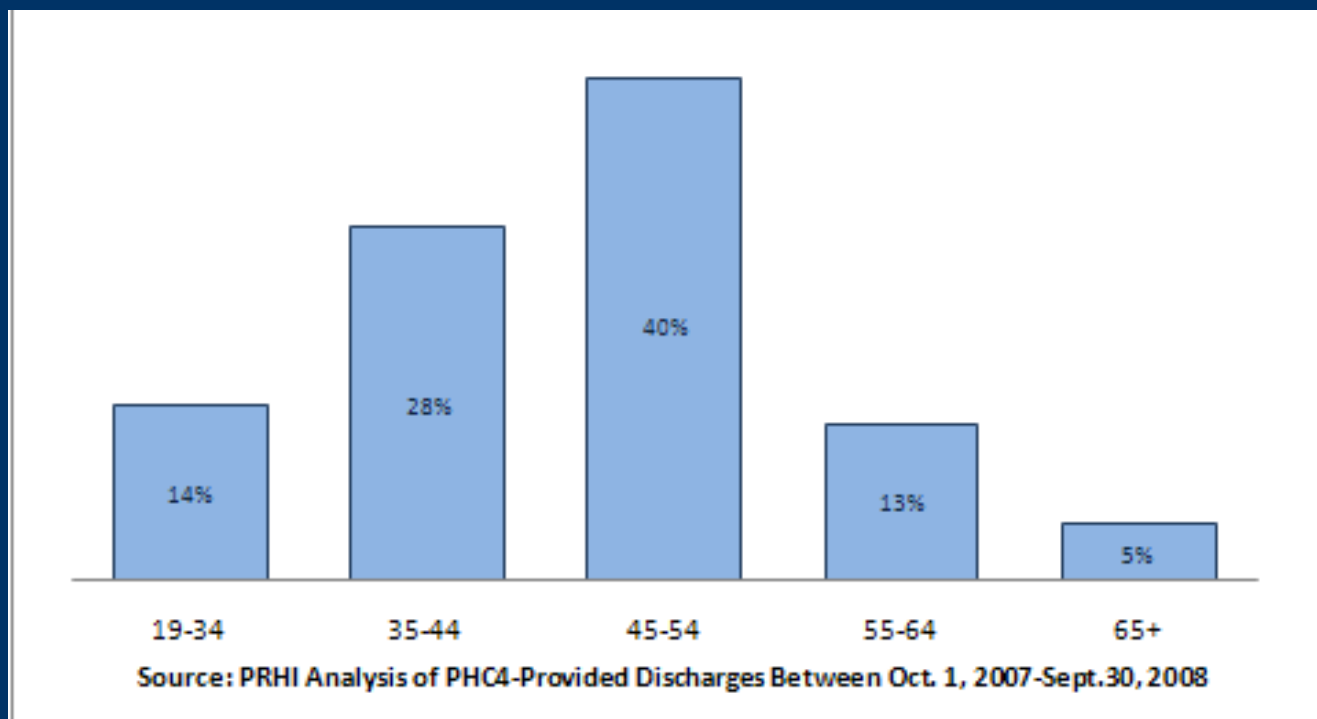
- Questions posed:
 - Is our HIV-positive population unique?
 - What are rates of readmissions?
 - If care can be improved, who's responsible for giving it?
 - Are there “flags” that can help identify patients at high-risk of readmission?
 - What is the impact of behavioral health?
 - Co-morbidity of with physical health
 - Switching hospitals
 - Leaving hospitals Against Medical Advice (AMA)

HIV Positive Patients by Race and Gender



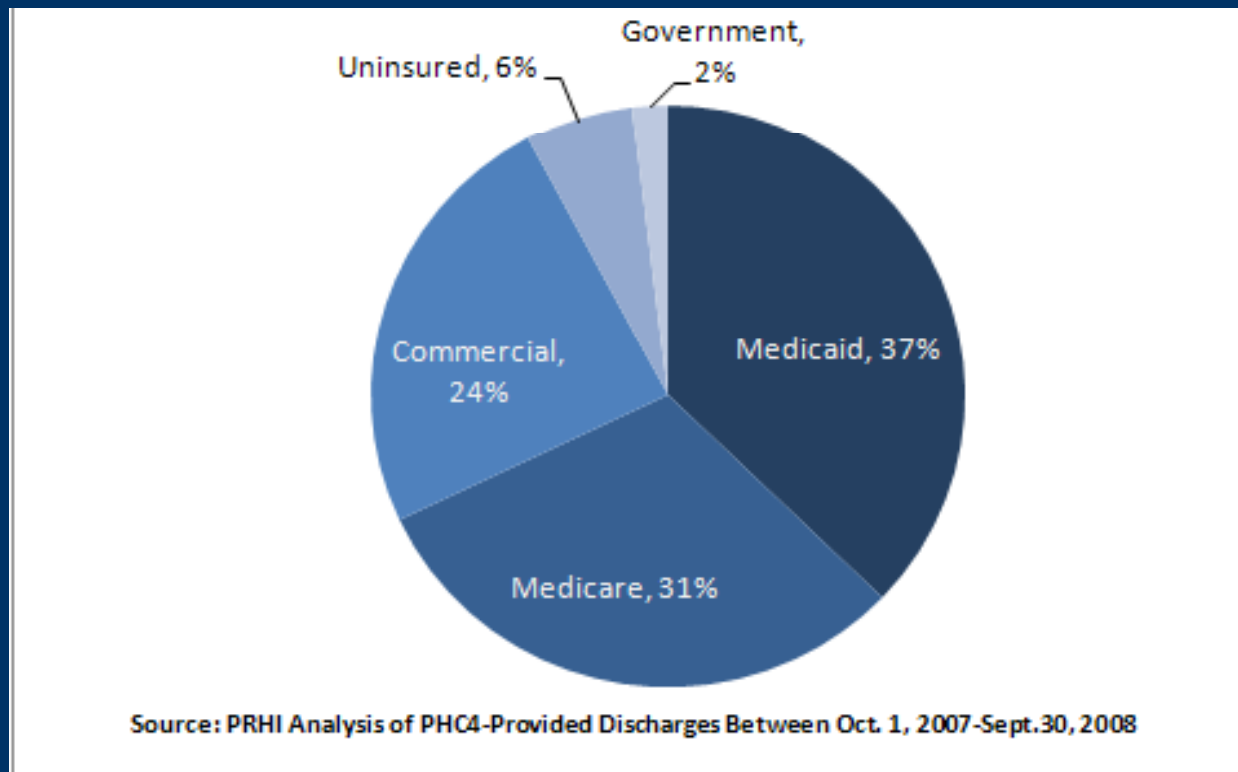
- HIV population does not reflect regional demographic
- Higher prevalence of African-American females also noted in national databases; may relate to factors in African-American males (El-Sadr, 2010)

HIV Positive Patients by Age Group



- 58% of patients over the age of 45
- Longevity may relate to HAART effectiveness

HIV Positive Patients by Primary Payer



- 70% of patients in federal- or state-sponsored insurance plan in this inpatient population

Top 10 Admitting Diagnoses of HIV Patients

Most Prevalent Principal or Secondary Diagnoses (by ICD-9 code groups)	Number of Admissions	Percent of Admissions
1. Nondependent abuse of drugs	304	28%
2. Viral hepatitis	254	24%
3. Disorders of fluid electrolyte and acid-base balance	233	22%
4. Essential hypertension	206	19%
5. Diseases of esophagus	134	13%
6. Depressive disorder not elsewhere classified	134	13%
7. Diabetes mellitus	131	12%
8. Drug dependence	125	12%
9. Chronic renal failure	122	11%
10. Affective psychoses	116	11%

Top 10 Admitting Diagnoses of HIV Patients

1. Four of top 10 codes are for behavioral health issues and SUDs.

Rank	Primary Diagnoses (by ICD-9 code groups)	Number of Admissions	Percent of Admissions
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8.	Drug dependence		%
9.	Chronic renal failure		%
10.	Affective psychoses		%

3. Opportunistic infections and malignancies are no longer among top admitting diagnoses.



Co-morbid Depression or SUD in HIV

Most Prevalent non-Behavioral Health Principle or Secondary Diagnoses (ICD-9 code groups)	Percent of Admissions with Co-morbid Depression	Percent of Admissions with Co-morbid SUD	Percent of Admissions with Co-morbid Depression or SUD
2. Viral hepatitis	23%	46%	55%
3. Disorders of fluid electrolyte and acid-base balance	14%	33%	42%
4. Essential hypertension	26%	37%	49%
5. Diseases of esophagus	33%	31%	49%
7. Diabetes mellitus	18%	32%	40%
9. Chronic renal failure	14%	24%	36%
All 1,072 HIV-Positive Admissions	22%	38%	47%

- Major medical diagnoses were associated with depression or SUD nearly half the time.

Readmission Patterns in HIV

■ Readmission rates by PHC4 data analyzed by the following factors:

1. Co-morbidity
2. Race and gender
3. Admitting hospital
4. Primary payer



HIV Readmissions by Diagnosis



Most Prevalent Principle or Secondary Diagnoses (ICD-9 code groups)	30-Day Readmission Rate	Readmissions within the 12-Month Study Period
1. Nondependent abuse of drugs	22%	46%
2. Viral hepatitis	32%	56%
3. Disorders fluid electrolyte/ acid-base balance	29%	53%
4. Essential hypertension	23%	46%
5. Diseases of esophagus	35%	53%
6. Depressive disorder not elsewhere classified	20%	50%
7. Diabetes mellitus	33%	63%
8. Drug dependence	33%	69%
9. Chronic renal failure	39%	69%
10. Affective psychoses	29%	52%
All 1,072 HIV-Positive Admissions	25%	48%

HIV Readmissions by Race and Gender

Demographic Group	Overall Admissions	30-Day Readmit Rate
Female	304	28%
African American	173	25%
Caucasian	122	34%
Male	768	24%
African American	372	27%
Caucasian	368	23%
Overall (all races)	1072	25%
African American	545	26%
Caucasian	490	26%

HIV Readmissions by Hospital

Facility Name	Number of Admissions	Share of All Admissions	30-Day Readmission Rate	Readmissions within the 12-Month Study Period
UPMC Presbyterian Shadyside	432	40%	29%	53%
Allegheny General Hospital	135	13%	20%	40%
UPMC Mercy	70	7%	38%	53%
Western Pennsylvania Hospital	56	5%	26%	51%
Western Psychiatric Institute & Clinic	50	5%	24%	56%
UPMC McKeesport	48	4%	13%	42%
Heritage Valley Beaver	29	3%	50%	64%
UPMC Braddock	27	3%	22%	37%
Jefferson Regional Medical Center	22	2%	14%	38%
UPMC St. Margaret	21	2%	38%	62%
Average All Admissions	1,072	100%	25%	48%

- 61% UPMC; 70% within Pittsburgh city limits.



Readmissions by Payer

Primary Insurer Type	Number of Admissions	Share of All Admissions	30-Day Readmission Rate
Medicaid	424	40%	28%
Medicare	365	34%	31%
Commercial	225	21%	16%
Uninsured	40	4%	8%
Government	18	2%	12%

- 78% patients with public insurance.
- High readmission rates with Medicare and Medicaid.
- Low readmission rates among uninsured.

Identification of Readmission Risk Factors in HIV Patients

- The following characteristics were studied to identify “red flags” at the point of transition, and to facilitate safe discharge planning:
 1. Specific medical co-morbidities
 2. Readmission time windows
 3. Disposition at discharge

Interventions: “Flag” High-Risk Patients

Most Prevalent Primary or Secondary Diagnoses (ICD-9 code groups)	30-day readmit rate when condition present	30-day readmit rates when condition <i>not</i> present	Difference in 30-day readmit rates
1. Nondependent abuse of drugs	22%	27%	Not significant
2. Viral hepatitis	32%	23%	Significantly higher (p=0.010)
3. Disorders of fluid electrolyte and acid-base balance	29%	24%	Not significant
4. Essential hypertension	23%	26%	Not significant
5. Diseases of esophagus	35%	24%	Significantly higher (p=0.006)
6. Depressive disorder not elsewhere classified	20%	26%	Not significant
7. Diabetes mellitus	33%	24%	Significantly higher (p=0.032)
8. Drug dependence	33%	24%	Significantly higher (p=0.038)
9. Chronic renal failure	39%	24%	Significantly higher (p<0.000)
10. Affective psychoses	29%	25%	Not significant

Interventions: “Flag” High-Risk Patients

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5. Diseases of esophagus	35%	24%	Significantly higher (p=0.006)
6. Depressive disorder not elsewhere classified	20%	26%	Not significant
7. Diabetes mellitus	33%	24%	Significantly higher (p=0.032)
8. Drug dependence	33%	24%	Significantly higher (p=0.038)
9. Chronic renal failure	39%	24%	Significantly higher (p<0.000)
10. Affective psychoses	29%	25%	Not significant



Interventions: Identify Risk Window



Most Prevalent Principle or Secondary Diagnoses (ICD-9 code groups)	Number of Admissions	Average Days to 30-day Readmission	Average Days to 12-Month Readmission
1. Nondependent abuse of drugs	304	11.6	55.7
2. Viral hepatitis	254	13.4	53.1
3. Disorders fluid electrolyte/ acid-base balance	233	10.5	42.6
4. Essential hypertension	206	12.0	50.3
5. Diseases of esophagus	134	12.7	52.8
6. Depressive disorder not elsewhere classified	134	10.9	62.2
7. Diabetes mellitus	131	12.1	53.5
8. Drug dependence	125	12.8	55.8
9. Chronic renal failure	122	9.3	47.3
10. Affective psychoses	116	11.5	51.6
All 1,072 HIV-Positive Admissions	1,072	11.9	52.2

Interventions: Risky Dispositions



Disposition at Point-of-Discharge	Number of Admissions	Share of Admissions	30-Day Readmission Rate
Discharged to Home	770	72%	26%
Discharged to Home with Home Health Service in Anticipation of Covered Skilled Care	93	9%	26%
Discharged/Transferred for Further Hospitalization at Short Term, Rehab, Long-Term, Critical Care Facilities	66	6%	14%
Discharged/Transferred to Skilled Nursing or Intermediate Care Facility	65	6%	35%
Discharged/Transferred to a Psychiatric Hospital or Psychiatric Unit of a Hospital	8	1%	13%
Patient Died	30	3%	-
Left Against Medical Advice	32	3%	34%
Hospice	6	1%	0%
Discharged/Transferred to Another Type of Institution Not Elsewhere Defined in this List	2	0%	0%

Summary

- Demographics:
 - The HIV-positive population is aging; 60% of inpatients are 45 years or older
- Healthcare coverage:
 - 71% of patients are in federal or state insurance programs, a possible sign of economic vulnerability
 - 74% of SWPA HIV admissions are to Pittsburgh hospitals
- Barriers to care:
 - No racial disparity was found in 30-d readmissions
 - Uninsured patients had a readmission rate less than 1/3 of the covered population

Summary

- Inpatient care:
 - Opportunistic infections and malignancies no longer appear in the top 10 admission diagnoses
 - Patients are more often admitted with chronic medical conditions, typically the purview of primary care physicians
 - 47% of medical diagnoses have co-morbid depression or substance use

Summary

- Readmissions:
 - 25% of discharges are readmitted within 30 days, a rate higher than other chronic diseases
 - “Flags” for readmission at point of discharge:
 - Viral hepatitis
 - Diseases of the esophagus
 - Diabetes
 - Drug dependence
 - Chronic renal failure
 - The most frequent dispositions that predict readmission are:
 - Discharged to a skilled nursing facility
 - Left against medical advice (AMA)

Recommendations

1. HIV positive patients should be managed by methods now being developed for chronic disease states:
 - Better discharges (e.g., Project RED)
 - Post-discharge calls and visits
 - Designated care managers
2. HIV is increasingly becoming a primary care disease, and specialty clinics may need to assume a more collaborative role (“The Patient-Centered Medical Neighborhood”)
3. Behavioral health issues and substance use disorders are remarkably common; consider screening and intervention using validated point-of-care methods (PHQ2, SBIRT)

Recommendations

4. Consider using a checklist at point-of-transition to identify HIV patients at increased risk of unplanned readmission:
 - ❑ Drug dependence
 - ❑ Viral hepatitis
 - ❑ Esophageal diseases
 - ❑ Diabetes
 - ❑ Chronic renal failure
 - ❑ Medicare and Medicaid
 - ❑ Discharge to skilled nursing facilities
 - ❑ Left hospital Against Medical Advice

Unresolved Questions

- What is the impact of isolation?
- Patterns of hospital switching?
- Are there barriers for the uninsured?



“ENABLING COMMUNITY-WIDE QUALITY IMPROVEMENT”



The screenshot displays the PA HIV Initiative website. At the top left is the logo, which consists of a stylized figure in purple and teal above the text "PA HIV INITIATIVE". To the right of the logo is a horizontal navigation menu with seven items: "home" (green), "about us" (pink), "data & reports" (purple), "news & blog" (orange), "resources" (grey), "my account" (green), and "technical support" (grey). Below the navigation menu is a large green box containing a "welcome" message, a "user name" input field, a password input field with masked characters, and two links: "New User?" and "Forgot Your Password?". To the right of the login box is a photograph of several people's hands clasped together in a circle, symbolizing teamwork. Below the main content area are two sidebars. The left sidebar, titled "Welcome!", contains a paragraph describing the initiative's services and a link to log in as a "New User". The right sidebar, titled "Countdown", features a "Ryan White Grantee Meeting 13th Annual Clinical Conference" in Washington, DC, with a date of August 23, 2010. At the bottom left of the page is the number "010".

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Welcome!

The PA HIV Initiative is a portal offering real time reporting, case studies and webinars of best practices, professional networking, accredited online lean QI training, opportunities to build and customize regional communities, and provides transparency to consumers. It is to act as a tool for those whom administer, plan, provide and/or receive HIV AIDS related services.

If you like to learn more, please log in as a "New User".

Countdown

**Ryan White Grantee Meeting
13th Annual Clinical Conference
Washington, DC
Date of Event: August 23, 2010**