Rehospitalization: The Nature of the Challenge

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What is the Magnitude and Why Does it Matter?

Rehospitalizations and Deaths After Discharge: Medicare FFS

	Start	----------End----------	
Days after discharge	Percent still at risk	Cumulative rehospitalizations	Cumulative outpatient deaths
0-30	100.0%	19.6%	3.5%
31-60	76.9%	28.2%	4.5%
61-90	67.3%	34.0%	5.1%
91-180	60.9%	44.8%	6.0%
181-365	49.3%	56.1%	6.8%
>365 days	37.1%		

Budget

- At 30 days: about $17.4 billion trust fund dollars in 2004.
- Roughly 90% of 30-day rehospitalizations are unplanned and acute and therefore are targets for prevention.
- Achievable savings extremely uncertain, but clinical trials suggest 20-40% preventability.

A Perfect Crisis

- Safety
- Cost
- Patient experience
- We will likely have to both reduce the fragmentation of care and shift the focus from providers to patients in order to substantially reduce rehospitalization.

Causes

Clinical Causes of Rehospitalization

- 70 percent of post-surgical hospitalizations are for medical reasons – largely conditions such as pneumonia, heart failure, and gastrointestinal that account for large numbers of hospitalizations in the elderly.
- 90 percent or more appear to be the result of clinical deterioration – related to the index hospitalization and not part of a treatment plan.

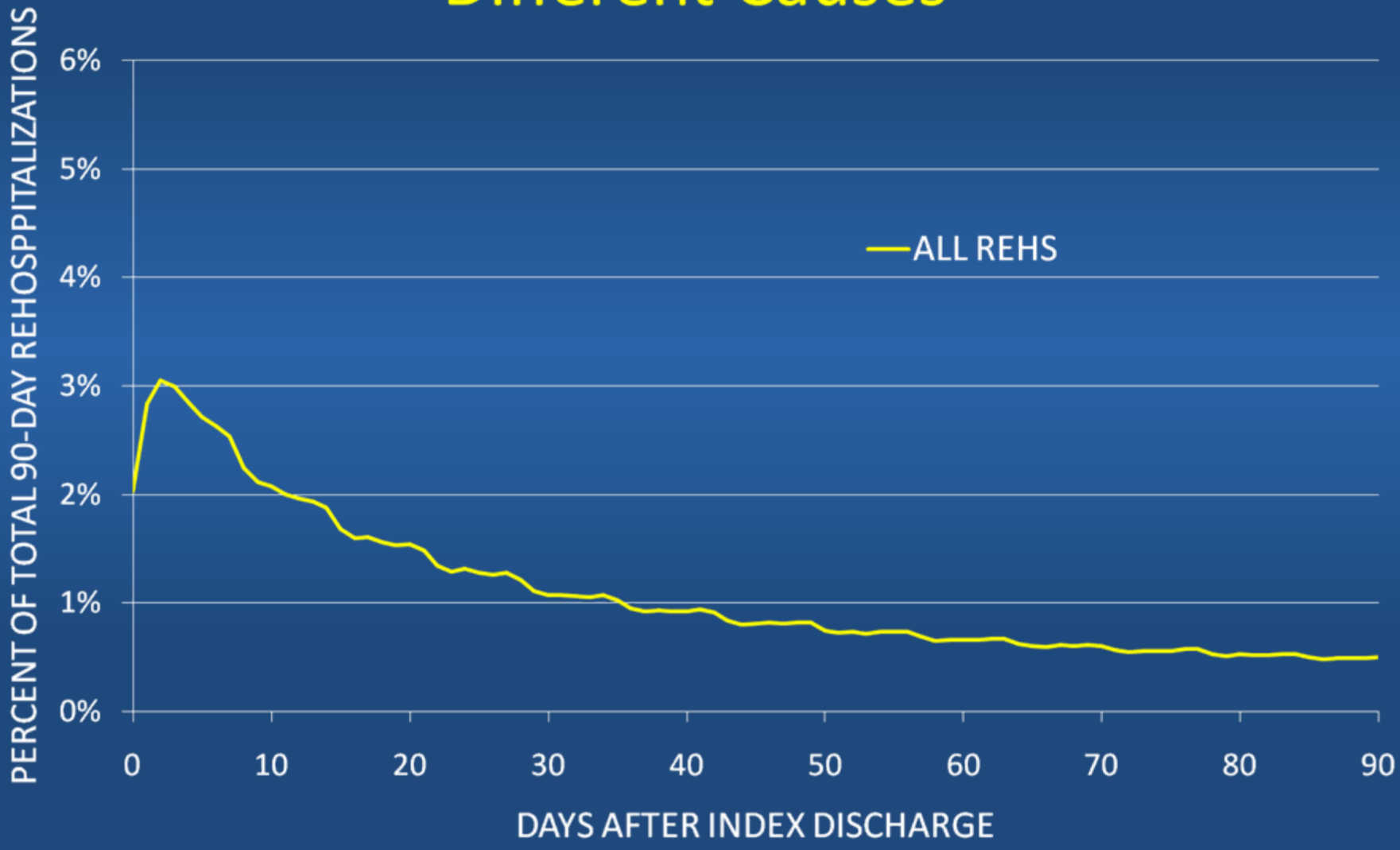
Four Kinds of Rehospitalization

- Related-unplanned: ~90% by 30 days. Heart failure, pneumonia, stroke.
- Related-planned: ~5-10% by 30 days. Chemotherapy, staged surgery.
- Unrelated, planned: uncommon by 30 days. Unrelated procedures.
- Unrelated, unplanned: some kinds of trauma and harm from the environment.

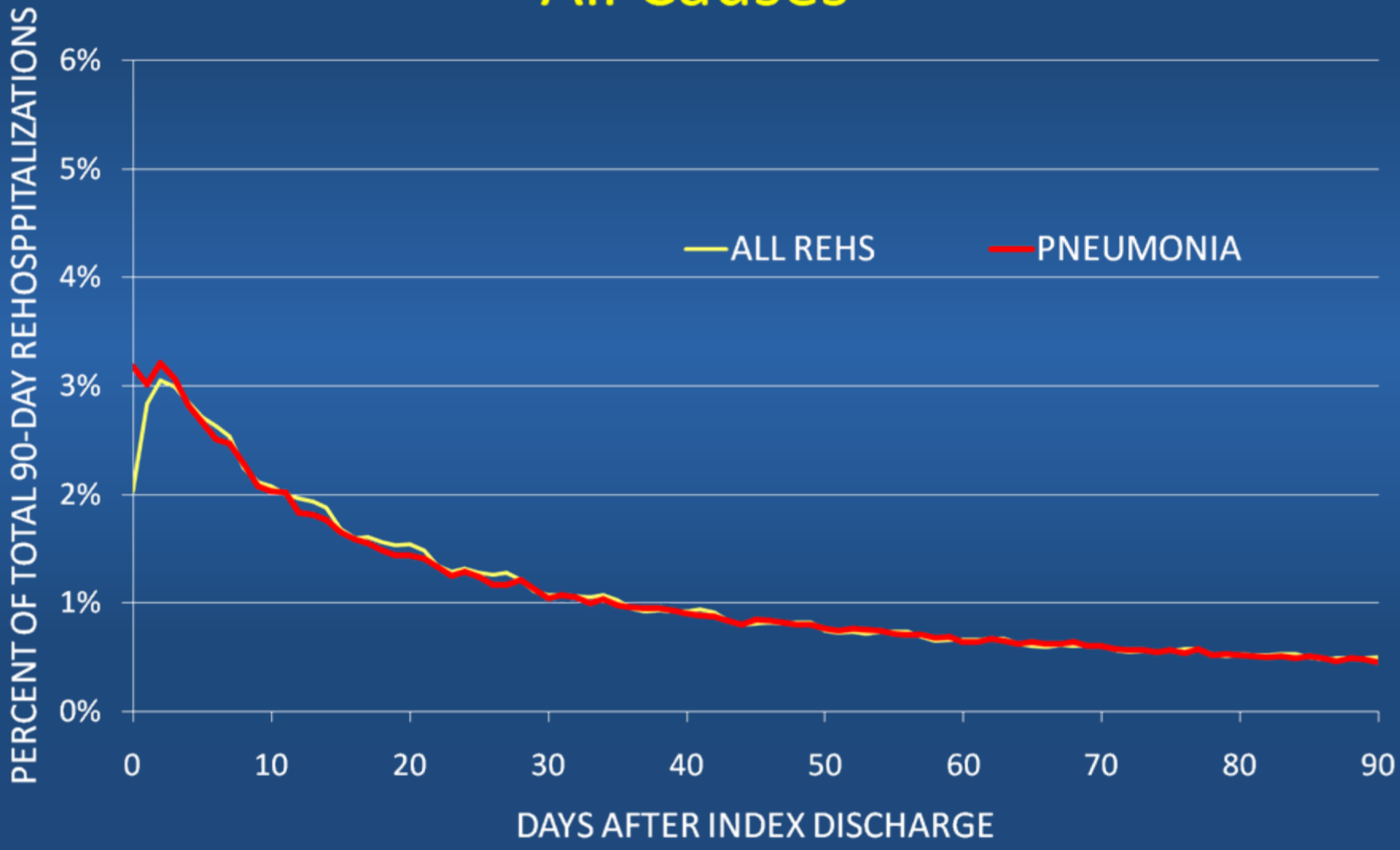
Four Kinds of Rehospitalization

TYPE	FREQUENCY	EXAMPLES
Related-unplanned	~90% by 30 days.	Heart failure, pneumonia, stroke
Related-planned	~5-10% by 30 days	Chemotherapy, staged surgery
Unrelated-planned	uncommon by 30 days	Unrelated procedures
Unrelated-unplanned	uncommon by 30 days	Some kinds of trauma and harm from the environment

Patterns of Rehospitalization for Different Causes



Patterns of Rehospitalization for All Causes



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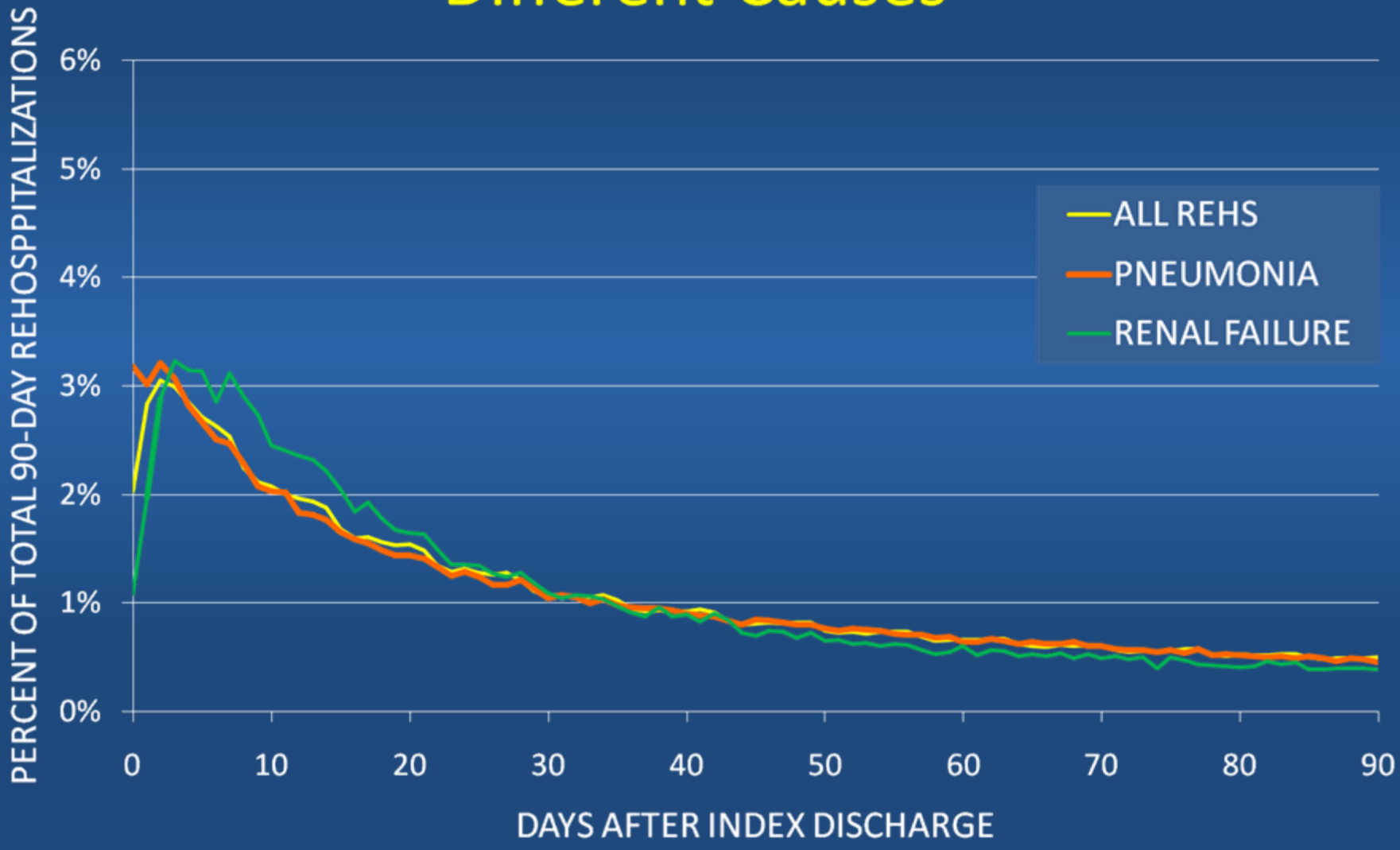
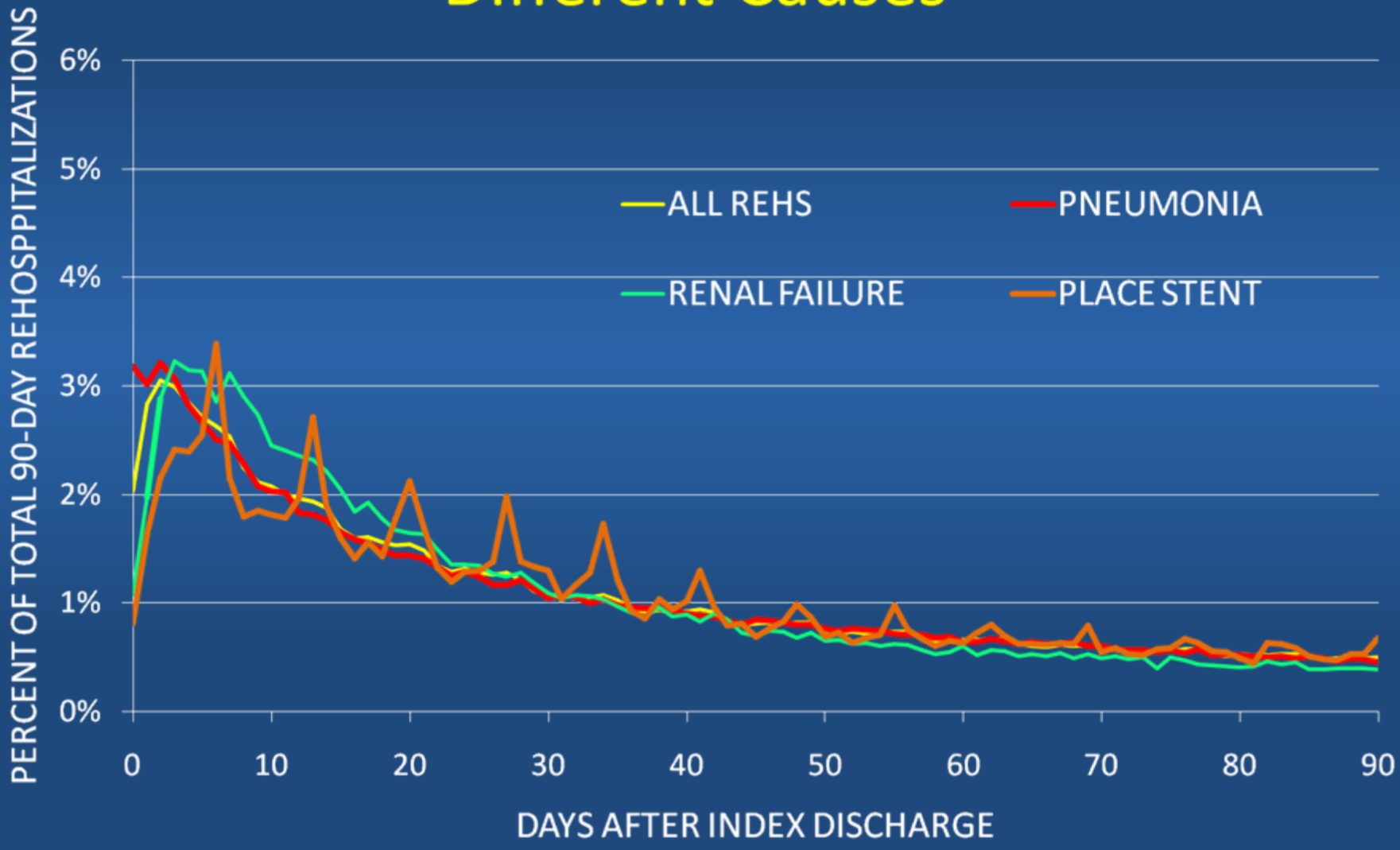


Notes on Patterns

- About 90% of rehospitalizations follow this pattern.
- The pattern suggests a clear temporal relationship to the index hospitalization.
- The pattern also suggests that the rehospitalizations result from one or more decreasing risk factors and are unplanned.
- Other conditions have quite different patterns.

Patterns of Rehospitalization for Different Causes



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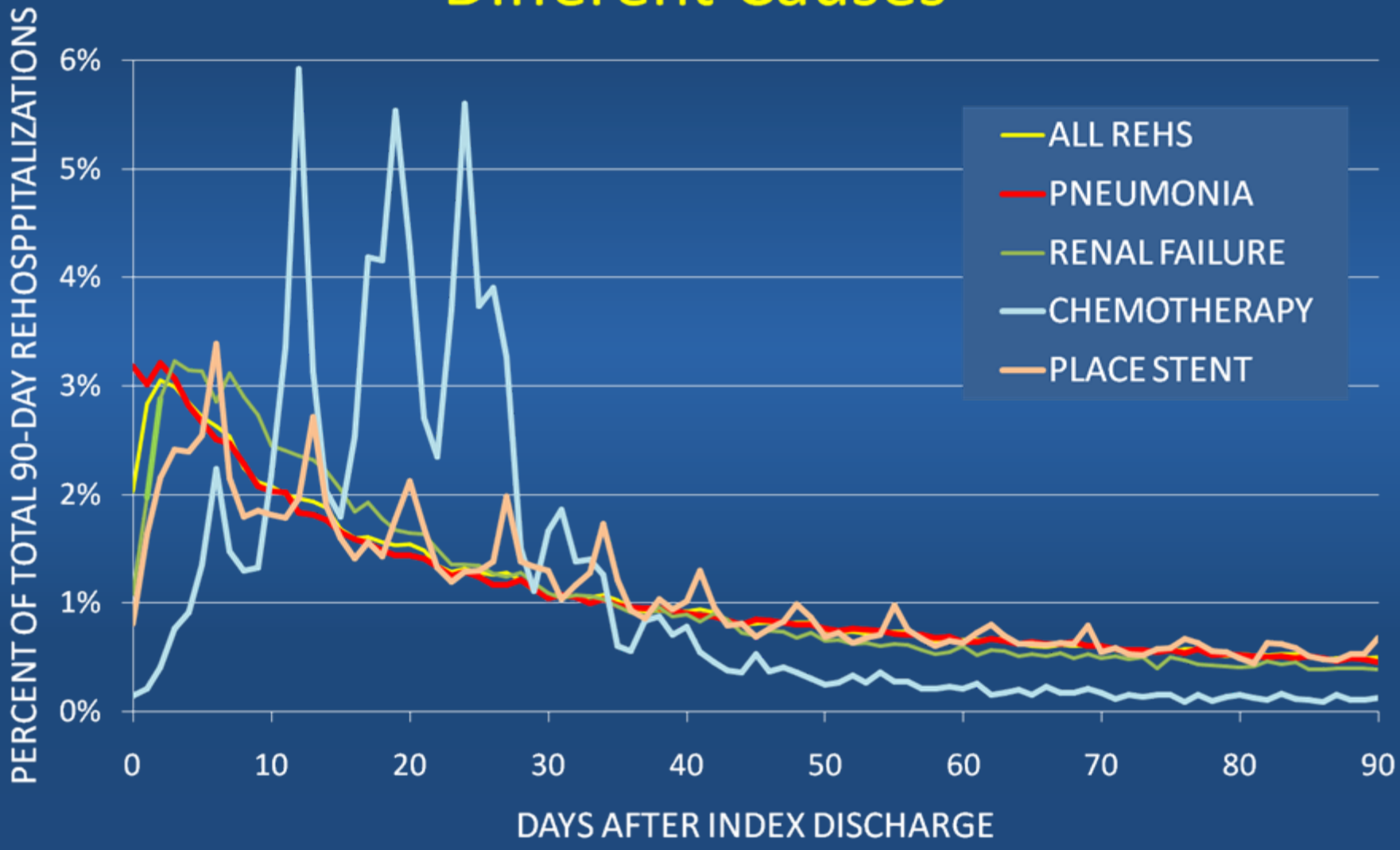


Measurement

Framing Questions

- What are the purposes of measurement and how should we do it?
- What time window?
- Which discharges/rehospitalizations do we exclude?
- What processes of care do we measure and why?
- Which rehospitalizations are preventable?

Three purposes, Three kinds of accountability

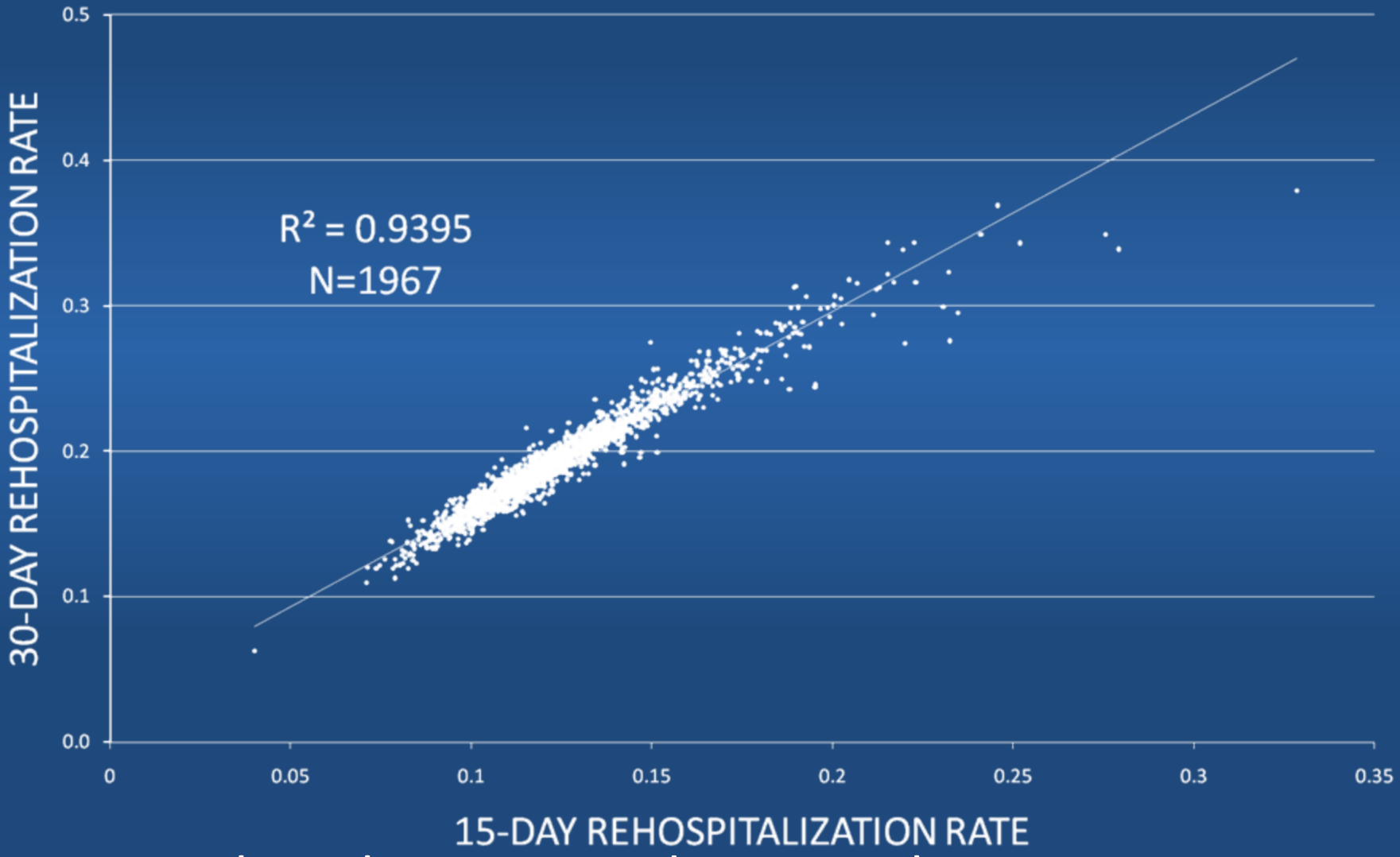
	Cause of rehospitalization	Accountable entities
Patient safety	Clinical deterioration	All, especially hospitals
Fiscal stewardship	Above + Treatment plan	All providers
Community health	Above + unrelated	Political decision

Length of Interval:
Correlation of Hospital Rates with Various Intervals

	15-day	30-day	60-day	90-day	180-day
15-day		.96	.90	.86	.82
30-day			.98	.95	.92
60-day				.99	.97
90-day					.99
180-day					

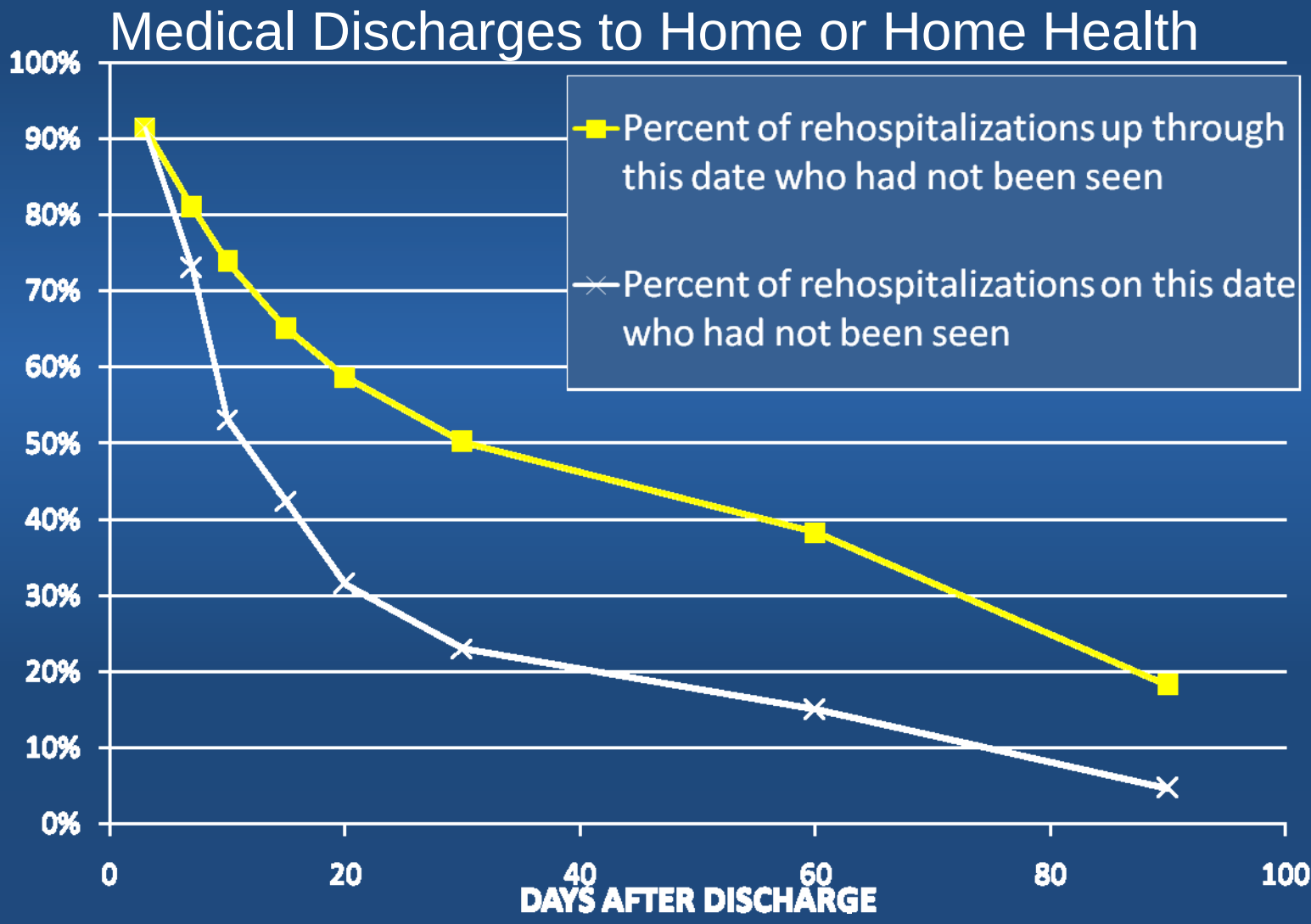
all correlations significant at p<.0001;
hospitals with >1000 yearly Medicare discharges

15- v. 30-Day Rehospitalization Rates



Hospitals with >2000 Medicare Discharges in 2004

Medicare FFS Patients Rehospitalized Without Interim Physician Bill



Risk Adjustment

Risk adjustment stratifies patients by their risk of rehospitalization or compares the risk of a group of patients with that of a standard population. Useful for

- Comparing rehospitalization rates among hospitals or communities.
- Identifying high-risk patients as targets for preventive intervention.

Risk Adjustment

Indirect adjustment of hospital case mix to the national experience using DRGs is a relatively powerful predictor variable for the hospital-level rehospitalization (R^2=0.27)rate. However:

- The correlation of adjusted and unadjusted rates is >0.95.
- There is evidence as well as logic to suggest that a large part of case mix variation is endogenous – the result of recycling.

MEDICARE: PERSON-LEVEL PREDICTORS OF REHOSPITALIZATION

RELATIVE RISK FROM PROPORTIONAL HAZARDS MODEL

Variable	Hazard Ratio (p>0.95 CI)	Variable	Hazard Ratio (p>0.95 CI)
Hospital Observed/ Expected Ratio	1.096-1.098[S]*	ESRD	1.409-1.425*
National Rehospitalization Rate for DRG	1.267-1.270[S]*	SSI	1.113-1.122*
Previous hospitalizations in last 6 mo		Male	1.053-1.059*
1	1.374-1.383*	Age 55-64	0.978-0.988*
2	1.746-1.759*	Age 65-69	0.989-1.009
3 or more	2.495-2.513*	Age 70-74	1.012-1.035*
Stay >2 X expected for DRG	1.261-1.272*	Age 75-79	1.059-1.084*
Stay <0.5 X expected for DRG	0.872-0.877*	Age 80-84	1.089-1.113*
African-American	1.053-1.061*	Age 85-89	1.111-1.136*
Disabled	1.119-1.141*	Age >89	1.105-1.131*

Targeting Prevention

- History of rehospitalization
- Longer stay than expected
- High-risk DRGs (e.g.: heart failure, psychosis)
- On dialysis
- Disabled
- Poor

Targeting Prevention – Why Not?

- The effective changes are system changes, which are often easier to implement across the board than selectively.
- Screening accurately costs resources that could be used in prevention.
- Most screening models still miss many rehospitalizations.

PREVENTING REHOSPITALIZATION

Programs Shown to Be Effective

- Project RED (ReEngineering Discharge) -- Jack
- Transitional Care Model -- Naylor
- Care Transitions Program -- Coleman
- Evercare Model –

Notes:

1. RCTs published in peer-reviewed journals.
2. Published evidence is 1-2 sites.

Programs with Strong Data

- Community Care of North Carolina
- Commonwealth Care Alliance- Brightwood Clinic
- Heart Failure Resource Center
- Home Healthcare Telemedicine
- Novant Physician Group Practice Demonstration Project
- Kaiser Permanente Chronic Care
- Creating an Ideal Transition Home for Patients with Heart Failure (IHI)

Processes Believed to Be Effective

- Family involvement
- Coaching/Care Transition Management
- Contact Point
- Follow-up appointments
- Family and patient education with teachback
- Prompt information forwarding
- Medication reconciliation

SUMMING UP

TAKE HOME MESSAGES

- This is a big, expensive issue.
- It is also the royal road to patient-centered care
- There are effective interventions.