The Centers for Medicare & Medicaid Services' Nonpayment Policy and Nursing Sensitive Patient Outcomes in the U.S. Hospitals

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Background

- The Centers for Medicare & Medicaid Services (CMS) implemented a new policy for Medicare in 2008 to reduce preventable adverse outcomes in hospitals.
- The new CMS reimbursement policy incentivizes the prevention of avoidable adverse patient outcomes by eliminating reimbursement for treatment of those outcomes in hospitals.
- Both intended consequences of the new CMS policy (appropriate changes in care processes) and unintended consequences (avoiding admissions of patients with higher acuity levels, resource shifting) are expected.
- Limited research has been conducted on how this new policy has influenced the nursing-sensitive adverse outcomes.

Purpose

- The current study examined the impact of the new CMS nonpayment policy on nursing sensitive patient outcomes and regional and hospital characteristics related to better implementation of the policy.

Methods

- **Study sample**
  The sample includes 3,260 U.S. hospitals.
- **Study design**
  Cross-sectional, secondary data analysis
- **Data**
  2010 American Hospital Association annual survey, 2010-2011 Hospital Compare data from the CMS, Rural-Urban Commuting area code (RUCA)
- **Measures**
  New CMS reimbursement policy: the percentage of Medicare patients served as a proxy for a measure of the CMS changes in reimbursement.
  Nursing sensitive patient outcomes: stages III and IV pressure ulcers, falls and trauma, catheter-associated urinary tract infections, and vascular catheter-associated infections.
  Hospital and regional factors: region, size, ownership, teaching status, RN staffing, and case mix.
- **Data analysis**
  Descriptive analysis, logit and Poisson regression models with standard errors adjusted for clustering at the state level.

Results

Table 1. Relationships between CMS policy and nursing sensitive adverse patient outcomes

	Pressure ulcer stages III and IV OR (SE)	Falls and trauma IRR (SE)	Infection from a urinary catheter OR (SE)	Vascular catheter -associated infection OR (SE)
Hospital discharges paid by Medicare (%)	1.013 (0.005)*	1.000 (0.003)	1.023 (0.004)**	1.018 (0.004)**
Region				
Northeast (reference)				
Midwest	0.701 (0.164)	0.951 (0.068)	1.100 (0.244)	1.031 (0.254)
South	0.821 (0.155)	1.002 (0.061)	1.041 (0.194)	1.453 (0.310)
West	0.547 (0.107)**	1.007 (0.094)	0.938 (0.256)	1.029 (0.249)
Location				
Metropolitan (reference)				
Micropolitan	0.801 (0.105)	1.243 (0.094)**	1.340 (0.163)*	0.734 (0.102)*
Rural area	0.470 (0.106)**	1.035 (0.108)	0.758 (0.144)	0.299 (0.070)**
County median income ($100)	1.000 (0.001)	0.999 (0.001)*	1.000 (0.001)	1.001 (0.001)
County poverty percent	1.025 (0.020)	0.982 (0.006)**	0.963 (0.015)*	1.009 (0.019)
States with public reporting policy				
Yes	1.163 (0.161)	1.002 (0.065)	1.172 (0.152)	0.993 (0.130)
No (reference)				
Number of beds				
<100 (reference)				
100 to <300	2.505 (0.385)**	0.781 (0.054)**	2.780 (0.333)**	4.788 (0.628)**
300 or more	5.331 (0.975)**	0.741 (0.074)**	8.511(1.610)**	18.583 (4.030)**
Type of ownership				
Public (reference)				
Not-for-profit	0.833 (0.119)	1.010 (0.049)	0.892 (0.133)	1.517 (0.264)*
For-profit	0.722 (0.116)*	1.031 (0.067)	0.752 (0.105)*	1.176 (0.156)
FTE of RNs per 1000 patient days	0.938 (0.023)**	0.980 (0.006)**	0.963 (0.015)*	0.928 (0.019)**
FTE of LPNs/LVNs per 1000 patient days	1.250 (0.059)**	0.988 (0.037)	1.269 (0.106)**	1.310 (0.070)**
Skill mix	1.041 (0.008)**	1.002 (0.005)	1.060 (0.012)**	1.059 (0.010)**
Hospital filled capacity	1.022 (0.003)**	0.998 (0.002)	1.012 (0.004)**	1.015 (0.005)**
Teaching status	1.826 (0.582)	0.908 (0.063)	1.865 (0.540)*	5.241 (2.666)**
Case mix	1.891 (0.202)**	1.570 (0.208)**	3.302 (0.610)**	4.026 (1.130)**
N	3,244	3,245	3,245	3,245

*p<0.05, **p<0.01, OR: odds ratio, IRR: Incidence rate ratio, SE: standard errors

Table 2. Characteristics from U.S. Hospitals in study (n=3,260)

	N (%) or M (SD)
CMS policy implementation	
Hospital discharges paid by Medicare (%)	45.50 (12.24)
Regional characteristics	
Region	
Northeast	510 (15.64)
Midwest	762 (23.37)
South	1,365 (41.87)
West	623 (19.11)
Location	
Metropolitan	2,139 (65.61)
Micropolitan	671 (20.58)
Rural areas	450 (13.80)
County median income ($)	44,647 (11,712)
County poverty percentage	17.11 (6.15)
States with public reporting policy for hospital acquired infections	2,268 (69.57)
Hospital characteristics	
Number of beds	
<100	1,068 (32.76)
100 to <300	1,416 (43.44)
300 or more	776 (23.80)
Type of ownership	
Public	547 (16.78)
Not-for-profit	1,980 (60.74)
For-profit	733 (22.48)
Nurse staffing levels	
Full time equivalent (FTE) registered nurses(RN) per 1,000 patient days	8.80 (11.43)
FTE licensed practical or vocational nurses (LPN, LVN) per 1,000 patient days	0.98 (1.61)
Professional skill mix	
Percent of FTE of RNs to total FTE of nursing staff	
(FTE of RNs/FTE of RN, LPNs, LVNs ×100)	90.04 (10.25)
Hospital filled capacity	
Average daily census/total hospital beds ×100	56.70 (17.94)
Teaching status	
Number of medical and dental residents and interns/number of staffed beds	0.06 (0.18)
Case mix	1.45 (0.32)
Type of hospital acquired conditions per 1,000 discharges	
Pressure ulcer stages III and IV	0.106 (0.245)
Pressure ulcer stages III and IV = 0	2,120 (65.05)
Falls and trauma	0.556 (0.664)
Falls and trauma = 0	722 (22.15)
Catheter-associated urinary tract infection	0.304 (0.557)
Catheter-associated urinary tract infection = 0	1,525 (46.78)
Vascular catheter-associated infection	0.282 (0.649)
Vascular catheter-associated infection = 0	1,412 (43.31)

Conclusion and Implication

- The new CMS policy was not related to a reduction of adverse outcomes.
- Hospital size, nurse staffing, skill mix, hospital filled capacity, and case mix were related to adverse outcomes.
- Hospital resources (nurse staffing) was found as facilitators for preventing all four adverse outcomes
- Nurse managers and staff nurses need to promote care process changes to reduce and prevent adverse patient outcomes

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