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Laboratory Monitoring of Psychotropic Medications: Physician and Pharmacist Collaboration

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For many individuals who reside in state supported living centers for the developmentally disabled and/or mentally impaired, there is the potential to be placed on a myriad of psychotropic medications to treat behavioral, psychological, and psychiatric disturbances.
Most of these psychotropic medications require continuous monitoring in order to assess for both effectiveness and possible side effect development. It is imperative that routine laboratory tests are performed for specific psychotropic medications (e.g., mood stabilizers and antipsychotic medication) and failure to monitor these drug therapies is recognized as one of the most frequent causes of preventable adverse drug events. The errors that are typically associated with laboratory monitoring appear to occur due to a lack of either baseline, follow-up laboratory monitoring, delay in action being taken to address abnormal laboratory results, or lack of appropriate collaboration between different health care professionals as it relates to medication management.

Keyword: Psychotropic Medications, Therapeutic Drug Monitoring, Narrow Therapeutic Windows, Anticonvulsants, Mood Stabilizers, Antipsychotic Medications, Adverse Effects, Pharmacist and Physician Collaboration

1. Introduction

Many individuals who reside state assisted living centers for the developmentally disabled and/or mentally impaired are placed on a myriad of psychotropic medications to treat their behavioral, psychological, and psychiatric disturbances. There is the awareness that appropriate, timely laboratory tests and proper monitoring should be undertaken while individuals are on these psychotropic medications. The Long Term Care State Operations Manual (LTC SOM) cites that while serum concentration monitoring is not required or available for all anticonvulsants, period serum concentrations should be monitored for phenytoin, phenobarbital, primidone, divalproex sodium, and carbamazepine so as to determine and maintain their level of effectiveness as well as prevent the development of adverse effects that can potential lead to significant harm. 1 Some of these agents can be used psychiatrically and in some cases proper monitoring is not performed

unlike when the same medication is used for a mental condition. According to LTC SOM, the frequency and duration of monitoring can be used to identify therapeutic effectiveness and adverse consequences will be dependent on factors such as clinical standards of practice, facility policies and procedures, manufacturer's specifications, and the resident's clinical condition. [1] Monitoring should encompass three aspects that include periodic planned evaluation of progress towards the therapeutic goals, continued vigilance for adverse reactions or consequences, and evaluation of the identified adverse consequences. It is recognized that failure to monitor drug therapy is among the most frequent causes of preventable adverse drug events.[2] The errors that can be associated with laboratory monitoring appear to occur when there is a lack of baseline or follow-up laboratory work, or a delay in responding to abnormal laboratory results that are identified. According to the LTC SOM- F329 guidelines, one of the four distinct steps of medication monitoring involves reevaluating and updating monitoring approaches as the status of a facility's residents change and determining the frequency of monitoring for these particular medications. [3]

Furthermore, the revised F329 guidelines include a list of specific laboratory monitoring parameters to perform an assessment on those medications that have the potential to cause clinically significant adverse drug reactions.[3] Some of these medications include long and short acting benzodiazepines, hypnotics, sedatives, anxiolytics, and antipsychotic medications. Drugs for which a relationship between their blood concentration and therapeutic effects have been established are noted to be significantly important because practitioners must be diligent with obtaining labs. The use of therapeutic drug monitoring parameter can be useful when determining if a patient has achieved desired drug concentration or if headed towards toxicity.[4] The difference between therapeutic effect and toxicity can be narrow for specific psychotropic medications so is important that proper labs are identified and routinely performed. The use of drug specific monitoring parameters is also important for certain drugs that carry a risk of organ system toxic effects, require dosage adjustments, and can cause electrolyte imbalances such as the mood stabilizers and/or antiepileptic for mood stabilization, antidepressants, and antipsychotics.[5] The most common intervention that has been documented in the ambulatory care setting that are recommended by pharmacists included suggestions for liver enzyme tests or complete blood cell counts for patients started on carbamazepine (16.2%) valproate(15%) therapy, and obtaining serum, liver, and/or thyroid tests for patients on lithium therapy.[5] For patients with abnormal laboratory findings prescribers have been shown to take 91% of the guidelines-based recommendations that were provided by a pharmacist and incorporate them into their follow-up interventions.[5] Pharmacists been shown to be instrumental in the improving treatment for disease state management through drug therapy review and staff consultation so it is feasible that they can also offer assistance when it comes to maintaining compliance with labs for psychotropic medications.[6] The advent of pharmacists providing recommendations through the performance of drug regimen reviews can greatly assist with identifying and meeting the requirements for routine and periodic laboratory tests that might otherwise be missed. It is both the combination of both clinical judgment and practice standards the can help to foster the movement towards the performance of routine laboratory monitoring.

Pharmacists performing drug regimen reviews have the ability to thoroughly evaluate medication profiles and determine when initial (baseline) and follow-up laboratory monitoring need to be performed on many of the most commonly utilized psychotropic mediations. Many studies have shown that the collaboration between pharmacists and physicians can improve medication management if there is a continuous stream of dialogue when providing patient care.[7] For instance, an electronic tool has been shown to be instrumental in effectively increasing the number of patients receiving routine laboratory monitoring for ongoing psychotropic therapy

because pharmacist are able to communicate their findings to the physician in a timely manner, and physicians are able to either reject or accept the recommendations in a matter of moments. A randomized controlled study conducted by Raebel and colleagues(2006) in which physicians and pharmacists jointly developed monitoring guidelines which alerted pharmacists of missing laboratory results showed that the use of the computerized tool as well as the joint efforts of health care professionals led to an increase in the number of patients who receive adequate laboratory monitoring their drug therapy.[8] Pharmacists working alongside physicians to provide medication management has been shown to improve clinical outcomes by allowing for the notification of physicians when specific baselines and follow-up labs needs to be performed.

Lastly, an additional study conducted by Longe (1989) to determine the types of laboratory tests recommended by pharmacists in a 185-bed skilled nursing facility tests found that routine drug monitoring were being performed more frequently based upon the recommendations of pharmacists, and the results of these tests prompted changes to be made to patients current drug therapies. [9] For certain agents such as psychotropic medications with established organ-system effects, clinicians must actively monitor key laboratory elements at baseline and at regular intervals, and pharmacists can provide additional assistance with it comes to maintaining compliance with many of these laboratory monitoring parameters if they are not recognized by other providers involved in the interdisciplinary management of patients. [10]

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