



Pharmaceutical Care Plan

Dr. Hussain A. Al-Omar, M.Sc.

Lecturer, Clinical Pharmacy Department
College of Pharmacy, King Saud University
email:clinicalph@yahoo.com



Purposes

- The purpose of the care plan is to determine how to manage patient medical conditions or illness successfully.
- It includes all the work that is necessary to accomplish this.

Activities and Responsibilities

Activities	Responsibilities
Establish goals of therapy	Negotiate and agree upon endpoints and timeframe for pharmacotherapies. Inform patient of their responsibilities to accomplish goals.
Determine appropriate interventions to: ➤ Resolve drug therapy problems ➤ Achieve goals of therapy ➤ Prevent new problems	Consider therapeutic alternatives and select patient-specific pharmacotherapy, patient education, and other nondrug interventions.
Schedule follow up evaluation	Establish a schedule for follow-up evaluation that is clinically appropriate and convenient for the patient.

Identifies Goals of Therapy for Each Patient

1. Goals of therapy are established for each indication for drug therapy.
2. Desired goals of therapy are described in terms of the observable or measurable clinical and/or laboratory parameters to be used to evaluate effectiveness and safety of drug therapy.

Cont'd

3. Goals of therapy are mutually negotiated with the patient and health care providers when appropriate.
4. Goals of therapy are realistic in relation to the patient's present and potential capabilities.
5. Goals of therapy include a timeframe for achievement.

Cont'd

- It allows you to work with patient, who may have different expectations or understanding of his or her medication.
- It serves as a negotiated agreement.
- It includes several individuals such as patients, family members, physicians, and pharmacists.

Cont'd

- In most clinical practices, care plans are organized by *indications* for drug therapy.
- Patients often have multiple medical conditions.
- Some conditions are acute and many are chronic requiring long-term treatment.

Cont'd

- Multiple drug therapies for the same indication are grouped together with the same care plan.

1.Hypertension	7. Esophagitis
2. Hyperlipidemia	8. Depression
3. Diabetes	9. Cardiac dysrhythmias
4. Osteoporosis prevention	10. Myocardial infarction
5. Congestive heart failure	11. Hypothyroidism
6. Allergic rhinitis	12. Asthma

Major Questions for Successful Care Plan



1. What goals of therapy are you and your patient trying to achieve with pharmacotherapy?
2. What are you going to do, or how are you going to intervene, to resolve any drug therapy problems identified during the assessment?
3. What interventions are you going to provide to ensure that your patient achieves the desired goals of therapy?

Establishing Goals Therapy



- They are necessary in order to produce and document positive outcomes.
- You and the patient must agree upon clear and concise goals of therapy.
- It is essential to ensure that a patient will maximally benefit from drug therapies.

Goals of Drug Therapy

1. Cure a disease
2. Reduce or eliminate signs and/or symptoms
3. Slow or halt the progression of a disease
4. Prevent a disease
5. Normalize laboratory values
6. Assist in the diagnostic process

Examples

Goal of therapy	Medical Condition
Cure a disease	Streptococcal pneumonia Otitis media Diarrhea
Reduce or eliminate signs and/or symptoms	Major depression Allergic rhinitis Common cold
Slow or halt the progression of disease	Diabetes Congestive heart failure Ischemic heart disease

Cont'd

Prevent a disease	Osteoporosis Myocardial Infarction Pneumococcal pneumonia
Normalize laboratory values	Hypokalemia Anemia
Assist in the diagnostic process	Anxiety associated with MRI procedure Intraocular pressure for glaucoma

Cont'd

- Goals of therapy have a specific structure and always include:
 1. Clinical parameters (signs and symptoms) and/or lab values which are observable, measurable, and realistic;
 2. Desired value or observable change in the parameters;
 3. Specific timeframe in which the goal is to be met.

Example

- Patient who suffers from allergic rhinitis and presents with nasal congestion, runny nose, and eye itching, but no cough or loss of taste, the patient-specific goals of therapy might include the relief of the patient's complaints of nasal congestion, runny, nose, and eye itching in a timeframe of 48 hours.

Supportive Questions

1. What would you like to achieve with your medications?
2. What are your goals for this therapy?
3. How do you feel about trying to achieve with a new drug therapy?

Examples

Medical Condition	General Guidelines for goals of therapy	Comments
Hypertension	Systolic 115-140mmHg Diastolic 75-90 mmHg <130/80 for patient with diabetes or chronic kidney disease	The aim of reducing blood pressure is to minimize end-organ damage including heart disease (angina, myocardial infarction, heart failure), stroke, renal impairment, and/or retinopathy.

Cont'd

GERD	<p>Alleviate or eliminate patient's symptoms which often include esophagitis (heart burn), hypertension, belching, regurgitation after eating.</p> <p>Decrease frequency and duration of gastroesophageal reflux</p> <p>Heal the injured mucosa</p> <p>Prevent recurrence</p>	<p>Symptoms relief generally observed within 2 weeks.</p> <p>However, prolonged treatment (8-16 weeks) required to achieve healing and minimize recurrence.</p>
------	---	---

Cont'd

Insomnia	Improvement in symptoms such a difficulty falling asleep, maintaining sleep, not feeling rested following sleep, daytime fatigue, and/or decreased ability to concentrate.	Sedation effects of drug therapy should be expected within 1-2 hours. Hypnotic effects or benzodiazepines can be maintained for 1 month with night use.
----------	--	--

Cont'd

- All of the activities that you perform are called interventions.
- Interventions may directly involve drug regimens, or they may utilize education, technology, exercise, or dietary instructions.

Interventions

- **Develops a Care Plan that Includes Interventions to:**

1. Resolve Drug Therapy Problems,
2. Achieve Goals of Therapy, and
3. Prevent Drug Therapy Problems.

Measurement Criteria

1. Each intervention is individualize to the patient's conditions, drug related needs, and drug therapy problems.
2. All appropriate therapeutic alternatives to resolve drug therapy problems are considered, and the best are selected.
3. The plan is developed in collaboration with the patient, his/her family and/or care-givers, and health care providers, when appropriated.

Cont'd

4. All interventions are documented.
5. The plan provides for continuity of care by including a schedule for continuous follow-up evaluation.

Interventions to Resolve Drug Therapy Problems

- It is given highest priority
- They interfere with patients.
- If your patient is not realizing the full effectiveness from her prescribed antihistamine to manage seasonal allergic rhinitis because the dose is too low, the dosage regime must be increased before there is any realistic hope of achieving a positive outcome.

Cont'd

- If your patient is experiencing dose-related side effects from her antihistamine, the dosage regimen must be modified in order to her to receive appropriately indicated drug therapy that is both effective and safe.

Cont'd

- Interventions might include:
 1. Initiating new drug therapy,
 2. Changing the drug product,
 3. Altering the dose and/or the dosing interval, or
 4. Discontinuing drug therapy

Supportive Questions

1. How do you feel about making these adjustments in your medications?
2. Is this change that you think you can manage in your daily use of this medication?
3. What do you think would be the best way to improve your therapy?

Interventions to Achieve Goals of Therapy

- Establish with your patient effectively and efficiently all drug-related needs.
- The interventions you select are grounded in patient preferences, selected according to patient needs, and limited by patient tolerance.

Cont'd

1. Drug regimen(s) the patient should receive,
2. Changes in drug therapy that are required,
3. Patient-specific education or information,
4. Referrals to specialists,
5. Instructions on how to properly use prescription drug products,
6. Nonprescription drug products, and
7. How to use other remedies, products, and devices.

Limitations

- A care plan is of little value if the patient is:
 1. Unable to acquire the medication,
 2. Unable to afford the medication,
 3. Unable to take the medication, or
 4. Simply refuses to fill a prescription.

Intervention to Prevent Problems

- Each pharmaceutical care plan must address the need to prevent the development of new drug therapy problems.
- In clinical practice design drug therapies and patient education to avoid preventable side effects or risks known to be associated with certain drug therapies or diseases.

Examples

- Initiating antihypertensive therapy with a minimal dosage to prevent orthostatic hypotension.
- Warning patients about to drowsiness

Therapeutic Alternatives

- There is seldom only one best Intervention.
- Decide what interventions you will select to resolve drug therapy problem
- Decide what interventions you will select to achieve the goals of therapy.
- Decide what other interventions in order to prevent the development of drug therapy problems.

Supportive Questions

1. What is your preference given these approaches for treating your illness?
2. There are several medications available to treat your illness, which would you refer?
3. Which therapy do you feel will work best for you?



Pharmaceutical Follow-up Evaluation

Dr. Hussain A. Al-Omar, M.Sc.

**Clinical Pharmacy Department
College of Pharmacy, King Saud University**



Purposes

- The purpose of the follow-up evaluation is to determine the patient's outcomes from drug therapy and to compare these results with the patient's goal of therapy.

Cont'd

<u>Activities</u>	<u>Responsibilities</u>
Elicit clinical and/or laboratory evidence of actual outcomes and compare them to goals of therapy.	Evaluate effectiveness of pharmacotherapy.
Elicit clinical and/or laboratory evidence of adverse effects of toxicity to determine safety of drug therapy.	Evaluate safety of pharmacotherapy.
Document clinical status and any changes in pharmacotherapy that are required.	Make a judgment as to the clinical status of the condition being managed with pharmacotherapy.
Assess patient for any new problem	Assess patient compliance and identify if any new drug therapy problems have occurred.
Schedule next follow-up evaluation	Provide continuous care.

Cont'd

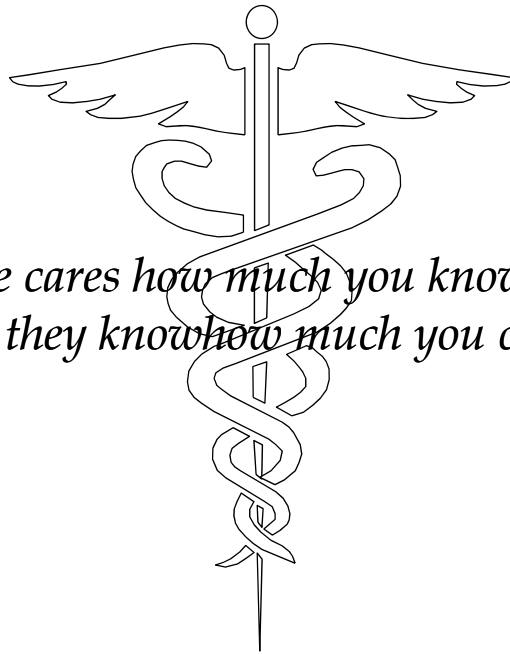
- Evaluates the patient's outcomes and determines the patient's progress toward the achievement of the goals of therapy
- Determine if any safety or compliance issues are present, and
- Assess whether any new drug therapy problems have developed.

Measurement Criteria

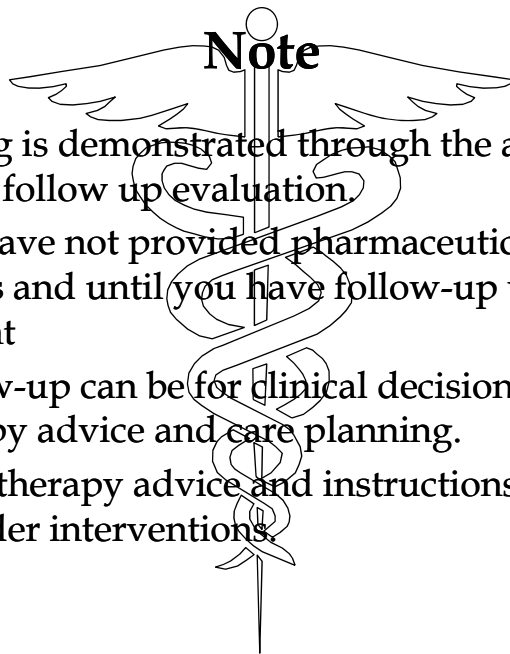
1. The patient outcomes from drug therapies and other interventions are documented.
2. The effectiveness of therapies is evaluated, and the patient's status is determined by comparing the outcomes with the expected timeframe to achieve the goals of therapy.
3. The safety of the drug therapy is evaluated.
4. Patient compliance is evaluated.

Cont'd

5. The care plan is revised, as needed.
6. Revision in the care plan are documented.
7. Evaluation is systematic and ongoing until all goals of therapy are achieved.
8. The patient, family and/or care-givers, and health care providers are involved in the evaluation process, when appropriate.



*No one cares how much you know, until
they know how much you care*



Note

- Caring is demonstrated through the activities of the follow up evaluation.
- You have not provided pharmaceutical care unless and until you have follow-up with patient
- Follow-up can be for clinical decisions, drug therapy advice and care planning.
- Drug therapy advice and instructions consider interventions.

Cont'd

- Your clinical decisions, drug therapies, and advice can produce any of the following three outcomes:
 1. The intended positive clinical result
 2. A negative clinical result
 3. No demonstrate change
- The follow-up evaluations provide the evidence of effectiveness and safety.

Cont'd

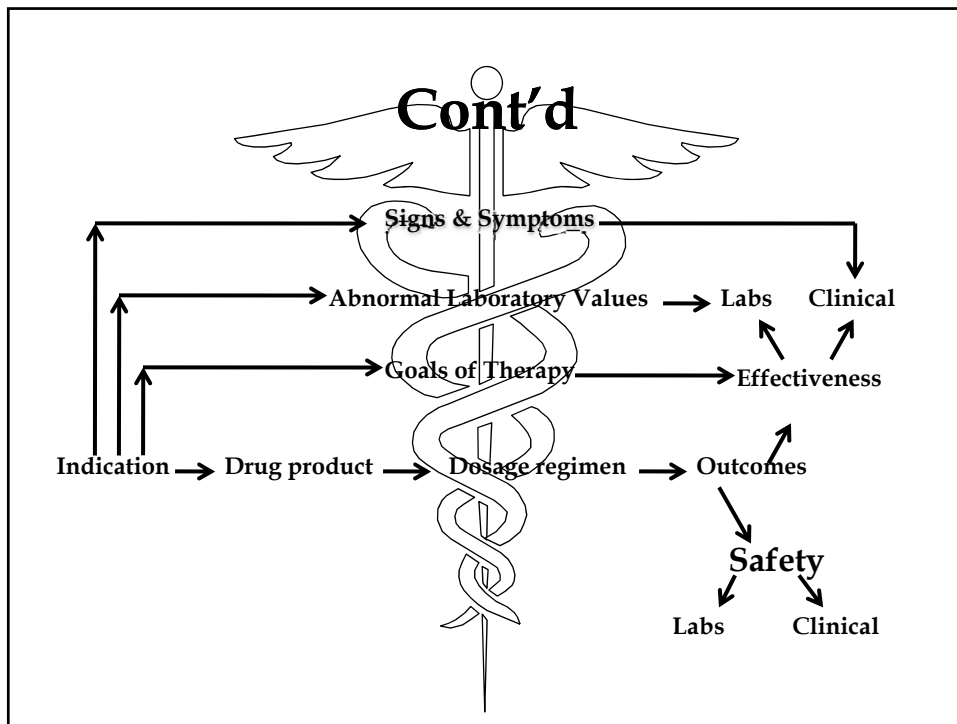
- Observing what resulted from your clinical decisions constitutes clinical experience.
- New knowledge is gained during each follow-up evaluation.
- Look for evidence of medications and which dosage regimens are most effective, cause harm, and any new problems since the last visit.

Cont'd

- Good (effectiveness): disappearance of the signs and symptoms of the disease or illness.
- Bad (safety): adverse and harmful effects from drug therapies.

Evaluating Effectiveness of Drug Therapies

- During the follow-up you have to compare the goals of therapy with patient outcomes.
- Frequent parameters for evaluation are clinical and/or laboratory parameters.



Improvement in Patient Signs and Symptoms

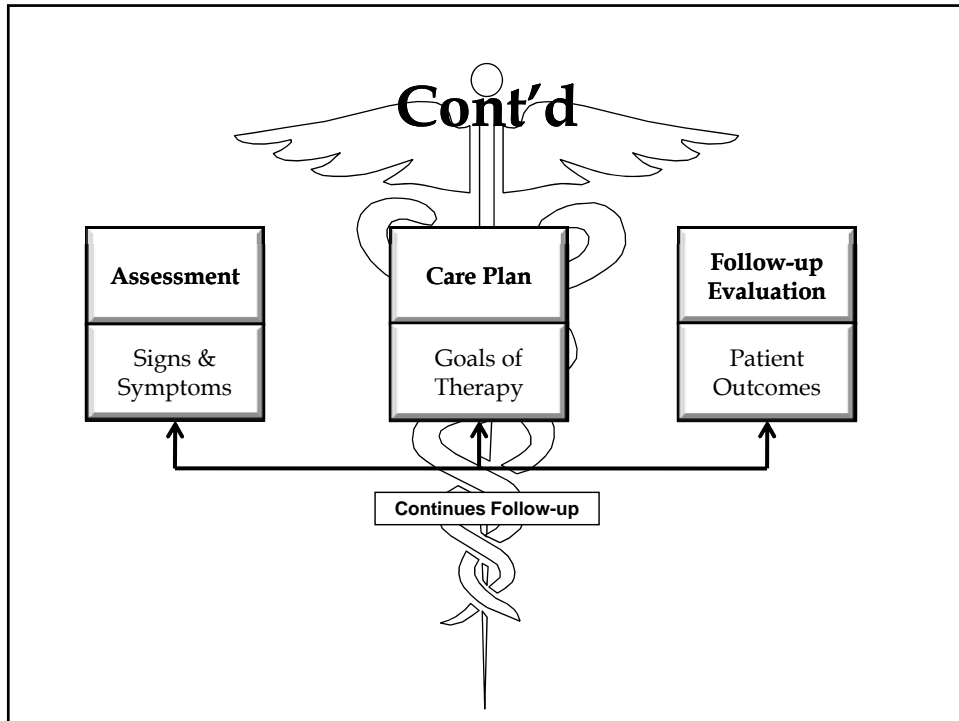
- Changes in clinical parameters are frequently used to determine the effectiveness of drug therapy.
- Positive clinical outcomes are associated with disappearance or diminution of the presenting signs and symptoms.

Cont'd

- Clinical parameters can include:
 1. Levels of pain,
 2. Anxiety,
 3. Mood changes,
 4. Inflammation, or
 5. Frequency and severity of cough, seizures, bleeding, sleep disturbances, tremors, and shortness of breath.

Cont'd

- The practitioner establishes the relationships between
 1. Original presenting signs and symptoms of the disease or illness;
 2. Clinical parameters use to establish the goals of therapy; and
 3. Improvement in those same clinical parameters at the time of follow-up.



Cont'd

<u>Therapeutic Indication</u>	<u>Clinical parameters</u>
Back pain	Severity and frequency of pain, range of motion, ability to ambulate
Migraine	Headache pain, retro-orbital pain, nausea, vomiting, visual disturbances
Major depression	Mood changes, feeling of sadness, level of energy, interest or enjoyment in usual or favorite activities, insomnia, agitation, fatigue, ability to think or concentrate, thoughts of death.
Anxiety disorder	Level of restlessness, concentration, irritability, muscle tension, sleep disturbance

Cont'd

<u>Therapeutic Indication</u>	<u>Clinical parameters</u>
Cough	Severity and frequency of cough, interruption, of daily activities or sleep
Rash	Change in color and/or size, associated inflammation, itching
Osteoarthritis	Use-related pain in weight-bearing joints including knee, hip, spine, and hands. Stiffness after rest.

Improve in Laboratory Test Results

- Outcomes evaluations often relay on changes in lab values.
- In some diseases or conditions outcome judgments are based primarily on improvements in laboratory test results.

Example

- Hyperlipidemia is a common example in which measurements of the patient's serum lipids (cholesterol, LDL, HDL, and TGs) serve as the parameters to determine the effectiveness of drug therapy.
- Patient seldom exhibit clinical symptoms associated with hyperlipidemia.

Cont'd

<u>Therapeutic Indication</u>	<u>Clinical parameters</u>
Hyperlipidemia	Cholesterol, low-density lipoprotein (LDL), triglycerides, high-density lipoproteins (HDL)
Anemia	Complete blood count (CBC), hemoglobin (Hb), hematocrit (Hct), red blood cell count, mean corpuscular volume (MCV), reticulocyte index, serum ferritin, iron-binding capacity, serum iron, serum B12
Cardiac dysrhythmias	Electrocardiogram (ECG, EKG)
Diabetes mellitus	Blood or plasma glucose, hemoglobin (A1C).

Cont'd

- You must understand the impact of drug therapies on specific lab tests to determine if they are effective.
- The timing of collecting lab test is important.
- Ask yourself, will this drug regimen have any beneficial effect for my patient?
- Ask yourself, how much of an impact will this drug regimen have on my patient?

Example

- Most of statins begin to improve serum lipid determinations within a few days (5-14 days), but generally several weeks (3-6) are required to see the full extent of the changes in serum lipids might provide information as to whether the selected therapy is likely to have effect at all on the patient's lipid profile.

Cont'd

- However, waiting 6 weeks or longer is more likely to provide evidence as to the extent of the benefit the patient is likely to experience from the drug regimen.
- In the first case, the laboratory test result is used to determine the *extent or degree* of benefit the patient has received from the drug therapy.

Cont'd

- In acute disorders you evaluate the final patient outcomes.
- In chronic conditions you establish the present status of the patient's condition.

Evaluating the Safety of Drug Therapies

- Drugs exhibit activities either beneficial or undesirable.
- Desirable action help to achieve the goals of therapy.
- Undesirable actions are called adverse effects or side effects.

Examples

- Aspirin is known to have analgesic, antipyretic, and anti-inflammatory properties.
- It gastrointestinal irritation, renal effects, and irreversible inhibition of platelet aggregation, and also inhibits cyclooxygenase-2 (COX-2) which provides aspirin-inflammatory properties.

Cont'd

- When a patient is treated with aspirin, all of these effects occur to varying degrees.
- If the intended indication is analgesia.
- In this patient platelet inhibitory activities are undesirable and would be considered a side effect.

Cont'd

- Patient using aspirin as 2^{ry} prevention of a MI or CVA.
- Platelet pharmacology is the desired action.
- Renal and GI activities are negative consequences.
- *The aspirin does not know why you are using it. It just exerts all of its pharmacological activities.*

Patient Signs & Symptoms as Evidence of Drug Safety

- Patient manifest undesirable actions of drugs in many ways.
- The vast majority of medication are taken orally.
- GI irritation is a common problem with oral medications.
- Many undesirable drug effects manifest as skin eruptions or rashes.

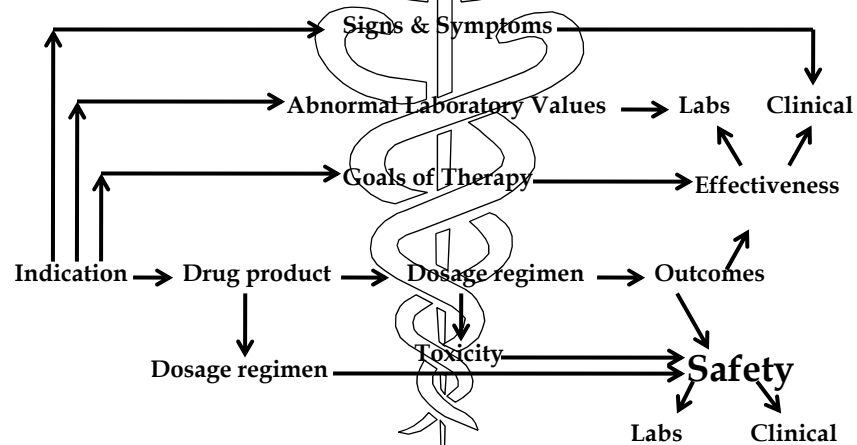
Cont'd

- CNS drugs can make patient drowsy, somnolent, dizzy, agitated, or confused.
- Undesirable effect either unpredictable adverse reactions associated with the product itself or those reactions related to the dosage of the drug.
- Unpredictable effects include allergic reactions, hypersensitivity reactions, or idiosyncratic adverse events.

Cont'd

- The substantially more frequent category of undesirable drug effects results from drug regimen and dosage of the drug.
- Adverse effects manifested as S or S and/or as alteration in lab test results.

Cont'd



Abnormalities in Lab Test as Evidence of Drug Safety

- Require follow-up to determine the safety of the patient's drug therapies.
- Drug toxicities can often identified before severe or permanent harm is caused by lab tests on a schedule basis.

Example

- Drugs commonly used to manage hyperlipidemia can cause liver damage, such as atorvastatin, simvastatin, pravastatin, lovastatin.
- Test the presence and extent of hepatic damage are recommended at baseline and every 12 weeks as part of the follow-up of patient's drug therapy.

Cont'd

- If the results of these hepatic injury test become elevated to greater than 2 to 3 times normal, the drug therapy needs to be d/c and different therapeutic alternatives need to be used.

Cont'd

- Know the lab test that are most useful in detecting drug toxicity.
- Schedule for its follow-up.
- It is required to ensure patient's safety.

Determining the Clinical Outcome Status

- You must take a clinical judgment about patient outcomes.
- Each follow-up contains your clinical judgment.
- You are responsible for documenting the progress (or lack of progress) in achieving the goals of therapy.

Cont'd

- In acute disorders: follow-up the final outcome.
- In chronic conditions: continual or serial follow-up to improve or decline in the status of the patient's condition being managed with drug therapy.

Cont'd

- The outcome term describe either of two status:
 1. The progress, or lack of progress, in achieving the desired goals of therapy at the time of the follow-up evaluation; and
 2. The action, if any, taken to adjust the patient's drug therapies.

Cont'd

- In practice many patient have multiple conditions and require drug therapy for both acute and chronic conditions simultaneously.

Cont'd

<u>Therapeutic outcome status</u>	<u>Definition (progress toward goal and action required)</u>
Resolved	Goals of therapy have been achieved. Drug therapy has been completed or can now be discontinued. Usually associated with therapy for an acute disorder.
Stable	Goals of therapy have been achieved. The same drug therapy will be continued. Usually associated with therapy for chronic disorders.
Improved	Adequate progress is being made toward achieving the goals of therapy at this point in time. The same drug therapy will be continued.

Cont'd

<u>Therapeutic outcome status</u>	<u>Definition (progress toward goal and action required)</u>
Partially Improved	Some measurable progress is being made toward desired goals of therapy, but adjustments in drug therapy are required. Usually dosage changes or the addition of additive or synergistic therapies is required.
Unimproved	No measurable progress in achieving goals of therapy can be demonstrated at this time. It is judged that more time is needed to produce adequate response. No changes will be made. The same drug therapy will be continued at this time.

Cont'd

<u>Therapeutic outcome status</u>	<u>Definition (progress toward goal and action required)</u>
Worsened	There has been a decline in health status while receiving the current drug regimen. Some adjustments in drug product selection and/or drug dosage are required.
Failure	The goals of therapy have not been achieved despite adequate dosages and adequate duration of therapy. Discontinuation of the present medication and initiation of new drug therapy is required.
Expired	Patient died while receiving drug therapy.

Evaluation for New Drug Therapy Problems

- Follow-up can identify new medical conditions that require treatment with drug therapy or determine if any new drug therapy problems have developed.
- You must assess the appropriateness of the indication, effectiveness, safety, and compliance for each medication in each patient.

Example

- If your patient's major depressive disorder has not improved after the recommended 12 weeks of antidepressant therapy, then your patient's therapy has not resulted in a positive clinical outcome.
- If the clinical decision is that the outcomes at this point would be considered a failure, then you would describe this new drug therapy problem as "the patient is receiving ineffective drug therapy of depression."

Cont'd

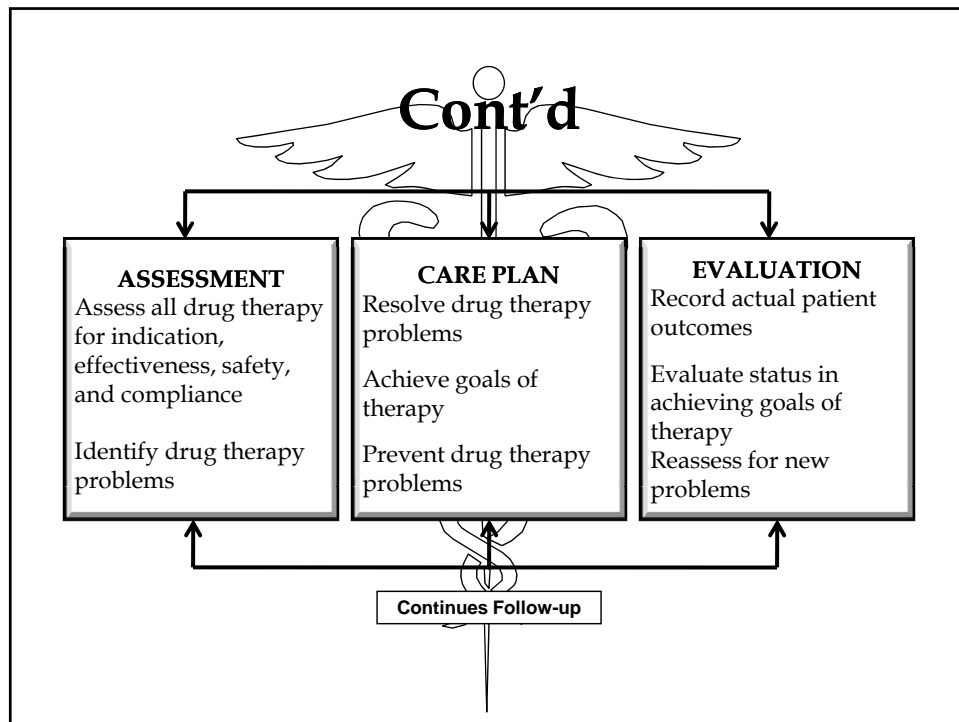
- You are now responsible to institute whatever interventions are needed in order to improve the patient's medical experience.
- Despite your best efforts, corrective action is required.

Schedule for Continuous Follow-up Evaluations

- Establish the schedule and plan for continuous follow-up.

Documenting the Follow-up Evaluation

- Documentation of the follow-up is a must.
- It is important to connect between the indication, pharmacotherapy, and actual outcomes.
- It helps to recall the relationship between the three steps of the patient care process.
- Recommended changes are documented at and the care plan is modified to reflect the new therapy.



Cont'd

- The outcome status is recorded using outcome terminology.
- These terms represent your clinical judgment.
- Supporting evidence for judgment can include improvements in clinical and/or lab values.

The text is centered on the page with a large caduceus symbol in the background.



Cont'd

- Changes in product, dose, interval, duration, and/or instructions need to be clearly and completely understood by your patient.
- Lastly, you will record the schedule for the next follow-up evaluation.



The Pharmacotherapy Patient Case Presentation

Dr. Hussain A. Al-Omar, M.Sc.

**Clinical Pharmacy Department
College of Pharmacy, King Saud University**

Purpose

- **Patient cases are presented to colleagues on a daily basis, for three primary reasons.**
1. Responsibility,
 2. Advice,
 3. Teaching and education.

Need for a Specific Format

- Teams include: physicians, nurses, dentists and other pharmacists.
- Each field has their own format according to their primary function.
- The case presentation for each practitioner is slightly different from the others.



Cont'd

- In pharmaceutical care practice it is structured to present patient information for the purpose of identifying, resolving, and preventing drug therapy problems.



Cont'd

- Case presentation should consist of selected and processed data from the Pharmacotherapy Workup and must be delivered precise manner.
- Oral presentation of a patient's case is usually an abbreviated effort.



Cont'd

- Oral presentation includes all of the important positive findings and a few pertinent negative findings
- Information that you may have gathered, but did not use to make decisions or provide care for the patient are not included in your presentation.



Cont'd

- Case presentations start with a brief description of the patient.
- They contain:
 1. Medical conditions,
 2. Drug therapy problems,
 3. Associated drug therapies, and
 4. Resulting outcomes.



Cont'd

- Case presentations end by summarizing the information you feel is most relevant to your understanding of how to optimize the patient's medication experience.



Pharmacotherapy Patient Case Presentation Format

Assessment

Brief description of the patient (age, gender, appearance)
Primary reason for the patient encounter or visit
Additional patient background/demographics
The medication experience as reported by the patient (wants, expectations, concerns, understanding, preferences, attitudes, and beliefs that determine the patient's medication taking behavior)
Comprehensive medication history (allergies, alerts, social drug use, and immunization status)

Cont'd

Current medication record: description of all medical conditions being managed with pharmacotherapy with the following associations made:

Indication-Drug product-Dosage regimen-Result to date

Relevant past medical history: outcomes of past medication use

Review of systems

Identification of drug therapy problems: description of the drug therapy problem, medications involved, and causal relationships

Prioritization of multiple drug therapy problems

Summary of the assessment

97

Cont'd

The Care Plan (for each indication)

Goals of therapy

Clinical and laboratory parameters used to define the goals of therapy

Observable, measurable value and timeline for each

How you plan to resolve the patient's drug therapy problems

Therapeutic alternative approaches considered

Rationale for your product and dosage selections

How you plan to achieve the goals of therapy

Nonpharmacologic interventions

Prevention of drug therapy problems

Schedule for follow-up evaluation

98

Cont'd

Follow up Evaluation

Clinical and/or laboratory evidence of effectiveness of drug therapies for each indication
Clinical and/or laboratory evidence of safety of every drug regimen
Evidence of compliance
Evaluation of outcome status
Changes required in drug therapies
Schedule for future evaluations
Summary of Case

99

Cont'd

- During a case presentation your decisions are described and your rationale is explained.
- You will need to describe which drug therapy problem your patient has and how you decided to resolve it.



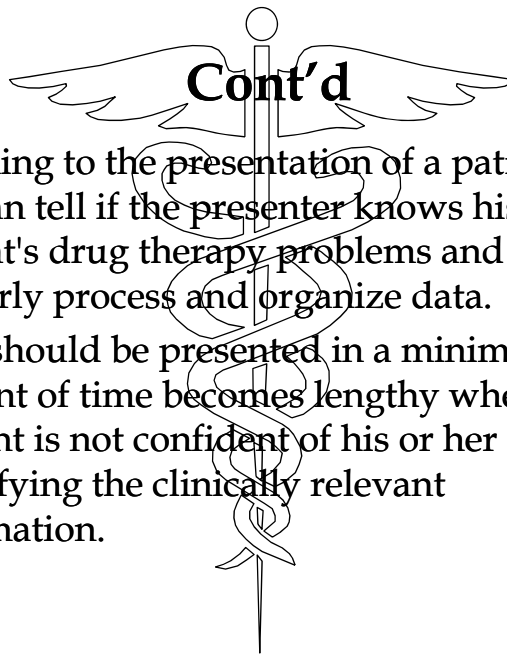
Cont'd

- The case presentation tells the story of what you found, what you did, and what happened.
- Some case presentations are designed for the purpose of obtaining assistance from a colleague.

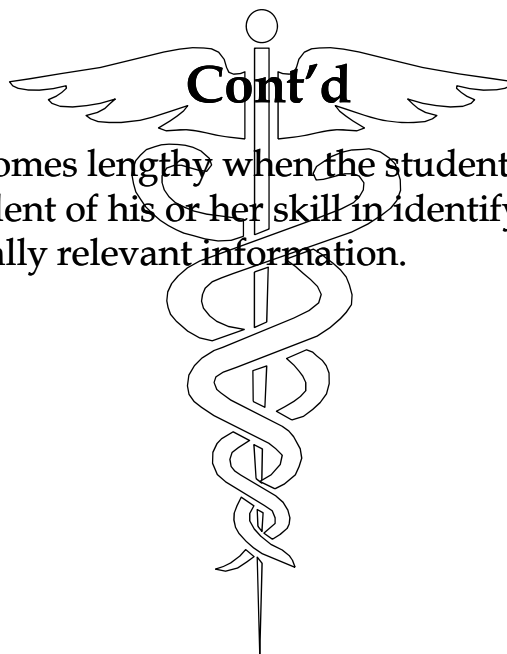


Example

- "I have not been able to determine why my patient is not responding to her drug therapy.
- I would appreciate your opinion about what the drug therapy problem might be in this case."



- Listening to the presentation of a patient case, one can tell if the presenter knows his or her patient's drug therapy problems and can properly process and organize data.
- Case should be presented in a minimum amount of time becomes lengthy when the student is not confident of his or her skill in identifying the clinically relevant information.



- It Becomes lengthy when the student is not confident of his or her skill in identifying the clinically relevant information.

Example of a Pharmacotherapy Case Presentation

The following is an example of a Pharmacotherapy Case Presentation.

- **Brief description of the patient**
 - M.J. is a 23-year-old female who is 5 ft 3 in tall and weighs 132 lb.

Cont'd

- **Primary reason for the encounter**
 - She presented to our pharmaceutical care clinic concerned about a cough that she explained has "kept me awake for the past two nights."
- **Additional patient background**
 - M.J. has a history of animal allergies including cat dander and has recently been taking care of her partner's three cats.



Cont'd

- She feels the cough is related to the cats, but would like to continue to care for the cats until her partner returns in 2 weeks.
- **Medication experience**
- She has not attempted to treat this episode of the cough, but she did attempt to treat a similar cough last spring using dextromethorphan.



Cont'd

- M.J. described that she prefers not to take dextromethorphan again, as it caused her to "feel nauseated and it did not help much."
- **Comprehensive medication history**
- She reports no drug allergies and does not use tobacco.



Cont'd

- She uses alcohol only on special social occasions which averages two to three times per month.
- She is up to date with her immunizations and received her annual influenza vaccine at her place of employment last month.



Cont'd

- **Current medication record**
- M.J. is presently treating an episode of tendonitis of the right elbow with ibuprofen 600 mg three times daily for the past 5 days.
- She originally tried 200 mg twice daily, but found no relief.
- The increased dosage of ibuprofen is providing satisfactory relief and she reports no gastrointestinal upset from this therapy.



Cont'd

- **Relevant past medical history**

- M.J. describes herself as being in excellent health with no chronic medical conditions.
- She has a history of exercise-induced asthma at age 7, but has not needed any drug therapy or medical care for the past 8 years.



Cont'd

- **Review of systems**

- A brief review of systems revealed no cardiovascular, renal, or gastrointestinal problems.
- As for her respiratory status, she reported only the cough and no shortness of breath or wheezing.
- M.J. is not pregnant.



Cont'd

- **Summary of the Assessment**

- The summary of my assessment of M.J. is that she is a healthy 23-year-old female who is bothered by coughing in the evening, which is disrupting her sleep and is felt to be a manifestation of her allergies to cat dander.



Cont'd

- **Drug therapy problem**

- Her drug therapy problem is that she requires additional drug therapy to relieve the symptoms (cough) she is experiencing secondary to her animal allergies.
- M.J. agreed with this assessment.



Cont'd

- **Care plan**
 - Relief of symptoms associated with allergies to cat dander.
- **Goals of therapy**
 - We discussed goals of therapy and agreed that achieving a restful night of sleep tonight and for the next two nights without the constant coughing would be most desirable.



Cont'd

- During the day she is at work and leaves the cats alone in her apartment, so the cough is not a problem at work.



Cont'd

- **Therapeutic alternatives**

- We discussed several alternatives including cough suppressants (codeine and dextromethorphan, which was not effective in the past) and antihistamines such as diphenhydramine, chlorpheniramine, and less sedating agents such as loratadine.



Cont'd

- **Pharmacotherapy**

- M.J. was started on diphenhydramine HCl (Benadryl) 25 mg orally in the afternoon after work and 25 mg at bedtime.
- She agreed that if it caused her to feel drowsy, that might be beneficial in her case.



Cont'd

- She will also make her bedroom off limits to the cats in an attempt to minimize her exposure to allergens.
- She will also continue taking 600 mg of ibuprofen three times each day for tendonitis.



Cont'd

- **Plan for follow-up evaluation**
- I plan to follow-up and evaluate her new therapy next Tuesday and will evaluate effectiveness in terms of restful sleep and to make certain that she is not bothered with early morning drowsiness from her diphenhydramine therapy.

