

TUBERCULOSIS CASE MANAGEMENT FOR NURSES

FUNDAMENTALS OF TUBERCULOSIS CASE MANAGEMENT

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INTRODUCTION

This module provides an overview of case management, including historical background and definitions. The principles and goals of the case management process are described, as well as a comparison of the roles and responsibilities of case management to the nursing process.

The concepts and principles of case management are applied to ambulatory care treatment of persons diagnosed or suspected of having clinically active tuberculosis (TB). Since tuberculosis is transmitted by droplet nuclei from an infectious person with active TB, the risk to the public's health cannot be ignored. Therefore, tuberculosis case management not only involves managing the services required for patient care and treatment, but also includes an array of public health activities to help prevent and control the spread of the disease in the community.

The role of the nurse in TB case management is described along with specific goals that provide direction for the case management process. The process including eight elements and activities necessary to achieve effective, efficient outcomes, is discussed in detail. Although Module 4 will address special issues related to the child with TB, there are instances when the case management activities for children are modified or affected in some way. In this module, issues particular to children will be italicized and found at the end of the paragraph.

Before reading this module, it is important for the nurse to demonstrate knowledge of TB pathogenesis, transmission, diagnosis, treatment, infection control practices, contact investigation principles and standards, and delinquency control procedures. The *CDC Self-Study Modules on Tuberculosis, 1-9* are a useful resource for providing this essential foundation (Centers for Disease Control and Prevention [CDC], 1995 & 1999).

LEARNING OBJECTIVES

After completion of this learning module, you will be able to:

- 1) Describe the history of case management
- 2) Define case management
- 3) Compare the case management process to the nursing process
- 4) Describe the role of the TB nurse case manager
- 5) Specify three goals of TB nurse case management
- 6) List the eight elements of the case management process
- 7) Identify components of the initial assessment and continual assessment
- 8) Explain how the assessment of a child differs from that of an adult patient with TB
- 9) State the two components of a nursing diagnosis
- 10) List three expected outcomes that should be included in the planning process
- 11) Identify activities for implementing TB case management
- 12) Explain how variance analysis is used in the TB nurse case management process

OVERVIEW OF CASE MANAGEMENT

BACKGROUND

Case management may seem like a relatively new concept, but its roots can be traced back as far as 1863 when Massachusetts founded a board of charities to coordinate services for the sick and poor (Weil & Karls, 1985). Since that time, case management has been utilized by a variety of disciplines to coordinate health and human services and to help contain the costs of these services. However, the emphasis of this self-study module is the manner in which the nursing profession has employed the process.

Initially, case management services were primarily community-based (Kalisch & Kalisch, 1996). A shift to the acute care setting did not occur until the early 1980s with the establishment of Diagnostic Related Groups (DRGs) and reimbursement incentives for shorter hospital stays. Hospitals employed nurse case managers to coordinate care and to facilitate patients' transition back into the community after discharge. The insurance industry and health maintenance organizations (HMOs) soon followed, recognizing the benefits of the case management process in coordinating services.

Presently, nurse case managers can be found in all areas of the nursing profession. Although the specific implementation of the process may vary from setting to setting, the goals remain the same; to provide quality health care and contain costs for the care provided.

DEFINITION

During the last decade, case management has been defined in a variety of ways. The Commission for Case Manager Certification (CCMC) defines case management as "a collaborative process that assesses, plans, implements, coordinates, monitors, and evaluates the options and services required to meet an individual's health needs, using communication and available resources to promote quality, cost-effective outcomes" (Kenyon et al, 1990). The American Nurses Association (1998) defines case management as a system of healthcare delivery designed to facilitate achievement of expected outcomes within an appropriate length of stay. *In Clinical Pathways for Collaborative Practice*, the authors define case management as, "a practice model that uses a systematic approach to identify specific patients and manage patient care to ensure optimal outcomes" (Ignatavicius & Hausman, 1995).

Case management is a system of healthcare delivery in which an individualized treatment plan for the patient is developed by a multidisciplinary team to achieve established patient care outcomes. It is a recognized competency with established practice standards. As a competency, it is "the ability to establish an appropriate plan of care based on assessment of the client/family and to coordinate the necessary resources and services for the client's benefit" (Conti, 1998). In the broadest sense, case management can be described as a strategy that tailors a complex, fragmented healthcare system for both the patient and provider's benefits. In summary, case management is efficient coordination of healthcare services to achieve specific and measurable outcomes. It has the potential to influence the quality of patient care in a positive way, while containing healthcare costs.

Goals and Principles of Case Management

- Provision of quality health care along a continuum
- Reduction of fragmented services across multidisciplinary settings
- Enhancement of the patient's quality of life
- Achievement of anticipated outcomes
- Effective utilization of patient care resources
- Provision of cost effective health care

The case management process and the nursing process are similar and, in many situations, may be used interchangeably. Nurses are ideal case managers because of their familiarity with the nursing process. Furthermore, patient care always takes place in a system of health care in which nurses play an essential role.

In both the nursing process and case management process, conclusions about the patient are based on assessment data, and the identification of patient problems and plans for interventions are the priority. In case management, strategies are developed and assessments are validated with the interdisciplinary team. Although the case manager may not be involved in the provision of direct care, assurance that the plan of care is implemented is a major responsibility. In the nursing process, evaluation includes analysis of conflicts or discrepancies in the plan of care that may require adjustment. Documentation is an essential activity in every component of both processes, and it establishes the care plan as an internal standard by which the nurse and the interdisciplinary team are evaluated.

TUBERCULOSIS NURSE CASE MANAGEMENT

ROLE OF THE NURSE CASE MANAGER

The role of the TB nurse case manager includes managing services for the individual diagnosed or suspected of having TB, from initiation to completion of treatment, a change in the diagnosis, or death. Some TB programs/clinics may choose to include the management of individuals with latent TB infection, or old, healed TB.

The role of the TB nurse case manager requires a proactive approach in which potential or anticipated problems are identified and appropriate measures are used to address these problems before they develop. For example, the day before a scheduled clinic visit, the outreach staff should remind the patient of the appointment. If the patient is unable to keep the appointment, the nurse case manager should immediately schedule another date, to avoid the patient being labeled "delinquent". Problems experienced by TB patients are frequently confounded by multiple variables and it may be difficult to sort out and identify cause and effect of complex problems. A reactive approach usually requires more time and energy on the part of the case manager and others involved in patient care.

The role of the nurse case manager may vary, depending on resources available in ambulatory clinics or health departments. In addition to case management responsibilities, the nurse may also be the provider of care and be required to perform some or all of the TB control activities. In these situations, it is recommended that administrative oversight of the case management process be established to help ensure that all activities are completed, and intermediate and expected outcomes are achieved.

GOALS OF CASE MANAGEMENT IN TUBERCULOSIS

TB case management is directed towards accomplishing the following goals:

- All hospitalized patients diagnosed or suspected of TB disease receive continuity of care during transition from hospital to the outpatient setting without interruption in treatment or essential services
- Disease progression and drug resistance are prevented
- Each patient receives TB care and treatment according to published standards of care (American Thoracic Society/Centers for Disease Control and Prevention [ATS/CDC], 1994)
- An integrated, coordinated system of health care allows patients to experience TB care along a continuum rather than in fragments
- Patients complete TB treatment within appropriate time frames and with minimal interruption in lifestyle or work
- Transmission of tuberculosis within the community is prevented through effective contact investigations and delinquency control activities
- The patient/family/community is educated about TB infection, disease, and treatment
- Individuals diagnosed with clinically active or suspected TB are reported according to regulations, and TB control activities are implemented according to standards of CDC and state, regional, or municipal TB control programs
- Case managers participate in policy development within the healthcare system (at community or state level) that positively affect clinical and TB control outcomes
- Case managers participate in studies to improve case management services and documentation, enhancement of adherence, and TB nursing

ELEMENTS AND ACTIVITIES OF THE CASE MANAGEMENT PROCESS

Eight elements of the case management process have been identified: case finding, assessment, problem identification, development of a plan, implementation, variance analysis, evaluation, and documentation. The following section provides a discussion of each element and specific case management activities that lead to the desired outcomes for the patient with tuberculosis. (Cesta, Tahan & Fink 1998).

Case finding

Case finding is the early identification of the patient with TB to ensure that public health reporting regulations are upheld, and TB control activities can be initiated as soon as possible. The nurse case manager should be familiar with facilities or organizations that provide services to clients at high risk of TB infection and disease. Liaisons with these facilities/organizations should be developed and sustained.

Activities of case finding include:

- **Communicate with healthcare providers.** Communication, education, and networking with hospital infection-control practitioners and physicians are important because these activities help ensure early notification of those suspected or diagnosed with TB. The nurse case manager often acts as a resource for nurses and physicians as they identify TB suspects and active cases of TB.
- **Develop a system to track patients with TB who are hospitalized during outpatient treatment.** Their status should be monitored to prevent interruption in services after discharge.
- **Ensure that all public health reporting regulations have been met and that essential TB control activities are initiated.** Essential TB control activities include the TB interview and contact investigation. If the TB case is not reported in a timely manner, there may be missed opportunities for prevention of transmission and treatment of infection or disease.
- **Ensure that a contact investigation is completed in accordance with state and local policy.** Every attempt is made to identify the source case in cases of infectious or potentially infectious TB.

There must be a sense of urgency when very young children (less than 4 years of age) are household or close contacts of an infectious case, because these children are at particular risk of developing TB disease once exposed and infected.

- **Provide education about TB infection and disease** to healthcare providers in the community to increase the awareness of TB, especially in areas of high prevalence. A high level of suspicion on the part of healthcare providers will prevent delayed diagnosis and treatment as well as misdiagnosis.

This is especially important in diagnosing children who do not present with the usual symptoms of TB, such as cough and night sweats. (See Module 4 for more information regarding the diagnosis of TB in children).

Assessment

Assessment is the gathering of data that will form the basis for TB treatment and care. In the TB case management system, many professionals are involved in patients' care and contribute to the data from which the initial assessments are formed. The nurse case manager will draw assessment data from many sources, including community agencies, primary care providers, schools, and other healthcare facilities. Each situation must be assessed objectively to determine the appropriateness of the planned intervention.

When the patient with TB is a child, it is important for the case manager to involve both the child and his/her family in the assessment process.

The **initial assessment** should occur during the patient's hospitalization. Patients who are diagnosed during a hospitalization will require discharge planning. The case manager should ensure appropriate discharge planning occurs for all patients with TB to prevent transmission in the community and interruption in treatment.

Prior to the patient's first visit to the physician/clinic after hospital discharge, the nurse case manager should ensure that a copy of the patient's hospital record and chest x-ray is available to the treating physician. Without the hospital record, the physician may not be able to make the correct judgments in medical management. If the patient is not hospitalized, the initial assessment should take place at the first clinic visit or during a home visit. At some time during the patient's TB treatment, a home visit is helpful. Information gathered at the patient's home is often more revealing than assessments performed in the clinical or health department settings and can lead to a more accurate understanding of the patient's lifestyle.

Activities included in the initial assessment:

- **Obtain or review demographic information**, including the name, address, telephone number(s), birth date, social security number, and name, address, and identifying information of health insurance.
- **Ascertain the extent of TB illness**, including acuity and length of symptoms, bacteriology and radiographic findings, laboratory analyses, tuberculin skin test results, nutritional status, vital signs, and baseline weight (without shoes and excess clothing). It is important to record weight in kilograms. Temperature, pulse, and respiration should be assessed if the patient appears ill or the history suggests illness. Blood pressure evaluations are valuable, especially if the patient has no primary care provider.

In cases of pulmonary TB in children who are 6 years of age and under, anterior/posterior and lateral chest x-rays are important in the initial diagnosis. This is unlike adults who are suspected of TB or who are active cases. These adults usually need only an initial posterior/anterior chest x-ray.

- **Obtain and review the patient's previous health history** to determine concurrent medical problems including HIV disease or risk factors, allergies, or medications that may interfere with TB drugs. It will be necessary for the case manager to obtain the names, addresses, and telephone numbers of the patient's primary care provider and any specialists involved in his/her medical care, previous hospitalizations, allergies, and current medications. It is important to know the patient's history of treatment for TB infection and/or disease, especially those who are treatment failures or have relapse of TB disease as they are at a higher risk for developing multi-drug resistant TB (MDR-TB).

It is also important to determine what the patient perceives as his/her most important medical/health problem. The date of the last menstrual period and contraceptive use should be obtained from female patients.

- **Determine infectiousness or potential infectiousness.** This assessment should include the duration and frequency of symptoms, especially cough, and a review of the radiographic findings. If the patient is infectious or potentially infectious, the case manager should have an understanding of the period of infectiousness. The parameters of a contact investigation, including the need for repeating the tuberculin skin test for contacts who were initially negative, can then be determined.

In the case of a child with TB who is 4 years of age or under, the contact investigation should focus on determining the source case of TB, since young children cannot transmit TB. Dates of exposure and most recent information concerning the infectiousness of the source case should be documented.

- **Evaluate the patients' knowledge and beliefs about TB**, including a history of TB in family and/or friends and the response to treatment. The nurse case manager can assess TB knowledge by interviewing the patient regarding TB transmission, pathogenesis, and symptoms. Patient education should be based on current knowledge and ability to comprehend written, visual, and/or verbal information.

It is important to interview both the child and parent or guardian when assessing TB knowledge; however, adolescents should be given the opportunity to speak to a healthcare provider alone. Keep in mind that parents who have misinformation or cultural bias about TB may affect their children's understanding of the disease.

Patient education can be documented on a form such as the one in Appendix 1.

- **Monitor the TB medication regimen.** The nurse case manager should ensure that medications and dosages are prescribed according to *ATS/CDC Treatment of Tuberculosis and Tuberculosis Infection in Adults and Children* (1994). If the initial assessment occurs during the patient's hospitalization, the case manager should ensure that the medications are given at the same time every day, and that the ingestion of the medication is observed by a nurse. The patient's tolerance to TB medications should be noted, and interactions with other medications should be determined prior to the patient starting TB medications.

If TB medications are going to be given to a child in a school or day-care setting, parental authorization must be obtained.

- **Identify barriers or obstacles to adherence** in taking TB medications and keeping physician or clinic appointments. This includes such issues as availability of transportation, the patient's preferences for place and time of directly observed therapy (DOT), and the ability to swallow pills. Many adolescents and adults who have difficulty swallowing pills are embarrassed to report this to the healthcare provider. It may be necessary to crush the pills and put them in food such as pudding or applesauce. In addition, the nurse case manager should determine the need for enablers and identify incentives that will be most valuable to the patient.

When establishing school-based DOT, it is important to determine a time of day that is most convenient and least disruptive to the school schedule.

- **Review psychosocial status** to identify unmet needs, the use of alcohol and/or illegal drugs, and any pre-existing psychiatric diagnoses. A good history of the patient's social network is important to identify and document in the event that the patient does not return for follow-up. The nurse case manager needs to verify the patient/family's address, evaluate residential stability, and assess potential for homelessness. The patient's residence(s) during the past year should be determined, particularly any congregate living situations, such as prison, jail, homeless shelter, nursing home, boarding home, or foster care. Occupation and/or student status must be established, and the name and address of business or school should be documented. Recent research involving DNA fingerprinting suggests that the usual criteria used to determine close contacts of persons with infectious, active TB may not be sufficient. "Casual contacts" may actually have had many hours of exposure to the source case of TB, and in some cases, transmission may have occurred with limited contact. In order to identify those who have shared common air space with the infectious, untreated patients with TB, it is necessary to have an understanding of the patient's social and recreational activities and how he/she spends leisure time. This also includes time spent at faith-based functions.

The name and location of a child's babysitter, daycare center or school should be noted.

An **ongoing assessment** takes place monthly either in an ambulatory clinic setting, health department, or private physician's office. Additional assessments may need to be made throughout the month for patients experiencing problems in their TB treatment, or for those patients who are nonadherent to DOT or follow-up appointments.

Activities of the ongoing assessment include:

- **Monitor the clinical response to treatment** by reviewing vital signs, weight, bacteriology reports, radiographic results, including drug sensitivities and TB symptoms and comparing them to previous documented findings. This review is an important measurement of clinical improvement, worsening, or stabilization of the patient's condition. If a variation is noted, the patient should be interviewed to determine the potential cause(s) of the deviations(s). All bacteriological reports should be listed in chronological order and correlated with the patient's current symptom history and chest x-ray report to assure accuracy. Inconsistencies should trigger additional questions, such as the possibility of laboratory contamination, and should be brought to the physician's attention immediately.

- **Determine HIV status and the risk factors for HIV disease, and refer the patient for treatment, if indicated.** It is important for patients to understand the correlation between TB and HIV disease. The nurse case manager should ensure that HIV counseling and testing are done at the beginning of TB treatment, if the HIV status is not previously known. If the patient refuses HIV testing, an assessment of the risk factors for HIV should be completed.

If the parents of a young child with TB refuse to permit the child to be HIV tested, the parents should be interviewed regarding the child's risk of HIV disease, including neonatal transmission.

- **Review the treatment regimen** to verify that the physician's orders are clear and concise. One of the nurse case manager's primary responsibilities is to ensure that the patient completes treatment according to the physician's plan. It is also important to ensure that the plan is specific for the individual patient and follows the principles of TB treatment. Monitor side or adverse effects of medication. Review laboratory findings and contact the treating physician if abnormal results are obtained.

If the child is taking TB medications at school, regular communication with the school nurse is indicated to determine whether the child is experiencing medication side effects.

- **Identify positive and negative motivational factors influencing adherence.** Policies and procedures must be in place to establish the expected monthly rate of DOT adherence. An assessment of adherence needs to occur daily. If the nurse case manager is not involved in providing the care, a notification system should alert him/her if the patient misses more than 2 consecutive days of DOT, or there is suspicion of nonadherence in the case of self-administered therapy. A preventable interruption in treatment can be avoided if the nurse case manager is notified immediately, rather than when the monthly DOT rate is calculated. The nurse case manager should review the monthly adherence rate to ensure that all patients in the cohort achieve the expected adherence rate. If the patient is self-administering TB medication, a weekly visit should be made to the patient's residence to assess adherence and observe for side effects or adverse reactions. The effectiveness of enhancement methods (i.e., incentives, enablers, behavioral contracting, or behavior modification) should also be regularly monitored.
- **Determine the unmet educational needs of the patient** regarding transmission, diagnosis, and treatment of TB. Identify the concerns and anxieties regarding diagnosis, and need for further education. The educational needs of the patient/family may vary throughout the course of treatment. Patient education will vary depending on beliefs about TB treatment, acceptance of the diagnosis, coping mechanisms, cultural values, and the accuracy of the information they have already received. The nurse case manager should explore the effect the diagnosis has on the patient's relationships with other family members, co-workers, and social contacts so that appropriate, culturally sensitive information can be provided.

- **Review the status of the contact investigation**, if one was conducted. It has been found that patients may not initially reveal the names of all close contacts. Over time, many more individuals are often identified. The following is an example that illustrates this clearly:

A 59-year-old male diagnosed with infectious, pulmonary TB receives his TB medications via DOT at 9:30 AM Monday through Friday. After a contact investigation was performed, all identified contacts were tuberculin skin tested and medically evaluated. The clinic and TB control personnel considered the contact investigation complete. However, approximately 4 months after the start of treatment a different staff member visited the patient for DOT, covering for the regular outreach worker who was ill. The staff member arrived at the patient's home at 6:30 AM because it was on her way to work. Because she did not have the patient's phone number, she was unable to call ahead to explain the change in schedule. When she arrived, the patient was not there. His wife stated that he was at work, babysitting for three young children from 6:30 AM to 8:30 AM every weekday for the past 2 years. However, he had neglected to identify these children during the contact investigation in fear of alarming their parents.

There are countless stories from nurses and outreach workers reinforcing the fact that not all information is obtained from the patient/family at one time. Therefore, the nurse case manager must ensure that the list of contacts is updated from time-to-time and determine the need for further testing. It is also important to review the status of the contact investigation to ensure that timelines and standards are followed. Checking for the accuracy of previous variables should occur throughout the patient's TB treatment.

Problem identification

Identification of existing or potential problems is derived from the assessment. The problems may be stated in the form of a nursing diagnosis or as a problem statement. The purpose of making a nursing diagnosis is to identify patient problems for development of a treatment plan. The nursing diagnosis must be within the scope of professional nursing practice; however, it may be comprised of problems identified by various members of the multi-disciplinary team. For example:

Assessment data: *Patient verbalizes very little understanding of TB disease, transmission, pathogenesis, and treatment.*

Nursing diagnosis: *Knowledge deficit related to lack of understanding of disease process and treatment of TB.*

In the above example, an outreach worker, during the TB interview process, obtained the data. Regardless of who collects data, the nurse case manager's responsibility is to review and interpret the data and document the assessment or identified problem (nursing diagnosis) in the medical record.

Problem identification is not always easy. Confounding and conflicting variables presented by patients often result in misleading conclusions. For example, the nurse case manager might conclude that nonadherence was a problem because of the patient's past history of leaving the hospital against medical advice and failure to keep clinic appointments. However, the reasons for the patient's previous behavior were never determined. Therefore, nonadherence may actually be the result of a "real problem" that is yet to be identified. Until the actual reasons for the behavior are determined, the nursing diagnosis for the previous nonadherence problem would be stated as, "the potential for continued infection and relapse related to patterns of nonadherence to TB treatment". The plan of care would then be directed toward the nursing diagnosis rather than the nonadherent behavior.

Activities to identify problems include:

- **Assess existing and/or potential health problems** and document them using the nursing diagnosis. A clear statement of the problems and possible etiologies is extremely important to the case management process.

When the patient with TB is a child, the nurse case manager should remember to include the family system in identification of problems.

- **Coordinate team meetings** to discuss the patient assessment, antecedent variables, and identified problems. It is important for the case manager to discuss the patient assessment and the nursing diagnoses with team members. The team should agree on the conclusions drawn from the assessment and provide the nurse case manager with feedback. Both the patient and the case manager benefit when the nursing diagnosis or problem is correctly identified and clarified for all members of the team. Errors in problem identification will lead to unsuccessful interventions and outcomes. Additional information that will be useful in planning patient care can be obtained at team meetings. Team meetings are a good forum for discussing feelings or attitudes team members may have about patients or required tasks. The nurse case manager should use team meeting time to identify problems healthcare workers are experiencing, especially those that may affect expected outcomes.
- **Monitor the nursing diagnoses** for appropriateness over time. This activity allows for changes to be made as intermediate or expected outcomes are achieved, or as the patient's status changes. New problems or changes will require the addition of new nursing diagnoses or a change in the existing ones.

Plan development

Planning begins when sufficient information has been gathered. Development of a plan is based on assessment data and problems identified by members of the healthcare team. The plan combines both medical management of the patient and nursing interventions. Planning for continued care of the patient with TB requires critical thinking and decision making and should always include participation and commitment from all team members and the patient. Due to the length of TB treatment (from 6 to 24 months), the plan must include intermediate and expected outcomes. The nurse case manager is responsible for the overall plan including documentation, monitoring the patient response, interventions, intermediate and expected outcomes, and initiating changes in the plan to reflect changes in circumstances (variances). The nurse case manager also determines how the plan of care fits with the roles and responsibilities of the team members depending on their specific job descriptions.

In working with the pediatric population, the nurse case manager must ensure that the family and child are involved in the planning process. Gaining the cooperation of the parents and family is essential.

Plan development activities include:

- **Establish the plan of care** ensuring that all the components are included: assessments, nursing diagnoses, required procedures such as x-rays, blood, sputum, auditory, visual acuity tests, medication orders, expected patient behaviors, TB control activities, and intermediate and expected outcomes. The nurse case manager should ensure that the plan of care is useful and meaningful. It becomes the internal standard of care for the patient as well as the performance standard for the nurse case manager. Good planning will allow the patient to experience TB care and treatment along the healthcare continuum and prevent duplication and fragmentation of services. The plan should be discussed and validated with all team members and the patient.
- **Monitor the plan of care and patient response** according to established time frames. It is important to pay attention to relevance of the information and the plan in view of the overall assessments. Each component of the plan should be reviewed to ensure that it is an accurate accounting of the patient's problems, required tests, and interventions. The achievement of intermediate and expected outcomes should be documented. Examples of intermediate and expected outcomes can be found in Appendix 2 and Appendix 3. This documentation will serve as the basis of the evaluation of services and analysis of variances.
- **Negotiate and adjust the plan of care**, as needed, to meet new realities. Since patient circumstances are usually fluid and personnel resources often change over time, it is essential that the plan be negotiated with the patient and changed to adjust to new situations. The plan should allow for flexibility and negotiation. The adjusted plan should be discussed with the team members, as well as the patient.

Implementation

Implementation includes all the interventions required to move the TB patient along a coordinated, sequenced healthcare continuum from diagnosis to treatment completion and cure. The nurse case manager must ensure that all the Elements of a Treatment Plan for TB Patients (CDC, 1995) have been addressed in this implementation phase (see Appendix 4). Effective communication with all staff members is an essential component in successfully implementing a patient's plan of care. Implementing the plan requires educating, coordinating, monitoring, locating, referring, negotiating, documenting, decision-making, and advocating for the patient.

Implementation activities include:

- **Monitor the patient's response to TB treatment, interventions, and adherence.** The nurse case manager should ensure that the treatment is progressing according to the physician's plan, and that the patient continues to show signs of clinical improvement. Policies and procedures regarding DOT and nonadherence will allow the nurse case manager to identify events that require additional assessment interventions. The nurse case manager should ensure that the patient is informed about the consequences of nonadherence, including legal interventions. Changes in the patient's attitude towards the clinic and/or clinic staff should be noted and verified with the patient. Occasionally, a patient with TB may require hospitalization during the course of his/her treatment. This may or may not be TB-related. Regardless, it is important for the nurse case manager to monitor patient progress at frequent intervals to assure that TB treatment is provided according to standards of care and is not interrupted. For specific guidelines see Appendix 5.

Children's clinical response to treatment may not be as significant as that of an adult. Therefore, it is important to reinforce what the expected response to treatment should be for the individual child during the course of treatment.

- **Refer the patient to other healthcare providers, social service or community agencies as needed.** The nurse case manager should have a good understanding of the community resources, including strengths and weaknesses. The referral process requires the case manager to locate and coordinate accessible, available, and affordable resources for the patient. After the referral is made, the case manager should monitor the patient's adherence to the referral and obtain the consultation or follow-up report in writing. Immediate intervention may be necessary if the patient or the referring agency experiences difficulty.
- **Broker and locate needed services relating to the TB treatment.** This may include laboratory, auditory, or visual acuity testing, additional radiographs, or other tests required specific for the patient. It is important to schedule or assist the patient in scheduling appointments, monitor the patient's adherence to the appointment, and the results. An understanding of the patient's financial resources and health insurance coverage is important. Lack of financial resources or health insurance will affect the patient's willingness to keep appointments, which may be critical to his/her health. The nurse case manager may need to discuss essential services with insurance companies or other healthcare providers to obtain the most cost effective, quality service.

- **Negotiate a plan for DOT or self-administration evaluation.** The nurse case manager should ensure the plan is suitable for the patient's needs and achievable by the healthcare provider(s). Due to the length of TB treatment, the patient's circumstances may change. The nurse case manager needs to verify that the time and place for DOT administration originally agreed upon is still agreeable to the patient/provider. It also may be necessary to coordinate the arrangements for DOT with outside organizations, such as school nurses, drug treatment center nurses, etc.
- **Coordinate strategies to improve adherence.** Coordination helps to achieve the case management goal of treatment completion and cure. The nurse case manager must have knowledge of and proficiency in strategies to improve patient adherence. An understanding of the importance of developing and maintaining a therapeutic relationship with the patient throughout the course of the TB treatment is critical. It is also important for the nurse case manager to be familiar with the principles and practices of behavioral contracting and behavioral modification, two useful methods to improve adherence. Collaboration with team members is essential to obtain as much information as possible about strategies to improve adherence of individual patients and elicit opinions, attitudes, and feelings expressed by the patient that may be counter productive to the goals. To be effective, incentives and enablers should be meaningful and specific for a particular patient population.

To facilitate DOT adherence of children with TB, the nurse case manager needs to be familiar with the childhood developmental stages, including important events, and utilize strategies in consideration of these stages (see Module 4, Table 5).

- **Educate patient and caregivers about the TB disease process** during the course of TB treatment. Instruction should be relevant for the patient's level of education or ability to learn. The nurse case manager should ensure that education is provided in the patient's primary language and is culturally appropriate. In addition, healthcare beliefs that are in conflict with educational information should be identified and addressed.

Age-appropriate educational materials and methods should be utilized, especially in working with children. When dealing with a school-aged child, it is important to explain that TB is treatable, and with the adolescent, it may be necessary to constantly reaffirm confidentiality.

- **Advocate for the patient** with team members and other service providers when necessary. The nurse case manager should demonstrate respect and understanding of the patient's cultural beliefs and values and prevent team members from imposing their own values or belief systems on the patient. The nurse case manager should be able to communicate the patient's fear/anxieties, likes/dislikes, and needs/wants to the team members in a non-judgmental manner. It is the nurse case manager's responsibility to be a compassionate, caring, role model for the team so that the services and interventions can be planned and carried out for the patient's benefit. The case manager must also have an understanding of the team members, and mediate, negotiate, and resolve differences of opinion regarding the patient and interventions. Team building and conflict resolutions are important competencies required for a successful nurse case manager.

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- **Monitor delinquency control activities** to ensure that the patient and required activities are assigned to an outreach worker and completed according to established standards (e.g., an outreach worker has 3 days to bring infectious TB patient to clinic). The nurse case manager needs to have a good understanding of public health workforce skills and competencies in locating and returning delinquent patients to TB treatment. It is also important to understand policies and procedures relating to delinquency control and to intervene at the administrative level if they are not in accordance with statewide standards.

Variance analysis

Variance analysis looks at the discrepancy between the anticipated and actual patient care outcomes. Variances should not be considered failures but rather opportunities to improve the quality of care. They may arise from changes in the patient's personal situation, medical condition, or healthcare resources. A flexible plan can easily be adjusted to accommodate variances. Because TB treatment takes 6 months or more, it is likely that the patient's situation will change and variances occur. If successful treatment outcomes are to be achieved in these new circumstances, changes in the care plan are necessary.

The nurse case manager should review all variances, make changes as necessary, and identify the frequency of clinical, operational, or system problems. If variances are not addressed, the result may be feelings of frustration on the part of the patient and/or the healthcare team.

Variance analysis activities include:

- **Identify variances in the plan of care at specified intervals** to determine if intermediate and expected outcomes were achieved. The nurse case manager should review all assessments and information to determine if the outcomes are realistic.
- **Describe the reason(s) for the variance.** If reason(s) is unknown, conclusions regarding the variance should be drawn based on assessments and critical thinking.
- **Document the individual variances** to identify changes that need to be made in the patient's plan of care. Often there are changes in the TB patient's circumstances during the lengthy course of treatment. The following is an example of a variance:

The plan called for the patient to receive DOT in the clinic, Monday through Friday mornings. The patient routinely rode his bicycle to the clinic, and during inclement weather he used bus tokens to get to the clinic for DOT. His adherence had been 100% for the last 3 months. During the last week, the patient was nonadherent. After 2 missed days of DOT, the case manager assigned an outreach worker to find the patient and determine the reason for the nonadherence. The outreach worker could not find the patient for 3 days. On the fourth day, the patient's father was at home and informed the outreach worker that the patient found a job at a construction site in another county. A van picked the patient and his co-workers up every day at 7:30 AM and transported them to and from work. He returned home from work at approximately 7:30 PM. The outreach worker reported this to the case manager. The case was discussed during a team meeting. It was decided that a possible solution would be to place the patient on twice weekly treatment, since he was now sputum smear and culture negative and had completed 12 weeks of DOT with excellent adherence. The outreach worker would visit the patient's home either before 7:30 AM or after 7:30 PM. The patient would be consulted regarding this plan prior to its implementation. The change to intermittent therapy was a benefit for the outreach worker, clinic staff, and the patient as well.

Evaluation

Evaluation is an important component of the case management process. Throughout the evaluation process, the nurse case manager must demonstrate skills such as problem solving, critical thinking, leadership, effective communication, negotiation, and networking. Evaluation is the outcome of the case management process and should be continuous and ongoing. Patient care is never complete without the evaluation component. In TB case management, the achievement of desired outcomes must be evaluated so that services and activities can be improved, and TB treatment goals achieved.

Evaluation activities include:

- **Answers to the following questions:**

Were the TB treatment plan and control activities implemented in a timely manner?

Were intermediate and expected outcomes achieved?

Was the patient satisfied with the services or care?

Were the nurse case manager and the team members satisfied with the plan and outcomes?

- **Monitor the multidisciplinary care plan at least monthly**, or more frequently depending on the complexity of treatment and patient variables. The appropriateness of interventions should be reviewed, as well as dates when intermediate and/or expected outcomes were achieved. Attention should be given as to how rapidly the care plan was changed when the need was identified. If the care plan has remained unchanged, the reason must be determined. An example of chart review is found in Appendix 6.
- **Identify strengths or weaknesses in the healthcare system** that negatively or positively affect the expected outcome. A good evaluation will lead to positive changes for the patient and others.
- **Conduct a cohort analysis at least** quarterly to identify variances or common elements among the group. The nurse case manager, armed with variances common to the cohort patients with TB, can make changes to prevent future variances from occurring with other patients.
- **Monitor the regulatory reporting mechanism and the contact investigation** to ensure the TB case reports are accurate and updated according to state standards, and the contact investigation is complete.

Documentation

Documentation is an integral part of all steps in the case management process. Documentation chronicles patient-care outcomes and can be used to facilitate positive changes for both patients and healthcare providers. The nurse case manager must ensure that documentation is completed regularly by all members of the multidisciplinary team. For example, if legal action is necessary to improve adherence of a difficult patient, the outreach staff must have all attempts to locate and communicate with the patient explicitly documented. All interventions should be documented in a clear and concise manner to ensure continuation of appropriate care.

The nurse case manager should remember the cardinal rule of documentation: “If it isn’t documented, it wasn’t done.” Training regarding documentation may be required for clinical and TB control staff. The case manager must review the documentation to assure that it is consistent with both external and internal standards. Proper documentation will enhance the continuity of care for patients with TB, particularly if different providers are involved in the care over the course of treatment. See Module 1 for a discussion of documentation and the use of standardized nursing language.

Documentation activities include:

- **Monitor the patient's medical record** at each clinic/physician visit, monthly, or more frequently as indicated to ensure that all members of the multi-disciplinary team document information and interventions/services/care when provided in a timely manner. This includes education and factors to improve patient adherence. Review the medical record for completeness, compliance with external and internal standards of care, and clarity. Ensure that all necessary documentation from private physicians or referral agencies is included in the patient's record. Update the multidisciplinary care plan as required. Variances from the usual plan should be documented, including the reasons why the variances occurred and the rationale for the change in plan. Document the achievement of intermediate and expected outcomes as they occur.
- **Document case management activities and elements of the case management process** in the patient's medical record. To be useful, documentation must be clearly and succinctly written. The use of a checklist will assist the nurse case manager to document patient care in a timely, efficient manner. For example, TB education can be documented using a format similar to the patient education documentation form found in Appendix 1. Charting by exception is also another way to efficiently document assessments and interventions. Policies and procedures must be in place if charting by exception is used so that those standards of care are upheld.
- **Assure patient confidentiality.** The nurse case manager should inform the patient that the medical record is kept confidential. Written consent from the patient should be on file if it is necessary to obtain or provide any part of the patient's medical record with another provider, healthcare insurance agency, or community agency. It is also important to ensure that medical records are not easily accessible to others during the day and are filed in a locked cabinet at the end of the day.

REVIEW QUESTIONS

SECTION REVIEW – OVERVIEW OF CASE MANAGEMENT

- 1) What was the objective of early case management programs?
- 2) What prompted the rise of case management services in acute care settings?
- 3) Define case management.
- 4) List three goals of case management.
- 5) List three principles of case management.
- 6) Describe how the nursing process is similar to the case management process.

SECTION REVIEW – TUBERCULOSIS NURSE CASE MANAGEMENT

- 1) Identify the goals of nurse case management in TB.

SECTION REVIEW – ELEMENTS AND ACTIVITIES OF THE CASE MANAGEMENT PROCESS

- 1) Define case finding and explain the importance of identifying the source case.
- 2) Name eight activities involved in the initial assessment process.
- 3) Discuss ways to monitor the patient's clinical response to treatment.
- 4) Discuss the advantages of the team approach to problem identification.
- 5) Describe how the nurse case manager involves team members in plan development.
- 6) Name essential components of the implementation process and examples of each.
- 7) Define variance analysis and how it relates to treatment care plans.
- 8) Explain methods for evaluating patient care plans.
- 9) Discuss the importance of documentation and name three case management activities involved in the process.

APPENDIX 1

PATIENT EDUCATION DOCUMENTATION FORM

PATIENT FACTORS THAT MAY AFFECT LEARNING (CHECK IF APPLICABLE)				EVALUATION SCORE KEY				
<input type="checkbox"/> Cognitive impairment	<input type="checkbox"/> Physical impairment			1 = Unable to Teach				
<input type="checkbox"/> Visual impairment	<input type="checkbox"/> Family dynamics			2 = Teaching Offered – Refused				
<input type="checkbox"/> Speech	<input type="checkbox"/> Hearing impairment			3 = Requires Reinforcement of Content				
<input type="checkbox"/> Primary language other than English	<input type="checkbox"/> Cultural/religious factors			4 = Demonstrates with Assistance				
<input type="checkbox"/> Literacy	<input type="checkbox"/> Emotional state			5 = Explains Independently				
<input type="checkbox"/> Readiness/motivation/desire to learn	<input type="checkbox"/> Other			6 = Demonstrates Independently				
EXPECTED OUTCOMES				TEACHING SESSIONS/LEARNER EVALUATION				
Patient/family is able to:	Initials Date	Evaluation Score	Initials Date	Evaluation Score	Initial Date	Evaluation Score	Initials Date	Evaluation Score
Verbalize an understanding that confidentiality will be maintained.								
Verbalize understanding of the difference between TB infection and TB disease.								
Verbalize understanding of TB transmission.								
Demonstrate techniques to prevent transmission, e.g., proper use of mask, covering mouth and nose when coughing, correct use and disposal of tissues. Verbalize an understanding that TB is curable.								
Verbalize an understanding of the consequences of not undergoing treatment for full length of time.								
Verbalize an understanding of causes and consequences of MDRTB.								
Agree to participate in DOT.								
Verbalize an understanding that non-adherence can result in involuntary confinement.								
Identify contacts.								
Verbalize an understanding of the importance of knowing HIV status and its effect on TB treatment.								

APPENDIX 2

EXAMPLES OF INTERMEDIATE OUTCOMES IN TB CASE MANAGEMENT

Activity: Initiate treatment with anti-TB medication

- Appropriate TB regimen prescribed and DOT planned at first visit

Activity: Directly observed therapy (DOT)

- DOT initiated within 1 working day
- Compare patient's monthly adherence rate to established objectives

Activity: Clinical monitoring of response to anti-TB treatment

- Sputum conversion (smear) occurs within 2 to 3 weeks and sputum remains negative
- Culture conversion within 8 to 10 weeks, and culture remains negative
- Clinical improvement subjectively and objectively noted in 80% of patients

Activity: Monitoring and follow up for TB drug side effects and adverse events

- Side effects of medication will be minimized by adjusting method of ingestion
- Baseline CBC, hepatic enzymes and platelet count obtained in 100% of patients placed on four first-line drugs
- Blood test repeated in 100% of patients who have abnormal test results, are at high risk for side effects, or who present with signs or symptoms of adverse reactions to drugs
- Baseline visual acuity and color vision (Ishihara) test performed at first visit on 100% of patients taking ethambutol. Thereafter, repeated monthly
- Baseline auditory and renal function studies performed on 100% of patients taking capriomycin IM or IV
- Baseline uric acid and hepatic enzyme levels obtained in 100% of patients taking PZA. Repeated if abnormal or if symptoms of adverse reaction

Activity: Adherence monitoring

- Continuity of TB treatment ensured by patient keeping monthly appointments
- Barriers to adherence identified within 2 days of missed DOT and addressed within 3 working days

Activity: Insight into TB disease process

- Education provided to 100% of patients and caregivers regarding pathogenesis, transmission, and treatment of TB disease, the difference between latent infection and disease, and prevention of transmission in the community

Activity: Treatment plan documented

- Individualized, multidisciplinary care plan developed during the first month of treatment
-

Activity: Community health*

- TB interview conducted within 3 days after patient is reported as suspected of TB or diagnosed as an active case
- Identified contacts will be TB skin tested, if previously negative, within 15 days after patient is reported as suspected of TB or diagnosed as an active case
- Contacts who are TB skin test positive will be medically evaluated within 30 days after the case was reported

*Follow state guidelines

APPENDIX 3

EXAMPLES OF EXPECTED OUTCOMES IN TB CASE MANAGEMENT

Activity: Treatment with anti-TB medication

- Appropriate medication regimen completed in expected time frame (varies according to patient's condition)

Activity: Directly Observed Therapy (DOT)

- Treatment completed
- Patient maintains adherence rate that meets established objectives

Activity: Clinical monitoring of response to TB treatment

- Status of sputum smears and cultures remain negative
- Patient no longer demonstrates signs or symptoms of TB

Activity: Monitoring for adverse drug reactions

- Potential adverse drug reactions were identified in a timely manner and if present, adjustments were made to treatment plan

Activity: Adherence monitoring

- Patient kept appointments with physician, nurse, and other team members
- Patient did not miss DOT appointments
- Barriers identified and issues addressed

Activity: Insight into TB disease process

- Patient verbalizes an understanding of the TB disease process
- Patient understands importance of following TB treatment regimen as evidenced by adherence and completion of therapy
- Patient cooperates with nurse and TB staff in TB control issues to prevent transmission of disease

Activity: Treatment plan documented

- Individualized care plan, developed in the early stages of treatment, is reviewed at regular intervals and updated by team members as needed

Activity: Community health

- Contacts will be identified, skin tested, and evaluated for treatment according to established guidelines

APPENDIX 4

ELEMENTS OF A TREATMENT PLAN FOR PATIENTS WITH TB (CDC, 1995)

I. Assignment of responsibility

- A. Case manager (i.e., person assigned primary responsibility)
- B. Clinical supervisor (e.g., nurse, physician, physician assistant)
- C. Other caregivers (outreach worker, nurse, physician, physician assistant)
- D. Person responsible for completing the contact investigation

II. Medical evaluation

- A. Tests for initial evaluation (e.g., tuberculin skin test, chest radiograph, smear, culture, susceptibility tests, HIV test), including results of each test and date completed
- B. Important medical history (e.g., previous treatment, other risk factors for drug resistance, known drug intolerance, and other medical problems)
- C. Potential adverse reactions
 - 1. Appropriate baseline laboratory tests to monitor toxicity (e.g., liver enzymes, visual acuity, color vision, complete blood count, audiogram, BUN, and creatinine), including results of each test and date completed
 - 2. Potential drug interactions
- D. Obstacles to adherence

III. TB treatment

- A. Medications, including dosage, frequency, route, date started, and date to be completed for each medication
- B. Administration
 - 1. Method (directly observed therapy or self-administered)
 - 2. Site(s) for directly observed therapy

IV. Monitoring

- A. Tests for response to therapy (e.g., chest radiograph, smear, and culture), including planned frequency of tests and results
- B. Tests for toxicity, including planned frequency of tests and results

V. Adherence plan

- A. Proposed interventions for obstacles to adherence
- B. Plan for monitoring adherence
- C. Incentives and enablers

VI. TB education

- A. Person assigned for culturally appropriate education
- B. Steps of education process and date to be completed

VII. Social services

- A. Needs identified
- B. Referrals, including date initiated and results

VIII. Follow-up plan

- A. Parts of treatment plan to be carried out at TB clinic
- B. Parts of treatment plan to be carried out at other sites and person(s) conducting activities

APPENDIX 5

TB CASE MANAGEMENT GUIDELINES FOR PATIENTS WHO REQUIRE HOSPITALIZATION DURING OUTPATIENT TB TREATMENT

It is the nurse case manager's responsibility to monitor the patient's progress while he/she is in the hospital, whether or not the hospitalization is related to TB. The case manager should communicate regularly with the hospital case manager, physicians, floor nurses, and infection-control nurses. The frequency with which the patient's care and progress is monitored depends on the individual patient situation, diagnoses, and other complications. It may be necessary for the nurse case manager to go to the hospital floor to actually review the patient's medical record, see the patient, and discuss the case with nurses and physicians. Prior authorization, however, should be obtained from the hospital to allow the case manager access to hospital/patient records. Either a verbal understanding or written agreement identifying the case manager's role during the patient's hospitalization is important. Role clarification may need to occur with various disciplines within the hospital.

If management of the TB regimen becomes a problem during the patient's hospitalization, the case manager may need to discuss the situation with the physician who was treating the patient on an outpatient basis, or the clinic's medical director. Depending on the situation, physician-to-physician may be the most effective form of communication to resolve medical/treatment issues. An effective case manager utilizes the most capable existing resources in problem resolution.

If the local health department, TB control, or clinic has ancillary personnel who function as hospital liaison, the nurse case manager may elect to delegate the patient monitoring activities; however, it is important to give explicit instructions regarding delegated activities. Written or verbal reports should be given to the case manager on a timely basis so patient progress can be assessed.

Case management does not end when the TB patient is hospitalized, unless the patient has completed treatment or is no longer suspected of TB. Assessment, monitoring, and coordination must be continual. Working with the hospital staff to ensure the patient receives the appropriate TB regimen will assure uninterrupted TB treatment, allow appropriate discharge planning, thwart patient problems, and increase the treatment completion in a timely manner.

The nurse case manager should ensure the following:

- The hospital treating physician has the medical information necessary to continue the patient's TB treatment according to the outpatient plan
- The patient does not have an interruption of his/her TB treatment
- The TB drug regimen in the hospital is the same as prescribed by the clinic physician. Any changes in the treatment regimen must be discussed with the treating clinic physician
- The ingestion of all TB medication is observed by an RN and documented in the patient's medical record
- The doses of TB medication are not split during the day, but given all at once the same time. The exceptions to this would be patients who cannot tolerate taking all their medications at one time and medications which are difficult to tolerate, such as ethionamide and PAS. The clinic physician treating the patient should clear all exceptions
- The patient's TB drug regimen remains the same and is not changed by different doctors during the hospital stay
- Pulmonary TB cases have sputum collected, if infectious or thought to be infectious, at least once a week during the course of the hospitalization. The nurse case manager can give guidance about the bacteriologic findings and the necessity of sputum collection
- Appropriate discharge planning occurs
- There is a smooth transition from inpatient to outpatient care with no interruption in TB treatment
- The hospital medical record is available for the clinic physician at the first clinic visit following hospitalization

APPENDIX 6

Patient _____

CHART REVIEW

Intermediate Outcomes	Time frame	Date(s) accomplished					
TB contact interview	3 days						
Contacts identified and tested	15 days						
Medical evaluation of TST + contacts	30 days						
Appropriate medication regimen	at 1st visit/monthly						
DOT arranged	24 hours						
Testing/Screening	Baseline and prn						
• Blood							
• Vision							
• Hearing							
• Sputum							
• x-rays							
• HIV							
Sputum smear conversion	2-3 weeks						
Sputum culture conversion	8-10 weeks						
Clinical improvement	monthly						
• Subjective							
• Objective							
Patient Education							
• Initiated	at 1st visit						
• Documented	monthly						
Appointments							
• Physician follow up	monthly						
• DOT adherence	monthly						
• Referrals	prn						
Nursing care plan							
• Initiated	at 1st visit						
• Documented	monthly						

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