

The Effectiveness of Family-Centered Transition Processes From Hospital Settings to Home: A Review of the Literature

AUTHORS

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KEY WORDS

patient discharge, health transition, hospital readmission, patient-centered care, outcome and process assessment (health care), comparative effectiveness research, review, hospitalists, pediatrics, adults

ABBREVIATIONS

ED: emergency department

PCP: primary care physician

RA: research assistant

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abstract

BACKGROUND AND OBJECTIVES: The quality of care transitions is of growing concern because of a high incidence of postdischarge adverse events, poor communication with patients, and inadequate information transfer between providers. The objective of this study was to conduct a targeted literature review of studies examining the effectiveness of family-centered transition processes from hospital- and emergency department (ED)-to-home for improving patient health outcomes and health care utilization.

METHODS: We conducted an electronic search (2001–2012) of PubMed, CINAHL, Cochrane, PsycInfo, Embase, and Web of Science databases. Included were experimental studies of hospital and ED-to-home transition interventions in pediatric and adult populations meeting the following inclusion criteria: studies evaluating hospital or ED-to-home transition interventions, study interventions involving patients/families, studies measuring outcomes ≤30 days after discharge, and US studies. Transition processes, principal outcome measures (patient health outcomes and health care utilization), and assessment time-frames were extracted for each study.

RESULTS: The search yielded 3458 articles, and 16 clinical trials met final inclusion criteria. Four studies evaluated pediatric ED-to-home transitions and indicated family-tailored discharge education was associated with better patient health outcomes. Remaining trials evaluating adult hospital-to-home transitions indicated a transition needs assessment or provision of an individualized transition record was associated with better patient health outcomes and reductions in health care utilization. The effectiveness of postdischarge telephone follow-up and/or home visits on health care utilization showed mixed results.

CONCLUSIONS: Patient-tailored discharge education is associated with improved patient health outcomes in pediatric ED patients. Effective transition processes identified in the adult literature may inform future quality improvement research regarding pediatric hospital-to-home transitions.

The quality of hospital-to-home transitions is a critical health system problem in the United States. Recent evidence demonstrates a high incidence of adverse events after hospitalization,¹⁻³ poor communication with patients and families during transitions,⁴ and inadequate information exchange among health care providers.⁵⁻⁷ Emergency department (ED)-to-home transitions represent a larger proportion of transitions between sites of care for pediatric patients; similar to hospital-to-home transitions, these are also susceptible to adverse events after discharge, medication discrepancies, and communication failures.⁸⁻¹⁰

These gaps in quality and patient safety led the Centers for Medicare and Medicaid Services and the Agency for Healthcare Research and Quality to target care transitions between sites of care as a priority topic area for pediatric quality measure development. The Centers for Medicare and Medicaid Services and the Agency for Healthcare Research and Quality assigned this measure development task to the Center of Excellence on Quality of Care Measures for Children with Complex Needs, 1 of 7 Centers of Excellence that constitute the national Pediatric Quality Measures Program mandated by the Children’s Health Insurance Program Reauthorization Act of 2009.¹¹ Our center hypothesized that adverse outcomes were more frequent among children whose families were not adequately prepared to care for them after discharge from the ED or hospital. For this reason, we chose to focus this quality measure development effort on transition processes directly involving patients and their caregivers.

As a first step toward developing scientifically sound quality measures, we conducted a targeted literature review to evaluate the effectiveness of specific family/patient-centered transition processes on health outcomes during hospital- and ED-to-home transitions.¹² We used the Donabedian quality improvement framework¹³ to conduct this review, in which processes of care are defined as interactions between patients and providers through the delivery of health care, and outcomes refer to the effects of health care on the health status of patients and populations (Fig 1).

Although several published reviews have summarized the literature on

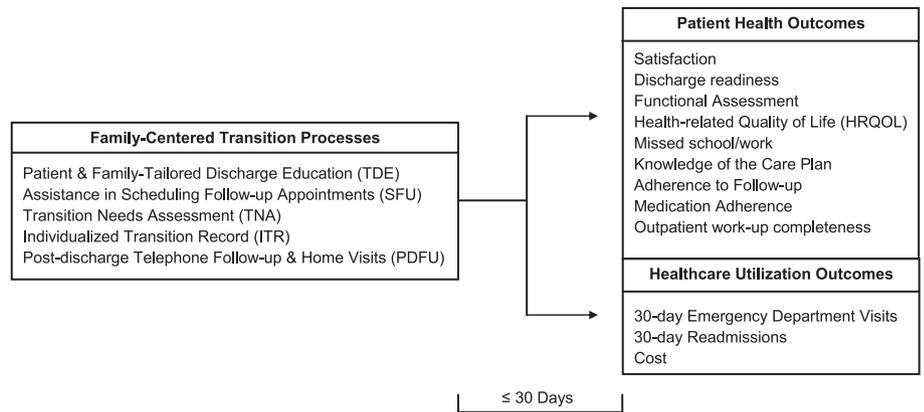


FIGURE 1 A quality improvement framework to measure the effectiveness of family-centered transition processes from hospital settings to home for improving health outcomes.

hospital-to-home transition interventions,^{5,14–23} they have important differences from this review, including broader inclusion criteria and approaches that did not specifically examine the transition process–outcome link in a manner that would inform development of family-centered quality measures for pediatric populations. Here, we review studies in pediatric and adult populations that examine the clinical effectiveness of specific family-centered transition processes for improving patient health outcomes and health care utilization.

METHODS
Eligibility Criteria

Studies that met the following criteria were included in the review: (1) use of an experimental design (cohort, case-control, and randomized clinical trials); (2) conducted in pediatric, adult or elderly populations; (3) the intervention contained elements of transition processes involving the patient and/or family; and (4) outcomes included any of the following: patient health outcomes (satisfaction, discharge readiness, functional assessments, health-related quality of life, missed school/work days, knowledge of the

care plan, adherence to follow-up with primary care physician [PCP], medication adherence, completeness of outpatient workup), and health care utilization (subsequent ED visits, readmissions, cost). Studies meeting the following criteria were excluded from review: (1) nonexperimental study design (ie, qualitative studies, systematic reviews, guidelines, editorials, comments, and case reports); (2) evaluation of transitions between health care settings other than hospital- or ED-to-home, (3) study interventions that did not involve patients or families (eg, interventions to enhance information transfer among health care providers), or (4) studies reporting outcomes >30 days after hospital discharge (to ensure outcomes were reflective of the transition intervention as opposed to long-term care coordination interventions). We limited our review to studies published in the United States after 2001 because the goal of this review was to inform the development of family-centered pediatric quality measures related to hospital- and ED-to-home transitions in US hospitals. The interventions examined needed to be those taking place in US health care settings and interventions that would be applicable to current pediatric practice.

Study Search

We searched 6 electronic databases of peer-reviewed literature, including PubMed, CINAHL, Cochrane, PsycINFO, Embase, and Web of Sciences for articles including the MeSH terms and keywords noted in Table 1. Search criteria included English-only articles published from January 1, 2001 to September 6, 2012. Citations of articles that met eligibility criteria also were reviewed for additional studies not identified in our search.

Study Selection

A research assistant (RA) with expertise in conducting large-scale literature searches and one of the authors (J.P.) screened titles and abstracts of the first 100 articles derived from the database search together to clarify RA questions regarding predetermined inclusion and exclusion criteria. The RA then independently screened titles and abstracts of all remaining articles for

studies potentially meeting eligibility criteria. Titles and abstracts of potential articles retained by the RA were then independently screened by 2 authors (A.D., J.P.) for studies meeting inclusion criteria. Finally, the lead author read the full text of remaining articles and made further exclusions based on the previously noted criteria.

Data Extraction

The lead author extracted the following data from each study into a summary table: study design, population, level of evidence, description of specific transition processes evaluated in the study, and study outcomes. For each study, principal outcome measures and assessment time frame were extracted for the outcomes of interest. The strength of evidence for each clinical trial was rated according to the Oxford's Centre for Evidence-Based Medicine 2011 Levels of Evidence.²⁴

RESULTS

Of the 3458 articles retrieved from our database search strategy, 3168 were excluded on the basis of title and abstract review by the RA, leaving 290 articles (Fig 2). An additional 175 articles were excluded after independent review by 2 authors, leaving 115 for full-text review. Of these remaining articles, 12 experimental studies met inclusion criteria for this review, and an additional 4 studies were identified by reviewing citations of included articles, yielding a total of 16 experimental studies. All of the clinical trials met criteria for Centre for Evidence-Based Medicine Levels of Evidence 2 to 4.

Four studies meeting inclusion criteria examined the effectiveness of family-centered transition processes in pediatric populations, and all were conducted in the ED setting. The remaining studies examined the effectiveness of family-centered transition processes from hospital-to-home in adult and elderly patients, and 10 of these studies implemented bundled interventions including multiple transition processes.

Two family-centered transition processes were commonly identified in both the pediatric and adult studies reviewed: (1) providing patient- and family-tailored discharge education, and (2) providing assistance in scheduling follow-up appointments. We identified 3 additional transition processes that were frequently implemented in the adult studies examined: (3) conducting a transition needs assessment during hospitalization, (4) providing patients and families with an individualized transition record, and (5) conducting postdischarge follow-up via telephone calls and/or home visits. A description of the specific family-centered transition

TABLE 1 Full Electronic Search Strategy Executed for PubMed

Transition[Title/Abstract] OR Transitional[Title/Abstract] OR Transitions[Title/Abstract]
 OR handoff[Title/Abstract] OR handoffs[Title/Abstract] OR "discharge
 planning"[Title/Abstract] OR transfer[Title/Abstract] OR transfers[Title/Abstract]
 OR patient discharge[MeSH Terms] OR "hand over"[Title/Abstract]
 OR handover[Title/Abstract]
 AND
 (((outpatient[Title/Abstract] OR home[Title/Abstract] OR clinic[Title/Abstract])
 AND
 ("emergency room"[Title/Abstract] OR "emergency department"[Title/Abstract]))
 OR
 (inpatient[Title/Abstract]
 AND
 (home[Title/Abstract] OR icu[Title/Abstract] OR "intensive care unit"[Title/Abstract]))
 OR
 ("rehabilitation facility"[Title/Abstract] OR "skilled nursing facility"[Title/Abstract]
 OR "long term care"[Title/Abstract])
 AND
 hospital[Title/Abstract] OR inpatient[Title/Abstract])
 OR
 ("primary care"[Title/Abstract] OR "general practitioner"[Title/Abstract])
 AND specialist[Title/Abstract])
 OR
 ("emergency room"[Title/Abstract] OR "emergency department"[Title/Abstract])
 AND
 hospital[Title/Abstract] OR inpatient[Title/Abstract])

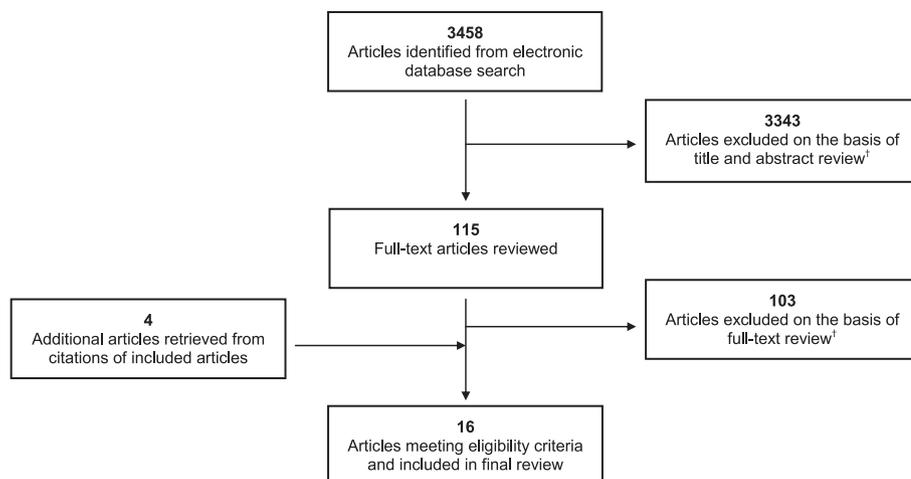


FIGURE 2 Flow diagram of studies included in review. † Exclusion criteria included nonexperimental studies, studies evaluating nonhospital- or non-ED-to-home transitions, study interventions not involving patients or families, studies reporting outcomes >30 days after the index ED visit or hospitalization, studies published before 2001, or non-US studies.

processes included in each study intervention is summarized in Table 2. The relationship between transition processes identified in each study intervention, and principal outcome measures is summarized in Table 3. These 5 transition processes also were used to provide a framework to summarize the main findings from this review.

Patient- and Family-Tailored Discharge Education

Three of the pediatric studies in this review tested the effectiveness of family-tailored discharge education on health outcomes in ED-to-home transitions.^{25–27} A randomized controlled trial by Hussain-Rizvi et al²⁵ evaluated the impact of self-management education in a pediatric ED population presenting with asthma exacerbation. They found parents given the opportunity to practice administering albuterol metered dose inhaler treatments with a spacer before discharge from the ED were significantly more likely to use them at home. The intervention group reported less cough at 2 weeks; however,

other patient health outcomes were similar between groups. A randomized controlled trial by Yin et al²⁶ evaluated the impact of medication instruction sheets that use pictograms to convey information about medication name, dose frequency, and preparation. The research assistants used “teach-back” methods to review these information sheets with parents, and found parents who received the intervention had significantly better knowledge of medication preparation, higher medication adherence rates, and lower dosing error rates. A non-randomized controlled trial by Patel et al²⁸ evaluated the use of a discharge facilitator to reinforce written instructions in the parent’s preferred language before discharge from a pediatric ED, and found Spanish-speaking families who received the intervention identified significantly more warning signs and symptoms.

In the adult literature, 9 studies evaluated patient- and family-tailored education in combination with other care processes,^{28–36} and all used nonphysician providers (ie, nurses,

dietitians, pharmacists) to deliver discharge education. Patient health outcomes^{29,32–34} were significantly better for the intervention group, whereas health care utilization and cost outcomes showed mixed results.^{28–36}

Assistance in Scheduling Follow-up Appointments

One pediatric study by Zorc et al³⁷ implemented an intervention in which caregivers were provided assistance in scheduling PCP follow-up appointments during and immediately after an ED visit for asthma. Although significantly more patients in the intervention group reported seeing a PCP and returning to baseline health status, there was no difference in missed school or work days, controller medication use, or subsequent ED visits.

Studies in the adult literature found similar results. Chang et al³⁸ implemented an intervention providing adult patients with assistance in scheduling a follow-up appointment before discharge. The intervention group had a significantly higher rate of follow-up; however, there was no difference in subsequent ED visits. In bundled interventions, 2 studies noted significantly higher adherence to follow-up among participants who received scheduling assistance; however, these did not necessarily translate to reductions in subsequent ED visits or readmissions.^{29,34}

Transition Needs Assessment

We did not find any clinical trials evaluating the impact of a transition needs assessment on health outcomes in pediatric patients. Four studies in the adult literature included a transition needs assessment as a component of a larger, bundled intervention.^{32,34,35,39}

TABLE 2 Description of Family-Centered Transition Processes Used in Study Interventions

Study	Study Population	Transition Process	Description of Study's Transition Process
Anderson et al ²⁸	Elderly	TDE PDFU	Cardiac nurse educator, dietician, and physical therapist provided targeted patient education. Home health care nurse with cardiac training implemented 6-wk home care plan: 6–10 visits enforcing education and self-management skills + 1 telephone call within 2 wk postdischarge.
Balaban et al ²⁹	Adults	TDE ITR SFU PDFU	Floor nurse reviewed patient-tailored discharge form in the preferred language of communication. Patient given Patient Discharge Form, including diagnosis, names of hospital physicians, immunizations given, new allergies, diet and activity instructions, home services ordered, appointments, pending tests, recommended outpatient workup, and discharge medication list. Primary care office nurse called patient to confirm appointments and arrange urgent appointments within 24 h postdischarge. Primary care office nurse also assessed medical status, elicited questions or concerns, and arranged immediate interventions, such as medication refills during phone call.
Chang et al ³⁸	Adults	SFU	Discharge appointment coordinators assisted patients and families in scheduling follow-up appointments before discharge by using 3-way conference calls.
Coleman et al ^{30,31} Parry et al ³⁶	Elderly	TDE ITR SFU PDFU	Transition coach met with families to discuss a system for taking medications and other self-management skills, along with discussing red-flag warning symptoms or signs. Patient given Personalized Health Record, including active problem list, medications, allergies, and list of red flags. Transition coach provided advocacy in getting follow-up appointments as needed postdischarge. Transition coach scheduled a home visit within 24–72 h postdischarge and at least 3 follow-up phone calls within 24 d after discharge.
Dedhia et al ³²	Elderly	TNA TDE	Hospitalists performed a comprehensive initial assessment, including transition needs on admission, and case manager created IDP by using input from patients and providers. Discharge planning nurse, discharging hospitalist provider, and patient/family participated in a discharge meeting in which written discharge information was reviewed with an emphasis on health literacy, and a medication grid was given.
Finn et al ³³	Adults	TDE PDFU	Discharge facilitator met with all patients to answer any questions about their discharge plan, medications, and appointments. Discharge facilitator called patients who were discharged over the weekend to follow-up on questions or concerns before PCP appointment.
Hussain-Rizvi et al ²⁵	Pediatric (ED)	TDE	Physician demonstrated use of MDIS on first treatment, and parents administered subsequent treatments under supervision.
Jack et al ³⁴	Adults	TDE TNA ITR SFU PDFU	Nurse discharge advocate provided diagnosis-specific education and used teach-back methodology to review transition record. Nurse discharge advocate reviewed barriers to keeping appointments and worked with patients and families to develop an After-Hospital Care Plan. Patient given After-Hospital Care Plan, including diagnosis, provider contact information of PCP and nurse discharge advocate, dates for appointments/tests with a calendar, pending results, and contingency plan information. Nurse discharge advocate made follow-up appointments with input from patients and families before discharge. Pharmacist called patient 2–4 d postdischarge to review medications and address medication-related problems, and then communicated problems to the PCP or nurse discharge advocate.
Koehler et al ³⁵	Elderly	TDE TNA ITR PDFU	Care coordinator provided daily condition-specific education, with extra discharge teaching regarding self-management and contingency plans when problems arise at home. Care coordinator provided additional time to address discharge barriers. Patient given Personalized Health Record, including active problem list, medications, allergies, and list of red flags. Care coordinator called patient and family 5–7 d postdischarge to confirm receipt of medical equipment, home health arrangements, and scheduling of follow-up appointments.
Naylor et al ³⁹	Elderly	TNA PDFU	Advanced practice nurse trained in heart failure performed comprehensive needs assessment during hospitalization, communicated patient needs to team, and developed an IDP with provider input. Advanced practice nurse provided at least 8 home visits postdischarge over 3 mo, along with telephone availability 7 d/wk.
Patel et al ²⁷	Pediatric (ED)	TDE	Discharge facilitator verbally reinforced written discharge instructions in parent's language of choice before discharge from the ED.
Reese et al ⁴⁰	Adults	PDFU	Hospitalists provided a home visit before the patient's PCP appointment to assess the patient, home environment, and review medications, and communicated findings to PCP.
Yin et al ²⁶	Pediatric (ED)	TDE	RAs gave parents medication instruction sheets with pictograms to convey information about medication name, dose frequency, and preparation; and reviewed these instructions by using teach-back methods.
Zorc et al ³⁷	Pediatric (ED)	SFU	Study staff assisted caregivers of children with asthma in scheduling follow-up appointments with PCP during or immediately after ED visit.

IDP, individualized discharge plan; ITR, individualized transition record; MDIS, metered dose inhaler with spacer; PDFU, postdischarge telephone follow-up and home visits; SFU, assistance in scheduling follow-up appointments; TDE, patient and family-tailored discharge education; TNA, transition needs assessment.

TABLE 3 Transition Processes, Principal Outcome Measures, and Assessment Time Frame by Study

Study	Level of Evidence ^a	Sample Size	Population (Mean Age)	Transition Process	Patient Health Outcomes	Health Care Utilization/Cost
Anderson et al ^{26,b} 2005	3	I: 44 C: 77	Elderly (78.5 y)	TDE PDFU		30-d Readmission: I: 6% vs C: 22%*
Balaban et al ^{29,b} 2008	2	I: 47 C: 49	Adults (56 y)	TDE ITR SFU PDFU	Completed f/u visit at 21 d: I: 85% vs C: 59%** Completed outpatient workup at 21 d: I: 88% vs C: 69% Completed f/u visit at 30 d: I: 78% vs C: 60%***	30-d ED visit: ND 30-d Readmission: ND
Chang et al ³⁸ 2012	4	I: 83 HC: 306	Adults (not reported)	SFU		14-d ED visit: ND
Coleman et al ^{30,b} 2004	3	I: 158 C: 1235	Elderly (77 y)	TDE ITR SFU PDFU		30-d ED visit: OR 0.76 (0.44–1.30) 30-d Readmission: OR 0.52 (0.28–0.96)* 30-d Readmission: OR 0.59 (0.35–1.00)* 30-d Cost: I: \$784 vs C: \$918*
Coleman et al ^{31,b} 2006	2	I: 360 C: 352	Elderly (76 y)	TDE ITR SFU PDFU		30-d ED visit: OR 0.58 (0.34–0.98)* 30-d Readmission:
Dedhia et al ^{32,b} 2009	4	I: 185 HC: 237	Elderly (77 y)	TNA TDE	Quality of transition ^c reported at 1 wk: OR 3.49 (2.06–5.92)*** Felt better than before hospitalization reported at 30 d: OR 2.36 (1.41–3.95)** Knowledge of who to call with questions reported at 1 wk: OR 15.87 (2.05–125.00)** Satisfied with discharge process (yes/no) reported at 2–4 wk: I: 97% vs C: 76%***	30-d ED visit: OR 0.55 (0.32–0.94)*
Finn et al ^{33,b} 2011	2	I: 440 C: 432	Adults (63 y)	TDE PDFU	Felt safe going home reported at 2–4 wk: I: 97% vs C: 92% Knowledge of who to call with questions reported at 2–4 wk: I: 95% vs C: 85%** Knowledge of f/u plan reported at 2–4 wk: I: 99% vs C: 87%*** Knowledge of medications reported at 2–4 wk: I: 96% vs C: 87%**	30-d ED visit: I: 9% vs C: 9% 30 d Readmission: I: 20% vs C: 18%
Hussain-Rizvi et al ²⁵ 2009	2	I: 40 C: 46	Pediatric (3 y)	TDE	Presence of cough reported at 2 wk: I: 13% vs C: 30%* Presence of other symptoms reported at 2 wk: ND Functional status reported at 2 wk: ND Missed school/work reported at 2 wk: ND Albuterol use reported at 2 wk: ND MDIS use reported at 2 wk: I: 95% vs C: 72%*	

TABLE 3 Continued

Study	Level of Evidence ^a	Sample Size	Population (Mean Age)	Transition Process	Patient Health Outcomes	Health Care Utilization/Cost
Jack et al ^{134b} 2009	2	I: 370 C: 368	Adults (50 y)	TDE TNA ITR SFU PDFU	Felt prepared for discharge reported at 30 d: I: 65% vs C: 55%* Knowledge of discharge diagnosis reported at 30 d: I: 66% vs C: 57%* Knowledge of medications reported at 30 d: I: 89% v C: 83%* Knowledge of f/u appointments reported at 30 d: I: 86% v C: 79%* Completed f/u visit at 30 d: I: 62% vs C: 44%***	30-d ED visit: I: 0.17 vs C: 0.25* (visits/pt/mo) 30-d Readmission: I: 0.15 vs C: 0.21 (readmits/pt/mo) 30-d Cost savings: I: \$412/pt
Koehler et al ^{135b} 2009	2	I: 20 C: 21	Elderly (78 y)	TDE TNA ITR PDFU TNA PDFU		Combined 30-d ED visit and Readmission: I: 10% vs C: 38%*
Naylor et al ^{136b} 2004	2	I: 121 C: 118	Elderly (76 y)		Satisfaction (0–100 scale where high scores are better) reported at 2 wk: I: 83 vs C: 75*** HRQOL ^d (0–5 scale representing lowest to highest quartile scores) reported at 2 wk: I: 3.0 vs C: 2.7 Functional status ^e reported at 2 wk: ND	30-d Readmission: I: 13% vs C: 26%*
Parry et al ^{136b} 2009	2	I: 44 C: 42	Elderly (81 y)	TDE ITR SFU PDFU TDE		30-d Readmission: I: 7% vs C: 17%
Patel et al ¹³⁷ 2009	4	I: 158 HC: 133	Pediatric (not reported)		Satisfaction reported at 1 wk: I > C (numerical values not provided) Warning signs identified (7-point scale where higher scores are better) reported at 1–2 d: I: 4.3 vs C: 3.3***	

TABLE 3 Continued

Study	Level of Evidence ^a	Sample Size	Population (Mean Age)	Transition Process	Patient Health Outcomes	Health Care Utilization/Cost
Reese et al ¹⁰ 2003	3	I: 15 C: 34	Adults (69 y)	PDFU	Missed f/u visit reported at 15 d: ND	15-d ED visit: I: 7% vs C: 18% 15-d Readmission: I: 13% vs C: 15%
Yin et al ²⁶	2	I: 124 C: 121	Pediatric (3.5 y)	TDE	Medication name error rates reported at 12 d (mean f/u): I: 6.5% vs C: 13.2% Medication dosing frequency error rates reported at 12 d (mean f/u): I: 0% vs C: 15.1%** Medication preparation error rates reported at 12 d (mean f/u): I: 10.9% vs C: 28.3%* Medication nonadherence rates reported at 12 d (mean f/u): I: 9.3% vs C: 38%** Medication dosing error rates by observation at 12 d (mean f/u): I: 5.4% vs C: 47.8%*** Missed school/work reported at 4 wk: ND Return to baseline health status reported at 4 wk: I: 82% vs C: 71%* Using controller medication daily reported at 4 wk: I: 54% vs C: 58% Completed f/u visit at 4 wk: I: 77% vs C: 51%***	
Zorc et al ³⁷ 2003	2	I: 139 C: 139	Pediatric (8 y)	SFU		30-d ED visit: ND

C, control group; f/u, follow-up; HC, historic control group; HRQOL, health-related quality of life; I, intervention group; IDP, individualized discharge plan; ITR, individualized transition record; MDIS, metered dose inhaler with spacer; ND, no difference; PDFU, postdischarge telephone follow-up and home visits; pt, patient; SFU, assistance in scheduling follow-up appointments; TDE, patient- and family-tailored discharge education; TNA, transition needs assessment. * $P < .05$; ** $P < .01$; *** $P < .001$.

^a Based on the Oxford Centre for Evidence-Based Medicine 2011 Levels of Evidence: 1 = systematic review; 2 = randomized trial; 3 = cohort study; 4 = case-control study; 5 = mechanism-based reasoning.

^b Bundled intervention.

^c Quality of transition assessed using the 15-item Care Transitions Measure.⁶⁷

^d HRQOL assessed by using the Minnesota Living with Heart Failure Questionnaire.⁶⁸

^e Functional status assessed by using the Enforced Social Dependency Scale.⁶⁹

All of these studies then used the needs assessment to develop an individualized discharge plan. Although assessment of the patient's and family's transition needs was only 1 component of a bundled intervention, all of these studies reported better patient health outcomes and significant reductions in health care use.

Individualized Transition Record

We did not find any studies in the pediatric literature evaluating the use of an individualized transition record on health outcomes. Six studies in the adult literature included a detailed transition record in a bundled intervention,^{29,31,34-36} and 4 of these studies used a similar type of transition record developed by Coleman et al.^{30,31,35,36} Interventions including a transition record were associated with better patient health outcomes, and all except 1 study²⁹ noted reductions in health care use.

Postdischarge Telephone Follow-up and Home Visits

We did not find any studies in the pediatric literature examining the impact of postdischarge telephone follow-up or home visits on health outcomes. In adult patients, one study by Reese et al⁴⁰ evaluated the effectiveness of a postdischarge home visit on subsequent health care use in isolation of pre-discharge transition processes. The study found no difference in missed follow-up appointments or 15-day readmission rates; however, the study noted a trend toward lower ED visits among intervention patients.

Nine studies included telephone follow-up and/or home visits as components of a more comprehensive intervention.^{28-31,33-36,39} Four of these

9 studies assessed patient health outcomes, and all of them demonstrated favorable results for the intervention group.^{29,33,34,39} All 9 studies reported health care utilization outcomes, and 3 of the 9 studies^{29,33,36} found no significant difference in subsequent ED visits or readmissions.

DISCUSSION

Significant gaps remain in our understanding of the impact of family-centered transition processes on health outcomes in pediatric patients. Although the 4 pediatric studies in this review exemplify emerging transition-related research, current pediatric literature on patient and family involvement in care transitions from hospital-to-home in the United States is primarily composed of qualitative studies⁴¹⁻⁴⁵ or is limited to the ED setting. The findings of this review may inform the development of family-reported pediatric quality measures to assess the quality of hospital- and ED-to-home transitions; however, potential measures should be reviewed and revised routinely with the emergence of new pediatric transition-related research.

Findings from this review indicate that providing patient and family-tailored discharge education that is condition-specific, comprehensible, and includes opportunities to practice self-management skills are associated with improved knowledge and adherence to the care plan for ED-to-home transitions in pediatric patients. Similar findings were noted in bundled interventions in adult and elderly populations. This is consistent with the pediatric qualitative literature^{41,42,46-49} and supports expert guidelines⁵⁰⁻⁵⁴ recommending the care team provide patients and families with opportunities to ask questions and build self-management skills. These guidelines

also recommend care teams should assess the patient or caregiver's health literacy and preferred language of medical communication to ensure patients and caregivers receive comprehensible verbal and written instructions. Finally, discharge education also should focus on key points of greatest importance to patients: major diagnoses, medication changes, follow-up appointment dates, self-care instructions, and who to contact if problems develop. Further investigation is needed to evaluate the impact of family-tailored discharge education on pediatric transitions from hospital-to-home, and the effectiveness for reducing subsequent ED and hospital readmissions.

A pediatric and adult study included in this review evaluated the effectiveness of providing patients and families with assistance in scheduling follow-up appointments,^{37,38} and findings indicate this transition process is associated with better adherence to follow-up. However, the impact on other patient health outcomes and health care use was variable. Recommending that patients follow-up with their primary care physician after ED visits or hospitalization remains the standard of care in pediatric and adult populations,^{55,56} although questions remain regarding the optimal timing^{57,58} and effectiveness of these appointments on 30-day readmissions.⁵⁹ Further investigation is needed to evaluate the impact of providing scheduling assistance on patient health outcomes and health care utilization in pediatric populations.

Other findings of this review in adult populations may inform future directions for pediatric research within this field. Quality improvement initiatives may consider focusing on

transition processes that appear to be associated with improved health outcomes in adult and elderly patients, such as (1) assessing the patient and family's transition needs early in the discharge planning process, and (2) providing patients and caregivers with an individualized transition record. These findings are consistent with the pediatric qualitative literature. Pediatric patients with their families report varying degrees of social support, coping mechanisms, community resources, financial restrictions, and transportation needs for care transitions; and they recommended identifying unmet needs as an important component of the discharge process.⁴¹⁻⁴⁴ Additionally, although patients and families receive a variety of written materials on discharge, they report discharge instructions are often generic, and unclear about who to call if problems arise at home.^{41,43,44,46,47}

These findings are consistent with multiple expert guidelines. The guidelines recommend discharge planning begin on admission, engage the family, identify patient needs and family resources, assess health literacy, and resolve logistical barriers to timely follow-up.^{50,52,54-56,60} Expert consensus also recommends patients receive a transition record, including admission and discharge diagnoses, a dated medication list, pending and resulted tests, the transferring physician's contact information, a detailed list of follow-up appointments, a contingency plan for unanticipated problems, and a 24/7 telephone contact number if problems arise.^{51,52,56,61} Therefore, conducting a needs assessment early in the hospital admission and providing caregivers with an individualized transition record may be effective in improving the quality

of pediatric hospital-to-home transitions, and requires further investigation.

In qualitative studies, patients and caregivers suggested postdischarge telephone follow-up and home visits provided an opportunity to discuss questions and concerns that were not obvious before discharge, and were helpful to address needs, interpret discharge instructions, and reduce family stress.^{41-43,45,47,48} However, guidelines recommended telephone follow-up or home visits may be cost-effective only for certain patient populations, such as medically complex populations.^{51,53,54} This review found the effectiveness of postdischarge telephone follow-up and/or home visits on patient health outcomes is favorable; however, the evidence is mixed for health care use. This is consistent with a Cochrane review by Mistiaen and Poot¹⁹ that found clinically equivalent results between groups who received telephone follow-up and controls. Furthermore, favorable health care utilization outcomes among general adult patients were noted in interventions without home visits^{34,35} or without any postdischarge component.³² Considering the high cost of these interventions, further investigation is needed to determine the effectiveness of implementing these transition processes in all pediatric patients versus limiting them to specific pediatric populations with high care coordination needs.

Limitations

This review has several limitations. The primary intention of this review was to evaluate the effectiveness of family-centered transition processes on health outcomes to inform the development of transition quality measures for pediatric populations. However, our search

retrieved very few pediatric clinical trials, all occurring in ED settings, which limits the generalizability of our findings. Although we found some similarities in our results among pediatric and adult populations, it is uncertain whether the effectiveness of transition processes that were evaluated only in adult populations will demonstrate the same outcomes in pediatric populations. Furthermore, many of the studies we identified in the adult literature encompassed bundled interventions, limiting our understanding of which specific transition process within the bundle had the largest impact on outcomes.

It is possible that relevant articles were not identified through our search strategy, although we made a substantial effort to search multiple databases and citations of relevant articles, and incorporate references from experts in the field. We also used strict inclusion criteria, resulting in the exclusion of many pediatric articles for a variety of reasons: (1) studies did not use an experimental design; (2) study outcomes were measured >30 days after the index ED visit or hospitalization; (3) studies were conducted before 2001; and (4) studies were conducted in other countries. We excluded studies measuring outcomes past 30 days, because the goal of this review was to examine the effectiveness of short-term transition interventions, not long-term care coordination interventions. It is difficult to ascertain whether improvement in outcomes after 30 days is the direct result of transition interventions or from patients receiving more long-term care coordination. We excluded studies that were conducted before 2001 because the impact of quality improvement is very much dependent on the context in which it is studied (eg, the setting, population, financing, and delivery of health care).⁶² For example,

the care of hospitalized children by pediatric hospitalists has emerged as the primary model of inpatient care only in the past decade,^{64–65} creating greater demands for care coordination between the inpatient and outpatient settings.^{56,66} Effective interventions implemented 15 years ago are likely not applicable to current pediatric hospital medicine practice. We also excluded studies published in other countries for similar reasons. Although this conservative approach limited the number of pediatric studies included in this review, we believe the articles reviewed are highly applicable to the development of pediatric transition quality measures for US hospitals.

Studies that did not directly involve patients and families in the intervention, such as those examining the effectiveness of interventions to enhance information exchange between providers, also were excluded. Although these processes are an important component of hospital- and ED-to-home transitions, for this quality measure development effort, our center chose to focus on the central role patients and families play in successful transitions between sites of care.⁶⁰

Despite our strict exclusion criteria, assessment periods for health outcomes in the included studies still varied widely (1–30 days) and there was also significant heterogeneity in assessment tools used to measure patient health outcomes. Studies often did not use validated instruments or standardized measures to evaluate outcomes. This limited our ability to draw robust conclusions from this review, or conduct a meta-analysis of study outcomes.

This review also was limited in that only 1 individual screened all titles and abstracts of articles derived from

the electronic search strategy. This limitation may have been partially mitigated by 1 of the authors (J.P.) reviewing a subset of articles with the RA who conducted the screenings to clarify inclusion and exclusion criteria.

Implications

Given the recent emphasis on improving care transitions from hospital- and ED-to-home, hospitals caring for pediatric patients are increasingly implementing quality improvement strategies to reduce adverse events, prevent readmissions, and achieve better transitions through improved care coordination. However, significant gaps remain regarding our understanding of the effectiveness of family-centered transition processes on patient health outcomes and health care utilization. Future pediatric research in this area should consider evaluating “unbundled” transition care interventions to ascertain key drivers behind successful transitions. Also, limiting assessment time frames to 30 days for hospital- and ED-to-home transitions may reflect the effectiveness of transition processes more directly. This will better inform the development of standardized care transition quality measures that are paramount to enable benchmarking and comparative effectiveness research.

CONCLUSIONS

Improving the quality of care transitions from hospital-to-home or ED-to-home is not only important for reducing unnecessary health care utilization, but also ensures patients and families feel adequately prepared and have the necessary resources to continue management of the child’s medical care at home. Family-centered discharge education appears to be associated with improved outcomes in pediatric patients in the ED-to-home

transitions; however, future research is needed to evaluate the effectiveness of this transition care process in pediatric hospital-to-home transitions. Conducting a needs assessment during hospitalization and providing patients and families with an individualized transition record is associated with improved outcomes in adult patients, and further investigation is needed to evaluate the effectiveness of these transition processes in pediatric hospital-to-home transitions.

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REFERENCES

1. Forster AJ, Murff HJ, Peterson JF, Gandhi TK, Bates DW. The incidence and severity of adverse events affecting patients after discharge from the hospital. *Ann Intern Med.* 2003;138(3):161–167.
2. Tsilimingras D, Bates DW. Addressing post-discharge adverse events: a neglected area. *Jt Comm J Qual Patient Saf.* 2008;34(2):85–97.
3. Moore C, Wisnivesky J, Williams S, McGinn T. Medical errors related to discontinuity of care from an inpatient to an outpatient setting. *J Gen Intern Med.* 2003;18(8):646–651.
4. Co JP, Ferris TG, Marino BL, Homer CJ, Perrin JM. Are hospital characteristics associated with parental views of pediatric inpatient care quality? *Pediatrics.* 2003;111(2):308–314.
5. Kripalani S, LeFevre F, Phillips CO, Williams MV, Basaviah P, Baker DW. Deficits in communication and information transfer

- between hospital-based and primary care physicians: implications for patient safety and continuity of care. *JAMA*. 2007;297(8):831–841.
6. Harlan G, Srivastava R, Harrison L, McBride G, Maloney C. Pediatric hospitalists and primary care providers: a communication needs assessment. *J Hosp Med*. 2009;4(3):187–193.
 7. Coghlin DT, Leyenaar JK, Shen M, et al. Pediatric discharge content: a multisite assessment of physician preferences and experiences. *Hosp Pediatr*. 2014;4(1):9–15.
 8. Engel KG, Heisler M, Smith DM, Robinson CH, Forman JH, Ubel PA. Patient comprehension of emergency department care and instructions: are patients aware of when they do not understand? *Ann Emerg Med*. 2009;53(4):454–461.e15.
 9. Caglar S, Henneman PL, Blank FS, Smithline HA, Henneman EA. Emergency department medication lists are not accurate. *J Emerg Med*. 2011;40(6):613–616.
 10. Forster AJ, Rose NG, van Walraven C, Stiell I. Adverse events following an emergency department visit. *Qual Saf Health Care*. 2007;16(1):17–22.
 11. Dougherty D, Schiff J, Mangione-Smith R. The Children's Health Insurance Program Reauthorization Act quality measures initiatives: moving forward to improve measurement, care, and child and adolescent outcomes. *Acad Pediatr*. 2011;11(suppl 3):S1–S10.
 12. Byron SC, Gardner W, Kleinman LC, et al. Developing measures for pediatric quality: methods and experiences of the CHIPRA pediatric quality measures program grantees. *Acad Pediatr*. 2014;14(suppl 5):S27–S32.
 13. Donabedian A, Bashshur RL. *An Introduction to Quality Assurance in Health Care*. Oxford, UK: Oxford University Press; 2003.
 14. Abrashkin KA, Cho HJ, Torgalkar S, Markoff B. Improving transitions of care from hospital to home: what works? *Mt Sinai J Med*. 2012;79(5):535–544.
 15. Boling PA. Care transitions and home health care. *Clin Geriatr Med*. 2009;25(1):135–148, viii.
 16. Jacob L, Poletick EB. Systematic review: predictors of successful transition to community-based care for adults with chronic care needs. *Care Manag J*. 2008;9(4):154–165.
 17. Shepperd S, Lannin NA, Clemson LM, McCluskey A, Cameron ID, Barras SL. Discharge planning from hospital to home. *Cochrane Database Syst Rev*. 2013;(1):CD000313.
 18. Crocker JB, Crocker JT, Greenwald JL. Telephone follow-up as a primary care intervention for postdischarge outcomes improvement: a systematic review. *Am J Med*. 2012;125(9):915–921.
 19. Mistiaen P, Poot E. Telephone follow-up, initiated by a hospital-based health professional, for postdischarge problems in patients discharged from hospital to home. *Cochrane Database Syst Rev*. 2006;(4):CD004510.
 20. Hansen LO, Young RS, Hinami K, Leung A, Williams MV. Interventions to reduce 30-day rehospitalization: a systematic review. *Ann Intern Med*. 2011;155(8):520–528.
 21. Auger KA, Kenyon CC, Feudtner C, Davis MM. Pediatric hospital discharge interventions to reduce subsequent utilization: a systematic review. *J Hosp Med*. 2014;9(4):251–260.
 22. Mistiaen P, Francke AL, Poot E. Interventions aimed at reducing problems in adult patients discharged from hospital to home: a systematic meta-review. *BMC Health Serv Res*. 2007;7(1):47.
 23. Chiu WK, Newcomer R. A systematic review of nurse-assisted case management to improve hospital discharge transition outcomes for the elderly. *Prof Case Manag*. 2007;12(6):330–336, quiz 337–338.
 24. OCEBM Levels of Evidence Working Group. Oxford 2011 levels of evidence. Oxford Centre for Evidence-Based Medicine. Available at: www.cebm.net/index.aspx?o=5653. Accessed January 28, 2015.
 25. Hussain-Rizvi A, Kunkov S, Crain EF. Does parental involvement in pediatric emergency department asthma treatment affect home management? *J Asthma*. 2009;46(8):792–795.
 26. Yin HS, Dreyer BP, van Schaick L, Foltin GL, Dinglas C, Mendelsohn AL. Randomized controlled trial of a pictogram-based intervention to reduce liquid medication dosing errors and improve adherence among caregivers of young children. *Arch Pediatr Adolesc Med*. 2008;162(9):814–822.
 27. Patel B, Kennebeck SS, Caviness AC, Macias CG. Use of a discharge facilitator improves recall of emergency department discharge instructions for acute gastroenteritis. *Pediatr Emerg Care*. 2009;25(9):558–564.
 29. Anderson C, Deepak BV, Amoateng-Adjepong Y, Zarich S. Benefits of comprehensive inpatient education and discharge planning combined with outpatient support in elderly patients with congestive heart failure. *Congest Heart Fail*. 2005;11(6):315–321.
 29. Balaban RB, Weissman JS, Samuel PA, Woolhandler S. Redefining and redesigning hospital discharge to enhance patient care: a randomized controlled study. *J Gen Intern Med*. 2008;23(8):1228–1233.
 30. Coleman EA, Smith JD, Frank JC, Min SJ, Parry C, Kramer AM. Preparing patients and caregivers to participate in care delivered across settings: the Care Transitions Intervention. *J Am Geriatr Soc*. 2004;52(11):1817–1825.
 31. Coleman EA, Parry C, Chalmers S, Min SJ. The care transitions intervention: results of a randomized controlled trial. *Arch Intern Med*. 2006;166(17):1822–1828.
 32. Dedhia P, Kravet S, Bulger J, et al. A quality improvement intervention to facilitate the transition of older adults from three hospitals back to their homes. *J Am Geriatr Soc*. 2009;57(9):1540–1546.
 33. Finn KM, Heffner R, Chang Y, et al. Improving the discharge process by embedding a discharge facilitator in a resident team. *J Hosp Med*. 2011;6(9):494–500.
 34. Jack BW, Chetty VK, Anthony D, et al. A reengineered hospital discharge program to decrease rehospitalization: a randomized trial. *Ann Intern Med*. 2009;150(3):178–187.
 35. Koehler BE, Richter KM, Youngblood L, et al. Reduction of 30-day postdischarge hospital readmission or emergency department (ED) visit rates in high-risk elderly medical patients through delivery of a targeted care bundle. *J Hosp Med*. 2009;4(4):211–218.
 36. Parry C, Min SJ, Chugh A, Chalmers S, Coleman EA. Further application of the care transitions intervention: results of a randomized controlled trial conducted in a fee-for-service setting. *Home Health Care Serv Q*. 2009;28(2–3):84–99.
 37. Zorc JJ, Scarfone RJ, Li Y, et al; Randomized trial. Scheduled follow-up after a pediatric emergency department visit for asthma: a randomized trial. *Pediatrics*. 2003;111(3):495–502.
 38. Chang R, Spahlinger D, Kim CS. Re-engineering the post-discharge appointment

- process for general medicine patients. *Patient*. 2012;5(1):27–32.
39. Naylor MD, Brooten DA, Campbell RL, Maislin G, McCauley KM, Schwartz JS. Transitional care of older adults hospitalized with heart failure: a randomized, controlled trial. *J Am Geriatr Soc*. 2004;52(5):675–684.
 40. Reese PP, Hicks LS, McWilliams M, Britton O, McKean SCW. Hospitalist home visit program identifies medication errors in a vulnerable general medicine population. *J Clin Outcomes Manag*. 2003;10(4):198–202.
 41. Aitken ME, Mele N, Barrett KW. Recovery of injured children: parent perspectives on family needs. *Arch Phys Med Rehabil*. 2004;85(4):567–573.
 42. Lerret SM. Discharge readiness: an integrative review focusing on discharge following pediatric hospitalization. *J Spec Pediatr Nurs*. 2009;14(4):245–255.
 43. Graham RJ, Pemstein DM, Palfrey JS. Included but isolated: early intervention programmes provision for children and families with chronic respiratory support needs. *Child Care Health Dev*. 2008;34(3):373–379.
 44. Turrell SL, Davis R, Graham H, Weiss I. Adolescents with anorexia nervosa: multiple perspectives of discharge readiness. *J Child Adolesc Psychiatr Nurs*. 2005;18(3):116–126.
 45. Burton JH, Marshall JM, Munro P, Moule W, Snell GI, Westall GP. Rehabilitation and transition after lung transplantation in children. *Transplant Proc*. 2009;41(1):296–299.
 46. Cain CH, Neuwirth E, Bellows J, Zuber C, Green J. Patient experiences of transitioning from hospital to home: an ethnographic quality improvement project. *J Hosp Med*. 2012;7(5):382–387.
 47. Foust JB, Vuckovic N, Henriquez E. Hospital to home health care transition: patient, caregiver, and clinician perspectives. *West J Nurs Res*. 2012;34(2):194–212.
 48. McMurray A, Johnson P, Wallis M, Patterson E, Griffiths S. General surgical patients' perspectives of the adequacy and appropriateness of discharge planning to facilitate health decision-making at home. *J Clin Nurs*. 2007;16(9):1602–1609.
 49. Smith VC, Dukhovny D, Zupancic JA, Gates HB, Pursley DM. Neonatal intensive care unit discharge preparedness: primary care implications. *Clin Pediatr (Phila)*. 2012;51(5):454–461.
 50. Elias ER, Murphy NA; Council on Children with Disabilities. Home care of children and youth with complex health care needs and technology dependencies. *Pediatrics*. 2012;129(5):996–1005.
 51. Kripalani S, Jackson AT, Schnipper JL, Coleman EA. Promoting effective transitions of care at hospital discharge: a review of key issues for hospitalists. *J Hosp Med*. 2007;2(5):314–323.
 52. Halasyamani L, Kripalani S, Coleman E, et al. Transition of care for hospitalized elderly patients—development of a discharge checklist for hospitalists. *J Hosp Med*. 2006;1(6):354–360.
 53. Chugh A, Williams MV, Grigsby J, Coleman EA. Better transitions: improving comprehension of discharge instructions. *Front Health Serv Manage*. 2009;25(3):11–32.
 54. American Academy of Pediatrics Committee on Fetus and Newborn. Hospital discharge of the high-risk neonate. *Pediatrics*. 2008;122(5):1119–1126.
 55. Sokol PE, Wynia MK. *There and Home Again, Safely: Five Responsibilities of Ambulatory Practices in High Quality Care Transitions*. Chicago, IL: American Medical Association; 2013, Available at: http://selfmanagementalliance.org/wp-content/uploads/2013/11/There-and-Home-Safely_ambulatory-practices.pdf. Accessed January 28, 2015.
 56. Lye PS; American Academy of Pediatrics. Committee on Hospital Care and Section on Hospital Medicine. Clinical report—physicians' roles in coordinating care of hospitalized children. *Pediatrics*. 2010;126(4):829–832.
 57. Hernandez AF, Greiner MA, Fonarow GC, et al. Relationship between early physician follow-up and 30-day readmission among Medicare beneficiaries hospitalized for heart failure. *JAMA*. 2010;303(17):1716–1722.
 58. Miskey GJ, Wald HL, Coleman EA. Post-hospitalization transitions: Examining the effects of timing of primary care provider follow-up. *J Hosp Med*. 2010;5(7):392–397.
 59. Weinberger M, Oddone EZ, Henderson WG. Does increased access to primary care reduce hospital readmissions? Veterans Affairs Cooperative Study Group on Primary Care and Hospital Readmission. *N Engl J Med*. 1996;334(22):1441–1447.
 60. Berry JG, Blaine K, Rogers J, et al. A framework of pediatric hospital discharge care informed by legislation, research, and practice. *JAMA Pediatr*. 2014;168(10):955–962, quiz 965–966.
 61. Snow V, Beck D, Budnitz T, et al; American College of Physicians; Society of General Internal Medicine; Society of Hospital Medicine; American Geriatrics Society; American College of Emergency Physicians; Society of Academic Emergency Medicine. Transitions of Care Consensus Policy Statement American College of Physicians-Society of General Internal Medicine-Society of Hospital Medicine-American Geriatrics Society-American College of Emergency Physicians-Society of Academic Emergency Medicine. *J Gen Intern Med*. 2009;24(8):971–976.
 62. Kaplan HC, Brady PW, Dritz MC, et al. The influence of context on quality improvement success in health care: a systematic review of the literature. *Milbank Q*. 2010;88(4):500–559.
 63. Rauch DA, Percelay JM, Zipes D. Introduction to pediatric hospital medicine. *Pediatr Clin North Am*. 2005;52(4):963–977, vii.
 64. Landrigan CP, Conway PH, Edwards S, Srivastava R. Pediatric hospitalists: a systematic review of the literature. *Pediatrics*. 2006;117(5):1736–1744.
 65. Simon TD, Starmer AJ, Conway PH, et al. Quality improvement research in pediatric hospital medicine and the role of the Pediatric Research in Inpatient Settings (PRIS) network. *Acad Pediatr*. 2013;13(suppl 6):S54–S60.
 66. Srivastava R, Stone BL, Murphy NA. Hospitalist care of the medically complex child. *Pediatr Clin North Am*. 2005;52(4):1165–1187, x.
 67. Coleman EA, Mahoney E, Parry C. Assessing the quality of preparation for posthospital care from the patient's perspective: the care transitions measure. *Med Care*. 2005;43(3):246–255.
 68. Rector TS, Kubo SH, Cohn JN. Patients' self-assessment of their congestive heart failure. Part 2: Content, reliability and validity of a new measure, the Minnesota Living with Heart Failure questionnaire. *Heart Fail*. 1987;(Oct/Nov):198–209.
 69. Benoliel JQ, McCorkle R, Young K. Development of a social dependency scale. *Res Nurs Health*. 1980;3(1):3–10.

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