



NR607 Standardized Procedure Worksheet

Student Name:

Carefully read the assignment guidelines and rubric and complete each section of the worksheet below.

1. Definition

a. Disease or condition

Serotonin syndrome

b. Pathophysiology

Serotonin syndrome is a potentially fatal condition triggered by an excess of serotonin in the central nervous system. This syndrome leads to heightened serotonin (5-HT) activity in the CNS and peripheral receptors (Badar, 2024). This overactivity can result from therapeutic medication use, intentional self-harm, or accidental drug interactions.

Serotonin syndrome manifests when the CNS retains an excessive amount of serotonin, leading to receptor overstimulation. As stated by Badar (2024), this can occur through serotonin production (e.g., L-tryptophan), release (e.g., amphetamines), reuptake inhibition (e.g., SSRIs, SNRIs), and degradation inhibition (e.g., MAOIs). The overstimulation of serotonin receptors results in various symptoms associated with serotonin syndrome.

c. Incidence and prevalence

The true prevalence of serotonin syndrome (SS) remains ambiguous and is likely underreported, as its symptoms often resemble those of other conditions, and mild cases tend to be ignored. The rise in serotonin syndrome occurrences is associated with the increased consumption of serotonergic drugs, especially SSRIs. In 2016, the Toxic Exposure Surveillance System recorded 54,410 incidents of SSRI poisoning, resulting in 102 deaths, with estimates suggesting that around 15% of these could be attributed to serotonin syndrome (Mikkelsen et al., 2023). Another dataset from the US reveals an SS incidence between 0.07% and 0.19% (Mikkelsen et al., 2023). Nevertheless, with the growing use of serotonergic medications, the frequency is believed to be on the rise and is more commonly seen in patients taking multiple serotonergic drugs (Prakash et al., 2021). The condition is generally regarded as rather rare. Around 15% of SSRI overdoses result in mild to moderate SS, while severe cases are uncommon (Chiew & Isbister, 2024). The co-ingestion of moclobemide increases the risk of SS,

whereas 5-HT_{2A} antagonists such as olanzapine or risperidone mitigate this risk (Chiew & Isbister, 2024). Nearly half of MAOI and SSRI overdoses lead to moderately severe SS, with serious, life-threatening situations arising almost exclusively from the combined intake of MAOIs and other serotonergic substances.

2. Assessment

a. Symptoms

Cognitive Effects: Typical subjective experiences (indicators) of serotonin syndrome encompass cognitive effects like confusion, in which patients may feel disoriented or struggle to think coherently, and hallucinations, which can manifest visually or auditorily (Prakash et al., 2021). Agitation or restlessness is also common, with individuals feeling unusually unsettled or anxious.

Autonomic Effects: Autonomic effects frequently seen in serotonin syndrome include hyperthermia, marked by an increased body temperature, along with profuse sweating, which usually occurs in conjunction with hyperthermia (Prakash et al., 2021). Moreover, patients might undergo flushing, a rapid reddening of the face, neck, or chest, as well as gastrointestinal issues like diarrhea.

Somatic Effects: Somatic effects of serotonin syndrome involve tremors, where patients may endure shaking or trembling in various body parts, alongside myoclonus, which signifies abrupt, involuntary jerking of a muscle or cluster of muscles (Prakash et al., 2021). Hyperreflexia, a heightened or overly active reflex, is another prevalent observation.

b. Physical exam findings

Serotonin syndrome may manifest with a range of clinical symptoms affecting various systems. Changes in mental status often present as restlessness, disorientation, and vivid perceptions. A neurological assessment may uncover hyperactive reflexes, clonus (notably in the lower limbs), muscle stiffness, and shaking (Prakash et al., 2021). Findings from a cardiovascular examination typically reveal rapid heart rate and elevated blood pressure. An evaluation of the musculoskeletal system commonly shows muscle stiffness, especially in the lower limbs (Prakash et al., 2021). Furthermore, a skin examination often highlights excessive sweating.

c. Intended state of practice and circumstances that require physician consultation, if indicated