HOSPITALISTS AND CARE TRANSITIONS AND TEAMWORK

11 PRINCIPLES OF GOOD TEAMWORK

Janet Nagamine

BACKGROUND

- Working successfully in teams is one of the most crucial skills in the practice of medicine.
- Many of these skills can be taught and incorporated systematically into patient care processes.
- Teamwork is increasingly being viewed as a competency and accrediting bodies such as Association of American Medical Colleges (AAMC) and Accreditation Council for Graduate Medical Education (ACGME) now include specific teamwork-related competencies for medical students and residents.
- The Society of Hospital Medicine (SHM) also includes a team approach and multidisciplinary care chapter in *The Core Competencies: A Framework for Curriculum Development* that defines specific knowledge, skills, and attitudes related to teamwork.
- The impetus behind these requirements in medical training is the increasing recognition that teamwork and communication failures in healthcare are common and can result in patient harm. The typology of errors that human beings make may be unintentional or violations.
  - Communication was determined to be the root cause in over 80% of sentinel events involving delays in treatment, and over 70% of cases involving wrong site surgery.
  - Many of these cases exemplify a group mindset of following the leader even when the leader of the team goes down the wrong path. In addition, stress, fatigue, burnout, and multitasking can negatively impact on cognitive function and vigilance.
  - Highly reliable industries such as aviation require specific team training in crew resource management (CRM) in order to ensure that personnel function in a coordinated and effective manner. All staff is required to participate in training that emphasizes flattening of steep hierarchies and promoting clear, open communication that facilitates achievement of desired outcomes.
- Training of healthcare providers as teams is a pragmatic, effective strategy for enhancing patient safety and reducing medical errors. Using examples from other industries, leaders in healthcare can promote a culture of safety through effective teamwork building and systems improvement.
  - Systems can be put in place to address communication failures through effective teamwork, computer support, and multiple checks.
  - Errors of omission such as failure to turn on a machine, errors of commission such as misreading a label on a drug, and errors under severe stress can be avoided through standardization of procedures and policies.
  - Team members can play a critical role in cross-monitoring of colleagues—in essence, looking out for each other—and in communicating essential team information.
- Comprehensive, evidence-based approaches to medical team training require teaching, observing, and measuring teamwork and communication competency.

TEAMWORK IN HEALTHCARE

- Teamwork generally has not been regarded as an important facet of medical performance and there may

be confusion relating to the identification of team members, role definition, and expectations for effective teamwork.

- During the twentieth century individual blame and physician autonomy in decision making were deeply embedded in the culture of medicine. Medical schools and residency programs did not educate physicians about the concepts of error, inherent limitations of human beings and complex systems, approaches of other industries to reduce error, and how teamwork and communication can reduce error rates in healthcare systems.
- Although physicians work with other professionals such as nurses, pharmacists, respiratory therapists, and physical therapists, interdisciplinary teams that function in a coordinated or integrated manner have not been operational in many settings.
  - Trained in distinctly different disciplines with varied educational focus and approach to patient care, team members may function independently and not interface directly with other healthcare providers directly involved in the care of a single patient.
  - Physicians and nurses are often referred only to colleagues in their respective disciplines when asked about teamwork.
  - Instead of team "sign-out", physicians sign out to physicians, nurses to nurses, residents to residents and likewise only provide feedback with their peers.
- Time constraints and different schedules limit face-to-face interaction in order to exchange thoughts, share observations, or communicate management plans directly.
  - Communication usually occurs via charts and computer, relying on notes and orders to "coordinate" care while team members function in parallel or independent of each other.
  - In fact, e-mail and other forms of communication by computer have increasingly replaced telephone or face-to-face dialogue.
- The hierarchical relationship that physicians have with other healthcare providers makes clarification of any uncertainty difficult and often leads to the communication failures seen in adverse events.
  - Another component of this hierarchical relationship is a culture of perfection that emphasizes individual agency rather than collective thinking and shared decision making.
  - Although physicians play a less dominant role than previously, there is continued adherence to traditional hierarchical behavior patterns which inhibit open communication and contribute to adverse events. Physicians and other team members may

fear that appropriate inquiry of actions taken by a superior may jeopardize a positive evaluation of their performance, or they may hesitate to assert themselves due to a concern about being wrong.
  - Members of the healthcare team have divergent views regarding role expectations and what constitutes effective teamwork. Studies on teamwork comparing survey responses of physicians with other health professionals consistently show that physicians rate levels of teamwork much higher than nonphysicians.
- Research in non-healthcare industries has identified many of the competencies necessary for effective teamwork and validated strategies exist in other domains.
  - Many of these principles and strategies are applicable to the environment of clinical medicine. The teamwork issues we currently face are quite similar to the issues faced by aviation prior to initiating CRM programs.
  - Strong hierarchy and power differential as well as lack of clarity regarding specific tasks and roles were two major challenges seen in aviation and similarly serve as major barriers to effective teamwork in healthcare.
- Teamwork is a complex and dynamic process in which members interact and collaborate to achieve desired outcomes.
  - A misguided emphasis on congenial working relationships as sufficient for successful teamwork may actually promote error.
  - The development of the specific skills and behaviors that are necessary for effective team performance and delivery of safe care requires training and evaluation.

PROMOTING EFFECTIVE TEAMWORK

- Effective teamwork requires the willingness of team members to cooperate toward a shared goal.
- Key features of a team include members with defined roles, defined tasks, and task interdependency.
- One model for medical teamwork is shown in Fig. 11-1. The model illustrates how the concepts of roles, tasks, and task interdependency can be implemented to accomplish shared goals.
- Formal teamwork training in high-risk industries such as aviation include techniques and specific
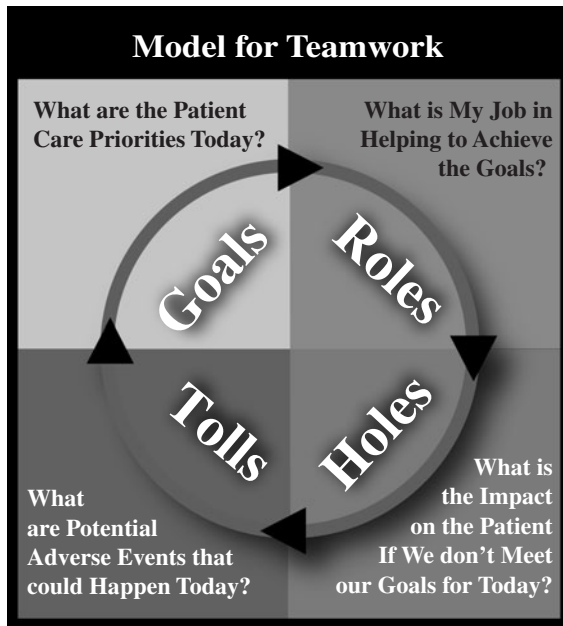
FIG. 11-1 One model of medical teamwork. Questions to ask include (1) What information do we need to make an accurate clinical assessment?
(2) What clinical outcomes are we trying to impact today?
(3) How will we know that we are progressing toward those outcomes?
(4) What interventions should we do that may lead to improved outcomes?

teamwork behaviors that ensure roles are clearly defined and plans are discussed and mutually agreed upon.
• Table 11-1 contrasts characteristics of effective versus ineffective teams.

TABLE 11-1   Contrasting Characteristics of Effective and Ineffective Teams

EFFECTIVE TEAMS	INEFFECTIVE TEAMS
Mutual goal setting	Lack of understanding of goals or plans
Sense of shared responsibility and interdependence recognized and addressed	Turf mentality Silo operations Interdependence not recognized or addressed
Clear understanding of roles, responsibilities, and tasks to be done	Ambiguity of roles, responsibilities, and tasks to be done
Inclusive, different perspectives welcome	Exclusive, other perspectives not sought
Open communication and safety in sharing ideas, observations, and making suggestions despite "rank"	Closed communication; not safe to share observations, ideas, or make suggestions: "know your place"
Members function in a coordinated manner	Lack of coordination

BUILDING TEAM-BASED CARE MODELS

• Successful teamwork requires strong leadership support, namely,
  1. Leadership by example—Mutual respect, explicit personal acknowledgement of error, recognition that all members of the team are capable of error, and evaluation of all errors or near misses through systems analysis rather than individual blame
  2. Daily clarification of specific team behaviors that all members of the team agree to
  3. Dedication of resources for team training
Goals of care include effective teamwork to get the job done correctly the first time. In order to accomplish this goal, there must be effective communication by the team leader. Effective communication strategies include:
  ◦ Brief the team to set the plan for the day and establish expectations.
  ◦ Verbalize the plan with explicit concise information.
  ◦ Ask for feedback from *all* members of the team and modify plan accordingly.
  ◦ Promote awareness for the potential of error and how team members can help monitor each other and safeguard against error.
• Examples where it is useful to set goals of care in advance of the encounter include:
  ◦ Establishment of a contract with a noncompliant patient
  ◦ Family meetings to discuss end-of-life issues
  ◦ Any teaching session to establish ground rules for learning
  ◦ Standardization of protocols for performing a procedure
• SBAR is a framework for communication that can be used in any practice situation, especially for instances that require modification of action, handoffs, and presentations to physicians.
  ◦ *Situation*—Succinct description of the problem
  ◦ *Background*—Synopsis of critical information
  ◦ *Assessment*—Speaker's evaluation
  ◦ *Recommendation*—Specific action plan for the listener
• Closed-loop communication requires the listener to repeat back the information. Not only does this ensure that the communication is heard and understood but this also promotes team awareness.
• Debriefing is a communication tool to review what went well and what did not so that corrective action can be taken by the team when a similar situation arises again.
  ◦ Frequently used after cardiac codes, this exercise can be used effectively after procedures, difficult family meetings, adverse events, misdiagnosis, and routinely at the end of the day or week.

○ Specific action steps should be identified and referred to people responsible to improve the system of care. Usually, this requires standardization of procedures and processes that facilitate safe and high-quality care.

INPATIENT CARE DELIVERY

• Both interpersonal and organizational factors must be addressed in order to build effective teams.
• The presence of hospitalists has changed the system of healthcare delivery. Now hospitalists have an opportunity to demonstrate that they can improve patient safety by developing and building models of interdisciplinary teamwork and collaboration.
• Interpersonal and organizational factors that facilitate teamwork among physicians and nurses include:
  ○ Interdisciplinary rounds and meetings
  ○ Collaborative practice orders, critical pathways, and protocols
  ○ High-quality, competent people committed to effective teamwork
  ○ Culture in which concern for the patient is paramount
  ○ Continuity, longevity, and specialization of staff
  ○ Established mechanisms for constructive conflict resolution
  ○ Committed unit/service medical directors
  ○ Nurse manager support
• Creating specific workflow structures and partnerships that overcome the traditional logistical challenges of interdisciplinary teamwork shows promise.
• Some organizations have implemented documentation tools to facilitate team-based care and communication.
  ○ One example is the daily goals sheet developed and implemented in the ICU at Johns Hopkins hospital.
  ○ The daily goals sheet makes explicitly clear what the goals are and members of the team must initial the sheet on each shift. Demonstrated outcomes include improvement of resident and nurse understanding of plans from 10% to 95% and a decrease in LOS from 2.2 days to 1.1 days.
• Care transitions are also vulnerable times for patients and demand effective teamwork. (See Chap. 14 on discharge summaries and sign-out).

CONCLUSION

• Successful teamwork is a core competency that requires training, evaluation, and feedback.
• Hospitalists are responsible for creating medical management plans not only for patients but also for leading healthcare teams.
• Hospitalists can shape how the healthcare team functions by explicitly setting goals of open dialogue and collaboration to overcome logistical and social barriers that get in the way of optimal patient care.
• Hospitalists are in a unique position to change and improve the delivery of healthcare by facilitating team training.

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WEB RESOURCES

Society of Hospital Medicine Quality Improvement Resource Rooms Care Transitions

Society of Hospital Medicine Quality Improvement Resource Room

http://www.hospitalmedicine.org/AM/Template.cfm?Section= Quality_Improvement_Resource_Rooms&Template=/CM/ HTMLDisplay.cfm&ContentID=6566

12 STRATEGIES TO OPTIMIZE LENGTH OF STAY

Kathleen M. Finn

BACKGROUND/OVERVIEW

- Up until 1982, US hospitals were reimbursed on a per diem basis. Given payment for each day of hospitalization, the longer the stay the more the hospitals and physicians were paid. As expected this encouraged relatively long average length of stay (LOS).
- In 1982, the federal government adopted the prospective payment system (PPS) for reimbursement on hospitalized Medicare patients. The system dictated a fixed amount for each patient hospitalized regardless of how many days they stayed in the hospital. The fixed reimbursement was based on 1 of 511 federal diagnosis related groups (DRGs) defined by the patient's diagnosis, surgical procedure, age, comorbidities, complications, and other factors.
  - After the PPS implementation by the federal government for Medicare, the system was rapidly adopted by the states for Medicaid programs and by many private insurance plans.
  - Suddenly LOS in the hospital mattered financially. Hospitals would lose money if patients stayed longer than the DRG allotted, and potentially save/make money if efficiency of care was optimized.

TABLE 12-1   Hazards of Hospitalization

Deconditioning
Nosocomial infections
Hospital-acquired delirium
Hospital-acquired renal failure
Deep vein thrombosis (DVT)
Line infections
Medication errors

- Hospitals and researchers began looking at ways to optimize LOS and to do this without adversely affecting patient care. Through the 1980s and 1990s, there were numerous studies published on optimizing LOS.
  - Hospitals did succeed in reducing LOS. Between 1985 and 2001, the average LOS declined 1.7 days from 6.6 to 4.9 days. Yet, studies indicated that LOS was still too long.
  - In the last 10 years, the hospitalist movement has contributed to further reductions in the LOS. Hospitalists enhance patient throughput by responding to changes in the patient's condition in real time, and are skilled in navigating hospital systems to maximize the efficiency of resource utilization.
  - Hospitalist programs have grown rapidly around the country as hospitals hope to optimize their LOS and save money.
- As inpatient physicians, hospitalists are aware there are other important reasons to optimize LOS besides individual hospital reimbursement.
  - Patient safety is a significant factor since the longer a patient stays in the hospital the more he or she is exposed to the potential, and not inconsiderable, hazards of hospitalization (Table 12-1).
    - The Institute of Medicine (IOM), in its landmark report *To Err is Human: Building a Safer Health System*, estimated that hospital admission is the eighth leading cause of unnecessary death in the United States, ahead of motor vehicle accidents and breast cancer.
  - Other reasons to optimize LOS include
    - Reducing national healthcare costs.
    - Alleviating high census conditions, allowing for more patients to be cared for with the same increasingly scarce hospital resources.

DEFINITION OF LOS

- LOS is defined as the time between a patient's admission to the hospital and his or her time of discharge from the hospital. LOS is influenced by many factors, including
  - Patients' responses to treatment, their clinical condition at time of hospitalization, as well as their comorbidities

○ Patients' social situations and the availability of an outpatient support system, such as the availability of a family member to become a temporary caregiver

○ Federal regulations (such as the Medicare 3-day rule, requiring a 3-day LOS for Medicare to reimburse skilled nursing facility care)

○ Availability of insurance to cover medications and treatments in the outpatient setting (common examples: low-molecular-weight heparin and home intravenous antibiotic therapy)

• LOS is often reported as an observed to expected ratio where the expected LOS is based on benchmarking data from Medicare, similar hospitals (such as the University HealthSystem Consortium) or consensus statements.

○ Hospital administrators often use the LOS metric as a measure of efficiency.

○ One of the IOM-specific aims for improving healthcare quality is that healthcare should be efficient— avoiding waste, in particular waste of equipment, supplies, ideas, and energy (and by extension, the waste of hospital bed days).

• With the decline in LOS, there has been concern for increase in mortality and readmission as a possible consequence. However, the literature does not support the relationship of shortened LOS with increased mortality or readmission rates.

○ Baker et al looked at 83,445 Medicare patients in Ohio with five diagnoses from 1991 to 1997 and found that readmission rates remained stable for all except heart failure. Postdischarge mortality was unchanged except for those with do not resuscitate orders.

○ In a multicenter hospital study, Lindenauer and colleagues compared hospitalist care to general internists and family physicians for 7 common diagnoses. Compared with general internists and family physicians, hospitalists had a significantly shorter LOS but there was no difference in death rates and 14 day readmissions. An accompanying editorial comments this study has clearly demonstrated shortening LOS has no adverse events on patient outcomes.

• While discharges to other facilities will reduce LOS and cost of care for the acute-care hospital, it is unclear if it reduces overall health costs or merely shifts the costs to other providers.

○ Fitzgerald et al demonstrated keeping hip replacement patients in the acute hospital 2 days longer to prevent a 1-week stay in a rehabilitation facility.

○ Some studies have shown earlier discharges actually increased the number of outpatient visits to primary care physicians and specialists as well as increased home nursing needs.

FACTORS THAT INCREASE LOS

• Patient complexity and hospital complications are medical care-related factors that can increase LOS. However, there are other factors that can increase LOS that may be related to the efficiency of the systems of care rather than the medical care itself.

• "Unnecessary days" or "delay days" are the description for days patients spend in the hospital when they do not need that level of care.

○ Private companies, like InterQual and MCAP, have emerged and produced tools that could be used to evaluate whether patients met criteria to be in the hospital. These tools or utilization guidelines were based on outcome studies and physician consensus.

▪ Insurers apply these utilization guidelines to determine if each day of hospitalization is appropriate, and may deny coverage for days they determine to be unnecessary.

▪ Hospitals and healthcare organizations can utilize these tools to learn their total number of unnecessary inpatient days and search for the specific causes in their organization.

○ Applying InterQual to 858 medical and surgical admissions at 43 veterans administration hospitals, Weaver et al found an average LOS of 12.7 days of which 6.8 days did not meet acute care level.

• What are the causes of delay days? One study at an academic teaching hospital found that 30% of patients on the general internal medical and gastrointestinal services experienced delays in discharge of an average of 2.9 days and that overall 17% of hospital days were unnecessary. In addition, 41% of all delay days were due to the unavailability of a bed at a subacute-care facility. The most frequent reasons for delay in discharge were

○ Scheduling of tests (31%)

○ Unavailability of postdischarge facilities (18%)

○ Physician decision making (13%)

○ Discharge planning (12%)

○ Scheduling of surgery (12%)

• Delays waiting for a bed at a postdischarge facility remain an ongoing problem:

○ Closed rehabilitation facilities and nursing homes because of financial insolvency

○ Inadequate numbers of psychiatric facilities, making it difficult to place mentally ill patients

○ A shortage of drug treatment centers, making it difficult to place patients with substance abuse issues

○ A lack of adequate centers skilled at managing patients with dual diagnoses of psychiatric disorders and substance abuse

○ Inadequate support services and shelters for homeless (and typically uninsured) patients

WAYS TO OPTIMIZE LOS AND IMPROVE PATIENT OUTCOMES

• There are a variety of ways to improve efficiency and optimize LOS (Table 12-2).

HOW TO IMPROVE QUALITY OF CARE

• As outlined by the IOM, healthcare should be safe (avoiding injuries to patients from the care that is intended to help them) and effective (providing services based on scientific knowledge to all who could benefit and refraining from providing services to those not likely to benefit, avoiding under use and overuse).
• One major attempt in medicine to improve quality of care was the development of guidelines and pathways.
• The terms practice guidelines, clinical guidelines, clinical pathways, or critical pathways are often used interchangeably in the literature.
  ○ Guidelines (both practice and clinical) are consensus statements of best practices, some derived from evidence-based medicine (nearly 50% are not), that are developed to assist practitioners in making optimal patient management decisions.
  ○ Pathways are management plans that provide a sequence of actions necessary to achieve goals and optimize efficiency. Pathways are often based on guidelines but not always.

• While practice guidelines have existed in medicine for many years, the late 1980s saw a rapid growth in the development of both guidelines and clinical pathways. This was fueled not only by the change in reimbursement but also the rise of healthcare costs, reports of large variation in practice among physicians and growing evidence of inappropriate utilization.
  ○ These guidelines and pathways were viewed as a way to improve and standardize patient care as well as remove inefficiencies in the healthcare system and reduce LOS.
  ○ The push for clinical pathways and guidelines came at a national level. In 1988, the Physician Payment Review Commission, which advises Congress, and the US Department of Health and Human Services both recommended using practice guidelines.
  ○ In 1989, the IOM convened a group of national experts to discuss guidelines. They recommended clinical guidelines be based on patient outcomes research.
  ○ Medical organizations, health plans, researchers, and public officials all expressed increasing interest in the development and implementation of practice guidelines and pathways. Millions of dollars were spent on their development on a national and local level.
  ○ The Agency for Healthcare Policy and Research established a national clearinghouse Web site for evidence-based medicine guidelines (see references for Web address).

TABLE 12-2   Ways to Optimize LOS

Clinical pathways	Help to standardize practice, reducing inefficiency, and improving quality of care
Discharge planning	Start discharge planning at time of admission
	Anticipate patients' discharge needs and plan ahead
	Work closely with case management
	Participate in interdisciplinary rounds to improve communication and help identify problems early
	Identify patients who need extended care facilities early on and discuss with patient and family
Communication	Set expectations early on about LOS. This allows patients and families to plan ahead
	Caution people they may not feel fully back to their baseline health status at time of discharge.
	Describe a time line and trajectory for improvement
	Communicate daily with patients' and their families and PCPs
Minimize hazards of hospitalization	Monitor for medication errors and minimize polypharmacy
	Remove tethers like foleys, oxygen tubes, and intravenous lines to limit deconditioning and nosocomial infection
	Evaluate the patient for risk of DVT and prescribe appropriate prophylaxis
	Evaluate patients for mobility issues and limit in-hospital deconditioning
	Minimize polypharmacy and other risks that contribute to delirium
	Minimize risks that contribute to hospital-acquired renal failure
Risk factors that increase LOS	Age >85
	History of dementia or cognitive impairment
	Poor nutrition
	Incontinence
	History of falls
	History of stroke
	Diabetes

◦ National organizations disseminated guidelines and pathways with the assumption that these would change practice. The new guidelines differed from older versions in that they focused on evidence-based medicine, quality of care, and appropriateness of practice.

• During the 1990s, there were many single-institution-based studies that confirmed the benefits of guidelines and pathways to patient care and LOS, and found no negative effects on patients such as increased mortality or readmission (surrogate markers for care quality).

◦ Weingarten et al in 1994 evaluated a practice guideline for chest pain showing a decreased LOS (0.91 days) and a cost reduction of $1397 per patient. No difference was found in the hospital complication rate, mortality, or patient satisfaction.

◦ In a 1993 meta-analysis, Grimshaw et al looked at 59 published studies of clinical pathways and found all but four studies showed improvement in the process of care. However, the size of improvement varied significantly. The authors found the most successful pathways were locally developed with specific educational interventions for the particular system that employed them. National guidelines that were published in journals or mailed to groups were not found to be effective.

◦ Lomas and colleagues studied the national consensus guidelines for cesarean delivery and found most obstetricians were aware of the guidelines and said they were compliant. Yet 2 years after the guidelines' release, there was no change in cesarean section rates. The authors concluded guidelines should not be developed in isolation but at the local level with resources for implementation and education.

• Given that most studies were single-institution-based trials, are the results from these studies accurate and generalizable? There are very few randomized multi-centered studies on clinical pathways to answer that question.

◦ Shaneyfelt et al evaluated 279 guidelines from 1985 to 1997, and found only 51% were developed using methodological standards and only 33.6% identified and summarized evidence.

◦ One multicenter study found that the implementation of several surgical pathways resulted in a lower LOS, but at the same time overall LOS for those areas decreased even in hospitals without pathways.

◦ Marrie et al in one of the few medical multihospital randomized trials found that a critical pneumonia pathway could maintain quality and decrease resource use in Canada.

• Physicians have not globally embraced pathways as a vehicle to improve patient care. There has been resistance on the basis of "cookbook medicine" or loss of professional autonomy. In addition, while pathways may work well for patients with a single illness or undergoing procedures, it is not clear they work as well for complex medical inpatients with multiple comorbidities and problems requiring balanced management.

• After nearly two decades of the development and use of guidelines and pathways, they are believed to improve quality of care, reduce LOS, and create efficiency, with no detrimental effects to patient care, but this has not been consistently shown in the literature.

• Should hospitalists use guidelines/pathways to improve patient care and reduce LOS? While pathways may not be the panacea that was hoped for in the late 1980s, "homegrown" single institution's pathways implemented with educational support have been shown to improve patient care and reduce LOS. Given hospitalists know their own hospital systems the best, they are well suited to develop and facilitate implementation of guidelines and pathways for their own institutions.

IMPROVING EFFICIENCY AND CARE TRANSITIONS

• The IOM noted that healthcare should be timely, reducing waits and sometimes harmful delays for both those who receive care and those who give care.

• Improving the transition of care at discharge can have a significant impact on optimizing LOS.

• In the study by Selker et al, physician's decision making and discharge planning accounted for a quarter of the reasons for delays.

• In addition to testing and decision making delays, the discharge transition itself can be slow and cumbersome.

• The discharge process should begin upon admission, and requires effective teamwork among physicians, nurses, therapists, case managers/social workers, and other members of the healthcare team to anticipate the discharge needs and proactively prepare to implement the discharge plan.

• Involvement of patients and families, and setting expectations for the goals of the hospitalization and the expected time course to accomplish them, is also crucial.

CASE MANAGEMENT

• The role of the case manager and expansion of case management departments has grown to promote a more coordinated discharge process.

- Typically made up of nurse case managers and social workers, and often combined with utilization review, case management focuses on anticipating and preparing for patients' needs after they leave the hospital and coordinating the discharge plan.
- Case managers know available resources in the community and what various insurers will cover, and can identify appropriate alternative sites of care.
- Case managers and social workers can make referrals to acute or subacute care facilities early in the hospital stay to minimize the delay in procuring an appropriate bed.
- Moher et al showed the benefit of case management with a reduction in LOS from 9.4 days to 7.3 days with a concomitant increase in patient satisfaction.

HOSPITALISTS

- Increasing communication between hospital-based physicians and outpatient physicians can allow for an earlier discharge. For example, a patient with chest pain who is deemed low risk and has ruled out may be able to be safely discharged over the weekend, rather than wait until Monday for a stress test, if the PCP is aware of the admission and can expeditiously arrange for an outpatient stress test.
- Varnava et al found that discharge days were not just based on clinical decisions but also determined by the day of the week, Fridays being the biggest day for discharges in hospitals. Increasing awareness of clinical indications for discharge may reduce this bias.
- Smith et al found there was an increase in LOS during physician's switch periods due to delays in decision making or planning as the new physician gets to know the patient's history.
- Strategies to improve this process include
  - Standardized and thorough sign-out processes
  - Expectations that physicians should "tie up lose ends" before going off service
  - Schedules that maximize continuity of care (block or block-shift models)
  - Preparing the discharge plans for patients that could go home on the transition day or during a weekend.
- Hospitalists can evaluate delay days on their services and identify the barriers to timely discharge, and participate in systems-based improvements to remove those barriers (such as lack of availability of diagnostic testing on the weekend).
- Hospitalists can collaborate with case managers and local rehabilitation and skilled nursing facilities to facilitate discharges. Some strategies that have been employed include:
  - Creating "discharge appointments" both to improve LOS and increase patient flow. The appointments are given to patients and families with an expected date and time of discharge, so arrangements can be made for transportation home, and the physician, nurse, and/or case manager can be available to review discharge instructions (especially any changes in medications) and answer questions. While results on LOS have been mixed, discharge appointments do set expectations for patients and families and give them time to plan.
  - Collaborating with the PCP and/or physicians who practice home care, and with visiting nurses, can allow patients (particularly frail elders) to be discharged early into a safe and familiar environment. Visiting nurses can monitor patients and ensure compliance with treatments.
  - Hospitalists have started follow-up clinics for recently discharged patients. This allows patients to be discharged earlier and monitored frequently even if their primary care physician is not available to see them soon after discharge, or they do not have a PCP.
  - This intervention may especially benefit homeless or uninsured patients with limited access to outpatient care.
  - Disadvantaged and difficult to place patients can drive up LOS as many delay days accrue while trying to find a safe discharge plan. One Boston group is teaming up with the state's Medicaid program and the department of public health to designate a number of beds in an already existing rehabilitation facility for these difficult to place patients.
  - Some hospitals with high volumes of discharges to skilled nursing facilities have partnered with such facilities to set aside a proportion of their beds for patients from that referral hospital. Such arrangements may include collaboration on post-acute care guidelines or pathways to enhance the care that can be provided in the facility for patients with particular discharge diagnoses, and/or the availability of appropriate subspecialists to do follow-up rounds or comanage patients at the facility.
  - Some hospitalist groups also provide skilled nursing facility care to help achieve a more seamless transition from acute care to skilled care.

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13 HANDOFFS

Vineet Arora and Julie Johnson

SCOPE OF THE PROBLEM

- An increased focus on the vulnerability of transfers of patient care between providers (handoffs) has occurred for a variety of reasons.

  ○ The implementation of restricted resident duty hours by the Accreditation Council of Graduate Medical Education (ACGME), coupled with the demand for 24-hour shift coverage by various groups, such as Leapfrog, are two reasons for increased attention to handoffs.
  ○ The Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) has made handoffs a national patient safety goal in 2006. The JCAHO mandate "requires hospitals to implement a standardized approach to handoff communications and provide an opportunity for staff to ask and respond to questions about a patient's care" (Table 13-1).[1]
- Poor communication at the time of handoffs has been implicated in near misses and adverse events in a variety of healthcare contexts, including nursing handoffs, physician sign-out of patients, and emergency medicine shift changes.
- Despite the increased focus on the vulnerability of the handoff, few medical trainees or hospitalists receive formal education on how to perform an effective handoff.

TERMINOLOGY ("PATHOPHYSIOLOGY")

- Other terms for the handoff include "sign-out," "sign-over" and "handover." These different terms refer to a difference in the approach to manage care over the 24-hour day. The distinction between handoff and sign-out has carried over into studies of information transfers under short call and cross-coverage schedules.
  ○ "Sign-out" and "sign-over" are used when a "day" provider or team transfers care to an evening or night shift, such as short-call or night float. Patients move from an active period of management to a "holding phase" until their regular provider returns. While the physician who accepts the sign-out will be dealing with emergencies, the planning and ongoing care of patients are often on hold.
    ▪ Sign-out can either refer to the written document or electronic file used to transfer patient information during "handoffs" or to the verbal communication that occurs during the "handoff."[7]
  ○ "Handoff" and "handover" are used to refer to the 24-hour, 7-day continuous management of the patient. The accepting physician is often fully empowered to manage all aspects of patient care (i.e., nursing, intensive care unit (ICU), emergency department (ED), and so forth).
    ▪ An effective handoff includes the transfer of critical patient information needed to continue care for that patient, and the acceptance of the professional responsibility of continued care for a patient.

TABLE 13-1   JCAHO Handoff National Patient Safety Goal: Improve the Effectiveness of Communication Among Caregivers[1]

Requirement 2E
- Requires hospitals to implement a *standardized approach* to handoff communications and provide an opportunity for staff to ask and respond to questions about a patient's care.

Rationale for Requirement 2E
- The primary objective of a handoff is to provide accurate information about a patient's care, treatment and services, current condition, and any recent or anticipated changes. The information communicated during a handoff must be accurate in order to meet patient safety goals.
- In healthcare there are numerous types of patient handoffs, including, but not limited to:
  ◦ Nursing shift changes, temporary responsibility for staff leaving the unit for a short time
  ◦ Physicians transferring complete responsibility for a patient; physicians transferring on-call responsibility
  ◦ Anesthsiologist report to post-anesthesia recovery room nurse
  ◦ Nursing and physician handoff from the ED to inpatient units, different hospitals, nursing homes and home healthcare
  ◦ Critical laboratory and radiology results to physicians

Implementation Expectations
1. The organization's process for effective handoff communication includes: interactive communications allowing for the opportunity for questioning between the giver and receiver of patient information.
2. The organization's process for effective handoff communication includes: up-to-date information regarding the patient's care, treatment and services, condition, and any recent or anticipated changes.
3. The organization's process for effective handoff communication includes: a process for verification of the received information, including repeat-back or read-back, as appropriate.
4. The organization's process for effective handoff communication includes an opportunity for the receiver of the handoff information to review relevant patient historical data, which may include previous care, treatment, and services.
5. Interruptions during handoffs are limited to minimize the possibility that information would fail to be conveyed or would be forgotten.

EVIDENCE

Strategies from other industries and applications to healthcare
- Human factors researchers conducted direct observations of handoffs in other 24-hour high-risk industries such as aviation, transportation, and nuclear power.

  ◦ They proposed a series of effective strategies that could be applied to healthcare, which included the following (Table 13-2):
  ◦ The use of standardization and a face-to-face verbal update with interactive questioning emerged as two key strategies from these observations that resonate with the JCAHO goals.

TABLE 13-2   Handoff Coordination and Communication Objectives and Strategies

INFERRED OBJECTIVES	STRATEGY
1 Improve handoff update effectiveness	Face-to-face verbal update with interactive questioning
2 Improve handoff update effectiveness	Additional update from practitioners other than the one being replaced
3 Improve handoff update effectiveness	Limit interruptions during update
4 Improve handoff update effectiveness	Topics initiated by incoming[*] as well as outgoing[†]
5 Improve handoff update effectiveness	Limit initiation of operator actions during update
6 Improve handoff update effectiveness	Include outgoing team's stance toward changes to plans and contingency plans
7 Improve handoff update effectiveness	Read-back[‡] to ensure that information was accurately received
8 Improve handoff update efficiency and effectiveness	Outgoing writes summary before handoff
9 Improve handoff update efficiency and effectiveness	Incoming assesses current status
10 Improve handoff update efficiency and effectiveness	Update information in the same order every time
11 Improve handoff update efficiency and effectiveness	Incoming scans historical data before update
12 Improve handoff update efficiency and effectiveness	Incoming reviews automatically captured changes to sensor-derived data before update
13 Improve handoff update efficiency and effectiveness	Intermittent monitoring of system status while "on call" [§]
14 Improve handoff update efficiency and effectiveness	Outgoing has knowledge of previous shift activities
15 Increase access to data	Incoming receives primary access to the most up-to-date information
16 Increase access to data	Incoming receives paperwork that includes handwritten annotations
17 Improve coordination with others	Unambiguous transfer of responsibility
18 Improve coordination with others	Make it clear to others at a glance which personnel are responsible for which duties at a particular time
19 Enable error detection and recovery	Overhear others' updates
20 Enable error detection and recovery	Outgoing oversees incoming's work following update
21 Delay transfer of responsibility during critical activities	Delay the transfer of responsibility when concerned about status/stability of process

[*]Incoming, personnel arriving to begin their shift
[†]Outgoing, personnel ending their shift.
[‡]Read-back, verbal repeat of information that was just heard to verify accuracy.
[§]On call, personnel who are assigned responsibility to be available to provide support on an "as needed" basis during a scheduled time.
Emily S. Patterson, et. al. Handoff strategies in settings with high consequences for failure: lessons for health care operations. *Int J Qual Health Care.* 2004;16(2):125–32, by permission of Oxford University Press.

- Use of structured language (i.e., "read-back" or "SBAR") can improve the comprehension of information transmitted at the time of a handoff.
  - "Read-backs" have been shown to reduce the number of errors during requested read-back of 822 lab results. All errors were detected and corrected. Furthermore, the use of a read-back was cost-effective.
  - "SBAR" or the situational briefing model is a technique used in aviation to communicate critical content (Table 13-3). This model has been

TABLE 13-3 Situation Debriefing Model "SBAR"

SBAR report to physician about a critical situation

S	**Situation**
	 I am calling about <u><patient name and location></u>.
	 The patient's code status is <u><code status>.</u>
	 The problem I am calling about is _____.
	  I am afraid the patient is going to arrest.
	
	 I have just assessed the patient personally:
	
	 Vital signs are: Blood pressure _____/_____, Pulse _____, Respiration _____and temperature ____.
	
	 I am concerned about the:
	  Blood pressure because it is over 200 or less than 100 or 30 mm Hg below usual.
	  Pulse because it is over 140 or less than 50.
	  Respiration because it is less than 5 or over 40.
	  Temperature because it is less than 96 or over 104.

B	**Background**
	 The patient's mental status is:
	  Alert and oriented to person place and time.
	  Confused and cooperative or noncooperative.
	  Agitated or combative.
	  Lethargic but conversant and able to swallow.
	  Stuporous and not talking clearly and possibly not able to swallow.
	  Comatose. Eyes closed. Not responding to stimulation.
	 The skin is:
	  Warm and dry
	  Pale
	  Mottled
	  Diaphoretic
	  Extremities are cold
	  Extremities are warm
	 The patient is not or is on oxygen.
	  The patient has been on _____ (l/min) or (%) oxygen for _____ minutes (hours).
	  The oximeter is reading _____%.
	  The oximeter does not detect a good pulse and is giving erratic readings.

A	**Assessment**
	  This is what I think the problem is: <u><say what you think is the problem></u>.
	  The problem seems to be cardiac infection neurologic respiratory _____
	  I am not sure what the problem is but the patient is deteriorating.
	  The patient seems to be unstable and may get worse, we need to do something.

R	**Recommendation**
	 I suggest or request that you <u><say what you would like to see done></u>.
	  transfer the patient to critical care
	  come to see the patient at this time.
	  Talk to the patient or family about code status.
	  Ask the on-call family practice resident to see the patient now.
	  Ask for a consultant to see the patient now.
	 Are any tests needed:
	  Do you need any tests like CXR, ABG, EKG, CBC, or BNP?
	  Others?
	 If a change in treatment is ordered then ask:
	  How often do you want vital signs?
	  How long to you expect this problem will last?
	  If the patient does not get better, when would you want us to call again?

effective in improving communication between clinicians. The SBAR process is defined as follows:

- *Situation*: Briefly state the nature of the problem, how it started, and how severe it is. Clearly communicate the patient's name and room number.
- *Background*: Give pertinent background information for the situation such as vital signs or code status.
- *Assessment*: What is your assessment of the patient's situation?
- *Recommendation*: What is your recommendation? Do orders need to be changed? Does the patient need to be moved?

In hospital physician handoffs (Table 13-4)

- Although few studies of in-hospital physician handoffs exist to date, these studies describe barriers to effective handoffs and how these barriers may compromise patient care.
- One study of internal medicine residents developed a taxonomy to describe effective and poor communication (Table 13-5).
- At least two studies have demonstrated benefits with the implementation of a computerized sign-out system in academic teaching hospitals. However, it is important to note that these computerized sign-out systems cannot substitute for a successful communication act and human vigilance will still be required to ensure a proper verbal handoff.

TABLE 13-4 Taxonomy of Sign-Out Quality

POOR SIGN-OUT	EFFECTIVE SIGN-OUT
Content omissions	Written sign-out patient content
• Medications or therapies	• Code status
• Tests or consults	• Anticipated problems
• Medical problems	• Active problems
◦ Active	• Baseline examination
◦ Anticipated	• Pending test or consults
• Baseline status	Overall features
• Code status	• Legible
• Rationale of primary team	• Relevant
Failure-prone communication processes	• Up-to-date
• Lack of face-to-face communication	Verbal sign-out
• Double sign-out ("night float")	• Face to face
• Illegible or unclear handwriting	• Anticipate
	• Pertinent
	• Thorough

Arora V, Johnson J, Lovinger D, et al. Communication failures in patient signout and suggestions for improvement: a critical incident analysis. *Qual Saf Health Care.* 2005;14:401–407.

SYSTEMS IMPROVEMENT

- Developing a standardized handoff protocol can help to meet the JCAHO national patient safety goals and potentially improve communication and transfer of professional responsibility during handoffs.
  - ◦ The handoff protocol should be tailored for users. To do this, take into account the culture of the discipline (i.e., surgery, medicine, nursing, and so forth), the

TABLE 13-5 Studies of In-Hospital Physician Handoffs

AUTHOR	STUDY TYPE	METHODS OR INTERVENTION	FINDINGS	IMPLICATIONS
Arora V, et al. 2005.[2]	Qualitative	Interns interviewed after a call night using critical incident technique to report near misses and adverse events due to deficient sign-out.	Sign-out communication failures include omitted content (such as medications, active problems) or failure-prone communication processes (such as lack of face-to-face discussion). These failures lead to uncertainty during medical decisions, resulting in inefficient or poor care. Interns desire relevant face-to-face verbal sign-outs that anticipate issues; and legible, accurate, updated, standardized written sign-out sheets.	Suggestions can be used to design educational programs and build effective sign-out systems. .
Solet DJ, et al. 2005.[13]	Descriptive, observational	Reviewed the literature on patient handoffs and evaluated the patient handoff process in their internal medicine residency program.	Considerable variation observed in the quality and content of handoffs. Barriers to effective handoffs include noisy, distracting physical settings that impede conversation; the hierarchal nature of medicine (which can discourage open discussion between health professionals); language barriers among doctors; lack of face-to-face communication; and time pressures.	Important need to develop standard educational practices that address these barriers.

(Continued)

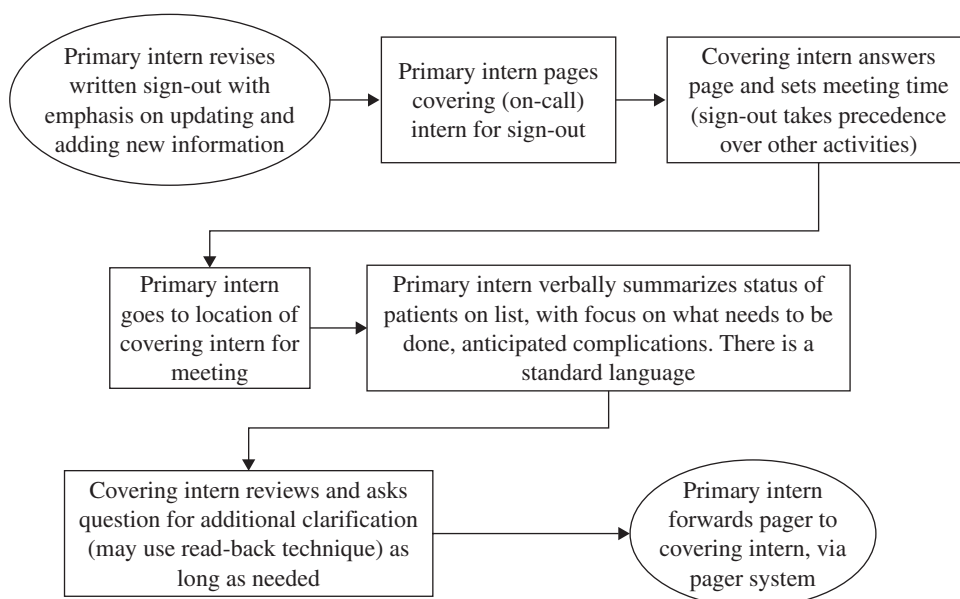**TABLE 13-5   Studies of In-Hospital Physician Handoffs (*Continued*)**

AUTHOR	STUDY TYPE	METHODS OR INTERVENTION	FINDINGS	IMPLICATIONS
Petersen LA, et al.[14]	Pre- and post-analysis to evaluate intervention	Pre- and post-analysis of preventable adverse events to evaluate the effect of implementation of computerized sign-outs.	Rate of preventable adverse events among the 3747 patients admitted to the medical service decreased from 1.7% to 1.2% (p <.10) with computerized sign-out. In the baseline period, the odds ratio (OR) for a patient suffering a preventable adverse event during cross coverage was 5.2 (95% confidence interval [CI], 1.5–18.2; p = 0.01), but was no longer significant after the intervention (OR, 1.5; 95% CI, 0.2–9.0).	Computerized sign-out may have reduced the risk for medical injury associated with discontinuity of inpatient care.
Van Eaton EG et al., 2005.[15]	Randomized cross-over study of intervention	Central, web-based system that stores sign-out information; downloads patient data (vital signs, laboratories); and prints them to rounding, sign-out, and progress note templates.	Improved efficiency through: (1) halved prerounding time spent copying data (p <.0001); shortened team rounds by 1.5 min/patient (p = 0.0006); and residents finishing work sooner (82.1% agree or strongly agree). Improved patient care by: (1) fewer patients missed on rounds (2.5 vs. 5 patients/team/month, p = 0.0001); (2) 40% more of resident prerounding time spent seeing patients (p = 0.36); (3) increased resident perceptions of sign-out quality (70% agree or strongly agree) and continuity of care (66% agree or strongly agree).	Information technology systems cannot only improve the quality of care but also address the importance of efficiency.

institution, and the local environment in which the handoff is occurring (i.e., busy ICU, ED, and so forth).
- ○ The goal of the handoff protocol is to standardize both process and content, within each discipline. While differences in the protocol across different disciplines are to be expected, deviations from the protocol within each discipline must be reduced.
- A process map can be very useful in getting buy-in and assessing the integrity of the handoff process.

FIG. 13-1   Sample handoff process map for University of Chicago internal medicine interns.

Some important questions to ask about the process are the following:

○ Where does the process begin and end? Is there a clear transfer of content and professional responsibility? Are there any gaps in the process? Where are the redundancies or unnecessary steps that do not add value to the process (Fig. 13-1)?

• A checklist of critical content can help to standardize the information that is communicated in addition to improving the transmission of that information (Fig. 13-2).

○ An ideal checklist is customized to one's institution and practice and contains examples of jargon routinely used to transfer information.

• This handoff protocol (process map and checklist) can be used to train new personnel and also observe handoffs in real time to monitor the adherence to the protocol.

✓ **P**roblem List

□ Any Pertinent Past Medical History (i.e. Cerebral Palsy, Seizure Disorder, etc.)
□ Systems-based List of Current Problems
□ Focus on Any Invasive Tubes/Devices (i.e. Patients has g-tube or trach)

✓ **E**xpected Tasks to be Done

□ Any Labs to Check on and What to Do About Them
□ Tests to Order or Follow-up on (CT scans, etc.)

✓ **D**iagnostic One-liner

□ Includes Age, Sex, Relevant Past History Related to Current Problem and Current Chief Complaint/
   Reason for Hospitalization (4 yo F with History of Chronic Severe Asthma here with Status Asthmaticus)

✓ **I**f/Then

□ Frequent Issues to be Expected with a Plan to Resolve Using IF/Then Format (i.e. "If HTN, Please
   Give Hydralazine," "CIS" etc.)

✓ **A**dministrative Data/Advanced Directives

□ Patient Name, Medical Record Number
□ Room Number
□ Admission Date
□ Primary Inpatient Team, Attending
□ Family Contact Information
□ Weight/BSA (Body Surface Area)
□ Code Status

✓ **T**herapeutics

□ Medications (Updated List of Medications with Doses (esp Dates that Any Antibiotics were
   Started and Duration)
□ Diet with Any Weaning Orders—Is the Patient NPO?
□ IVF
□ Oxygen with Weaning Instructions

✓ **R**esults and Other Important Facts

□ Labs (i.e. Recent Hgb/Hct, etc.)
□ Cultures (esp Any Outside Hospital Cultures that were Obtained)
□ Radiology Test Results
□ Consults

✓ **IV** Access/Invasive Devices

□ IV Access and What to Do If It Comes Out Overnight (i.e. "Has PIV, Must be Replaced If It Falls Out")
□ Any Invasive Devices Listed in Problem List

✓ **C**ustody and Consent Issues

□ Is the Patient DCFS (Division of Child and Family Services)—If yes, Need to Get Consents from Them
□ Child Protective Services Involved?
□ Parental Custody or Any Issues Related to Parental Custody

FIG. 13-2 Handoff checklist for pediatrics residents at the University of Chicago.

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14 DISCHARGE SUMMARIES
Marcy G. Carty and Namita S. Mohta

BACKGROUND

The hospitalist plays an integral role in ensuring a safe transition for discharged patients. This role is made more difficult by the following trends:
- Decreasing length of stay (LOS) and increasing case mix index (CMI)
  - Hospitalized patients are admitted and discharged sicker than ever before.
  - At same time, inpatient LOS is steadily declining.
- Growing number of handoffs
  - With the Accreditation Council of Graduate Medical Education (ACGME) resident hours restrictions, patients admitted to academic medical centers with house staff are handed off, or transitioned, to other caregivers (night floats, covering teams) multiple times throughout their stay and even in nonteaching settings there may be multiple clinicians involved in the patient's care. Therefore, discharges are often performed by someone other than the admitting physician, thus important details may be lost.
  - The advent of hospitalist attendings often creates additional systematic discontinuities, with transition on admission and transition postdischarge back to the primary care physician (PCP)/subspecialist who will provide follow-up care.
- Rising number of medications per patient
  - As population ages, number of chronic problems increases and necessitates more complex medical regimens. The average number of prescriptions per person rose from 7.3 to 11.6 between 1992 and 2002.
  - Growth of new pharmaceuticals is projected to continue with over 1000 products in the development pipeline.
- Increasing number of discharges to extended care facilities
  - Intermediate steps involving long-term care facilities create more transitions of care, and more opportunity for adverse events. Between 1985 and 1999, the percentage of discharges from hospitals transferred to long-term care facilities doubled, from 4.3% to 9%.

GOALS OF AN EFFECTIVE DISCHARGE CARE TRANSITION

- The discharge planning process begins at admission (Fig. 14-1), and should

TABLE 14-1   Case Concerning Discharge Summary

Ms S is an 86-year-old female with a history of CAD, CHF, and DM who was admitted to a community hospital with sepsis from a urinary tract infection.

- She improved with treatment consisting of IV fluid and several broad spectrum antibiotics, which were quickly narrowed to a quinolone.
- She was deemed stable for hospital discharge on hospital day #4 to a local rehabilitation facility for continued antibiotics and physical therapy.
- After three days at the facility, she became febrile and hypotensive and was readmitted to the hospital.
- In the emergency department (ED), her blood sugar was noted to be 671.

What happened?

- On discharge, medication reconciliation was not performed and her PO diabetes medications were not restarted.
- Her discharge summary did not indicate that the accepting provider needed to follow-up on pending urine culture sensitivities. Upon review, the bacteria were resistant to quinolones.

How could this readmission have been avoided?

- Contain all key elements, including pending test results at discharge.
- The discharge summary should communicate the plan for unresolved medical problems at the time of discharge, including specific information about what the receiving physicians should do.
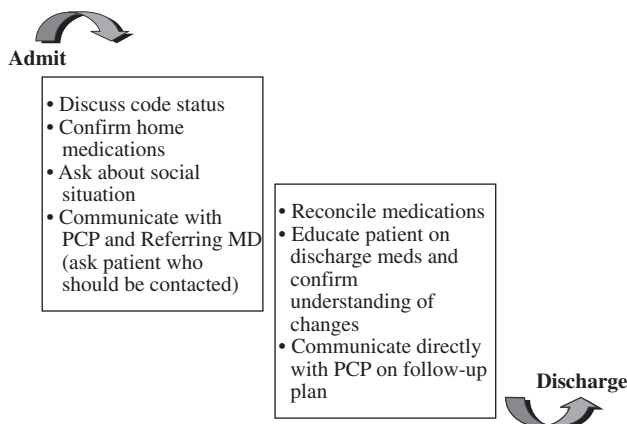
○ Prevent redundancy in diagnostic evaluations and avoid delays in future diagnosis and treatment.

○ Lay out a therapeutic/next step plan for the receiving physician for the patient's outstanding medical issues.

○ Ensure continuity during future hospitalizations.

The discharge summary should

○ *Contain all key elements:* Qualitative data suggest that many outpatient providers are dissatisfied with discharge summaries they receive because they are missing data regarding *discharge diagnosis*, *abnormal test results*, *medications,* and *follow-up plans*.

○ *Communicate the plan for unresolved medical problems at the time of discharge:* Several qualitative studies have shown that poor communication of the follow-up plan and outstanding issues at the time of discharge leads to adverse events; discharge summaries should contain specific information about

what the follow-up physicians need to do, when they should do it, and what they should watch for in the patient being passed off to them.

○ *Be brief:* van Walraven et al found that physicians felt quality of discharge summaries was substantially lower if length was greater than two pages.

○ *Follow a standardized format:* van Walraven et al found that outpatient physicians preferred discharge summaries in a standardized format that prompted inpatient providers to provide key elements that ensured information most relevant to ongoing care.

- The discharge process should

○ *Guarantee that the PCP/referring physician receives the discharge summary within a specific predefined number of days:* Recent studies have shown that between 25% and 40% of discharge summaries never reach the intended postdischarge clinician. Given most follow-up appointments are within 1–2 weeks, several best practice hospitals have a goal of all discharge summary reaching the outpatient providers within 5 business days.

○ *Ensure that the patient is educated regarding their medications and the discharge follow-up plan prior to discharge:* Schnipper et al identified drug-related problems during and after hospitalization and found unexplained discrepancies between discharge medication lists and postdischarge regimens in 29% of patients, and medication nonadherence in 23% of patients.

○ *Make certain that direct communication occurs between the discharging physician and follow-up clinician(s):* In a prospective cohort study of patients discharged from a general medical service, Forster et al found that almost 20% of patients had an adverse event postdischarge, 75% of which were preventable or ameliorable. The most common deficit was poor communication between the hospital caregivers and either the patient or the PCP.

FIG. 14-1   Hospitalist Role in Planning for Patient Discharge.

ELEMENTS OF EFFECTIVE PATIENT INSTRUCTIONS

When a patient is discharged from the hospital, he/she is inundated with a variety of information and it is important to highlight the critical elements so that the patient has a safe care transition.

The delineation of patient instructions is frequently a multidisciplinary process and it is important that the hospitalist coordinates all of the various care management and follow-up instructions in a document that facilitates an effective care transition. When thinking about the elements of effective patient instructions, consider the following question: What does the patient absolutely need to do in the next 72 hours?

ELEMENTS OF AN EFFECTIVE DISCHARGE SUMMARY

When thinking about the elements of an effective discharge summary, it is important to consider the following questions:

- Who will be reading the discharge summary?
  - Healthcare providers who have never met your discharged patient may be caring for him/her in a semi-acute setting (visiting nurses and doctors at skilled nursing facilities). This team's primary, and often only, source of information about the patient is the hospital discharge summary.
  - Patients receive care in a variety of settings from an ever-growing number of healthcare providers. In the case of hospitalized patients, for example, 70% of patients experience between two and three transfers in the first 3 months after discharge from acute care hospitals.
  - Different types of clinicians will need varying types/amount of information, and often the discharge summary will be shared by all of them. For example, the visiting nurse seeing a patient will need to be told in follow-up visits to check daily weights while the PCP will need to know the last creatinine and medication regimen at discharge.
- What information will healthcare providers need to take care of this patient after discharge?
  - The Society of Hospital Medicine (SHM) has recently published a discharge checklist for hospitalists, included in Table 14-2. This checklist includes the elements of an effective discharge summary, patient instructions, and critical information that need to be communicated to the follow-up clinician.
  - Each hospital has their own format for generating discharge summaries, whether they be dictated or electronically automated. Regardless of the template format, the framework outlined in the SHM checklist should form the basis of what is included in the summary and what is passed on during the transition handoff.

TABLE 14-2 Ideal Discharge of an Elderly Patient—A Hospitalist Checklist

DATA ELEMENTS	PROCESSES		
	DISCHARGE SUMMARY	PATIENT INSTRUCTIONS	COMMUNICATION TO FOLLOW-UP CLINICIAN ON DAY OF DISCHARGE
Presenting problem that precipitated hospitalization	x	x	x
Key findings and test results	x		x
Final primary and secondary diagnoses	x	x	x
Brief hospital course	x		x
Condition at discharge, including functional status and cognitive status if relevant	x—functional status o—cognitive status		
Discharge destination (and rationale if not obvious)	x		x
Discharge medications:			
Written schedule	x	x	x
Include purpose and cautions (if appropriate) for each	o	x	o
Comparison with preadmission medications (new, changes in dose/freq. unchanged, "meds should no longer take")	x	x	x
Follow-up appointments with name of provider, date, address, phone number, visit purpose, suggested management plan	x	x	x
All pending labs or tests, responsible person to whom results will be sent	x		x
Recommendations of any subspecialty consultants	x		o
Documentation of patient education and understanding	x		
Any anticipated problems and suggested interventions	x	x	x
24/7 call-back number	x	x	
Identify referring and receiving providers	x	x	
Resuscitation status	o		
And any other pertinent end-of-life issues			

*x = Required element.
†O = Optional element.
Adapted from: Halasyamani LK, Kripalani S, Coleman E, et al. Transition of care for hospitalized elderly patients—development of a discharge checklist for hospitalists. *J Hosp Med.* 2006;1:354–360.

- Discharge summary "pearls"
  - A general rule of thumb when writing the discharge summary is "What would I want to know if I was responsible for the care of this patient?"
    - Identification of new drug allergies, intolerances, any recommended drugs that did not work, any medication changes, specifics about high-risk drugs such as warfarin (dosages, follow-up check, and who is responsible), time course for administration of antibiotics
    - "New" information about the patient such as suspected substance abuse or dementia that would require outpatient follow-up, incidental findings on imaging that require follow-up with specified time intervals, identified healthcare proxy, end-of-life wishes, and family issues
    - Names of consultants, contact information, and synopsis of recommendations
    - Pending tests at discharge
  - It is also important to remember what not to include in a discharge summary. Often, the value of the information is diluted by superfluous data that is not helpful to receiving care providers or too long.

SYSTEMS IMPROVEMENT

- Based on the above discussion, the key to a good discharge summary, and more importantly a good postdischarge handoff, is communication in multiple venues and at multiple levels:
  - Communication with the patient predischarge
  - Communication with the outpatient providers (both via a written discharge summary and often a more direct communication such as a phone conversation)
  - Communication with future admitting hospitalists via the discharge summary (as part of the patient's longitudinal medical record)
- Based on research and personal experience initial systems improvement should focus on the following areas:
  - *Set communication standards and measure the implementation:* Select a physician champion and develop a short-term team with departmental leadership, referring physicians and hospitalists tasked with developing communication guidelines for the discharge summary between inpatient and outpatient physicians:
    - When (admission, discharge, change in status)
    - How (e-mail, phone, pager)

While setting guidelines also ensure that your group chooses specific goals and measures for each process and notes how they will be followed over time.
  - *Weigh the pros and cons of automating and standardizing the production of the discharge summaries at your institution:* There are pros (more efficient, standardized sections, less dictation cost, forces summarization) and cons (often poorer quality content, rely on the provider typing rather than dictating) to automating the discharge summary.
  - *Ensure that hospitalists and house staff are educated on what a proper discharge summary and an ideal discharge process are:* Frain et al found that physicians in training felt a lack of guidance regarding what to include in a discharge summary. Also, writing/dictating more than 20 discharge summaries per week conflicted with the need to attend to active inpatients, which caused an innate conflict on the part of the house staff. We support a highly structured educational curriculum starting in medical school on how to best communicate over transitions of care.
  - *Develop an audit system:* We believe that discharge summaries should be routinely audited. This will ensure that problems with documentation are addressed and may improve completeness. It will also reinforce the importance of discharge summaries to hospitalists and physicians in training.

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15 PATIENT EDUCATION IN THE HOSPITAL

Marie Neaton

BACKGROUND

- The Institute of Medicine (IOM) has defined patient-centered care as one of the six aims for healthcare improvements in the twenty-first century.
- Patient-centered care requires that all members of the healthcare team effectively educate patients and families so that they can actively participate in decision making relating to their care plans. This goes beyond informed consent.
- *The Core Competencies: A Framework for Curriculum Development* by the Society of Hospital Medicine (SHM) has identified patient education as a fundamental core competency for hospitalists.
- The American Association of Family Practitioners (AAFP) core educational guidelines define patient education as "the process of influencing patient behavior and producing the changes in knowledge, attitudes, and skills necessary to maintain or improve health."
- Behavior change is a complex process that requires more than increased knowledge.
  - A longitudinal perspective acknowledges the difficulty that patients have in following medical regimens.
  - It is a process that occurs over time and requires the integration of knowledge into daily action through trial and error.
- The hospital stay provides an opportunity that goes beyond teaching patients and families about their diagnosis, tests, treatment plans, and ongoing care after discharge.
- Patient-centered care includes patient education that
  - Empowers patients to ask questions and take an active role in their care
  - Facilitates insight into behaviors that put patients at risk so that they can modify behavior accordingly
  - Teaches patients self-management skills for acute and chronic disease care
  - Provides specific contact information relating to community resources postdischarge

PATIENT EDUCATION AND PATIENT SAFETY

- Recognition that patient education is central to patient safety and a critical component to reduce hospitalizations and readmissions, regulatory agencies and professional

organizations include patient education as part of their standards of care. For example, the Joint Commission of Accreditation of Hospital Organizations (JCAHO) has selected an educational intervention, the provision of written heart-failure–specific discharge instructions, as a core measure of quality for hospitalized heart-failure patients.
  - The impact of this intervention has been demonstrated in a randomized controlled trial comparing the effects of a structured 1-hour education session with a nurse educator to usual discharge education for heart failure patients (Koelling et al).
  - The combined endpoint of rehospitalization or death occurred in 47% of the education group vs. 65% of the control group.
  - Patient's reports of self-care practices such as doing daily weights were higher in the intervention group.
- Other examples of positive impact of patient education on health outcomes include
  - Improvements in diabetes control and fewer complications
  - Reduced emergency department (ED) visits and hospitalizations for asthmatics and improved self-management skills with lower morbidity (The National Asthma Education Program)
  - Positive impact on blood pressure control, mortality exercise, and diet for patients with cardiac disease
- The recommendations for patient education that may take different forms are to focus on survival skills and the behaviors needed for self-management, rather than on broader concepts such as disease pathophysiology or pharmacology.
- Despite a lack of clear outcomes for a particular type of educational intervention, all organizations dealing with chronic illness have identified patient education as a critical part of programs designed to improve clinical outcomes for chronic diseases.

PATIENT ADHERENCE TO PRESCRIBED THERAPIES

- Lack of compliance or failure to follow the treatment plan is a widespread problem.
  - For example, several studies of heart failure patients reported that they took only 70% of their medications and had high rates of nonadherence to the rest of their treatment plan, such as following a sodium-restricted diet.
  - It is estimated that nonadherence contributes to more than 60% of the hospital readmissions for heart failure.
- Even with patient education, some patients continue to not follow a treatment plan.

- Adherence is a complex behavioral process and not as simple as learning to follow specific directions. Adherence requires patients to internalize information about medical care plans and make choices.
- Poor adherence to the prescribed regimen or instructions can lead to
  ◦ A poor understanding of complex instructions or complex medical regimens that involve multiple behavior changes
  ◦ Low health literacy
  ◦ Reduced cognition, hearing, vision, and concentration, especially common in hospitalized patients
  ◦ Financial constraints
- Factors that facilitate adherence include
  ◦ Simplified regimens
  ◦ Integration of self-management behaviors into daily routines
  ◦ Development of achievable goals
  ◦ Feedback on adherence to recommended treatment plan

HEALTH LITERACY

- The IOM defines health literacy "as the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions."
- According to the IOM report on health literacy, nearly half of all American adults—90 million people—have difficulty understanding and acting upon health information. These difficulties include the ability to read, comprehend, and act on health information as well as perform basic numerical tasks such as "taking 2 tablets every 8 hours.
- The 1992 National Adult Literacy Survey found that 75% of respondents with a chronic disease also had low literacy skills. In the 2003 report, adults over age 65 continued to have the lowest literacy scores of any age group partly attributed to a decline in reading skills that appear to decline with advancing age. The elderly are also more likely to have other problems that may affect literacy including decreased vision, hearing loss, impaired cognition, and multiple chronic illnesses.
- The medium for health education also may be a factor in non-compliance with healthcare plans.
- For example, health related materials are commonly written at a 10th grade or higher level instead of the required fifth-sixth grade reading level.
- Low health literacy has been linked in many studies to poor health outcomes: the IOM report states that those with low literacy are more likely to make errors with their medication, less likely to complete medical treatments, and more likely to become hospitalized (see Chap. 97).

CHRONIC ILLNESS

- Approximately 120 million Americans have one or more chronic illnesses that account for 70% to 80% of healthcare costs.
- In the Medicare population, 25% of recipients have four or more chronic conditions accounting for two-thirds of Medicare expenditures. These numbers will only increase as the population continues to age.
- Chronic illnesses require patients to take extensive responsibility in the day-to-day management of their care.
- Key concepts of self-management include the ability to
  ◦ Monitor illness
  ◦ Manage symptoms and treatments
  ◦ Cope with chronic physical and psychosocial changes
- The focus of the patient education of chronic disease is self-management, namely, how to
  ◦ Develop problem-solving skills
  ◦ Improve self-efficacy (the belief that the patient can positively impact their health)
  ◦ Apply knowledge to individual circumstances
- Clinicians are advised to focus on goal setting, problem-solving strategies, and to link patients to self-management programs in the community.

STRATEGIES TO IMPROVE SELF-MANAGEMENT OF CHRONIC DISEASES

- Motivational interviewing techniques have been identified as an effective strategy to focus the patient interaction on problem solving, and identifying and reducing barriers to self-management. Motivational interviewing involves asking provocative questions and then discussing the responses.
- In the hospital setting asking focused questions can be helpful in assessing a patient's understanding about his/her illness and required self-management. For examples of questions, see Table 15-1.

TABLE 15-1   Questions that Patients Should be Asked

"Many people have some trouble taking their medications every day. What kind of trouble have you had taking your medication? What problems might happen at home?"

"These are the symptoms of heart failure. Did you have any of these symptoms before you came into the hospital? What do you think caused them? What do you do when you get these symptoms?"

"What are you afraid might happen because of your diabetes? Do you think you can have any impact on that?"

"Lots of people have trouble picking low-salt foods when they eat out. Have you had these problems?"

"It can be hard to follow the doctor's advice at home. What gives you the most difficulty?"

• Asking questions, and listening to and discussing responses help the patient in identifying barriers, beliefs, and priorities for action. This collaborative nonjudgmental approach can be an effective strategy to identify barriers and problem solve real-life situations.

INTERVENTIONS

ASSESS FOR LITERACY

• Low literacy is frequently hidden and not readily admitted to. Even if asked, the patient may deny problems with reading.
• *Observe:* Look for behavioral indicators, such as asking someone else to read or having difficulty completing forms.
• *Ask:* "Many people have trouble reading health information. Do you have any trouble with this?"
• *Assess:* "Can you read these instructions to me (Their question should be asked in private.)"
• *Evaluate comprehension:* Use open-ended questions. "Tell me what you understand about your disease." "When you go home, what will you do to control your diabetes?"

STRATEGIES FOR EFFECTIVE EDUCATION

• Education requires repetition; it is important to repeat the key points and to use more than one method. Remember that patient education is a team approach and a responsibility of all disciplines. It is most effective when the whole team delivers a consistent message.
• *Say it:* Patients do regard the physician as an authority and are influenced by medical recommendations. Verbal instructions are important. "The doctor said you should. . . ."
• *Repeat it:* Assume that only a small portion is actually retained and understood. Important information should be repeated. "It is very important that you take your warfarin each day and have your blood levels drawn." "You are going home on a medication called clopidogrel. Take it everyday to prevent blood clots from forming in your stent. It can prevent a heart attack."
• *Write it:* Written materials provide a reference for both: the patient, and caregivers and the next care provider. They also reinforce the education given. Reviewing written materials with the patient can be an effective strategy. Written instructions should include the diagnosis and a detailed treatment plan including changes in medication, other appointments, activity, diet, and when to seek further medical advice. Just providing a written piece of information without a verbal explanation is not a highly effective strategy, especially for people with lower health literacy.
• *Close the loop or teach back:* This is a simple, highly effective strategy to increase understanding and correct misunderstandings. Assess the patient's comprehension by having them tell you what they understand. "So tell me what you know about taking clopidogrel and why it is important." "Before you go home I want to be sure you have all the information that you need. Can you please explain to me what you will do to control your pain at home?"
• *Use multiple methods:* Using videos, pictures, diagrams, schedules, or tables can increase learning. Reviewing written materials with the patient also improves comprehension. Involve the family and caregivers in the educational process as well.

READING LEVEL

Whether it is preprinted material or personalized written discharge instructions, the "keep it simple" principle is facilitates compliance
• Use shorter words and sentences. Sentences should be no more than 8–15 words long. Express one idea per sentence. Use words that are one-two syllables as often as you can.
• Use common everyday language and avoid medical jargon if possible. "It's positional vertigo and quite benign" is not as meaningful as "You get dizzy when you change positions. While uncomfortable, it should go away and it does not cause other health problems."
• The simple measure of gobbledygook (SMOG) index is an easy method to use to assess reading level (Table 15-2) and a SMOG calculator is available online at http://webpages.charter.net/ghal/SMOG.html
• In general, physicians tend to overestimate the patients reading level and use recommended strategies infrequently.

SYSTEM CHANGES

• Provide written discharge instructions for common diagnoses, whether they are on a computer or preprinted.
• Standardize common, critical information such as how to take and monitor warfarin.
• Assess reading level of materials and work to reduce it. Use short sentences, small words, and larger fonts. Use dark ink on light paper, and use headers, subheadings, or a question and answer format to increase readability.

TABLE 15-2   SMOG Readability Formula

1. Select 30 sentences from the text to be assessed. Count 10 consecutive sentences near the beginning of the text, 10 in the middle, and 10 near the end. A sentence is any string of words ending with a period, question mark, or exclamation point.
2. In these 30 sentences, count every word containing three or more syllables. Include repetitions.
3. Estimate the square root of the number of polysyllabic words counted by taking the square root of the nearest perfect square.
4. Add 3 to the approximate square root. This gives the SMOG grade which is the reading grade that a person needs to fully understand the text.

Example

Total number of words with 3 or more syllables:	78
Nearest perfect square:	81
Square root:	9
Add 3:	12

The grade level would be grade 12.

Adapted from: G. Harry McLaughlin. SMOG grading. *Journal of Reading* 1969;5:639–646; and Hoffman T, Worrall L. Designing effective written health education materials: consideration for health professionals. *Dis Rehab*. 2004;26(19):1166–1173.

- Supplement educational efforts with videos, DVDs, or closed-circuit TV programs available for common health problems or treatment plans.
- Use charts, models, pictures, and diagrams to clarify message.
- Develop standards for patient education and a multi-disciplinary team to implement them. Develop a "tool kit" with standardized content, outcomes, and materials and methods to support the plan.
- The bottom line is patient education remains a critical and necessary part of each hospital stay. Effective education requires repetition, clarity of message, simple language, and interaction with the patient.

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WEB RESOURCES

Health literacy

1. Harvard School of Public Health, Health Literacy Studies. http://www.hsph.harvard.edu/healthliteracy/Comprehensive Web site with many links and literacy information, tools, and guides for writing patient education materials.
2. National Assessment of Health Literacy (NAAL) http://nces.ed.gov/naal
   Contains the 2003 NAAL report & statistics on literacy in the United States
3. Center for Health Care Strategies
   a. www.chcs.org
      Nine fact sheets available about health literacy, its impact on health outcomes, and strategies for designing patient education for patients with low literacy.
   b. Report on Literacy and Health Outcomes. Evidence Report/Technology Assessment No. 87. www.ahrq.gov
      Summarizes data related to health impacts of low literacy and interventions to improve health outcomes.

Writing guides

1. *Simply Put*. Developed by the Centers for Disease Control & Prevention (CDC).
   http://www.cdc.gov/od/oc/simpput.pdf Provides tips for writing simply and translating technical information into common language.

2. *Clear and to the Point. Guidelines for using plain language at NIH.*
   http//:execsec.od.nih.gov/plainlang/guidelines/index.html
   Gives more tips on writing simply and clearly.
3. *The SMOG Readability Calculator by G. Harry McLaughlin*
   http://webpages.charter.net/ghal/SMOG.html
   Contains a SMOG score calculator and other links.

Selected sites with patient education materials

1. American Diabetes Association www.diabetes.org
2. American Heart Association www.americanheart.org
3. American Lung Association www.lungusa.org
4. Arthritis Foundation www.arthritis.org
5. Heart Failure Society of America: Patient education modules www.abouthf.org
6. National Cancer Institute www.cancer.gov/cancerinfo/
7. National Diabetes Education Program www.ndep.nih.gov
8. National Digestive Diseases Information Clearinghouse http//:digestive.niddk.nih.gov
9. National Heart, Lung, & Blood Institute www.nhlbi.nih.gov
10. Vascular Disease Foundation www.vdf.org
11. Vascular Web www.vascularweb.org

Chronic illness

1. Improving chronic illness care www.improvingchroniccare.org
   Web site contains many tools & resources for providers to use in managing the care of those with a variety of chronic illnesses.

16   MANAGING TEST RESULTS AT HOSPITAL DISCHARGE

Christopher L. Roy

OVERVIEW

- The transition of care from hospital to home has been identified as a hazardous time for patients.
- Due in part to the rising prevalence of hospitalist services, discontinuity between inpatient and outpatient providers is increasingly the rule rather than the exception.
- Failures of communication between providers have been shown to account for more than half of all preventable adverse events in the postdischarge period.
- Although many physicians rely on the discharge summary for communication, it may not include key details about medications, pending test results, and follow-up plans and may not be available at all at the first postdischarge visit.

- Test results that are still pending at discharge may be particularly likely to fall through the cracks during this transition for the following reasons:
  ◦ They may be considered relatively minor details after an eventful hospital admission.
  ◦ They may be numerous.
  ◦ Lines of responsibility for follow-up may not be clear.
  ◦ It may not be obvious that they are not finalized or that they may change after discharge (e.g., in the case of a radiology report that has yet to be reviewed by an attending radiologist or a sensitivity panel returning on a positive culture).
- In recent years, national organizations have underscored the importance of test result follow-up in general:
  ◦ As a national patient safety goal for 2005, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) challenged hospitals to "measure, assess, and, if appropriate, take action to improve the timeliness of reporting, and the timeliness of receipt by the responsible licensed caregiver, of critical test results and values." In *20 tips to help prevent medical errors* the Agency for Healthcare Research and Quality (AHRQ) tells patients that when it comes to test results, "If you have a test, don't assume that no news is good news."[6]
- In the outpatient setting, several authors have studied follow-up of test results and found major deficiencies, with the majority of physicians reporting delays in reviewing test results, dissatisfaction with their ability to manage results, and failures to notify patients of normal, and sometimes even abnormal, results.
- Inadequate management of test results has the potential to affect not only patient safety but also malpractice claims. One major malpractice insurer reports a failure to follow-up results as accounting for one-quarter of diagnosis-related claims.
- In the outpatient setting, the same physician ordering the test is generally the physician who will follow up on the result. However, in the transition from hospital to home, responsibility for result follow-up is not always clear. Multiple providers (including hospitalists, consultants, and house staff) are often involved in caring for the patient in hospital, and multiple individuals order tests. Several questions often arise in this situation:
  ◦ If a result is pending for several days to weeks after a patient has left the hospital, does the responsibility for follow-up shift to the outpatient physician?
  ◦ If so, when and how does this transfer of responsibility occur?
  ◦ If the pending test and need for follow-up is documented in the discharge summary, does this absolve the inpatient physician of the responsibility?

EPIDEMIOLOGY AND PHYSICIAN AWARENESS OF TEST RESULTS PENDING AT DISCHARGE

- In a recent prospective study, we collected data on test results that were pending on the day of discharge at two academic medical centers, and surveyed hospitalists and primary care physicians about those that were potentially clinically actionable. This was the first and only study of the epidemiology and physician awareness of "postdischarge results."
- We hypothesized that these postdischarge results were common, were frequently overlooked in a patient's transition from inpatient to outpatient physicians, and that some might have important clinical consequences.
- Our objectives were to determine the prevalence and characteristics of postdischarge laboratory and radiology results and to determine physician awareness of those results that were important clinically
- Among 2644 patients discharged over 5 months, 1095 patients (41%) had pending results on the day of discharge.
- Of 2033 pending results, 877 (43%) were found to be abnormal when the results returned, and 191 (9%) were considered potentially actionable on the basis of a review of the discharge summary.
- When surveyed on these potentially actionable results, hospitalists and primary care physicians (PCP) stated they were unaware of 62%, and they were unaware the test had been ordered in 33%.
- Surveyed physicians agreed that 33% required clinical action and that 13% were urgent.
- Most of the urgent results were microbiology (blood, urine, and wound cultures) that necessitated starting or changing antibiotic therapy. One patient who had been admitted with new atrial fibrillation had an undetectable thyroid stimulating hormone level.
- Examples of actionable but nonurgent results included
  - Incidental findings of pulmonary nodule(s) or opacities on chest radiography or computed tomography (CT) that required follow-up
  - Positive serologic testing for *Helicobacter pylori* in setting of gastrointestinal bleeding
  - A new diagnosis of hepatitis C in a setting of presumed alcoholic hepatitis
  - Unexplained iron deficiency
- Our findings have important implications for patient safety on several fronts:
  - First, the volume of pending postdischarge results (both normal and abnormal) was high, averaging about one outstanding result for each discharged patient. About 9% of these were potentially actionable, and some were urgent. The sheer volume of postdischarge results thus calls for a high-reliability results management system.
  - Second, inpatient and primary care physicians' awareness of potentially actionable results was low, with an overall awareness rate of only 38%. The standard of care at our organizations during the study period was essentially to rely on the vigilance of individual clinicians to track these postdischarge results, and clearly this is not sufficient.
  - Finally, there was also a low awareness that a test was ordered, suggesting that multiple team members were ordering the tests, that there was imperfect communication about these tests with the physician discharging the patient, and that lines of responsibility were not clear.

DESIGNING AN IDEAL POSTDISCHARGE RESULTS MANAGEMENT SYSTEM

- The high volume and low physician awareness of postdischarge results provides justification for a high-reliability system of follow-up for these results to avoid the catastrophic cases such as those presented in Table 16-2 and 16-3.
- The remainder of this chapter outlines key concepts in developing an ideal system for your hospitalist practice (Fig. 16-1).

ESTABLISH LINES OF RESPONSIBILITY AND IDENTIFY RESPONSIBLE PROVIDERS

- Clear lines of responsibility for test follow-up in addition to clear identification of responsible providers form the necessary foundation of a postdischarge result management system.
- Lines of responsibility should be established at the time of test ordering and reconfirmed at hospital discharge.
  - Avoid a system that creates a sense of diffused responsibility, when multiple providers care for the same patient.
  - Instead, create a system of planned redundancy in which one provider is held primarily responsible and a multilayered fail-safe mechanism is put into effect if the responsible provider fails to act on abnormal test results.
- In most cases, the ordering physician will have primary responsibility for test result follow-up.
  - Your practice should discuss exceptions to this rule, contingency plans if the ordering physician is unavailable, and whether this responsibility can be delegated.
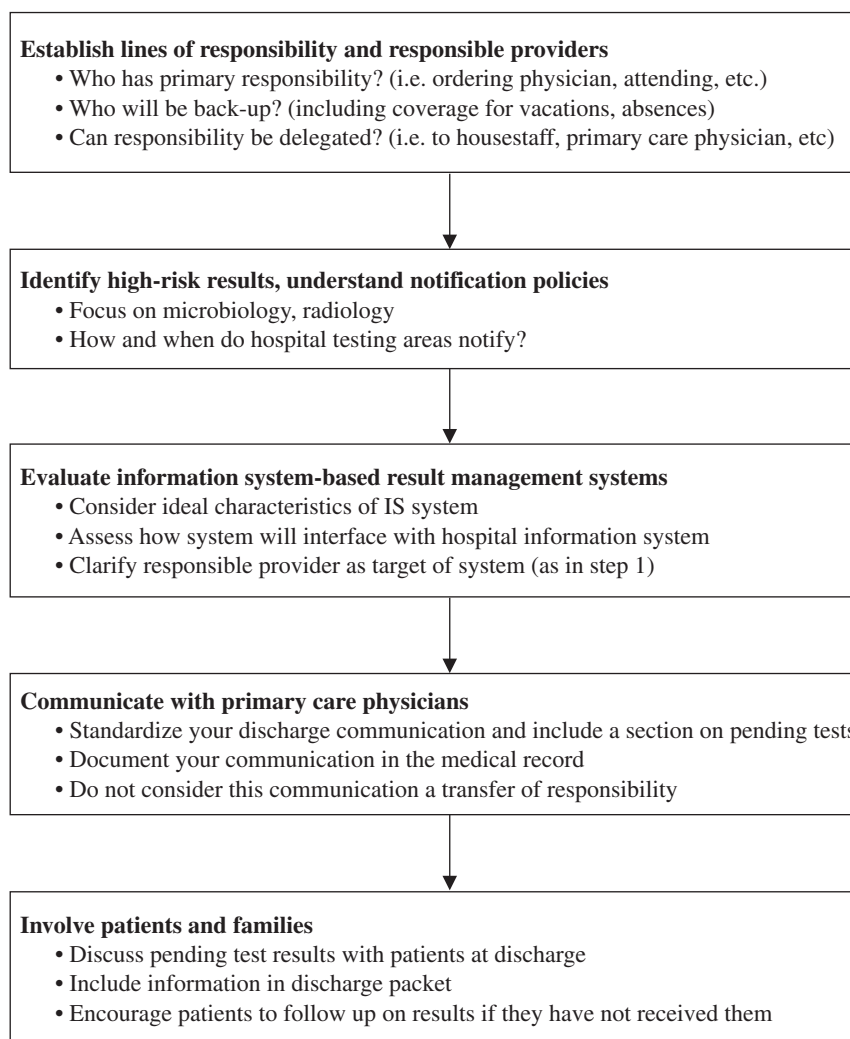
Establish lines of responsibility and responsible providers
- Who has primary responsibility? (i.e. ordering physician, attending, etc.)
- Who will be back-up? (including coverage for vacations, absences)
- Can responsibility be delegated? (i.e. to housestaff, primary care physician, etc)

Identify high-risk results, understand notification policies
- Focus on microbiology, radiology
- How and when do hospital testing areas notify?

Evaluate information system-based result management systems
- Consider ideal characteristics of IS system
- Assess how system will interface with hospital information system
- Clarify responsible provider as target of system (as in step 1)

Communicate with primary care physicians
- Standardize your discharge communication and include a section on pending tests
- Document your communication in the medical record
- Do not consider this communication a transfer of responsibility

Involve patients and families
- Discuss pending test results with patients at discharge
- Include information in discharge packet
- Encourage patients to follow up on results if they have not received them

FIG. 16-1   Developing an ideal postdischarge results management system.

- Consider centralizing all test result follow-up with one position or individual, for example, having a physician assistant or nurse practitioner screen all postdischarge test results.
  - The main drawback of a centralized system is that this individual would not know the clinical context and thus the urgency of an abnormal result.

IDENTIFY HIGH-RISK RESULTS AND UNDERSTAND NOTIFICATION POLICIES OF YOUR HOSPITAL'S TESTING AREAS

- Consider which postdischarge results are more common and more likely to be actionable. In our study, most actionable results were from microbiology and radiology.
- Understand your laboratory and radiology department policies for notifying providers about abnormal results.

- Microbiology results, mainly culture data and sensitivities, frequently take several days to be finalized, increasing the likelihood that the patient will have been discharged when the result is finalized. Laboratory personnel may notify the responsible physician of some results but not others, for example, when a patient develops positive blood cultures, but not when the antibiotic sensitivity panel becomes available.
- Radiology results are first preliminarily dictated or discussed with the inpatient team. The final report is entered only when an attending physician reads the study, which may be several hours later, and may differ from the preliminary report. Unless these amendments to the preliminary report are directly communicated to the responsible inpatient physician, it may be assumed that the final report will be unchanged.
- Your practice should understand how each testing area within your hospital handles abnormal results,

noting specifically which results require active communication (i.e., page) and how changes to preliminary reports are communicated to providers.

EVALUATE INFORMATION-SYSTEM–BASED RESULTS MANAGEMENT SYSTEMS

- An ideal postdischarge results management system would leverage the power of modern information systems.
- Postdischarge results would be centralized in a results management system that is integrated into the hospital's clinical information system and that is able to alert users to severely abnormal results.
- The application would be seamlessly embedded within the inpatient electronic medical record and be able to cull pending and final results from the clinical data repository, prioritizing the results on the basis of the type of result and degree of abnormality, and placing them in a centralized queue for users to review.
- Additional features would include automatic notification of severely abnormal results by alphanumeric page or e-mail, and patient notification of results with automatically generated letters.
- Similar systems have been tested and successfully implemented to address results management in the outpatient setting and could serve as a model for inpatient systems.
- In organizations with computerized provider order entry (CPOE), responsibility for the result should be assigned when the test is ordered, confirmed, and, if necessary, modified, at discharge.
- The results management system could be integrated with the discharge order so that pending results must be reviewed at discharge and could allow the discharging physician to assign responsibility for the result and select their preferred mode of notification of the result when it is finalized.
- Information systems-based management of postdischarge results is attractive but also has limitations:
  - Most centers are limited by the cost and difficulty of integrating such a system into the hospital's information systems.
  - Any results management system will be unsuccessful without clear guidelines regarding roles and responsibility for follow-up.
  - The process of result management must be clear to all providers caring for a patient, and a back-up system must be in place if those assigned primary responsibility are not available.
  - If the system depends on administrative databases to identify the responsible providers, these must be exquisitely accurate.

TABLE 16-1   Summary Points

- Test results that return after hospital discharge are common and can be overlooked by hospitalists and PCPs, resulting in potential harm to patients
- Clarifying how your practice and your hospital currently handles postdischarge results is a key first step
- Designing an ideal system will involve identifying responsible providers, focusing on high-risk test results, considering information-systems–based solutions, improving communication with PCPs, and involving patients and families.

  - The system must not unduly burden busy clinicians with unnecessary alerts and warnings.
  - The rules by which results are prioritized must be robust enough to filter out less urgent results, and the user should be able to set their preference about how to be notified.

COMMUNICATE WITH THE PCP

- Your discharge communication with the PCP should highlight information about pending tests, and this communication should be documented in the medical record.
- Consider standardizing your communication at discharge with a template that includes pending tests and follow-up plan.
- Although this communication is extremely important, it should not be considered a transfer of the primary responsibility for postdischarge result follow-up, unless clearly stated and understood as so.

INVOLVE PATIENTS AND FAMILIES

- The patient and family members may be a largely untapped resource when it comes to postdischarge result follow-up.

TABLE 16-2   Case 1: Postdischarge Test Result Follow-up Failure

A 45-year-old man is admitted with headaches and a blood pressure of 230/120 mm Hg.
- He has no past medical history and is on no medications.
- He has no family history of hypertension.
He is managed successfully with antihypertensive medications.
- The intern orders a 24-hour urine collection for catecholamines as a workup for pheochromocytoma.
- These results are pending at hospital discharge, but they are not mentioned in the discharge summary.
During the subsequent 6 months, he is readmitted twice with hypertensive urgencies before his PCP notices that the previously ordered 24-hour urine catecholamines are elevated. He undergoes a magnetic resonance imaging (MRI) that reveals an adrenal mass consistent with pheochromocytoma.
- The mass is resected with resolution of his hypertensive crises.

TABLE 16-3   Case 2: Postdischarge Test Result Follow-up Failure

A 37-year-old woman with advanced AIDS is admitted with fever, mental status changes, and bilateral pulmonary nodules.

- Blood cultures grow *Staphylococcus aureus,* and she is successfully treated with nafcillin.
- The pulmonary nodules are thought to be septic emboli, but invasive fungal disease is also a possibility
- A serum beta glucan (a test predictive of early invasive fungal disease) is ordered and is still pending on the day of discharge.

She is readmitted to the intensive care unit 6 days later with obtundation and worsening pulmonary opacities.

- The beta glucan is noted to be positive, having been available 4 days before the readmission.
- Antifungal therapy is begun but she dies of respiratory failure within 24 hours.
- Autopsy confirms invasive aspergillosis of the lungs and central nervous system.

- Consider including pending test results with the discharge information packet and telling patients that they should not assume "no news is good news." If they do not obtain the results from their physician, they should be encouraged to seek them out.
- Several organizations are developing web-based "patient portals" where patients can not only book appointments and send messages to their physician but also review test results.

SUMMARY

- A failure to follow up on postdischarge results can result in adverse outcomes for patients, as illustrated in the cases presented in the sidebars above.
- We have documented important gaps in physician awareness of these results.
- Designing a system to address this problem poses challenges similar to those seen when designing a system for test result management for outpatients, but unique challenges are posed by the transition of care that frequently accompanies hospital discharge.
- An ideal postdischarge result management system should rest on a foundation characterized by unequivocal lines of responsibility for result follow-up and accurate identification of responsible providers.

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