

Testing an Inpatient Nursing Intensity Billing Model

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There has been growing concern about the costs and intensity of inpatient nursing care, which consumes more than 40% of hospital direct costs and \$165 billion each year. Allocating nursing labor as an average cost per patient and charged as room and board creates cost compression, distorts hospital payment, and hides the economic value of nurses. This article examines a method for adjusting daily room charges using nursing intensity weights assigned by the diagnosis related group. In a test using claims data from 286 hospitals in four states representing 1,856,256 patient discharges in 2002, the nursing intensity adjustment improved explained total cost variance by 8.5% for adult all payer patients ($R^2 = .4448$ vs. $.4825$) and 9.4% for Medicare only patients ($R^2 = .4387$ vs. $.4798$) compared to unadjusted days. This article discusses unbundling inpatient nursing care intensity and charges from room and board and recommends implementing this billing process at all U.S. hospitals.

Keywords: *nursing care; nursing intensity; prospective payment system; reimbursement; hospital charges; hospital costs*

Nearly a million and a half nurses provide patient care in U.S. hospitals (U.S. Department of Health & Human Services, 2004). The financial burden for that care has steadily increased during the past two decades because of higher severity of illness, introduction of more complex medical therapies, and shorter lengths of stay (Unruh, 2003). In 1980, patients on average stayed 7.6 days in hospital and received 4.7 hours of nursing care each day, and by 2004 length of stay dropped to 5.6 days, with a 128% increase in nursing intensity to 10.7 hours daily (Welton, 2007a). Inpatient nursing time and costs have traditionally been embedded within room and board and expressed as a set fee per day, for example, a private or semiprivate room. All patients within the same revenue code receive the same standard per diem charge regardless of differences in nursing care time (Thompson & Diers, 1991). With increasing variability of nursing intensity and volatility of hospital nurse staffing, this traditional approach of allocating nursing resources is introducing substantial distortion in the current billing and payment system (Dalton, 2007). For example, any particular patient on a medical or surgical unit will receive more or less nursing care than average, so from a charge standpoint some patients are charged for more nursing care than actually received and others less. The appropriate solution is to unbundle nursing care from room and board and account for the variability in direct nursing time and cost delivered to individual patients in a separate nursing-specific revenue code (Welton, 2007b; Welton & Harris, 2007).

This article addresses the overall issue of inpatient nursing care costs, billing, and reimbursement and tests a model to adjust for nursing care using the New York nursing intensity weights (NIWs) as a proxy measure of daily nursing care hours (Ballard, Gray, Knauf, & Uppal, 1993; Knauf, Ballard, Mossman, & Lichtig, 2006). The goal of this study is to evaluate methods to better recognize the unique nursing resources expended for patient care and better represent the hours and costs of these nursing resources expended within the current inpatient reimbursement system.

Getting the Price Right

In 2006, the Centers for Medicare & Medicaid Services (CMS) introduced sweeping changes to the inpatient prospective payment system (IPPS), moving from a

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charge-based to a cost-based reimbursement formula (Ginsburg, 2006). This new approach was a response to a growing concern that hospital charges, which are the basis for calculating the diagnosis related group (DRG) relative weights used to determine payment, bear little resemblance to the true costs of care (Reinhardt, 2006; Tompkins, Altman, & Eilat, 2006). A second problem motivating this change is the siphoning of highly profitable and less severely ill patients to physician-owned specialty hospitals from community hospitals or academic medical centers (Medicare Payment Advisory Commission, 2005; Mitchell, 2005).

The primary problem is the differential markups of charges related to actual costs that hospitals used to bill for services. For example, an examination of charges in seven California hospitals revealed differences for chest X-ray from \$120 to \$1,519 (Lagnado, 2004). CMS will implement a new payment formula that will establish separate cost centers and cost-to-charge ratios to constrain the widely differing markups of ancillary charges. The CMS policy shift will realign slightly more than half of all hospital costs. The remaining half of hospital costs are routine and intensive care cost centers, sometimes referred to as "room and board." Nearly all direct inpatient nursing resources are contained in these two cost centers.

Unfortunately, the new payment formula leaves room and board essentially unchanged. Ancillary charges have high markups relative to costs; for example, drug charges are marked up 293%, radiology charges are marked up 318%, and cardiology charges are 471% above costs in an aggregate of more than 3,200 hospitals. Routine and intensive care charges are marked up only 19% and 40%, respectively (CMS, 2006). This disparity has roots in the early 1970s when the Nixon administration constrained room and board charges but allowed increases in ancillary services to accommodate new medical treatments (Mayes, 2006). Because nursing costs care held constant within the fixed daily room charge, ancillary charges dominate the reimbursement formula (Cromwell et al., 2004; Cromwell et al., 2005).

In the acute care inpatient setting, nursing resources—time, expertise, and intensity—are not directly measured for individual patients. For example, there is no itemization of nursing labor expenditures by license class or total hours of care for the hospital stay or differences in direct nursing care time for each day of stay in hospital charges. The typical hospital bill has a list of the days a patient spent in a private or semiprivate room, along with the daily room charge, but no line item for the variable amount of nursing time or treatments. The traditional use of a fixed per diem rate to account for nursing labor creates the assumption that all patients receive the same amount of

nursing care (Finkler & Ward, 2003). The other false assumption is that the DRG wholly explains all nursing care during hospitalization (Thompson, 1984). The lack of nursing-specific data in the administrative and billing abstracts makes nursing "invisible" at the policy making and financing levels of the health care system.

There is compelling evidence that nursing care time (also known as nursing intensity) varies substantially for individual patients and by case mix (Welton, Fischer, DeGrace, & Zone-Smith, 2006a; Welton, Unruh, & Halloran, 2006). For example, some patients who use relatively low amounts of nursing time are billed at a relatively higher daily rate, and patients who utilize large amounts of nursing time are billed below actual costs (Dalton, 2007). The inpatient charges submitted to the CMS currently form the basis for calculating the relative weights of the DRG after conversion to allowable costs. There is no current way to account for the variability of nursing care within the DRG. Therefore, nursing care has no appreciable influence on the relative weight used to calculate hospital payment. Changing the method for costing and billing for inpatient nursing care from a fixed to a variable costing model based on actual nursing care hours expended per patient will improve payment accuracy and more appropriately align nursing costs with reimbursement within each DRG. Adding direct nursing charges and time into the billing system would also provide additional information to administrators and policy makers about how nursing care resources vary by DRG and across different hospitals.

Cost and Intensity of Hospital Nursing Care

In a study of Medicare Cost Reports using data from 10 states between 1999 and 2000, Kane and Siegrist (2002) found nursing care costs (direct and indirect) represented 30% of all hospital costs and 44% of direct inpatient care costs. The researchers concluded that small increases in nursing labor costs have a large impact on total inpatient hospital expenditures.

In 2006, CMS conducted a study of hospital employees to gather information to adjust hospital payment for occupation mix (Welton & Keepnews, 2007). The Occupational Mix Survey represented 3,290 acute care hospitals (not critical access hospitals). Analysis of these data revealed the following:

- Registered nurses (RNs) make up 24.9% and RN managers comprise 2.2% of all employees (27.1% combined)
- All nursing personnel (RNs, licensed practical nurses, nurses aides, and medical technicians) comprise 37.2% of total hospital employees

- As a percentage of total salary, RNs (staff and managers) comprise 42.7% of total hospital labor costs

It is evident that inpatient nursing care is a substantial if not dominant resource expended by hospitals. The assertion by CMS not to create a unique nursing cost center or nursing intensity adjustment into the current revision of the IPPS presents a classic double-blind scenario. The main policy goal is to improve payment accuracy and account for true patient care cost variability and severity of illness, yet one of the single largest components of direct patient cost, nursing care, is not included in the new prospective payment formula because there are no specific data to measure nursing resource use in the billing or administrative databases used to reimburse hospitals for patient care.

This raises a key issue: To what degree does nursing care influence patient-level costs and ultimately reimbursement to hospitals for patients if a method to adjust for nursing intensity could be implemented without undue data-collection burden to hospitals? It is interesting to note that Thompson and Fetter, the designers of the DRG, originally conceptualized an independent nursing intensity adjustment (Thompson, Averill, & Fetter, 1979). The lack of a current independent nursing intensity adjustment may be affecting hospital behavior; for example, hospitals may be forced to cross-subsidize the nursing care of poorly reimbursed medical patients who require a large amount of nursing care with more highly reimbursed surgical patients (Dalton, 2007).

Nursing Intensity Billing Model

A nursing intensity billing model can address some of the above issues (Welton, Fischer, DeGrace, & Zone-Smith, 2006b). The model is an adaptation of Thompson's original idea to provide a unique nursing input to hospital prospective payment. Thompson argued that one of the primary reasons patients were admitted to hospitals was for nursing care (Thompson & Diers, 1985, 1988). Nursing care is different than the care administered by physicians and has different intensity and costs within each DRG category (Diers, 1999; Diers & Bozzo, 1997). Studies conducted at the Medical University of South Carolina (MUSC) Medical Center support Thompson and Diers's earlier research and concluded nursing care was highly variable by patient, diagnosis, and severity of illness (Welton, Fischer, et al., 2006a, 2006b).

If nursing care represents an independent treatment effect and is one of the largest resources expended by hospitals, then nursing hours and costs (nursing intensity) should be isolated and introduced as a separate variable in

the payment formula. The ability to adjust inpatient payment to hospitals for nursing care is based on the premise that nursing care can be readily measured as hours of care expended for individual patients, and a dollar value can be applied using either actual hourly wages or estimates of variable nursing costs for individual patients.

Direct Capture of Daily Nursing Intensity

At the MUSC Medical Center, nurses record actual hours of care expended for their assigned patients as a component of their documentation and nursing classification duties. This Nursing Intensity Database (NID) was implemented for all inpatient care units on January 2003 and is used primarily to help make staffing decisions and assess long-range nursing-related trends (Welton et al., 2003; Welton, Halloran, & Zone-Smith, 2006). Summary NID data have been merged with hospital billing and discharge data. This allows comparison of actual nursing care hours and estimates of direct nursing costs for individual patients with discharge diagnoses and hospital cost accounting information. Direct costs attributable to nursing staff assigned to patients in routine or intensive care units (ICUs) are calculated by mean hourly wages.

Based on 32,821 consecutive discharges from January 2004 through July 2005, a study of 12 inpatient medical and surgical units at MUSC, there were significant differences in nursing intensity and direct nursing costs across similar adult medical and surgical units (Welton, Fischer, et al., 2006b). Nursing care was undervalued by 32% using fixed per diem rates compared to actual nursing time and costs. For example, the cardiac step down unit had 44% of the intermediate care charges, but the actual mean nursing intensity and mean direct costs per patient for the unit was lower than several other units that were billed at the lower routine care rate. The salient interpretation of these results is that a fixed daily room rate does not adequately represent the actual nursing care delivered to patients and under-represents the time and costs of nursing care at this academic medical center. A study of Canadian hospitals found a similar undervaluation of nursing care within the costing and reimbursement structure (Botz, Sutherland, & Lawrenson, 2006).

New York State NIWs

The New York State Department of Health, in collaboration with the New York State Nurses Association, has adjusted instate Medicaid rates to hospitals using a separate NIW for each DRG for more than a decade (Ballard et al., 1993; Knauf et al., 2006; Lichtig, Knauf, & Milholland, 1999). Expert panels of clinicians are assembled every few years to examine "typical" patients within

each DRG and assign separate weights to represent differences in hours of care for routine and intensive care cost centers. The strength of this approach is the use of a single fixed nursing weight associated with each DRG. There is no need to collect bedside patient data, reducing overall administrative burden. From a payment standpoint, this is a useful approach, as the NIW represents the typical nursing resources for patients within a particular DRG (Mumolie, Lichtig, & Knauf, 2007). The main disadvantage in using the New York NIW scores is the lack of variability of nursing care within a particular DRG.

Testing the Nursing Intensity Billing Model

The primary goal of adjusting daily routine and intensive care billing for patient specific nursing care hours is to improve the overall accuracy and equity of the payment system relative to actual nursing care expended for individual patients. The current method of billing for nursing care is to allocate all direct nursing costs within the routine or intensive care cost centers by applying a fixed per diem charge. Unbundling the variable direct nursing care component from the per diem room rate is desirable. A method to accomplish this using an existing but little used revenue code (023X nursing incremental charges) has been proposed (Welton, Zone-Smith, & Fischer, 2006). In this model, hospitals would continue to use existing revenue codes to allocate fixed costs for each day of stay in routine or intensive care rooms. The 023X code would capture the actual or estimated variable nursing time and charge. This method was also suggested in the Research Triangle Institute (RTI) report regarding charge compression to CMS by Dalton in January 2007.

Because there are no currently available patient-level nursing direct time or cost data to test this model across many hospitals, the alternative approach is to use the existing NIW weights from New York as a measure of nursing care in other states. Ultimately, a more accurate payment system would explain a higher portion of the variability in total hospital costs with a nursing intensity adjustment compared to unadjusted days of care. A similar approach was used by Welton and Halloran (2005) to examine the improvement in explaining hospital resource and outcome variables when nursing diagnoses were added to regression models using DRG alone. In regression models when the nursing information was added, explanatory power (R^2) and model discrimination (c statistic) improved by 30% to 146% across the outcome variables of hospital length of stay, ICU length of stay, total charges, probability of death, and discharge to a nursing home ($p < .0001$).

In this study, we use a similar analytic approach in testing a nursing intensity adjustment to inpatient billing. Regression models with the nursing intensity adjustment explaining a higher portion of the variability in total costs than the unadjusted model would provide evidence of a better model fit and hence higher accuracy in reimbursing hospitals for actual nursing costs and resources expended for patient care.

Method

Sample, Setting, and Data Sources

Hospital discharge abstracts were obtained for four states (Massachusetts, Maine, North Carolina, Washington) in the calendar year 2002 using the Agency for Healthcare Research and Quality (2006) Health Care Utilization Project State Inpatient Database (HCUP-SID). These states were selected because of their availability from another study. The structure of the associated data file for these states allows derivation of routine and intensive care days from the revenue codes. Not all HCUP-SID states have this particular data structure. For routine care, the revenue codes between 0100X and 0150X for private, semiprivate, and ward beds were used to indicate location and amount of time the patient spend in any of these (e.g., if a patient spent 2 days in a semiprivate room and 1 day in a private room, the total would be 3 days of routine care). Likewise, the revenue codes from 020X and 021X were used to calculate total ICU or cardiac care unit (CCU) days (Table 1). To calculate nursing intensity, each record was matched by DRG to summary files of mean routine and intensive nursing intensity hours from the New York NIW database. The product of days and hours was calculated separately for each patient record to simulate unbundling nursing intensity from routine and intensive care revenue codes as if they were billed separately using the 023X code.

Hospital characteristics and nurse staffing data were obtained for each hospital in the sample from the American Hospital Association Annual Survey of 2002 matched to records in the HCUP-SID. Payers were identified, and a dummy variable for Medicare was constructed to allow comparison of all payers and Medicare-only patients in separate regression models. Total charges were converted to total hospital costs using the hospital-specific CMS-supplied cost-to-charge ratio (CMS, 2006). ICU admissions were calculated for patients who spent at least 1 day in an ICU or CCU based on the specific revenue codes. Overall, 20.8% of patients were admitted to an ICU during their hospitalization. There were 286 hospitals and 1,856,256 total patient discharges in the final data series.

Table 1
Uniform Billing Revenue Codes

	Revenue Code	Description
Routine days	011X	Room & board—Private
	012X	Room & board—Semiprivate 2 beds
	013X	Room & board—Semiprivate 3 to 4 beds
	014X	Room & board—Private (Deluxe)
	015X	Room & board—Ward
	016X	Room & board—Other
	017X	Nursery (not applicable for this study)
Intensive days	020X	Intensive care
	021X	Coronary care
Nursing intensity	023X	Incremental nursing charge rate

Source: New York State Department of Health (2007).

Inclusion and Exclusion Criteria

Adult patients (older than 17) from nonfederal acute care hospitals in the four states were used for the analysis. Excluded were patients discharged with diagnoses for psychiatric disease and substance abuse (major diagnostic categories of 19 and 20). Also, patients in hospitals with fewer than 25 beds were excluded to control for critical access hospitals and low patient volume. Patients with lengths of stay greater than 24 days (greater than 4 weeks) were also excluded to trim for high cost and length of stay outliers.

Multivariate ordinary least squares models were created for unadjusted and nursing intensity adjusted days for each of the four states and a fifth model with pooled data across states. All data preparation and statistical analysis were performed using SPSS Version 14.0. This study was reviewed by the MUSC Institutional Review Board and categorized as exempt status.

Results

Patient-level variables are shown in Table 2.

Regression models for each state were calculated using the unweighted and NIW routine and intensive care days (Table 3). Explained variance (R^2) is described for all payers and for Medicare-only discharges. The improvement in R^2 for the nursing intensity adjusted model (NIW adjusted days) is compared to the unadjusted days (routine and ICU days).

Discussion

The findings of the study support the adjustment of inpatient routine and intensive care billing for nursing

intensity. The overall improvement in all payer explained total hospital cost variance (R^2) was 8.5% for all states (0.4448 vs. 0.4825) and 9.4% for Medicare patients (0.4387 vs. 0.4798). We can conclude that adjusting for nursing intensity improves the accuracy of hospital payment by adding a unique nursing component that has not been previously incorporated into inpatient billing systems. Although these improvements are modest, the effect on the payment system in total dollars would be substantial. The findings set the stage for a discussion of whether unbundling nursing care from room and board represents a feasible and worthwhile national health policy financing goal.

Strategies to Collect Nursing Intensity Data

One intriguing unanswered question is whether actual bedside nursing time rather than NIWs by DRG would further improve the accuracy of hospital payment. Keepnews (2006) argued that both static NIWs such as the NY NIW used in this study and real-time patient-level NIWs collected for each shift have merit in being applied nationally. The use of the NY NIW in this study supports their tentative use in a national model to adjust for nursing intensity. Using the static weights, however, would preclude the advantage of collecting new patient-specific data that could allow comparison of nursing care across DRG and hospitals.

Do the findings of this study provide a basis for hospitals to begin unbundling nursing care from room and board using actual nursing intensity data? This question must be balanced against the overhead and administrative burden of collecting additional, new nursing-specific data. On one hand, the nursing intensity data could be used for staffing and costing studies within each hospital and for other purposes such as identifying long-range changes in nursing care intensity or comparing nursing care costs across multiple hospitals and regions. Bedside nursing intensity data similar to those collected at MUSC could be used as one approach to collecting concurrent nursing intensity data. Unfortunately, there is no single set of data being collected at all hospitals. There are additional issues regarding data reliability and validity that need to be addressed as well as the issue of how to capture and store nursing intensity data within existing clinical and billing information systems. These problems will need to be resolved before any widespread implementation of a nursing intensity billing model.

Perhaps the optimum approach is to create a hybrid of both types of nursing intensity adjustments in which a representative group of hospitals could collect contemporaneous bedside data and incorporate the daily collection of nursing hours by patient into the existing UB04 billing

Table 2
Patient Demographics

	Maine		Massachusetts		North Carolina		Washington		All Hospitals	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Age	59.2	20.6	58.8	21.0	56.4	20.6	55.6	21.3	57.3	20.9
LOS	4.4	3.8	4.5	3.9	4.4	3.8	3.9	3.5	4.3	3.8
Total charges	12,438	13007.1	14,055	17263.1	11,889	13232.6	14,248	16295.0	13,234	15488.2
Total costs	6,867	7188.5	7,771	9117.1	6,620	7385.2	7,601	8455.7	7,268	8279.8
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Hospitals	35	12.2	67	23.4	110	38.5	74	25.9	286	100.0
Male	51,802	41.2	258,835	40.0	244,476	37.6	162,736	37.4	717,849	38.6
Female	73,810	58.8	388,998	60.0	404,972	62.4	272,362	62.6	1,140,142	61.4
Alive	122,257	97.3	623,768	97.6	626,084	97.3	425,130	97.7	1,797,239	97.5
Died	3,355	2.7	15,423	2.4	17,358	2.7	9,951	2.3	46,087	2.5
No ICU or CCU	103,720	82.6	553,303	85.4	486,963	75.0	328,146	75.4	1,472,132	79.2
ICU or CCU	21,892	17.4	94,535	14.6	162,493	25.0	106,956	24.6	385,876	20.8
Medicare	65,645	52.3	314,057	48.6	304,132	46.8	170,669	39.2	854,503	46.0
Medicaid	15,633	12.5	63,921	9.9	83,686	12.9	67,929	15.6	231,169	12.5
Private insurance	37,980	30.2	234,353	36.3	201,667	31.1	174,495	40.1	648,495	34.9
Self-pay	3,310	2.6	10,168	1.6	32,445	5.0	10,822	2.5	56,745	3.1
No charge	106	.1	14,537	2.2	0	.0	89	.0	14,732	.8
Other	2,890	2.3	9,203	1.4	27,496	4.2	11,023	2.5	50,612	2.7
All patients	125,564	100.0	646,239	100.0	649,426	100.0	435,027	100.0	1,856,256	100.0

Note: LOS = length of stay; ICU = intensive care unit; CCU = cardiac care unit.

Table 3
Ordinary Least Squares Regression Summary

	All Payers				Medicare Only			
	<i>R</i> ²	<i>F</i>	Sig.	% Improve	<i>R</i> ²	<i>F</i>	Sig.	% Improve
Maine								
Routine and ICU days	.4448	744144.9	.000		.5364	32605.8	.000	
NIW-adjusted days	.4825	801253.4	.000	8.5	.5856	37497.1	.000	9.2
Massachusetts								
Routine and ICU days	.4456	5197.3	.000		.4462	89197.5	.000	
NIW-adjusted days	.5023	200974.5	.000	12.7	.5048	104971.9	.000	13.1
North Carolina								
Routine and ICU days	.5188	251366.8	.000		.5150	114698.1	.000	
NIW-adjusted days	.5251	242640.8	.000	1.2	.5231	112857.1	.000	1.6
Washington								
Routine and ICU days	.4853	181039.4	.000		.4878	73613.3	.000	
NIW-adjusted days	.5619	232335.6	.000	15.8	.5569	92675.0	.000	14.2
All states								
Routine and ICU days	.4448	744144.9	.000		.4387	333855.4	.000	
NIW-adjusted days	.4825	801253.4	.000	8.5	.4798	369273.6	.000	9.4

Note: ICU = intensive care unit; NIW = nursing intensity weight. Percentage improvement in *R*² was calculated as 1 - (*R*² adjusted ÷ *R*² unadjusted).

framework (Keepnews, 2006). The collection of unique nursing intensity data by patient would provide a new source of important quality and safety data that could become a basis for a value-based purchasing adjustment for nursing care. The trade-off to achieve higher payment

accuracy is to impose an additional data-collection burden on hospitals.

A mechanism to allocate direct nursing care time using an existing revenue code (023X nursing incremental charge) has been previously published (Welton, 2006;

Welton, Zone-Smith, et al., 2006). The findings from this study validate the model and provide evidence to support the RTI recommendations to CMS calling for changes to improve inpatient nursing cost finding and adjustment of nursing care intensity for individual patients separate from room and board.

National Health Policy Implications

The dilemma is how to allocate the unique nursing care resources expended in hospitals in a fair and equivalent manner. In its final inpatient rule for fiscal year 2008 (CMS-1533-F), CMS (2007) stated it is looking for

any ideas for how the relative weight methodology can systematically recognize and reimburse for differences in nursing resource consumption provided across hospital inpatients. We will consider whether we should study the possibility of using NIWs to recognize nursing intensity in the DRG relative weights. (p. 247)

The findings of this study provide a basis to answer the question above and move forward with further study and demonstration projects.

Limitations

The primary limitation of this study is the use of the four selected states' HCUP-SID data. Although these states are not geographically representative of the entire nation, the distribution of hospital size and case mix is reasonably representative. Our caution in generalizing the results beyond the selected states is tempered by the size of the sample.

This study did not incorporate ancillary cost centers in the regression models, only routine and intensive care, so the findings represent a partial model of all variables in the existing cost and DRG relative weight scheme. Because our focus was exclusively on direct nursing care time that is allocated to routine and intensive care cost centers, we believe the method we used maximizes our ability to detect changes in variance in explaining total hospital costs within routine and intensive care cost centers.

Recommendations

The primary recommendation of this study is to proceed toward developing a national model for incorporating a nursing intensity adjustment into the existing IPPS and other third-party billing mechanisms.

1. Allow hospitals to unbundle nursing care intensity (actual hours of direct nursing care) and charges from routine and intensive care per diem charges using the 023X nursing incremental charge revenue code
2. Change the Medicare Cost Report to reflect unique nursing labor costs and distribution of hours within each cost center relative to the categories of the 023X revenue code to allow calculation of a nursing cost to charge ratio
3. Conduct a national demonstration project across a representative sample of hospitals to collect and aggregate nursing intensity and cost data into a central repository to determine the distribution of nursing care time and costs by DRG and other relevant hospital, unit, and patient factors
4. Conduct further studies to identify the feasibility of using nursing intensity and cost data collected within the 023X revenue code to compare and benchmark inpatient nursing performance and contribute to the emerging effort to establish a value-based purchasing system for hospitals

Conclusion

The overall findings of this study are that a nursing intensity adjustment to existing inpatient billing improves explained variance in total hospital costs. Incorporating a nursing intensity adjustment into the existing reimbursement structure would improve payment accuracy. An existing revenue code can be used to unbundle nursing care from room and board charges and would not unduly burden nurses or hospitals in collecting bedside data, and the resulting new information would provide a means to determine the economic value of inpatient nursing care. Ultimately, as the nation moves toward an electronic medical record, automatic data capture and direct linkage of nursing intensity and costs to the billing and discharge records may present a viable solution to improving payment accuracy, providing additional clinically meaningful data to examine trends and compare patient care across settings, and identifying those hospitals that provide the highest quality and safety of nursing care at the optimum cost.

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