Ineffective Communication of Mental Status Information During Care Transfer of Older Adults

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BACKGROUND: Monitoring and documenting the mental status of older patients transferred between providers or facilities is important because mental status change can be a sign of acute disease and mental status abnormalities necessitate specific approaches to care.

OBJECTIVES: To identify patient and illness factors associated with presence of a mental status description in inter-facility transfer documents and to describe the content and concurrent validity of transfer mental status descriptions when they occur.

DESIGN: Retrospective study.

PARTICIPANTS: Individuals transferred between 5 long-term and 2 acute care facilities in an urban setting.

MEASUREMENTS: Trained research personnel reviewed hospital and nursing home medical records and inter-facility transfer documents. Mental status descriptions in transfer documents were coded as abnormal or normal within 5 domains: alertness, communication, orientation/memory, behavior, and mood. Descriptions were compared with mental status items in the nursing home Minimum Data Set and in a transfer communication checklist.

RESULTS: In all, 123 nursing home residents experienced 174 hospital admissions. Mental status descriptions were present in 69% of transfer documents. A total of 67% of patients missing a transfer mental status description upon nursing home-to-hospital transfer had dementia. Factors associated with presence of a transfer mental status description were urgent transfer, nursing home of origin, and among patients without dementia, greater cognitive impairment. When present, a mean of 1.47 (SD = 0.81) cognitive domains were documented in transfer mental status descriptions. Agreement between transfer mental status descriptions and comparison sources was fair to good ($\kappa = .31$ to $.73$).

CONCLUSION: Mental status documentation during transfer of older adults between nursing home and hospital did not identify all patients with dementia and did not completely characterize patients' cognitive status.

KEY WORDS: delirium; dementia; hospitalization; nursing homes; communication barriers.

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Monitoring the mental status of older patients transferred between providers or facilities is important because change in mental status can be a sign of acute disease,¹⁻⁵ and mental status abnormalities necessitate specific approaches to clinical and custodial care. In addition, recognition of delirium at the time of care transfer is important

because of its association with adverse outcomes,⁶⁻¹¹ its implications for urgent evaluation and treatment, and its potential for prevention.¹²⁻¹⁴ Essential to mental status evaluation and recognition of delirium are knowledge of the patient's usual mental status and its most recent stability over time. In situations of care transfer, the referring provider conveys this information often in a brief written narrative mental status description in transfer documents. Although process and outcomes of care transfer might be influenced by the content of these descriptions, in practice descriptions if present commonly have no standard format and use a narrow repertoire of abbreviated phrases, such as "alert and oriented." No studies have systematically examined the content of mental status descriptions written upon patient transfer or have measured their validity and reliability.

The objectives of this study were, for individuals transferred between nursing home and hospital during an episode of acute illness, to: (1) categorize and quantify the content of mental status descriptions in inter-facility transfer documents, (2) identify patient and illness factors associated with whether mental status is described, and (3) measure agreement of mental status descriptions in inter-facility transfer documents with other charted descriptions of mental status.

METHODS

Setting and Participants

Participants were individuals admitted to 2 academic hospitals in New York City from 1 of 5 study nursing homes between October 2000 and October 2003. The 5 nursing homes were large (>200 beds each), not-for-profit, Medicare-certified, nongovernmental facilities. Nursing home residents who were admitted to the hospital, stayed at least 24 hours, survived to hospital discharge, and were discharged back to a study nursing home were eligible. Individuals were enrolled who gave informed consent or whose legal surrogate gave informed consent. Institutional review boards of each study institution approved the study, which was part of a study that investigated an intervention designed to reduce adverse drug events from transfer-related drug prescribing changes.

Transfer Process and Documents

Each nursing home had full-time medical staff who provided care for patients in the nursing home but not in the hospital, where multiple physician groups and rotating house staff cared for patients. When patients were transferred from nursing home to hospital or back, paper transfer documents were transported between facilities. Each nursing home and hospital had its own inter-facility communication form(s) that providers filled out by hand. Other documents were sometimes

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attached to these forms, which for this study were considered parts of transfer documentation. Research staff examined each transfer document for narrative descriptions of mental status. Data were also collected from a nursing home-to-hospital (NH-to-H) transfer communication checklist used by nursing staff from 1 nursing home to document 12 cognitive and behavioral signs and symptoms.

Measurements

Mental Status Descriptions. Using a structured review instrument developed for this study, research staff categorized words and phrases in narrative mental status descriptions and the transfer communication checklist into 5 domains: alertness, communication, orientation/memory, behavior, and mood. Within each domain phrases were classified as indicating presence or absence of abnormality (Appendix). We identified change in mental status when “mental status change” or a change in cognition or behavior was documented, or, on the checklist, if there was a difference between day-of-transfer and pretransfer frequency for any item. Mental status descriptions in hospital-to-nursing home (H-to-NH) and NH-to-H transfer documents were coded using the same procedure. Inter-rater reliability for the coding procedure was excellent: 92% of coded items had a $\kappa(15) > 0.7$, indicating a high level of agreement.

Comparison Measures for Concurrent Validity. The Minimum Data Set (MDS) is a standardized nursing home assessment instrument used for mandated quarterly medical, functional, and psychosocial assessments. The Minimum Data Set cognitive items have good reliability¹⁶ and validity.^{17–21} We selected items from the MDS that matched our mental status domains and dichotomized items to reflect presence or absence of abnormality (Appendix). For all participants, we compared content of narrative mental status descriptions in NH-to-H transfer documents with the most recent prior nursing home MDS assessment, and with mental status descriptions in H-to-NH transfer documents (associated with discharge from the hospital back to the nursing home). In addition, for participants from the 1 nursing home with the NH-to-H transfer communication checklist, we compared responses on the checklist with the MDS and with coded NH-to-H and H-to-NH narrative mental status descriptions.

Patient Measures. Information was collected from nursing home and hospital medical records and from the MDS on patient demographics, chronic medical conditions, and physical and cognitive function. A score for burden of chronic disease, adapted from Charlson et al.,²² was calculated. Physical function was graded from 0 to 6 (0 indicating complete independence and 6 indicating total dependence) using the Activities of Daily Living (ADL) Self Performance Hierarchy, a scale that employs MDS items for personal hygiene, toileting, locomotion, and eating.²³ Cognitive function was graded from 0 to 6 (0 indicating no impairment and 6 indicating very severe impairment) using the Cognitive Performance Scale (CPS), a scale that employs MDS items for short-term memory, cognitive skills for daily decision-making, making self understood, eating, and coma.²⁴ A transfer was classified as (1) off-hours if it occurred after 6 PM, before 9 AM, or on weekends, and (2) non-urgent if it could have been rescheduled for later the same day or the next day without risking any immediate patient harm. Information on hospital length of stay and hospital readmis-

sion or death within 2 months of return to the nursing home were collected from hospital and nursing home medical records. Research staff were blinded to patient outcomes when they coded mental status descriptions in transfer documents.

Analysis

More than 1 hospitalization was allowed per patient. The unit of analysis was hospitalization. Multivariate logistic regression was used to determine associations between patient and transfer characteristics and presence/absence of a NH-to-H transfer document with a narrative mental status description. Variables included in the regression model were those hypothesized to affect likelihood of mental status being described, including patient's baseline mental status (2 variables: dementia yes/no, MDS Cognitive Performance Scale), patient's clinical complexity (4 variables: Charlson score, MDS ADL Self-performance Scale, do not resuscitate [DNR] status), provider familiarity with patient (duration of nursing home stay), circumstances of transfer (2 variables: off-hours transfer yes/no, urgent transfer yes/no), nursing home of origin, age, and gender. Generalized estimating equations were used to adjust for inclusion of more than 1 hospitalization for some patients (the GENMOD procedure in SAS). Effect of clustering of cases within nursing facility was accounted for by designating nursing facility as a class and independent variable.

For cases that had mental status descriptions, summary statistics on number of domains and number of words per description were calculated. For concurrent validity testing, among cases with a documented mental status description we compared descriptors (coded as normal or abnormal) in each documented mental status domain with the same domain from each comparison measure by creating 2×2 tables and calculating the kappa statistic of agreement, which indicates agreement beyond that expected by chance.¹⁵ We used multivariate logistic regression to determine adjusted associations between each documented mental status domain and each outcome measure, controlling for covariates and adjusting for clustering within patients and facilities using the same methods described above. Adjusted odds ratios (AOR), 95% confidence intervals (CI), and *P* values are reported where indicated. All analyses were performed using SAS software (Cary, NC).

RESULTS

Characteristics of Hospitalized Nursing Home Residents

Ninety-four nursing home residents were hospitalized once and 29 more than once for a total of 174 hospitalizations. Characteristics of patients are shown in Table 1. On average patients were 81 years old, 72% were female, 61% were white, and 55% had dementia. The most common causes of hospitalization were pneumonia (29%), urinary tract infection (18%), dehydration (14%), and congestive heart failure (14%). Seventy-eight percent of NH-to-H transfers were considered urgent and 55% occurred during off-hours. The median hospital length of stay was 7 days (range 1 to 64). Thirty percent and 13% of patients experienced hospital readmission and death, respectively, within 60 days of return to the nursing home.

Table 1. Characteristics of Hospitalized Nursing Home Residents (N=123 Individuals with 174 Hospitalizations)

Category	Characteristic	N (%) (Except Where Indicated)
Individual characteristics (N=123)	Female	89 (72)
	Caucasian	75 (61)
	African American	30 (24)
	Age (mean years (SD))	81.2 (12.0)
	Nursing facility 1	14 (11)
	Nursing facility 2	19 (15)
	Nursing facility 3	61 (50)
	Nursing facility 4	21 (17)
	Nursing facility 5	8 (7)
	Duration of NH residence (median days (range))	316 (1 to 7280)
	Do not resuscitate	41 (34)
	Comorbidity score (median (range)) ²²	4 (0 to 15)
	Extensive or total ADL dependence ^{*23}	99 (86)
	Dementia	68 (55)
	Moderate or severe cognitive impairment ^{*24}	56 (49)
	Hospital admissions 1	94 (76)
	2	22 (18)
	>3	7(6)
Transfer characteristics and hospital outcomes (N=174)	Urgent	136 (78)
	Off-hours	96 (55)
	Hospital length of stay (median days (range))	7 (1 to 64)
	Death or readmission within 60 d after discharge	64 (37)

*Unable to calculate in 8 individuals because of missing MDS data.

NH, nursing home; ADL, activities of daily living; MDS, Minimum Data Set.

Factors Associated with Mental Status Description in Transfer Documents

Transfer documents were not identified in the medical record for 11 NH-to-H transfers (6%) and 9 H-to-NH transfers (5%). Among cases in which transfer documents were identified, narrative mental status descriptions were identified in 116 (71%) and 109 (66%) NH-to-H and H-to-NH transfers, respectively ($P=.30$ for comparison); 31% of all transfer documents contained no mental status description. Among cases in which narrative mental status descriptions were identified, there was greater content in H-to-NH than in NH-to-H descriptions, with a mean of 1.86 (SD=0.79) and 1.47 (SD=0.81) mental status domains documented, respectively ($P<.001$), and a mean of 5.18 (SD=3.41) and 3.90 (SD=2.79) words documented, respectively ($P=.003$). Forty-six percent of NH-to-H mental status descriptions and 26% of H-to-NH mental status descriptions consisted of 2 words or less ($P=.002$).

Sixty-seven percent of those whose NH-to-H transfer documents did not contain a mental status description had dementia according to nursing home medical record review, and 62% had moderate or severe cognitive impairment according to the CPS. Table 2 shows results of a multivariate regression model examining factors associated with presence of a mental status description in NH-to-H transfer documents. Factors significantly associated were urgent transfer ($P=.05$) and nursing home of origin ($P<.001$). There was evidence of an interaction between dementia status and cognitive function. Among patients without dementia, but not those with demen-

Table 2. Characteristics Associated With Presence of a Mental Status Description in Nursing Home-to-Hospital Transfer Documents

Characteristic	Adjusted odds ratio*	95% confidence interval*
Female	1.46	.35, 6.10
Age	.96 [‡]	.89, 1.05
Duration of nursing home residence	1.001 [§]	1.000, 1.001
Do not resuscitate	2.29	.57, 9.24
Comorbidity score ²²	1.07	.86, 3.64
ADL dependence ²³	.63	.39, 1.02
Cognitive impairment score, ²⁴ patients without dementia	1.90	1.07, 3.38 [†]
Cognitive impairment score, ²⁴ patients with dementia	1.31	.85, 2.04
Nursing facility 1	.28	.02, 3.67
Nursing facility 2	.005	<.001, .11 [†]
Nursing facility 3	2.46	.18, 32.9
Nursing facility 4	.37	.02, 5.39
Nursing facility 5	1.00 (Reference)	
Urgent transfer	4.10	1.0, 17.1 [†]
Off-hours transfer	1.31	.50, 3.46

*Multivariate estimates using generalized estimating equations.

[†] $P \leq .05$.

[‡]Per additional year.

[§]Per additional day.

^{||}Per additional point.

ADL, activities of daily living.

tia, presence of a mental status description in NH-to-H transfer documents was associated with greater cognitive impairment ($P=.028$).

Content of Mental Status Descriptions

Narrative mental status descriptions in NH-to-H transfer documents most commonly described patients' level of alertness, followed by memory/orientation and communication (Table 3). The frequencies of normal and abnormal descriptors in each cognitive domain are shown in Table 3. When alertness was described it was most commonly described as normal, consistent with the high-frequency use of the descriptor "alert and oriented." In contrast, when orientation/memory and communication were described they were more commonly described as abnormal. Mental status items routinely completed in the communication checklist covered patients' alertness, memory/orientation, behavior, and mood, but there was no item for communication (Table 3). No transfer document suggested the presence of delirium, and change in mental status was documented in only 8 (4.6%) NH-to-H transfer documents.

Validity of Mental Status Descriptions

Agreement between NH-to-H transfer mental status descriptions and MDS items, and between transfer descriptions in the 2 directions of transfer (NH-to-H and H-to-NH), was fair to good, with κ ranging from .31 to .73 among domains (Table 3). Agreement was higher in the communication domain and lower in the alertness domain. Agreement between NH-to-H transfer descriptions and the NH-to-H transfer communication checklist was poor, with $\kappa=.19$ and .21 for alertness and orientation/memory, respectively. Finally, agreement between

Table 3. Concurrent Validity of Mental Status Abnormalities as Described in Nursing Home-to-Hospital (NH-to-H) Transfer Documents

Domain	Source	NH-to-H descriptor*: abnormal/normal (n/n)	Concurrence (κ agreement) with	
			MDS [†]	H-to-NH [‡]
Alertness	Narrative	9/65	.31	.38
	Checklist	4/55	.25	.47
Orientation/memory	Narrative	42/16	.46	.50
	Checklist	27/33	.50	.19
Communication [§]	Narrative	15/10	.51	.73
Behavior [§]	Checklist	3/56	-.08	
Mood [§]	Checklist	10/47	.06	

*Mental status descriptors in nursing home-to-hospital transfer documents.

[†]Mental status descriptors in MDS.

[‡]Mental status descriptors in hospital-to-nursing home transfer documents.

[§]Checklist had no communication items; narrative descriptions had no recordings of normal behavior and mood.

|| Insufficient data to calculate.

MDS, Minimum Data Set.

the NH-to-H transfer communication checklist and comparison sources was poor to fair, with κ ranging from -.08 to .50 (Table 3). Among patients with a documented NH-to-H mental status description, no mental status descriptor or communication checklist item was significantly associated with hospital length of stay or hospital readmission or death within 60 days after discharge from the hospital, whether unadjusted or adjusted for covariates.

DISCUSSION

In this study of mental status descriptions in nursing home and hospital inter-facility transfer documents, nearly one third of transfer documents contained no mental status description, and the majority of patients without transfer mental status descriptions had dementia. When present, mental status descriptions contained information on only 1 to 2 cognitive domains out of 5 (alertness, memory/orientation, communication, behavior, mood). Thus, mental status documentation during transfer of older adults between nursing homes and hospitals was suboptimal among facilities in the study because it did not identify all patients with dementia and did not completely characterize patients' cognitive status.

Suboptimal mental status documentation during patient transfer could adversely affect patient health by causing missed diagnosis of delirium and unmet patient care needs. Importantly, delirium is present in 14% to 22% of older adults upon admission to the hospital,^{12,25} but studies have shown that nurse and physician providers do not recognize delirium in one third to two thirds of cases.²⁶⁻²⁸ Delirium is particularly difficult to recognize in patients with dementia,²⁸ who make up the majority of the study sample. The lack of recognition of delirium in this study suggests that it is another hazard of patient "handoffs," joining a list of handoff hazards which includes omissions of diagnosis leading to treatment omissions,²⁹ test follow-up errors,³⁰ inadvertent medication regimen changes leading to adverse drug events,³¹ and inaccessibility of advance directives leading to treatment decisions in conflict with patient preferences.^{32,33}

Factors that we hypothesize contribute to poor mental status documentation during inter-facility transfer are: (1) providers' lack of a useful vocabulary to describe mental status, (2) their under-recognition of abnormal mental states, and (3) its low valuation relative to other clinical information. Factors that

have been suggested to contribute to poor overall communication during inter-facility transfer are absence of incentives for providers or institutions to perform patient transfer tasks well.³⁴ In addition, concerns about loss of confidentiality of protected health information may be an obstacle to exchange of information.³⁵ The American Geriatrics Society has issued a position statement calling for improvement in transitional care,^{36,37} and recently an intervention was developed that successfully targeted the process of patient care transfer.³⁸

A limitation of this study is that we did not measure health outcomes that might be directly affected by poor communication of mental status information between nursing home and hospital, such as falls, use of restraints, or agitation. Second, we had no true gold standard of mental status assessment with which to compare accuracy, since all of our comparative measures, including the MDS, themselves have accuracy limitations. Third, our sample sizes were small for calculation of agreement between sources, especially for the communication domain. Fourth, mental status could have changed during the time between some of the assessment pairs (e.g., between MDS and NH-to-H transfer, and between NH-to-H transfer and H-to-NH transfer), reducing concurrence between assessments. On the other hand, agreement remained poor between transfer assessments that occurred simultaneously (NH-to-H transfer document descriptions and the NH-to-H transfer communication checklist).

Furthermore, documentation bias may have affected our results. There were factors that were statistically associated with presence of mental status documentation, including urgent transfer, nursing home of origin and, among patients without dementia, greater cognitive impairment. In addition, providers who wrote "dementia" may have considered that sufficient to describe mental status and, therefore, not added any other descriptor. Since we restricted our calculations of concurrent validity to the subgroup of patients that had mental status description documented, our estimates are limited to a population in which approximately one third have missing documentation of mental status, and our estimates may not be applicable to populations in which 100% of transfer documents have mental status descriptions. Nevertheless, most practice populations more likely resemble the former, with missing information, than the latter.

Efforts to improve transfer mental status documentation should target improving recognition of delirium among provid-

ers and documentation of cognitive functions necessary for the self-care and safety of institutionalized patients, including orientation/memory, communication, and behavior. In this regard, the standardized checklist used by one of the nursing homes had significant weaknesses: its items overlapped (e.g., "assaultive" and "abusive"), it did not contain any items for communication, and mental status change was not explicitly recognized. It is worth investigating whether efforts such as this to improve documentation of mental status during patient handoff between facilities improves health outcomes.

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Supplementary Material

The following supplementary material is available for this article online:

Appendix. Descriptors from narrative descriptions of mental status in transfer documents, and comparison items from a nursing home-to-hospital transfer communication checklist and the nursing home Minimum Data Set (MDS).