TEACHING AND ASSESSING THE UNIVERSITY OF MARYLAND PHARMACIST PATIENT CARE PROCESS

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Learning Objectives

After participating in this learning activity, the participant will be able to

1. Define and list the components of the pharmacist patient care process.

2. Identify opportunities to incorporate the components of the pharmacist patient care process into your instructional activities.

3. Develop a patient case using the components of the pharmacist patient care process.
Background: What is the Pharmacists’ Patient Care Process (PPCP)

• Created by the Joint Commission of Pharmacy Practitioners.
• Profession-wide patient-centered care model.
• Consensus-based approach for delivering patient care in any setting.
Background: What is the University of Maryland Pharmacists’ Patient Care Process (UM-PPCP)

• Incorporates elements of the "Therapeutic Experiment".

• Step wise process designed to:
  – Identify a problem
  – Assess it adequately
  – Identify potential solutions
  – Examine the variables needed to judge the risk/benefit ratio of these solutions
  – Choose the most appropriate solution
  – Identify those beneficial and adverse effects which may result from the implementation of the chosen solution
Essential First Step of the Pharmacists’ Patient Care Process (PPCP)

• Establish a patient-pharmacist relationship throughout the process.

• Continually collaborate, document, and communicate with physicians, other pharmacists, and other health care professionals.
How can you incorporate the components of the PPCP into your instructional activities?
Incorporating Components of the PPCP into your Instructional Activities

• Patient case scenarios
• Didactic lecture
• OSCE/Fishbowl
• Skills based learning activities
• Assessment activities – Exams, quizzes

• Use the components of the PPCP to teach pharmacology and drug facts
  – Assess - application of treatment related variables
  – Plan - monitoring plan for toxicity and efficacy
  – Implement - patient education, special instructions, administration instructions
  – Follow-up - identify side effects and evaluate therapeutic efficacy
COLLECT

• Collection of the necessary subjective (e.g. patient and/or caregiver interviews) and objective (e.g. physical examination and laboratory data) information.
• Medication list and medication use history for prescription and nonprescription medications, herbal/integrative products, and dietary supplements.
You have been asked to design a case for Applied Science and Therapeutics (AST) 6 on hypothyroidism.

- In groups of 2-3 brainstorm a patient case scenario
  - What is the patient’s age, sex, PMH, etc.
  - What is the healthcare setting
**Ms. Lewis** is a 60 year old woman with a PMH significant for hyperlipidemia and GERD who presents to her PCP for symptoms of increasing fatigue and weight gain.

**SH:**
- Tobacco: denies
- Drug abuse: denies
- EtOH: occasional
- Education: masters degree in education
- Lives with husband, 2 grown children who are out of the house.

**ROS:** Admits to occasional bilateral knee pain with activity. Denies other symptoms.

**Medications:**
- Simvastatin 20 mg daily
- Ibuprofen 400 mg prn pain
- Omeprazole 40 mg daily
- Calcium and Vitamin D OTC

**PE**
- Wt: 190 lbs  Ht: 5’6”  T: 98.8°F
- P: 74 bpm  RR 18 breaths/min
- HEENT: PERRLA, EOMI, eyelids puffy
- EXT: decreased reflexes
- All other systems WNL
CASE DEVELOPMENT

• Identify questions related to **data collection**

• What information needs to be included in the case for students to complete data collection?
UM-PPCP Sample Questions for Patient Case Development: COLLECT

COLLECT: Identify the **subjective information** you will collect to assess the problem.

COLLECT: Identify the **objective information** you will collect to assess the problem.

COLLECT: List the **data to support the definition** of the patient’s problem in this case.
Case #1: Ms. Lewis is a 60 year old woman with a PMH significant for hyperlipidemia and GERD who was recently diagnosed with hypothyroidism.

1. **COLLECT:** What objective information would you like to collect?
1. **COLLECT:** What objective information would you like to collect?

<table>
<thead>
<tr>
<th>Lab</th>
<th>Ref Range</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSH</td>
<td>0.5-5.0 mIU/L</td>
<td>25 mIU/L</td>
</tr>
<tr>
<td>Free T4</td>
<td>0.9-2.3 ng/dL</td>
<td>0.64 ng/dL</td>
</tr>
</tbody>
</table>
ASSESS

• Analyzes the information collected in the context of the overall health goals
• Identify and prioritize problems
• Defines therapeutic objectives
• Defines available modalities and treatment related variables
• Considers guidelines and primary literature
ASSESS

• Etiology/Risk Factors
  – speculation as to the probable causes and potential risk to the patient.
  – is the mechanism of the disorder– what physiological/pathophysiological processes lead to the development of the problem.
ASSESS

• Severity
  – Established criteria (e.g. New York Heart Association Classification)

  OR
  – Mild: mild or no symptoms
  – Moderate: symptoms impact quality of life (QOL)
  – Severe: severe QOL restriction and/or short-term survival anticipated
  – Life threatening: immediately life threatening
ASSESS

• Why now?
  – important in acute exacerbation of chronic disease as it leads to an approach for treating the acute episode as well as measures aimed at prevention of further acute episodes.
  – In certain instances there may not be a why now. For example, if the problem is newly diagnosed and there is not acute process to make this occur.
  – Don’t make any assumptions for the why now. Only use the data available to you.
CASE DEVELOPMENT

For your thyroid disorders case:

• Identify questions related to **problem assessment**

• What must be included in the student response to be considered correct?
UM-PPCP Sample Questions for Patient Case Development: ASSESS

ASSESS: List and prioritize the medication related problems in this case.

ASSESS: List differential problems considered for patient’s primary problem (if any).

ASSESS: Assess the etiology, severity, and why now of this patient’s problem.
**ASSESS: Therapeutic Goals**

- Measurable
- Attainable
- Patient-centered

Example of inappropriate therapeutic goals:
- Decrease the risk of morbidity
- Control blood glucose

Example of appropriate therapeutic goals:
- Delay progression of renal impairment
- Achieve hemoglobin A1c goal of < 7%
ASSESS: Available Modalities

- Select options based on the assessment and therapeutic objectives
- Include pharmacological and non-pharmacological options
- DO NOT cross things off the list based on treatment related variables (e.g. allergies, cost)

Example – uncomplicated urinary tract infection
UM-PPCP Sample Questions for Patient Case Development: ASSESS

ASSESS: State the **therapeutic objective(s)** for this patient’s problem.

ASSESS: List the available **pharmacologic treatment modalities** for the patient’s problem.

ASSESS: List the available **non-pharmacologic treatment modalities** for the patient’s problem.
ASSESS: Treatment Related Variables

• Properties of any medication which are characteristic of that medication and effect its use in a given situation.

• Examples include:
  – Mechanism of action
  – Available dosage forms
  – Bioavailability of various formulations
  – Distribution in the body after absorption
  – Onset, peak, and duration of action
  – Half-life
  – Method of elimination from the body or detoxification
  – Adverse effects and toxicities (predictable versus idiosyncratic)
  – Cost (drug, administration, monitoring)
ASSESS: Treatment Related Variables

• Pre-existing conditions that may alter the expected effects, both therapeutic and toxic, and dosing of the medication that is administered.

• Examples include
  – Renal/hepatic function
  – problems with medication compliance
  – other disease states
  – financial and/or health insurance status
  – support systems
ASSESS

• National treatment guidelines and/or primary literature.

• Patients’ immunization status and need for preventative care.
UM-PPCP Sample Questions for Patient Case Development: ASSESS

ASSESS: List and briefly justify the treatment related variables that should be considered prior to recommending a treatment regimen for the patient’s problem.

ASSESS: Identify appropriate national treatment guidelines and/or primary literature to guide your assessment of the patient’s problem.

ASSESS: Identify immunization and preventative care needs for this patient.
Case #1

2. **ASSESS**: Define the patient’s problem
Case #1

2. **ASSESS:** Define the patient’s problem

- Hypothyroidism (TSH is $>10$)
- Untreated Indication
Case #1

2. ASSESS: Define the patient’s problem
   - Hypothyroidism (TSH is >10)
   - Untreated Indication

3. ASSESS: State the therapeutic objectives
2. **ASSESS**: Define the patient’s problem

- Hypothyroidism (TSH is >10)
- Untreated Indication

3. **ASSESS**: State the therapeutic objectives

- Achieve euthyroid state (TSH mid-normal range, Free T4 in normal range)
- Relief symptoms including fatigue, bradycardia, weight gain, decreased reflexes
- Prevent complications including myxedema coma, hearing changes, hypoglycemia, hyponatremia and ileus
Case #1

4. **ASSESS:** What are the available treatment modalities?
4. ASSESS: What are the available treatment modalities?

- Tyroid USP (Armour Thyroid)
- Thyroglobulin (Proloid)
- Liotrix (Thyrolar)
- Liothyronine (Cytomel)
- Levothyroxine (Synthroid, Levothroid, Levoxyl, Unithroid, etc)
# Treatment Options

<table>
<thead>
<tr>
<th>Medication</th>
<th>Brand Names</th>
<th>Content</th>
<th>Relative Dose</th>
<th>Comments/Equivalency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thyroid USP</td>
<td>Armour Thyroid</td>
<td>Desiccated beef or pork thyroid gland</td>
<td>60-100 mcg T4</td>
<td>Unpredictable stability; Generic brands may not be bioequivalent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Natural)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thyroglobulin</td>
<td>Proloid</td>
<td>Partially purified pork thyroglobulin</td>
<td>60-100 mcg T4</td>
<td>Standardized to give T4:T3 ratio of 2.5:1; More expensive than thyroid extract; No clinical advantage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Natural)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Levothyroxine</td>
<td>Synthroid, Levothroid, Levoxyl, Thyro-tabs, Unithroid</td>
<td>Synthetic T4</td>
<td>50-60 mcg T4</td>
<td>Stable, predictable potency; Generics are bioequivalent; Variable absorption between products; Considered to be drug of choice</td>
</tr>
<tr>
<td>Liothyronine</td>
<td>Cytomel</td>
<td>Synthetic T3</td>
<td>15-37.5 mcg T3</td>
<td>Uniform absorption, rapid onset; T3 instead of T4</td>
</tr>
<tr>
<td>Liotrix</td>
<td>Thyrolar</td>
<td>Synthetic T4:T3</td>
<td>5-60 mcg T4 + 12.5-15 mcg T3</td>
<td>Stable, predictable; Expensive; Lacks therapeutic rationale</td>
</tr>
</tbody>
</table>
• Includes:
  - Medication(s)
  - Dose
  - Dosage Form
  - Route
  - Frequency
  - Duration of Treatment*

*For non-chronic therapies

• Specific non-pharmacological plan
• Engages patient through education
• Supports continuity of care
# PLAN: Monitoring for Indices of Effect

<table>
<thead>
<tr>
<th><strong>Therapeutic</strong></th>
<th><strong>Toxicity</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Refer back to therapeutic goals</td>
<td>• Discriminating</td>
</tr>
<tr>
<td>• Specific and measurable</td>
<td>• Example: Hemoglobin NOT anemia</td>
</tr>
<tr>
<td>• Subjective/objective</td>
<td>• Specify frequency</td>
</tr>
<tr>
<td>• Specify frequency</td>
<td></td>
</tr>
</tbody>
</table>
For your thyroid disorders case:

• Identify questions related to treatment plan

• What must be included in the student response to be considered correct?
UM-PPCP Sample Questions for Patient Case Development: PLAN

PLAN: Recommend a **pharmacologic and/or non-pharmacologic treatment regimen** for the patient’s problem (include medication(s), dose, dosage form, route and frequency of administration and duration of use).

PLAN: List the **indices of therapeutic effect** and frequency of monitoring for the treatment recommended.

PLAN: List the **indices of toxic effect** and frequency of monitoring for the treatment recommended.
Case #1

4. ASSESS: What are the available treatment modalities?
   - Tyroid USP (Armour Thyroid)
   - Thyroglobulin (Proloid)
   - Liotrix (Thyrolar)
   - Liothyronine (Cytomel)
   - Levothyroxine (Synthroid, Levothroid, Levoxyl, Unithroid, etc)

5. PLAN: Recommend a pharmacologic treatment regimen (Including medication, dose, dosage form, route, & frequency)
Case #1

4. **ASSESS:** What are the available treatment modalities?
   - Tyroid USP (Armour Thyroid)
   - Thyroglobulin (Proloid)
   - Liotrix (Thyrolar)
   - Liothyronine (Cytomel)
   - Levothyroxine (Synthroid, Levothroid, Levoxyl, Unithroid, etc)

5. **PLAN:** Recommend a pharmacologic treatment regimen (Including medication, dose, dosage form, route, & frequency)

<table>
<thead>
<tr>
<th>Medication</th>
<th>Levothyroxine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dose</td>
<td>50 mcg</td>
</tr>
<tr>
<td>Dosage Form</td>
<td>Tablet</td>
</tr>
<tr>
<td>Route</td>
<td>PO</td>
</tr>
<tr>
<td>Frequency</td>
<td>Daily</td>
</tr>
</tbody>
</table>
Case #1

6. PLAN: List the indices of therapeutic and toxic effect and frequency of monitoring for the treatment recommended.

- TSH in 6 weeks
- HR at first follow-up
- Cholesterol in 3-6 months
- Subjective findings: resolution of symptoms (efficacy), anxiety, sleep disruption (toxicity)
IMPLEMENT

• Provide patient education.
• Collaborate with or refer to other health care professionals.
• Order, prepare, & dispense prescriptions
  – Administer immunizations
• Initiate, modify, discontinue, and/or administer medication therapy as authorized.
• Documentation of care using a SOAP note.
• Schedule follow up care
IMPLEMENT: List the **patient education** that you will provide to the patient.

IMPLEMENT: Identify the **referrals** to other healthcare providers that would be appropriate for this patient.

IMPLEMENT: Specify any **special instructions** related to ordering, preparing, and dispensing the prescription listed in the treatment recommendation.

IMPLEMENT: Describe any **special administration** instructions for the medications and/or vaccinations identified in the treatment recommendation.
FOLLOW UP: MONITOR & EVALUATE

• Uses monitoring plan and therapeutic objectives

• Evaluates the care plan for:
  – Therapeutic effects
  – Toxicity
  – Side effects
  – Adherence
  – Emergency of new medication related issues

• Modifies plan as needed
FOLLOW-UP: Evaluate the therapeutic efficacy of the patient’s current medication regimen.

FOLLOW-UP: Identify any side effects the patient is experiencing related to the current medication regimen.

FOLLOW-UP: Evaluate the patient’s adherence to the current medication regimen.

FOLLOW-UP: Recommend pharmacologic and/or non-pharmacologic modifications to the current treatment regimen.
SUMMARY

• PPCP is important to provide consistent, effective, and efficient patient-centered care.
• PPCP helps to facilitate communication between pharmacists, physicians, and other health care professionals.
• PPCP may enhance acknowledgement, acceptance, and reimbursement of pharmacy services.
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