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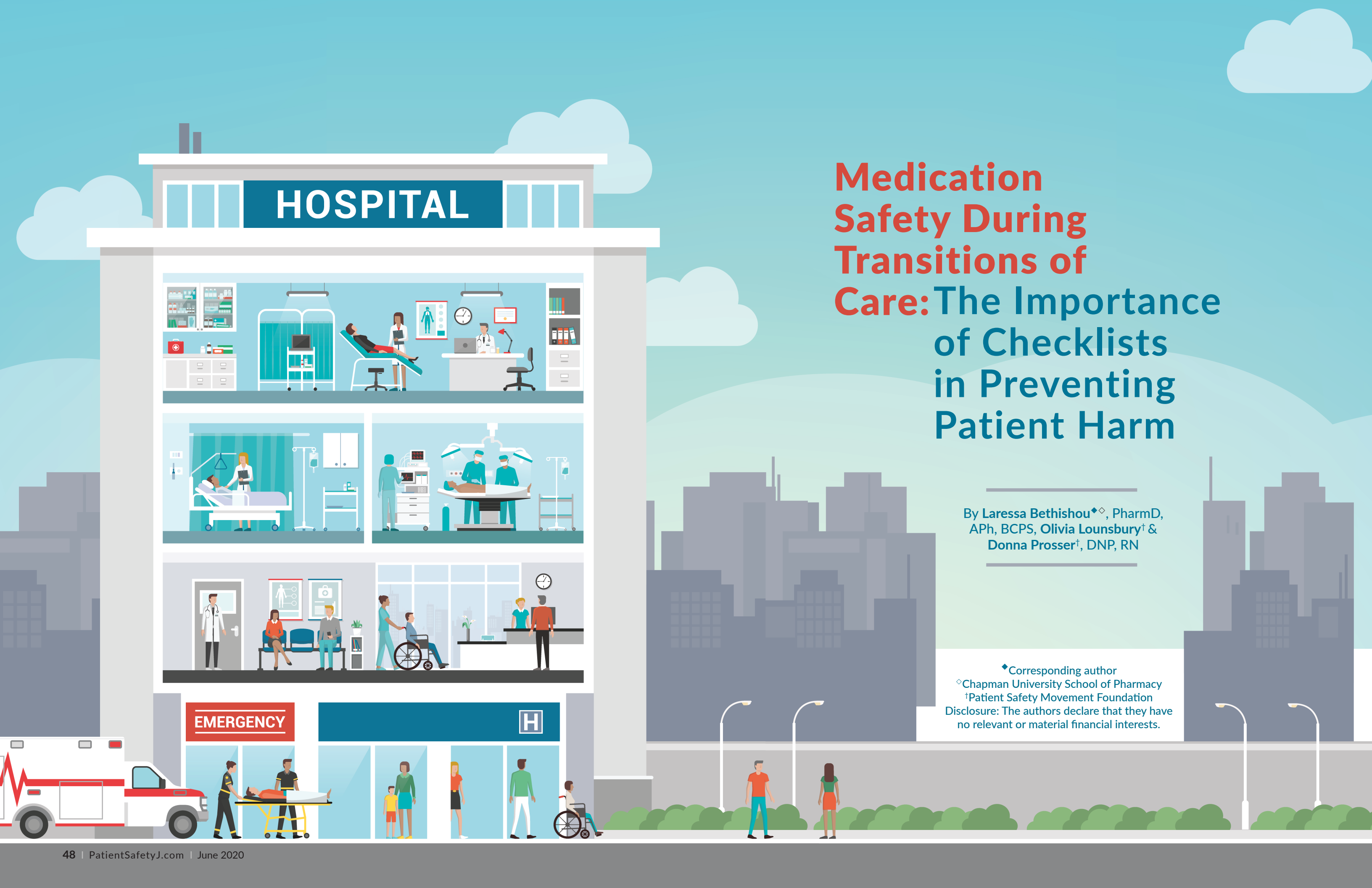
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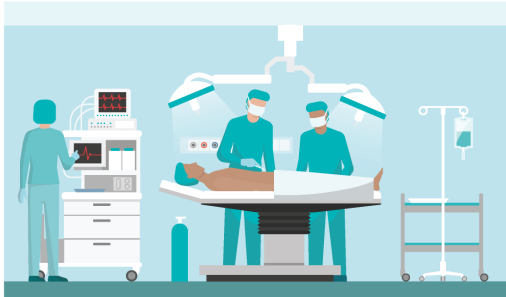
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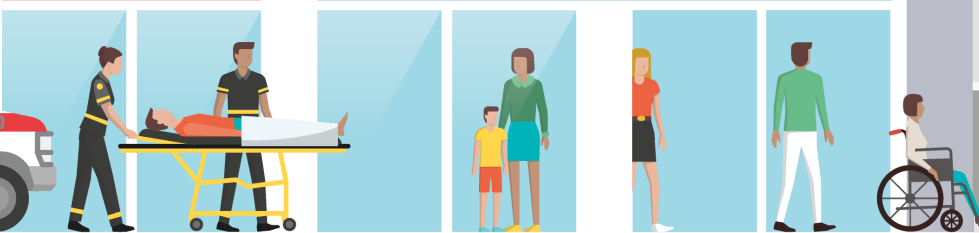


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Medication Safety During Transitions of Care: The Importance of Checklists in Preventing Patient Harm

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There is a need to optimize patient safety as patients navigate through the health-care system. With each transition of care, patients are vulnerable to changes that may cause adverse effects, including changes in their healthcare team, health status, and medications. The Centers for Medicare & Medicaid Services (CMS) defines a transition of care as “the movement of a patient from one setting of care to another.”²¹ While the concept itself may seem simple, this definition fails to capture the many potential handoff complications which classify these transitions as high risk for patients.¹ With 67% of patients facing unin-

tended medication discrepancies in the hospital and more than 40% of medication reconciliation errors resulting from miscommunications in handoffs, medication safety has become a leading priority for patients and caregivers.^{2,3} The World Health Organization articulated the need to improve communication specifically during points of transition.⁴ Differences in communication styles, distracting environments, and the lack of standardization are the primary factors contributing to the 80% of medical errors resulting from transitional miscommunication.⁵⁻⁷

This need for both efficiency and quality has prompted healthcare

professionals to adopt the use of checklists from the aviation industry as a tool to mitigate the risks for error and standardize the patient care process.⁸ Checklists have been shown to further patient care in areas from detecting medication errors⁹ to surgical safety¹⁰ to reducing communication errors in handoffs.¹¹ Checklists during handoffs have been proven to ease communication,⁶ maintain guideline adherence,¹² and promote situational awareness to produce high-reliability clinical interventions.¹³ With regards to medication administration, checklists have been found to promote the punctual antibiotic delivery necessary for infection prevention¹⁴ and reduce

medical errors that could potentially result in adverse events without hindering workflow.¹⁵

The Patient Safety Movement Foundation (PSMF), a nonprofit organization with the mission of reaching a goal of zero preventable patient deaths, has created Actionable Patient Safety Solutions (APSS) to address challenges which lead to patient harm (see **Table 1**).

Each APSS has been curated with a multidisciplinary healthcare team and includes the patient voice, as the foundation recognizes the importance of patient and family member engagement. The Hand-Off Communications APSS #6 provides a series of checklists for creating and sustaining safe practices during handoff communications.

The Medication Management During Transitions of Care Checklist focuses specifically on optimizing medication safety during healthcare transitions (see **Figure 1**).

Medication reconciliation should be completed at each transition of care, including changes in practice setting, level of care, and healthcare provider. Medication lists should be evaluated for appropriate indication, dosing, frequency, and route as changes to the patient’s health status, treatment plan, and level of care may impact medication regimens. Errors of omission, duplication, incorrect dosing, and drug interactions should be identified and resolved.

Healthcare providers can further support patients by identifying and resolving financial and access barriers, addressing educational deficits, and coordinating appropriate follow-up to ensure safe and effective medication management during transitions of care. The Medication Safety APSS #3 provides specific recommendations about high-risk medications, including opioids, diabetes agents, and anti-coagulants. Interdisciplinary collaboration between physicians,

pharmacists, nurses, case managers, and other healthcare providers is key in anticipating and addressing patient-specific needs and ensuring access to medications. Equally important is engagement of patients and caregivers. Patients should be educated on changes to their medication regimen, as well as required follow-up and monitoring.

The PSMF aims to not only inform and raise awareness, but also to ignite and inspire action from all healthcare professionals. Equally, the PSMF believes that patients should be at the forefront of this change in quality. Therefore, the above APSS were not only written and published by clinicians, administrators, and pharmacists, but also led by patients or family members. The patient voice in the Hand-Off Communications APSS #6 in particular is critical, as patients have the capacity to notice changes in their treatment and should feel empowered to raise questions when a hand-off seems to contain misinformation or lack essential information. The involvement of the patient in all stages of care is pivotal to progression in the healthcare world. It has been shown that when patients do raise concerns, potential medication errors are addressed and eliminated.¹⁶ Currently, however, barriers to patient involvement, such as confusion¹⁷ and fear of challenging medical professionals,¹⁸ undermine proactive communication between healthcare professionals and patients. In tandem, the Hand-Off Communications APSS #6 and the Person and Family Engagement APSS #16 offer extensive strategies for engaging patients in handoffs, which in turn can lead to a significant decrease in medication error (see **Table 1**).

Beneficial implementation of checklists is contingent upon an organizational culture of safety mindset, extensive and interactive training, and routine constructive criticism.¹⁹ It is imperative to

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**Differences in
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**Distracting
environments**



**Lack of
standardization**

Table 1: Actionable Patient Safety Solutions (APSS)

APSS Number	APSS Title
1	Culture of Safety
2	Healthcare-Associated Infections (HAIs)*
3	Medication Safety*
4	Monitoring for Opioid-Induced Respiratory Depression
5	Patient Blood Management
6	Hand-Off Communications
7	Neonatal Safety*
8	Airway Safety*
9	Early Detection and Treatment of Sepsis
10	Systematic Prevention and Resuscitation of In-Hospital Cardiac Arrest
11	Optimizing Obstetric Safety*
12	Embolus Events*
13	Mental Health
14	Falls and Fall Prevention*
15	Nasogastric Tube Placement and Verification
16	Person and Family Engagement
17	Patient Safety Curriculum
18	Post-Operative Delirium in Older Adults

*Indicates that these APSS have associated subchallenges under the same category. To view a full list of these APSS and for more detail, please visit www.patientsafetymovement.org.

acknowledge that each handoff is unique based on the context and environment, but a standardized approach and execution of handoffs is essential for proper documentation, communication, patient care, and research in the future. Therefore, the Hand-Off Communications APSS #6 offers 18 checklist models specific to the senders and receivers in the situation. These checklists outline all of the conversational interactions and subsequent documentation that should occur in order to avoid harm.

Each is built as a standard model which can then be adjusted and applied with ease to the organizational context of a specific institution.

An example of a successful tailoring of the Hand-Off Communications APSS #6 to a context-specific health-care organization is illustrated by Parrish Medical Center's Chief Nursing Officer Edwin Loftin, who has implemented all of the APSS in his organization and has since witnessed vast improvements in qual-

ity and efficiency.²² Parrish Medical Center's team devised a way to implement the APSS in the most suitable way for their organization:

"Since implementation of this APSS we continue to have regular action-oriented meetings every other week to evaluate all transitions. This allows a real-time continuous improvement process. We have witnessed and have documented improved communication, teamwork, and elimination in preventable errors." - Edwin Loftin, DNP, MBA, RN, Chief Nursing Officer, Parrish Medical Center

While the APSS and the checklists offered can offer pragmatic use on the floor of these organizations, the emphasis on collaboration with the patient and family members who can be or have been directly impacted by medication errors at handoffs cannot be overstated. As stated above, the APSS were curated through extensive and equal authorship from patients and family members and clinicians, as well as advocates and politicians. Active patient participation in initiatives to improve patient safety has been shown to not only influence behaviors of healthcare workers but also improve decision making and chronic care treatment.²⁰

The high-speed environments inherent in many modern healthcare organizations can increase likelihood of error due to inadequate processes and step-by-step quality assurance. Medication errors are a common occurrence without systematic processes guiding administration. Checklists, such as those mentioned above, ensure consistency and careful planning in patient care; however, while checklists serve as a tool to enhance patient safety in individual healthcare organizations, future research should focus on interoperable checklists across organizations to increase consistency and aid in patient safety in all healthcare facilities, not just the hospital.

Table 2: Available checklists curated by interdisciplinary workgroups from the PSMF

Checklist Title
From emergency department to hospital ward team
From emergency department to operating room
From emergency department to anesthesiology team
From emergency department to surgery team
From emergency department to critical care unit
From emergency department to testing unit (radiology, etc.)
From hospital unit (ward or ICU) to operating room
From hospital unit (ward or ICU) to outpatient clinic
From hospital unit (ward or ICU) to long-term care unit
From hospital unit (ward or ICU) to testing unit (radiology, etc)
From hospital unit (ward or ICU) to home (discharge instructions)
Within the same unit: shift changes
Within the same unit: Medication Management Hand-Off Communication During Transitions of Care Checklist
From operating room to post-anesthesia care unit (PACU)
From operating room to hospital unit (ward or ICU)
From operating room to home (ambulance or surgery)
From paramedics to emergency department
From paramedics to hospital unit (ward, ICU)
From paramedics to long-term care unit

Figure 1: Medication Management During Transitions of Care Checklist

This checklist was created to set up the process of medication management during transitions of care. Once your institution imbeds it in their workflow, it is not necessary to use as a traditional checklist. While this list focuses on aspects important for hospital discharge, your organization should apply the principles of medication reconciliation in this list during all hand-offs. Roles may vary by institution, but it is important to clearly define the roles for who takes ownership of these activities.

Ensure medication reconciliation is completed in EHR by physician

- Reconciliation of full medication list including prior to admission, as an inpatient, and at discharge
 - Evaluate for appropriate indication, dosing, frequency, and route
 - Identify and resolve errors of omission, duplication, drug interactions, and incorrect dosing
 - Update medications based on changes to patient health status and appropriate labs
- Prescriptions ordered to preferred pharmacy

Ensure collaboration between pharmacist, nursing, and care management

- Screen for and identify high-risk patients requiring medication review and education
- Plan for discharge:
 - Identify time and date of discharge
 - Coordinate with co-learners if indicated
 - Identify and address barriers to medication use

Ensure patient can access medications

- Identify financial barriers
 - Resolve prior authorization
 - Switch to cheaper alternatives when available
 - Coordinate social work and care management if patient doesn't have insurance
- Identify and resolve barriers to medication access
 - Ensure stock of medication
 - Coordinate compounding when indicated
 - Comply with prescribing requirements (REMS)
 - Arrange transportation or medication delivery to bedside when indicated
 - Order appropriate medical equipment
- Provide patient education about medications
 - Address language barriers, such as using interpreter, patient educational resources
 - Coordinate with caregiver and co-learner
 - Reinforce teaching around high-risk medications and educational deficits
 - Use "teach-back" method

Ensure follow-up and monitoring

- Schedule appropriate follow-up visits
- Schedule labs and monitoring
- Coordinate home healthcare when indicated

Conflicts of Interest: Olivia Lounsbury works for the Patient Safety Movement Foundation. Laressa Bethishou works for Chapman University School of Pharmacy, which has committed to and has implemented the APSS.

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Ensure

Medication reconciliation is completed in EHR by physician

Collaboration between pharmacist, nursing, and care management

Patient can access medications

Follow-up and monitoring

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