MED WRECK
UTILIZING STUDENT PHARMACISTS TO REPAIR TRANSITIONS OF CARE
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Objectives
- Discuss students’ role in effective transitions of care
- Analyze opportunities to advance student pharmacist involvement in care
- Discuss the opportunities and challenges associated with establishing an APPE rotation focused on medication histories in the pre-operative setting at Riverside Methodist Hospital (RMH)
- Evaluate the differences in problems between adult and pediatric health systems with discharge
- Examine current medication errors on After Visit Summaries at Nationwide Children’s Hospital (NCH)

Introduction
- Transitions of Care
  - Plan
  - Coordinate
  - Deliver

United States Health Care
- Costs of Poor Transitions
  - Care transitions are rushed
  - Responsibility fragmented
  - Poor communication
  - 20% readmission within 30 days
    - Costs = $15 billion/year
  - Medication errors in U.S.
    - 1.5 million medication errors/year
    - Costs = $3.5 billion/year

Transitions of Care (TOC)
- Critical junctions
  - High risk for patients
- Medication Errors

Economic Value of Improved TOC
- Ensures delivery of high quality of care
- Agency for Health Care Research and Quality
  - Save $412/patient who understood hospital discharge instructions
- HCAHPS
  - 2012= 1%
  - 2013= 2%
  - 2014= 3%
**Post-Discharge Barriers**

- Non-Adherence
- Adverse Drug Events
- Physician Errors
- Outpatient Pharmacy Errors
- Patient Safety Issues
- Discharge Medication Confusion
- Health Literacy

**Med Rec or Med Wreck?**

- 53.6% of patients admitted with at least one medication discrepancy
- Incorrect medication histories in up to 67% of cases
- One third of patients admitted with medication error
  - 85% attributed to issues with admission medication history
  - Pharmacy involvement lacking in many hospitals

**Common Med Rec Errors**

- Duplication in therapy
- Unexpected interactions
- Adverse drug reactions
- Discontinuation of medications
- Drug-related problems

**Medication Reconciliation**

- Medication Reconciliation (Med Rec)
  - Accurate list of all medications
  - Comparing against all orders
- Goal: Provide accurate medications to the patient at all transition points

**Emerging Role of Pharmacy**

- Pharmacists identify more medication errors than nurses
- Studies comparing pharmacists and technicians
  - No difference in discrepancies identified
- Pharmacist vs. Students
Emerging Role of Pharmacy

- Pharmacists are uniquely qualified to aid in discharge
- ~60% of Pharmacists provide discharge education
- Role of Pharmacist at discharge:
  - Screen patients
  - Minimize pill burden
  - Medication assistance programs
  - Medication reconciliation
  - Medication education


Expanding Access for Patients

- Pharmacist
- Resident
- Technician
- Intern
- Patient Access to Pharmacy Services
- Student

Opportunities for Students

- Medication Histories
- Immunizations
- Patient Education
- Patient Workup
- MTM
- Follow-up calls

Role of Student Pharmacists

- Pharmacist = Extenders of the pharmacist
  - E4m. Training for all pharmacy students on the roles of safety and quality in the medication-use process
  - E4n. Training for all pharmacy students on transitions of care
  - B23l. Establishment of processes to ensure education related continuity of care for discharged patients
  - B24c. Develop a plan to allocate pharmacy student time to drug therapy management services

Chase P. AJHP 2007;71(2):article 27.

PPMI Goals

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Student Involvement

- Expanding number of Pharmacy Schools
  - Need for quality clinical experiences
  - Student integration into practice site
- Student Pharmacists
  - Positive impact on patient care
  - Improved education
  - Preparation for post-graduation

Lubowski T, et al.

Effectiveness of a Medication Reconciliation Project Conducted by PharmD Students

- Advanced Pharmacy Practice Experience (APPE)
- General medicine and surgery service
- Ten month pilot involving eleven students

- 330 patients interviewed
- 932 discrepancies identified (2.8 per patient)
- 75% of patients had at least one discrepancy
- Average patient interview time: 9.3 ± 5.3 minutes

Mersfelder T, et al.

Inpatient Medication History Verification by Pharmacy Students

- Chart review conducted by PharmD students rotating in internal medicine unit

<table>
<thead>
<tr>
<th>Undocumented prescription medications</th>
<th>Undocumented nonprescription medications</th>
<th>Medication dose added or clarified</th>
</tr>
</thead>
<tbody>
<tr>
<td>175 charts (53.7%)</td>
<td>167 charts (51.2%)</td>
<td>220 charts (67.5%)</td>
</tr>
</tbody>
</table>

Admission or Discharge?

Pre-Operative Medication Histories Collected by Pharmacy Students

Riverside Background

- Private, not-for-profit teaching hospital located in Columbus, Ohio
  - 1,059 licensed beds
- Surgery
  - 29 existing operating rooms
  - 8 planned neurosurgery operating suites
  - 12,694 inpatient surgeries

Riverside Background

- Emergency Department
  - Largest point of admission
  - Pharmacy technician medication histories since 2010
  - Expansion to 24/7 coverage in August 2013
- Pre-Operative Unit
  - Second major point of admission
  - Nurse-driven medication history process
Identifying a Need

- Pre-operative unit = Major point of entry
- Demonstrated success with technicians in the emergency department (ED)
- Physician and nursing buy-in for a change
- Need for rapid patient throughput
- Limited pharmacist resources available

Identifying a Solution

- Meetings with key nursing stakeholders
- Leverage successful pharmacy technician program in ED
- Understand pre-operative unit workflow
- Developing a training plan

Partner for Promotion (PFP)

- Innovative practice advancement opportunity for APPE pharmacy students
- Historical focus on community pharmacy practice
- First implementation of a PFP project in health system setting
- Sustained history of successful implementations

Pharmacy Student Pre-Operative Medication Histories

- One student in pre-operative unit each month
  - Monday-Friday from 5:30am-2:00pm
- Partnership with nursing staff
- Paired with several nurses each day
  - Improve communication of responsibilities
  - Reduce potential patient misses
- Students function independently
- Pre-operative pharmacist available for questions

Pre-Op Medication History Process

- Onboarding binder
- Meeting with students prior to rotation
- Shadowing opportunities:
  - Emergency Department
  - Pre-Operative Unit
  - Post Anesthesia Care Unit
**Methods**

- IRB-approved, single-center, prospective research study
- APPE Rotation Implementation: August 3, 2014

**Inclusion Criteria**
- Age ≥ 18
- Newly admitted for inpatient surgical procedure

**Exclusion Criteria**
- Weekends or after 2:00pm on weekdays
- Same day surgery, Inpatient status

**Objectives**
- Describe the frequency and type of medication discrepancies identified
- Evaluate the accuracy of medication histories
- Evaluate time spent on medication history activities
- Measure overall patient capture rate

**Results**
- 973 patients interviewed
- Average age: 59.9 years
- Average number of home medications: 7.8
- Total initial medications: 7,618
  - New medications added: 1,343
  - Old medications removed: 383
- Total medications after student interview: 8,578
- Documented interventions per patient: 3.7

**Student Documented Interventions**
- Name/Type: 388 medications clarified
- Dose: Too high: 82 medications, Too low: 205 medications, Missing: 437 medications

**Dosage Form**
- 240 dosage forms corrected

**Allergies**
- Added: 20 patients, Corrected: 8 patients

**Therapeutic Duplication**
- 48 duplications addressed
Pharmacist Documented Interventions

- Pharmacist intervened on 85 total patients
  - 166 discrepancies identified
- Additional clarifications on 5 patients seen by pharmacy students
- Six discrepancies noted in these patients
  - Dose strength (n=4)
  - Dose frequency (n=1)
  - Medication name/type (n=1)

Time Spent with Patient

- Average: 8.5 ± 6.5 minutes
  - 16% 10 minutes or less
  - 79% 11–20 minutes
  - 4% 21–30 minutes
  - 1% Greater than 30 minutes

Patient Capture Rate

- Patients Interviewed: 973
- Total Eligible Surgeries: 3,398
- Patient Capture Rate: 28.6%

Future Directions

- Continue APPE rotation in 2015-2016
- Transition to new electronic medical record
- Addition of electronic medication reconciliation software
- Direct comparison of students performance to other disciplines
- Expansion to other points of admission

Nationwide Children’s Hospital

- Free-standing pediatric hospital located in Columbus, Ohio
  - 427 on-site beds
  - 92 off-site beds
- Discharges
  - ~75 discharges/day
  - 33 discharging services

Student Pharmacist Driven Medication Delivery Service at Hospital Discharge
Pediatric Health-Systems

- Unique challenges with medication reconciliation
  - Working with families/caregivers
  - Patients at different cognitive stages
  - Unique medications/formulations
  - Medication dosing

Samuels-Kalow, et al.

Parental Language and Dosing Errors After Discharge From the Pediatric Emergency Department

- Dosing errors
  - 32% of parents
  - 62% of Spanish speaking parents
- Inadequate health literacy
  - 10% of parents

NCH Discharge Process

- Medication reconciliation continues to be a challenge at NCH
  - Dispensing errors
  - Inaccurate medication lists
  - Adverse drug events
- ~50% of patients fill prescriptions at our outpatient pharmacy

Sample AVS

Methods: Pre-Implementation

- Audit General Pediatrics’ service AVSs
- Evaluate the pharmacy needs for patients on the General/Pediatrics service
- Develop service and workflow

- Go-live
- Prepare pharmacy students
- Educate nursing and medical staff

Type of Medication Errors Identified on AVS

- (n=270 errors)
Methods

1. Team decides to discharge
2. Rx sent to pharmacy
3. Student notified & reviews AVS
4. Nurse & student communicate
5. Student delivers medication

Methods

- Primary
  - Evaluate whether a student driven discharge medication reconciliation and delivery service reduces the proportion of patients AVSs with medication errors
- Secondary
  - Improved access to medications for pediatric patients
  - Assess the pharmacy students' experience
- NCH IRB exempt

Methods: Workflow

Methods: Student Education

- 5 hours of education required for students
  - Basic pediatric pharmacy information
  - How to deliver and counsel (video) and cultural competency
  - Electronic medical record training
  - Project details and training
- Competency
  - See One, Do One, Teach One

Methods: Pharmacy Student Discharge Service

After discharge, make home your only stop
Results

- 50% (127/255) of patients participated
- Pre-implementation audit: 270 errors on 150 AVSs
  - Average of 1.80 errors per patient
- Post-implementation audit: 44 errors on 127 AVSs
  - Average of 0.34 errors per patient

Results: Prescription Capture Rate

<table>
<thead>
<tr>
<th>Audit Period</th>
<th>Pre-Implementation</th>
<th>Post-Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVSs</td>
<td>150</td>
<td>127</td>
</tr>
<tr>
<td>with at least one</td>
<td></td>
<td></td>
</tr>
<tr>
<td>medication error</td>
<td>78.7%</td>
<td>22.5%</td>
</tr>
</tbody>
</table>

Results: Student Survey

<table>
<thead>
<tr>
<th>Question</th>
<th>Scale</th>
<th>% Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>How would you rate your educational experience through the Rx Delivery</td>
<td>0 (Poor)</td>
<td>0%</td>
</tr>
<tr>
<td>Service at Nationwide Children's Hospital?</td>
<td>1</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td>4 (Excellent)</td>
<td>40%</td>
</tr>
<tr>
<td>How well did the educational materials provided prepare you for being a</td>
<td>0 (Poor)</td>
<td>0%</td>
</tr>
<tr>
<td>part of the Rx Delivery Service?</td>
<td>1</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>0%</td>
</tr>
<tr>
<td></td>
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<td>4 (Excellent)</td>
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</tbody>
</table>

(n=5 Students)

Next Steps

- One pharmacist FTE and One technician FTE approved for 2015 dedicated to expanding discharge delivery
- Increase the services participating in the student discharge delivery program
- Advocate for pharmacy role in medication reconciliation at time of discharge
Med Wreck Repairs

Application

- Partnering with pharmacy schools
  - Block rotations
  - Partner for promotion
  - Longitudinal experiences
- Gap analysis
- Expanded intern roles
- Pre-Pharmacy Students
- Development of ambulatory care residency for transitions of care

Conclusion

- Transitions of care are a major area of focus for health systems looking to improve quality and reduce costs
- Pharmacy involvement in transitions of care at admission and discharge can have a significant impact on patient care
- Pilot projects demonstrated that students function efficiently and effectively in medication history role
- Opportunities exist for expanded student participation in other transition of care activities

Questions