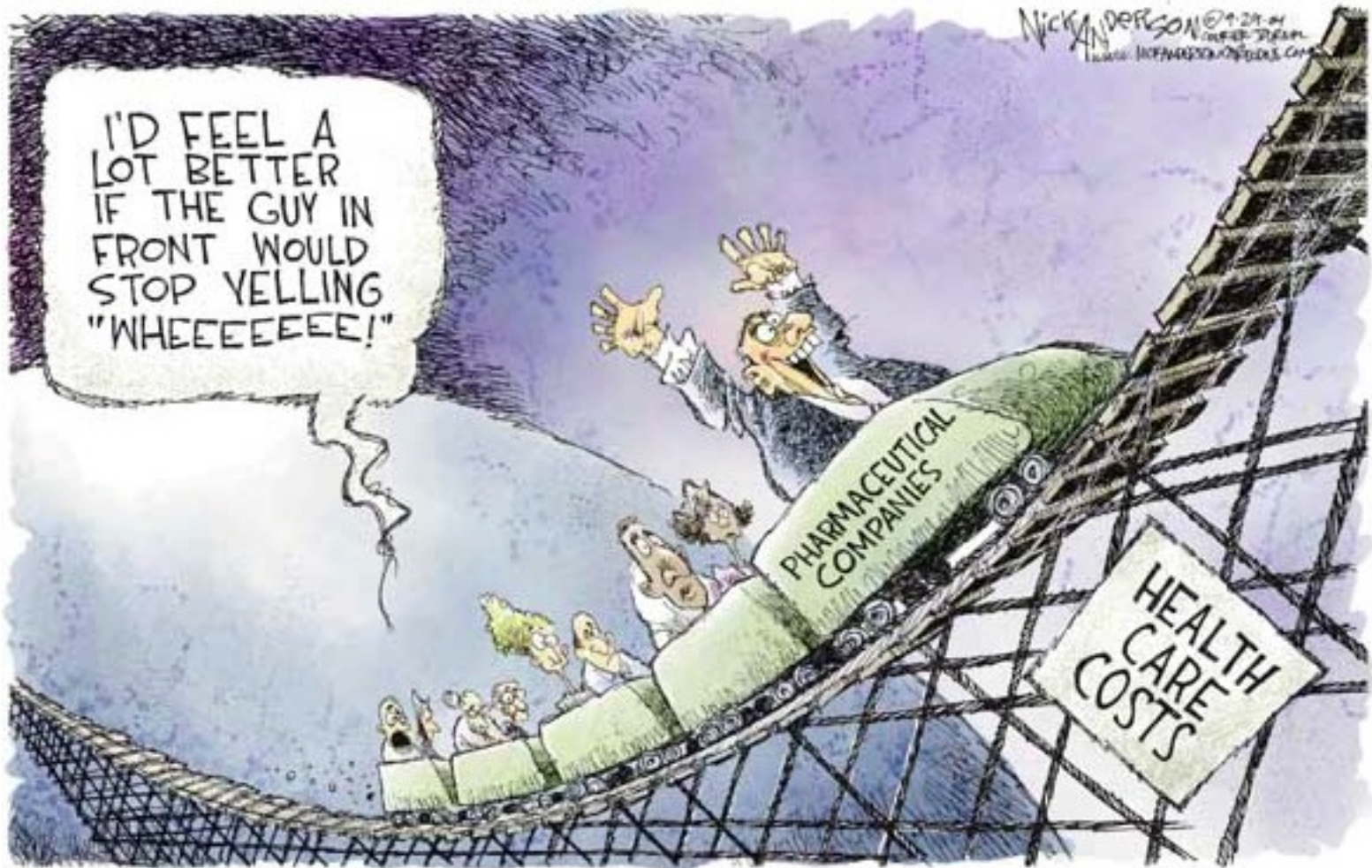


Persistence and adherence with cardiovascular and lipid-lowering drugs following acute myocardial infarction

Reka Pataky, Steve Morgan and Gillian Hanley
CAHSPR Conference
May 13, 2009

Rationale - Part 1



Rationale - Part 2



Background

- **Return on Investment Project**
 - Goal is to investigate the relationship between the causes and consequences drug expenditure
 - Understanding appropriateness of use is an important intermediate step
- **Treatment post-MI appears to be a case of inappropriate underuse**

Background

- **Post-MI treatment guidelines**

- Unless contraindicated, patients should get:

- ACE inhibitor
 - Statin

- β -blocker
 - ASA

- Reduced mortality and re-infarction

- **Adherence and persistence rates**

- Studies suggest ~50% of patients discontinue drugs by 2 years post-MI

- Varies with drug class, study population, etc.

- Discontinuation associated with poor outcomes

Study Overview

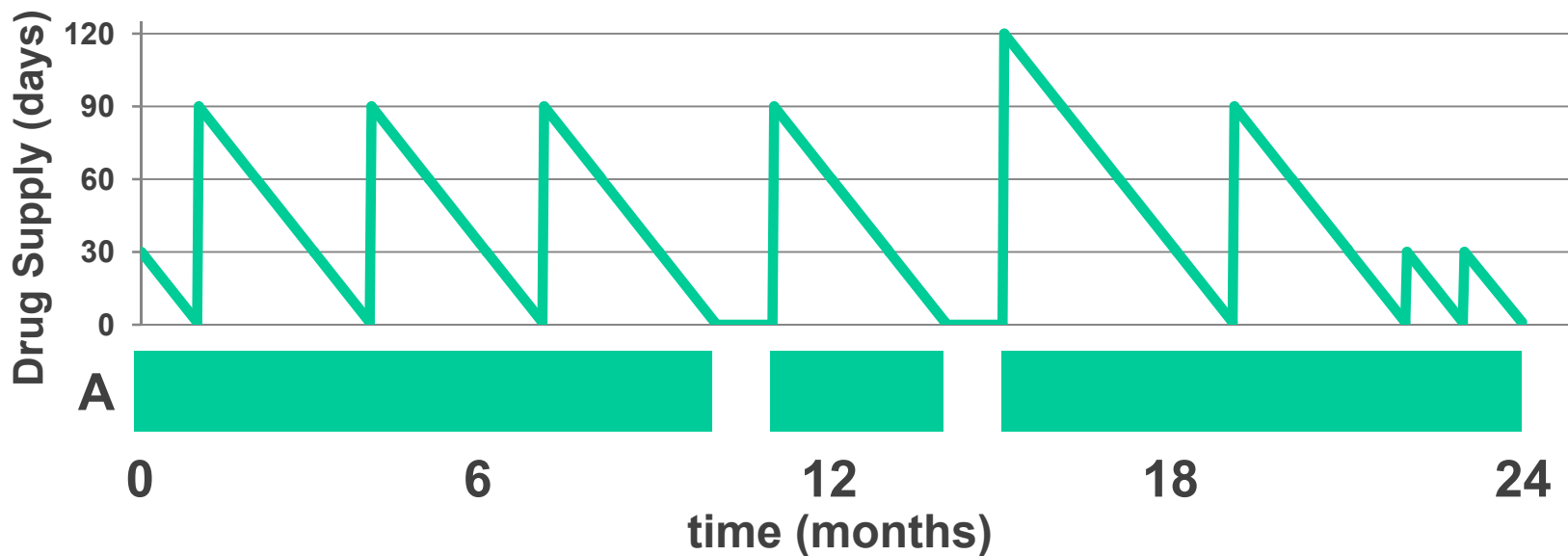
- **Objective:**

- To measure persistence and adherence with ACE-inhibitors, β -blockers and statins following acute myocardial infarction (AMI) in BC

- **Study Design:**

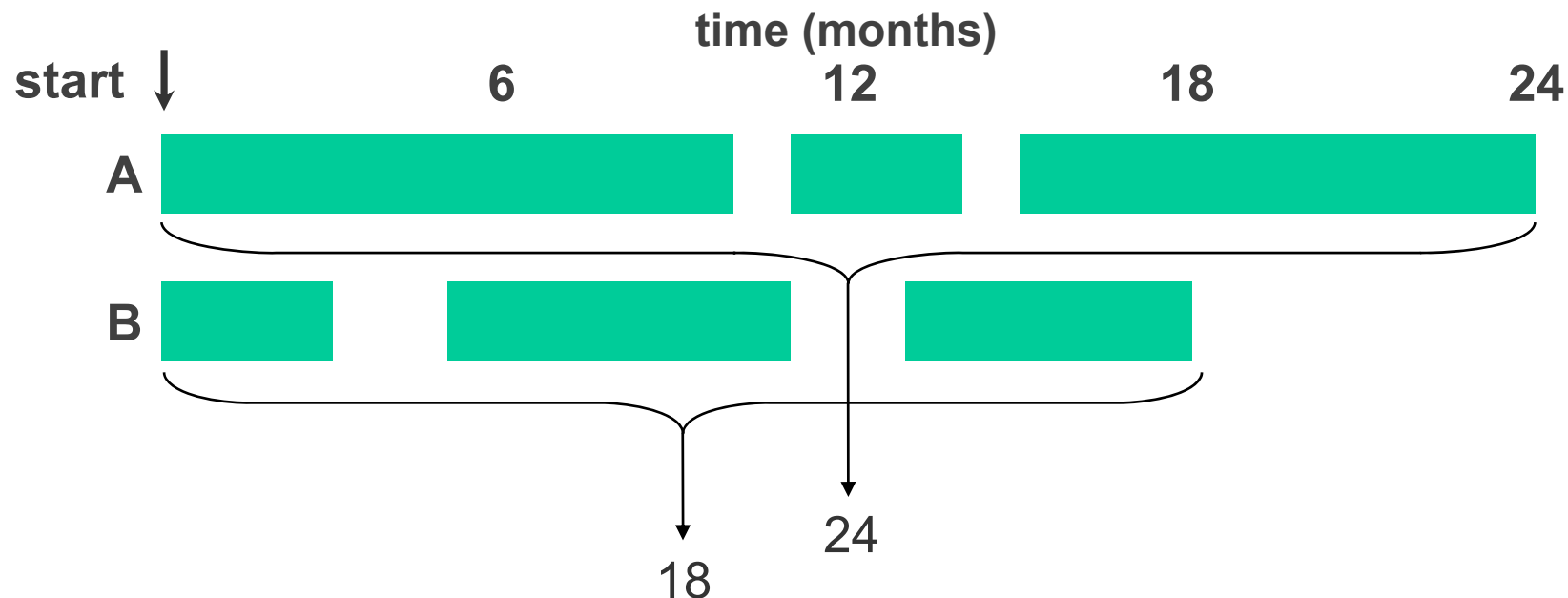
- Cohort of all BC patients suffering first AMI in 2001-2005
 - Follow up to end of 2006
- Administrative data from PharmaNet and BCLHD

Drug Inventory with PharmaNet Data



- Estimate drug inventory using PharmaNet fields for date and dispensed days supply
- Indicate daily drug availability

Definitions – Persistence



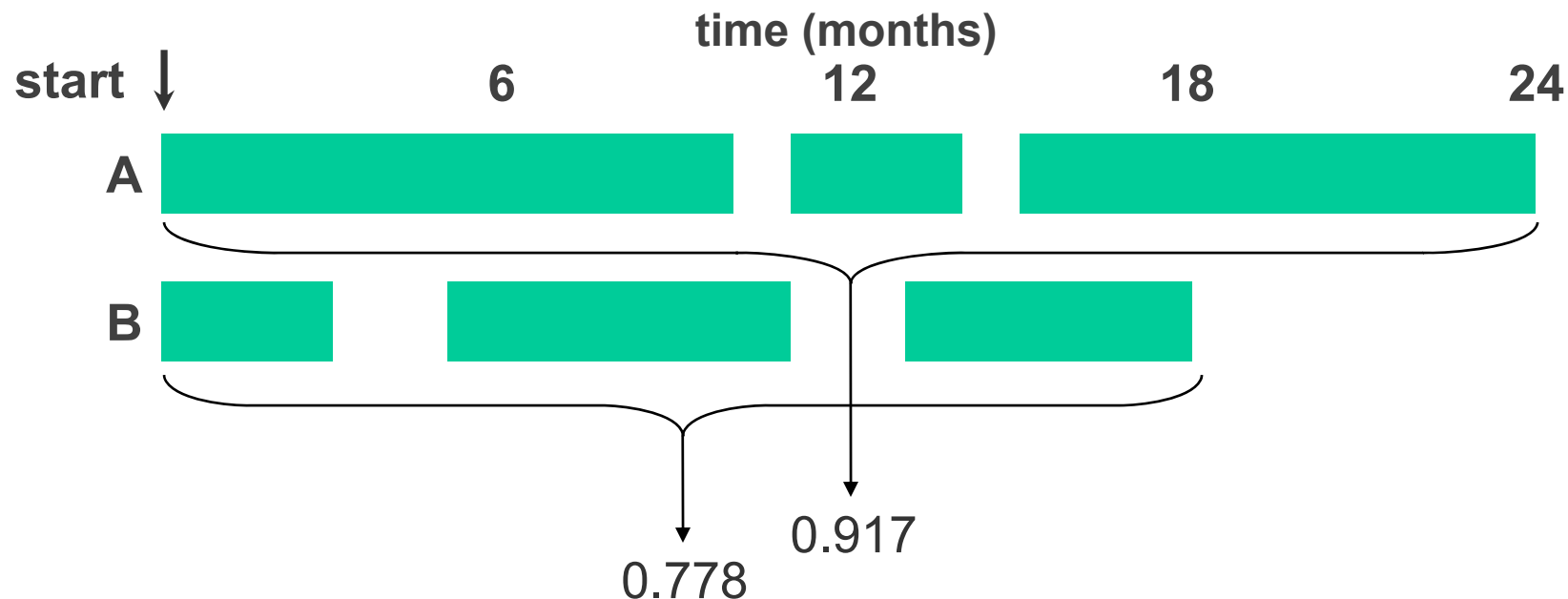
- **Persistence:**

- Measure of the duration of drug therapy

- Time to discontinuation of drug use

- Discontinuation defined as >90 day gap in drug availability

Definitions – Adherence

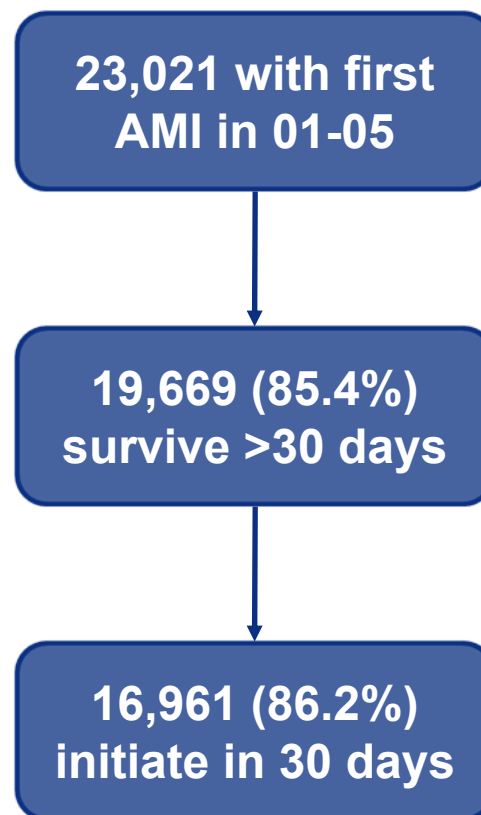


- **Adherence:**

- Measure of the intensity of drug use over time
- Proportion of days with drug available
 - From time from first prescription to discontinuation

Study Cohort

- **All BC patients with first AMI between 2001-2005**
 - No prior event (from '96 onwards) and registered for MSP at least 2 years previous
 - Age between 40-100
 - Stay in hospital < 30 days
- **Survive at least 30 days post-discharge**
- **Initiate ACE inhibitor, β -blocker or statins within 30 days**



Covariates of Interest

- **Demographic**
 - age, sex
- **Socioeconomic Status**
 - income percentile, private insurance
- **Health status**
 - John's Hopkins case-mix adjusters
- **Drug use**
 - Prior use of ACE-inhibitors, β -blockers or statins
 - Concurrent drug use
 - Number of prescribing physicians

Cohort Description

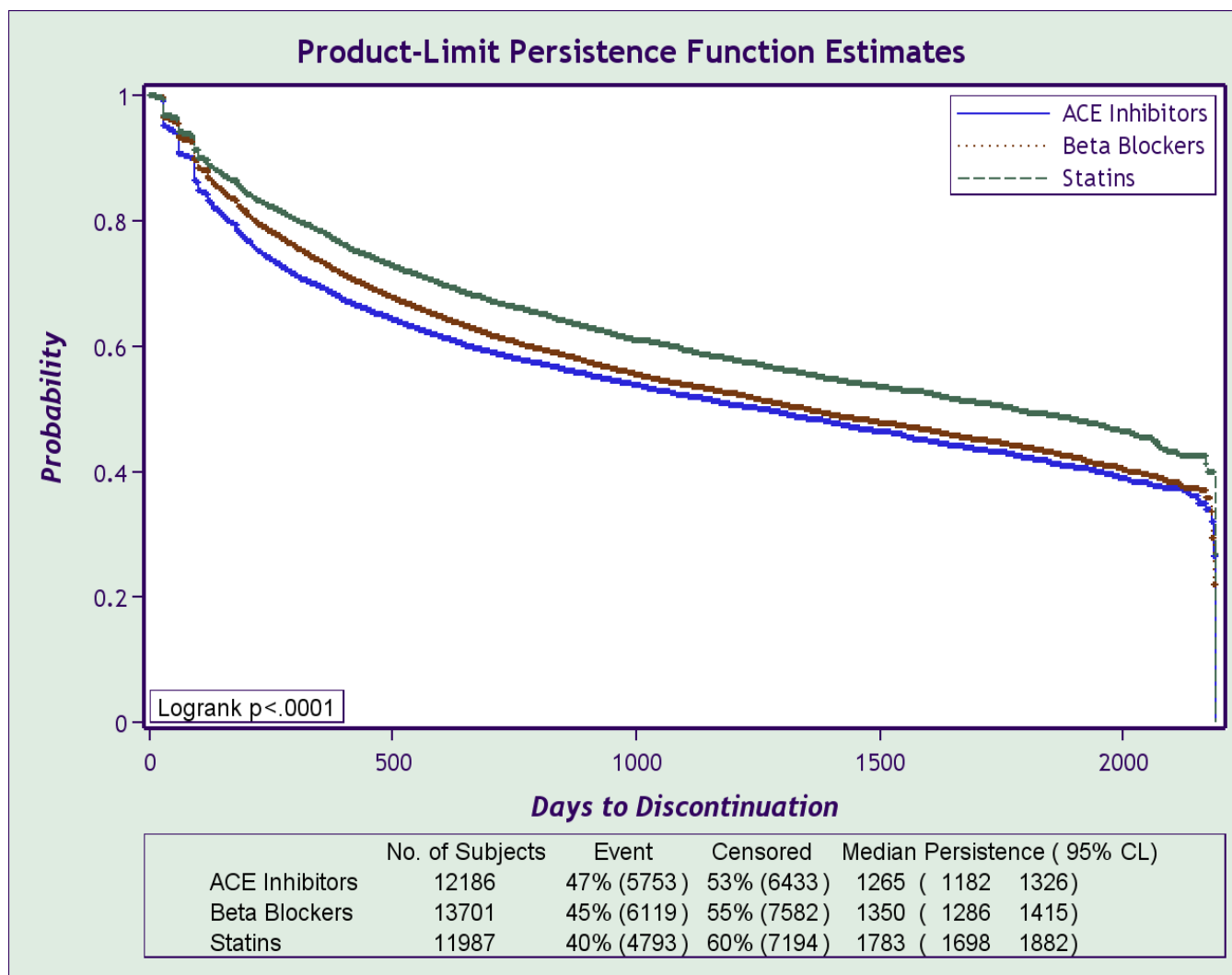
		Frequency	Percent
Age	Mean (SD)	67.9 (12.8)	
Sex	Male	11,116	65.5%
	Female	5,802	34.2%
MSP payer	Employer	6,784	40.0%
	Self	9,103	53.7%
	Other/unknown	1,074	6.3%
Prior drug use	ACE Inhibitors	4,339	25.6%
	Beta blockers	3,293	19.4%
	Statins	3,247	19.1%
# of drug classes used	1-3	1,795	10.6%
	4-6	4,717	40.0%
	6-9	5,209	30.7%
	10+	3,184	18.8%
# of prescribers	1	2,761	16.8%
	2	5,904	34.8%
	3	4,494	26.5%
	4+	3,802	22.4%
Death during follow-up		2,960	17.5%

Initiation Rates

- 30-day initiation rate of 86.2% (for any drug)
- Among initiators:

		Frequency	Percent
ACE Inhibitors		12,186	71.9%
Beta blockers		13,701	80.8%
Statins		11,987	70.7%
Combinations:	1	3,496	20.6%
	2	6,017	35.5%
	3	7,448	43.9%

Persistence



Adherence

- **Among initiators who fill >1 prescription:**

	Mean	SD	% above 0.90
ACE Inhibitors	0.955	0.075	84.6%
Beta blockers	0.941	0.086	78.5%
Statins	0.938	0.084	78.2%

- **For the time that patients persist with treatment, they appear to use drugs consistently**

Next Steps

- **Calculate persistence and adherence for drug combinations**
 - Most subjects initiate >2 drug classes
- **Adjusted persistence and adherence rates**
 - Cox proportional hazards modeling and linear regression to account for covariates of interest
- **Relationship between persistence/ adherence and health outcomes**

Thank you!

- **Acknowledgements:**

- Dr. Steve Morgan and the CHSPR Program in Pharmaceutical Policy
- Dr. Michael Law

