Intervention Databases: A Tool for Documenting Student Learning and Clinical Value

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Program Overview

- Background
- NU Experience
- DRP Documentation
- Documenting for the Future

Background

- ACPE Standards 2007 and Guidelines emphasize importance of the following reports to improve medication safety and patient outcomes:
  - Institute of Medicine Report
  - Cape Outcomes
  - Medicare Modernization Act of 2003
  - ASHP 2015 Initiative for Change

Program Assessment

- Question: to what extent were the P4 students involved in patient care?
- What disease states did the P4 students "see" on rotations?
- What populations did the P4 students interact with during rotations?
- Did the P4 students recognize drug related problems?
- Could the students suggest corrective measures for drug related problems?

Intervention Documentation: the NU experience

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Intervention Documentation

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Drug Related Problem Intervention Documentation

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Process: Form Development

- Clinical Committee reviewed existing forms and designed a form to collect the following information:
  - Drug problem identification
  - Pharmacotherapy interventions
  - Patient Population Demographics
  - Disease State Encounters
  - Drug Involved
  - Time Involved
  - Estimated Cost Savings
  - Written Summary of Recommendation by Student
  - Acceptance (or not) of Recommendation

Clinical Committee VCU College of Pharmacy Faculty

- Kimberly Cappuzzo
- Rebecca Collins
- Cynthia Kirkwood
- Laura Morgan
- Brigitte Sicat
- Amy Whitaker
- Melissa Williams
- Nancy Yunker
- Beverly Talluto (chair)

Disease States

- Beta Test had disease states printed on back of DRP form for students to check off.
- Electronic version has a drop down menu of disease states to select from.

Bone and Joint	Dermatologic	Gastrointestinal continued
Gout	Acne	Pancreatitis
Osteoarthritis	Burns	Ulcers: gastric / duodenal
Osteoporosis	Drug-Induced Disorders	Upper GI Bleeding
Rheumatoid Arthritis	**Endocrine**	**Hematologic Disorders**
Cardiac/Vascular Disease	Type 1 Diabetes	Sickle Cell Anemia
Angina	Type 2 Diabetes	Anemia
Arrhythmia	Diabetes Type Unkown	Thrombosis (DVT)/PE
Atrial Fibrillation	DKA	Coagulation Disorders
Heart Failure	Thyroid Disorder	**Infectious Disease**
Hypertension	**Gastrointestinal**	Bronchitis
Hyperlipidemia	Chronic Constipation	Cough and Cold
Myocardial Infarction	Cirrhosis	HIV
Peripheral Vascular	Diarrhea	Otitis Media
	GERD	Pneumonia
	Hepatitis	Sinusitis
	Inflammatory Bowel Disease	Skin and Soft Tissue
	Nausea and Vomiting	STD
		Urinary Tract

Neurological	Renal	
Dementia	Acute Renal Failure	
Headache	Chronic Renal Failure	
Migraine	Dehydration	
Pain Management	Electrolyte Disturbance	
Parkinson's Disease		
Seizure Disorder	**Respiratory**	
Stroke	Asthma	
Psychiatric	Allergic Rhinitis	
ADHD	COPD	
Alcoholism	Drug-Induced Disease	
Anxiety Disorder		
Bipolar Disorder		
Depression		
Psychosis		
Schizophrenia		
Sleep Disorder		

Drug Related Problem (DRP) Drug and Disease

- Top 200 Prescription Drugs
- Top 100 Institutional Drugs
- Drop down menu to select drug
- System allows input of drug or disease state not on list

DRP Classification

B. DRUG RELATED PROBLEM (DRP) CLASSIFICATION
Choose only ONE problem
1. Adverse Drug Reaction
_____A) Toxicity
_____B) Allergic reaction
_____C) Side effect

2. Drug Choice
_____A) Drug needed not prescribed
_____B) Drug prescribed not needed
_____C) Drug duplication
_____D) Cost of therapy
_____E) Contraindication
_____F) Inappropriate drug
_____G) Inappropriate dosage form

DRP Classification

3. Dosing
_____A) Dose too low or frequency not enough
_____B) Dose too high or frequency too often
_____C) Duration inappropriate

4. Drug Use
_____A) Wrong dose taken/administered
_____B) Wrong drug taken/administered
_____C) Drug not taken
_____D) Incorrect storage
_____E) Incorrect administration

5. Interaction
_____A) Dug-drug interaction
_____B) Drug-disease interaction
_____C) Drug-food interaction

DRP Classification

6. Patient/Provider
_____A) Drug product not available
_____B) Patient doesn't understand instructions
_____C) Patient misuse (over-use/under-use)
_____D) Non-adherence
_____E) Prescription/Transcription

7. Patient Comprehension
_____A) Health Promotion
_____B) Disease Prevention

Interventions

CHECK ALL that apply.
1. Drug
_____A) Discontinue therapy
_____B) Change medication
_____C) Add medication (Rx)
_____D) Add medication (OTC)
_____E) Change dose
_____F) Change dosage form
_____G) Change dosing interval
_____H) Therapeutic drug monitoring

2. Prescriber
_____A) Collaborative practice
_____B) Prescriber contacted
_____C) Consult left recommendation

Interventions

3. Prescriber Drug Information
_____A) Adverse effect
_____B) Compatibility/stability
_____C) Compounding
_____D) Dosing/administration
_____E) Herbal products
_____F) Pharmacology/pharmacokinetics
_____G) Pregnancy/lactation
_____H) Use or Indication
4. Patient
_____A) Refer patient
_____B) Disease management program
_____C) Drug regimen review
_____D) Patient contacted
_____E) Payer contacted
_____F) Pharmacy contacted

Interventions

5. Patient Education
_____A) Diabetes
_____B) Hypertension
_____C) Osteoporosis
_____D) Cholesterol
_____E) Asthma
_____F) Anticoagulation
_____G) Medication adherence
_____H) Discharge counseling
_____I) Other_____
6. Patient Training
_____A) Insulin pump
_____B) Insulin administration
_____C) Blood glucose meter
_____D) Blood pressure monitoring
_____E) Inhaler
_____F) Adherence device
_____G) Other_____

Interventions

7. Life Style Changes
_____A) Diet
_____B) Exercise
_____C) Smoking cessation
_____D) Alcohol moderation

8. Screenings
_____A) Hypertension
_____B) Diabetes
_____C) Osteoporosis
_____D) Cholesterol
Complete the INTERVENTION SPECIFICS COLUMNS

Student complete a short discussion on the intervention for the preceptor to review, accept, send feedback to the student and submit.

Results of Recommendation

CHECK ALL that apply.
_____A) Accepted by prescriber
_____B) Accepted by consult team
_____C) Accepted by patient
_____D) Not accepted by _____
_____E) Unknown

Actual Time Involved

_____**A)** 5 minutes or less
_____**B)** 6-15 minutes
_____**C)** 16-29 minutes
_____**D)** 30-59 minutes
_____**E)** over 60 minutes

Expected Outcomes

_____ **A)** Improved efficacy
_____ **B)** Improved safety
_____ **C)** Improved adherence
_____ **D**) Cost saving (institution)
_____ **E)** Cost saving (patient)

Form (Available as Handout)

(show example from flashkey)

Process: Data Collection **Pilot**

- Designed to be collected electronically
- Paper form was used for Beta Testing by students on rotation with faculty on the Clinical Advisory Board
- About 25 interventions/patient centered rotation were collected
- Forms were revised based on initial feedback from students and preceptors

Compare Results to Electronic Entry

- **One** rotation period (Class of 2009)
- Six rotation types (Ambulatory Care, Institutional, Acute Care, Community, Advanced Community, Geriatrics)
- **1641** patient interventions
  - (data being analyzed for final presentation in July)

Gender and Age

Patient Demographics		**Pilot Study Paper (5 rotations) (365 DRP's)**	**Electronic (1 rotation 1641 DRP's)**
Gender		196 F (54%)	
Age	>80	111 (30.7)	
	70-79	90 (24.9)	
	50-69	113 (31.3)	
	20-49	46 (12.7)	
	0-19	1 (0.3)	

Top 5 Drug Related Problem Classifications Chosen

Pilot Study Paper (5 rotations) (365 DRP's)	Electronic (1 rotation 1641 DRP's)
1. Drug needed not prescribed	
2. Dose too high or frequency too often	
3. Dose too low or frequency not enough	
4. Inappropriate drug	
5. Drug prescribed not needed	

Top 5 Drug Interventions

Pilot Study Paper (5 rotations) (365 DRP's)	Electronic (1 rotation 1641 DRP's)
1. Change Dose	
2. Add Prescription Drug	
3. Discontinue Drug	
4. Change Medication	
5. Change Interval	

Top 5 Drugs Selected for DRP

Pilot Study Paper (5 rotations) (365 DRP's)	Electronic (1 rotation 1641 DRP's)
1. Warfarin	
2. Lovenox	
3. Lisinopril	
4. Glipizide 4. Hydrochlorthiazide	
5. Oxycodone	

Top 5 Disease States

Pilot Study Paper (5 rotations) (365 DRP's)	Electronic (1 rotation 1641 DRP's)
1. Hypertension	
2. Hyperlipidemia	
3. Type 2 Diabetes	
4. Pain Management	
5. Anemia	

Percent of Interventions Requiring 0 to >60 minutes

Pilot Study Paper (5 rotations) (365 DRP's)		Electronic (1 rotation 1641 DRP's)
0- 5 minutes	48%	
6-15 minutes	21%	
6-29 minutes	12%	
30-59 minutes	8%	
>60 minutes	11%	

Conclusions

- Documentation using a web-adaptable paper form demonstrates the variety of drug related problems and interventions that students can document in their APPEs in a reasonable length of time.
- Identifying patient populations and disease state encounters helps define areas that need further curricular development and program assessment.

Limitations

- Assuring that preceptors review and give feedback
- Students not always select disease state
- Managing Volume of Data Collected
- Creating meaningful reports
- Giving timely feedback to sites/students