

The Evidence Base Related to Post-Hospital Transitional Care

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Post-acute Care Readmissions (1997)

Percent readmitted to Hospital

Diagnosis	≤ 1 day	≤ 30 days	≤ 60 days
Hip replace	1.01	8.06	11.7
Hip fracture	1.09	12.14	18.38
Pneumonia	1.93	16.18	21.12
Stroke	3.31	15.51	22.76
COPD	1.65	18.35	21.12
CHF	3.63	23.30	33.95

Kane RL. Health Services Research. 2002; 37(3):667

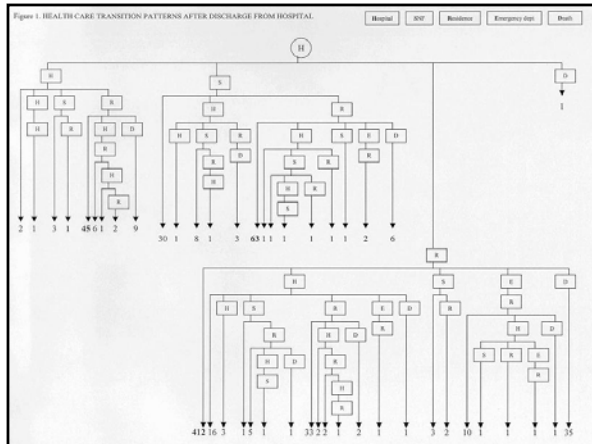
Defining + Measuring a Problem We All Recognize

Care Transitions

- 45 unique transition patterns in 30 days
- 1 in 4 are "complicated"

Single Transfer	444 episodes	51.2%
Two Transfers	130 episodes	17.9%
Three Transfers	62 episodes	8.5%
≥ Four Transfers	31 episodes	4.3%
Deaths	59 episodes	8.1%

Coleman et al. Health Services Research. 2004; 39:5,1449-1465



ERRORS RELATED TO DISCONTINUITY

- 3 types of error
 - Medication
 - Test follow-up
 - Work-up
- 49% had at least 1 error
- Work-up errors more likely to result in 30 day readmission

Moore et al. J Gen Intern Med 2003; 18:646-51

Medication Errors

- In 46% of hospitalized patients, 1+ regularly taken medications omitted without explanation
 - Potential harm estimated in 39%
 - *Cornish, Arch Int Med 2005 (165) 424-9*
- Transfer NH to hospital, average 3 med changes
 - 20% lead to ADE
 - *Boockvar, Arch Intern Med 2004 (164) 545-50*

Adverse Events after Discharge

- Injury resulting from medical management rather than underlying disease
- 19 percent had 1 or more adverse events within 3 weeks
- Many were preventable (23/76)
- Adverse drug events most common (66%)

Forster et al. Ann Intern Med 2003;138:161-7

Information Transfer

- Discharge/transfer information inadequate or not conveyed to next setting (*TNTC*)
- Hospital to NH transfer, documentation not legible 28% of time (Foley et al.)
- 14% of transfers had medication discrepancies
 - Coleman, Arch Intern Med. 2005; 165(16):1842

Naylor 1999 Transitional Care Study

- RCT at U. Penn
- Enrolled \leq 48 hours after hospital admit
 - 186 control
 - 177 intervention
- Mean age 75
- Average of 5 medical problems
- 57% fair to poor baseline health
- Advance practice nurse intervention

Naylor et al. JAMA. 281(7):613; 1999

Eligibility

1. Admission diagnosis

- CHF
- Angina
- MI
- Resp. infection
- CABG
- Valve replacement
- Major bowel procedure
- Ortho procedure, lower extremity

2. Risk for poor post-discharge outcomes

- Age \geq 80 yrs
- Weak support system
- Chronic health problems
- Depression
- Functional impairment
- Multiple hosp, 6 months
- Hosp. in past 30 days
- Fair/poor health (per pt)
- Non-adherence

Naylor et al. JAMA. 281(7):613; 1999

• Control

- standard discharge planning
- Medicare HHA services if referred

• Intervention

- gerontological APN's
- discharge planning, phone contact
- home visits for 4 weeks (minimum = 2)

	Intervention	Control
HHA nurse visits	3.1	7.1
APN visits	4.5	0.0
	7.6	7.1

Naylor et al. JAMA. 281(7):613; 1999

Re-admissions

When Re-admitted	Intervention (n=177)	Control (n=186)	P-value
0 – 6 weeks	17	32	<.001
6 – 24 weeks	32	60	.02
Time in Hospital			
Total days	270	760	< .001
Days/pt	1.53	4.09	< .001
Days/re-admit	7.50	10.1	< .001

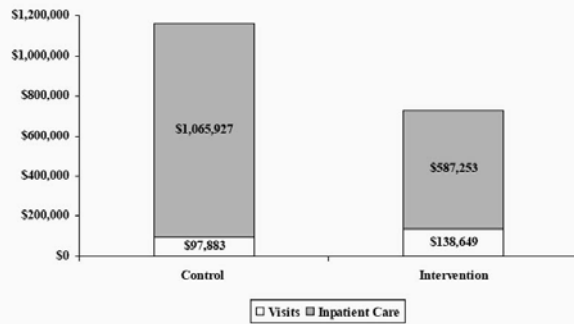
Naylor et al. JAMA. 281(7):613; 1999

Costs in Dollars

Utilization category	Intervention (n=177)	Control (n=186)	P-value
Hospital			
Re-admits	427,217	1,024,218	<.001
Other acute care	34,075	37,721	.74
Home visits			
Nurses	101,697	101,049	0.72
Other	79,606	75,940	0.70
Total	642,595	1,238,928	< .001
Mean/patient	3,630	6,661	< .001

Naylor et al. JAMA. 281(7):613; 1999

Figure 1: Effect of APN Care Model (Intervention=118) Versus Usual Care (Control=121)



Naylor, 2004. CHF study, RCT

Four Pillars: Coleman

- Medication self-management
- Patient-centered record (PHR)
- Follow-up with PCP/Specialist
- Knowledge of “Red Flags” or warning signs/symptoms and how to respond

Key Elements of Intervention

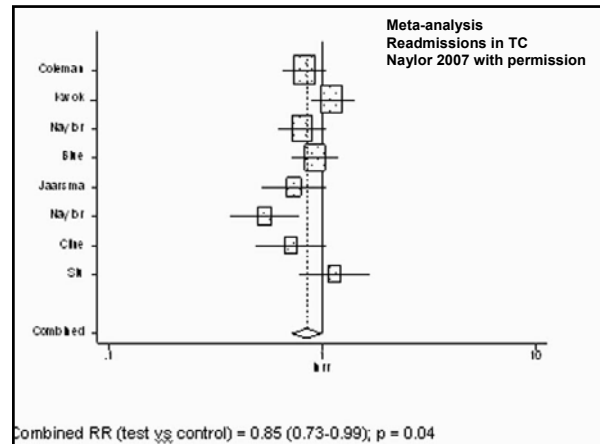
- “Transition Coach” (Nurse or Nurse Practitioner)
 - Prepares patient for what to expect and to speak up
 - Provides tools (Personal Health Record)
- Follows patient to nursing facility or home
 - Reconciles medications
 - Practices or “role-plays” next encounter
- Phone calls 2, 7 and 14 days after discharge
 - Single point of contact; reinforce, ensure follow up
- RCT 360 (experimental) vs. 352 (control)
 - Coleman, Arch Intern Med. 2006;166:1822

Variable	Intervention	Control	Adjusted P-value
Re-hospitalized w/in 30 days	8 %	12 %	0.048
Re-hospitalized w/in 90 days	17 %	23 %	0.04
Re-hospitalized w/in 180 days	26 %	31 %	0.28

Multidisciplinary Intervention to Prevent CHF Readmissions

- Nurse-directed team
 - Patient education, home care, phone calls
 - Geriatric cardiology consult in hospital
- Age 70 + admitted for CHF (high risk)
 - Uncontrolled hypertension or ischemia
 - Prior admission (s) for same
- RCT: 142 study vs. 140 controls
 - 90-day CHF re-admissions 24 vs. 54
 - QoL scores improved
 - Average overall cost \$460 lower

Rich et al. New Engl J Med 1995; 333:1190



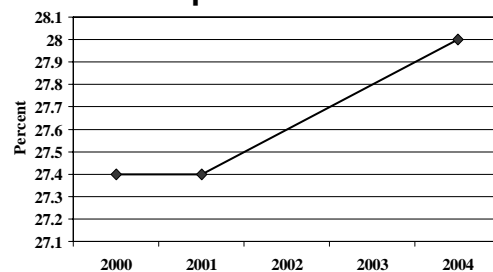
Cost Savings Per Patient, TC Models

- Coleman (2006) coaching RCT
 - \$2,058 vs. \$2,546 (savings = \$488)
- Naylor (2004) CHF NP RCT
 - \$7,636 vs. \$12,481 (savings = \$4,845)
- Naylor (1999) NP RCT
 - \$3,360 vs. \$6,661 (savings = \$3,301)

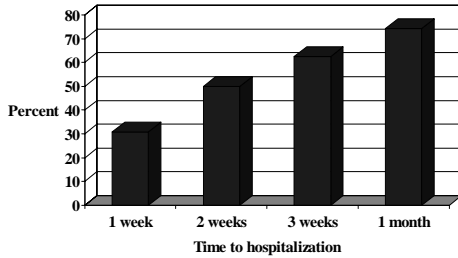
Additional Information for Other Transitions

Re-admissions for Home Care Patients

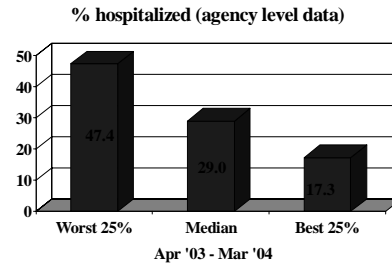
Medicare HHA: Hospitalization Rate



When are HHA Patients (28%) Hospitalized ?



Hospitalization, Medicare HHA's



National risk-adjusted rates, based on OASIS data

Outcome Evaluation in Medicare Home Health Care

- **OASIS**
 - 89 item assessment (at open and close)
 - 25 item subset (every 60 days)
 - Risk-adjusted quality reports
 - 41 quality indicators
 - PPS payment (23 of 89 items)
 - Public reporting (Home Care Compare)
- **OBQI (Outcomes-Based Quality Improvement)**

OBQI Demonstration(s)

- 2 concurrent demonstrations
- **National: 54 HHA's, 26 states, 3 years**
 - 157,548 cases
- **New York: 19 HHA's, 4 years**
 - 157,917 cases
- **Controls: 248,621 cases**
- **Each agency chose 2 endpoints: (1) hospitalization and (2) a clinical condition**
- **Feedback to HHA on outcomes, compared to national pool, case-mix adjusted**

J Am Geriatr Soc. 2002; 50:1354

OBQI Demonstration

- **Decline in hospitalization**
 - 22% per year (national) (33% to 29% to 25%)
 - 26% per year (New York) (28% to 26% to 23% to 22%)
- **Clinical outcomes**
 - Targeted: improved 5 - 8%
 - Not targeted ~ 1% (no change)

J Am Geriatr Soc. 2002; 50:1354

ElderPaCCT: Housecall Program with Area Agency on Aging

- **ElderPACT (n=49), controls (n=100)**
- **Matched cohort; functional outcomes at 1 year; total costs at 1 and 2 years**
- **Medicare costs were lower by half**
 - Year 1 \$17,409 vs. \$35,992
 - Year 2 \$11,255 vs. \$22,868
- **NHP from community lower**
- **Hospitalization (1 year)**
 - 2.1% per month vs. 5.7% per month

Kinosian. J Am Geriatr Soc. May 2004 - poster

Hospitalization of Nursing Home Patients

NH Discharges

- 2.1 million people
 - 10% recovered
 - 19% stabilized
 - 27% deceased
 - 28% hospitalized
 - 7% alternate NH
 - 8% other

NCHS Advance Data, April 2000; volume 312

EXHIBIT 1
Costs Of Nursing Home Hospitalizations, New York State, 1999–2004

	1999	2000	2001	2002	2003	2004
Nursing home residents	167,452	165,228	162,046	161,067	161,726	—*
Nursing home days	43,197,371	42,762,249	41,945,591	41,467,849	40,682,053	—*
Total no. of hospitalizations	63,498	67,826	71,401	75,021	78,702	82,230
Total no. of residents hospitalized	40,475	41,981	43,782	45,083	46,642	50,878
Total hospital days	66,4347	690,400	726,061	736,818	760,911	781,208
Average length-of-stay	10.51	10.31	10.18	9.86	9.67	9.50
Hospitalization rate	24.17%	25.41%	26.87%	27.83%	28.84%	—*
Total costs (\$ millions)	\$607.7	\$658.5	\$737.5	\$806.9	\$900.1	\$971.7
Total cost (millions, \$2004)	\$752.0	\$783.0	\$858.4	\$876.2	\$959.5	\$971.7
Total cost per hospitalization	\$9,911	\$10,026	\$10,583	\$11,018	\$11,643	\$12,160
Total cost per hospitalization (\$2004)	\$12,264	\$11,922	\$12,020	\$11,964	\$12,152	\$12,160
Total cost per hospital day	\$969	\$999	\$1,060	\$1,144	\$1,227	\$1,204
Total cost per hospital day (\$2004)	\$1,199	\$1,188	\$1,205	\$1,242	\$1,281	\$1,204

SOURCES: Minimum Data Set (MDS); and Statewide Planning and Research Cooperative System (SPARCS).
NOTES: The 2004 estimates are generated from the period January through June to account for truncation in the long-stay nursing home population. As such, we do not report the number of nursing home residents, nursing home days, or the hospitalization rate for this year. The measures involving total number of residents, total home days, and hospitalization rate are not computed for 2004 because there is no obvious way of converting the values for the first half of the year to full-year values. Across all years, approximately 2.5 percent of hospitalizations were missing cost information. These observations were excluded in calculating costs per hospitalization and per hospital day.
*Not available; see notes.

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EXHIBIT 2
Costs Of Ambulatory Care-Sensitive Nursing Home Hospitalizations, New York State, 1999–2004

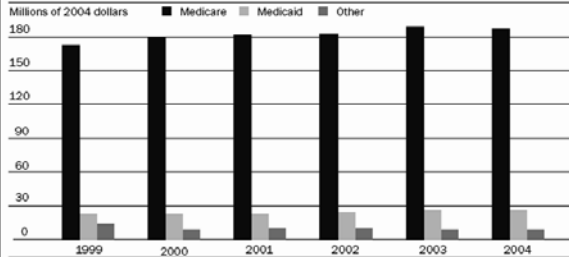
	1999	2000	2001	2002	2003	2004
Total no. of hospitalizations	21,258	22,609	22,765	23,152	23,530	23,822
Total no. of residents hospitalized	16,795	17,298	17,784	17,958	18,289	20,048
Total hospital days	196,673	202,714	198,645	192,954	193,786	190,954
Average length-of-stay (days)	9.25	8.97	8.73	8.33	8.24	8.02
Total costs (\$ millions)	\$180.0	\$178.4	\$180.3	\$190.7	\$214.4	\$223.8
Total cost (millions, \$2004)	\$209.1	\$212.1	\$215.2	\$216.8	\$223.8	\$223.8
Total cost per hospitalization	\$8,198	\$8,154	\$8,510	\$8,840	\$9,272	\$9,664
Total cost per hospitalization (\$2004)	\$10,144	\$9,695	\$9,673	\$9,598	\$9,679	\$9,664
Total cost per hospital day	\$913	\$909	\$992	\$1,093	\$1,148	\$1,226
Total cost per hospital day (\$2004)	\$1,130	\$1,117	\$1,127	\$1,187	\$1,199	\$1,226

SOURCES: Minimum Data Set (MDS); and Statewide Planning and Research Cooperative System (SPARCS).
NOTES: Across all years, approximately 2.5 percent of hospitalizations were missing cost information. These observations were excluded in calculating costs per hospitalization and per hospital day.

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November/December 2007

EXHIBIT 3
Costs Of Ambulatory Care-Sensitive Nursing Home Hospitalizations By Primary Hospital Payer, New York State, 1999–2004



SOURCES: Minimum Data Set (MDS); and Statewide Planning and Research Cooperative System (SPARCS).
NOTE: The 2004 estimates are generated from the period January through June to account for truncation in the long-stay nursing home population.

EXHIBIT 4
Ambulatory Care-Sensitive Nursing Home Hospitalizations, New York State, 1999–2004

Rank	Condition	Number	Percent of total	Total spending (millions, \$2004)	Percent of total spending	Mean spending
1	Pneumonia	40,580	33.25	456.6	36.90	11,252
2	Kidney/urinary tract infection	21,476	17.60	200.9	16.24	9,354
3	Congestive heart failure	20,116	16.48	210.8	17.04	10,481
4	Dehydration	10,650	8.73	89.1	7.20	8,366
5	Chronic obstructive pulmonary disease	9,494	7.78	98.3	7.95	10,357
6	Grand mal status and epileptic convulsions	5,719	4.69	49.4	3.99	8,637
7	Cellulitis	5,294	4.29	47.5	3.84	9,067
8	Diabetes	4,778	3.92	52.6	4.25	11,015
9	Asthma	1,386	1.09	15.1	1.22	11,332
10	Gastroenteritis	832	0.68	5.1	0.41	6,125
11	Angina	777	0.64	4.2	0.33	5,281
12	Hypertension	658	0.48	4.5	0.36	8,656
13	Sore ear, nose, throat infections	268	0.22	1.6	0.13	6,100
14	Hypoglycemia	181	0.15	1.3	0.11	7,369
All		122,027	100.00	1,237.3	100.00	10,140

SOURCES: Minimum Data Set (MDS); and Statewide Planning and Research Cooperative System (SPARCS).
NOTE: This exhibit contains only those hospitalizations for which we have full cost information for the period January 1999 through June 2004.

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Hospitalization of NH Patients

- 1991-3; Massachusetts; MPA + MEDPAR
- 11% with one or more hospitalization per resident **quarter** (8,070 in 73,319)
- 20% were high-discretion admissions
 - CHF (23%), UTI (13%), COPD (6%)
- 25% were low-discretion admissions
 - Hip fracture (32), pneumonia (12%), MI (10%), stroke (9%), bowel obstruction (6%)

Mary Carter. Health Services Research. 2003; 38(4):1177

Hospitalization Rate: NH Patients Sent to the ER

- 1994; 5-state sample of NHs
- Sub-sample of Medicare post-acute patients
- Study period: 90 days after NH admit
- Chart review by nurses: acute illness episodes
- Captured demographic and clinical data
- Of 2,414 cases; 536 had acute illness (22%)

J American Geriatric Society. 2001; 50: 223

Acutely Ill NH Patients Sent to ER

Diagnosis	Number Acutely Ill	% Sent to ER	If in ER, % Admitted
UTI	389	11	97.8
Pneumonia	149	46	96.8
CHF	98	58	91.8

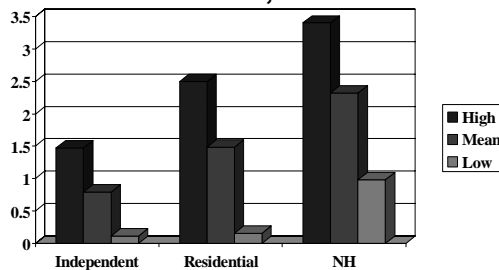
J American Geriatric Society. 2001; 50: 223

NH Patient Hospitalization Rate Varies by Facility

- CMS Demonstration Project (4 states)
 - Kansas, Maine, New York, South Dakota
- MDS, OSCAR, Area Resource File
- 663 facilities and 54,631 long-stay residents
- 15.5% hospitalized in 180 day study period
- 5.1% died in NH without hospitalization

Intrator, Zinn, Mor. J. American Geriatrics Society. 2004; 52:1730

ER Transfer Rate by Facility and Type Richmond, VA 2003



Parsons, P and Boling PA. J Am Geriatrics Soc. May 2003

Influences on NH Hospitalization Rate

- Hospitalization rate (mean) = 15.1% (9.2 to 25.2)
- For each \$10 above mean Medicaid day rate of \$75 -
 - 9% decline in risk of hospitalization
 - 18% decline in deaths
- If NH has NP/PA: 38% lower risk (hospitalization)
- More than median physician FTEs employed (0.08 FTE): 22% decrease risk of hospitalization

Intrator and Mor. J American Geriatrics Society. 2004; 52:393

Factors Affecting Hospital Transfer Rate in NH's

Tend to Increase Transfers

- Patient more ill
- Less capability of NH for acute care
 - nursing
 - physician/NP presence
- Financial incentives
- Local practice norms
- Rural location

Potential Intervention

- Select different patients
- Change staffing
- Add NP
- More physician presence
- Change incentives
- Provider education

Intrator and Mor. J American Geriatrics Society. 2004; 52:393

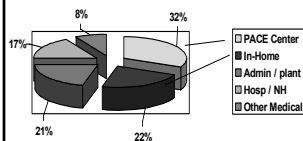
Clinical Path for NH Patients with Pneumonia

- 2001-2002
- RCT (327 vs. 353) in Canada
- Pathway
 - 10 percent hospitalized
- Controls
 - 22 percent hospitalized
- No difference in mortality
- Cost savings per patient: \$1,016

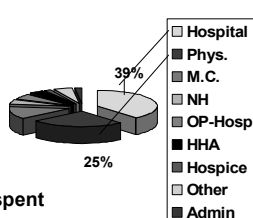
Loch. JAMA. 2006; 295(21): 2503-2510

PACE vs. Medicare

Chronic care focus



Acute care focus



Where the money is spent

CMS Vision for Post Acute Care in the 21st Century

- Person centered post-acute care
 - Optimize choice and control of services
 - Ensure placement based on patient needs, patient/family involved in decision making
 - Coordinated high quality care with seamless transitions
 - Reward excellence with payment based on quality measure performance
 - Utilize health information technology