

Simmons JC, Rushton WF, King JD, Charlton NP. Ability of Senior Medical Students to Identify Common Serotonergic Agents When Treating Serotonin Syndrome. Poster presentation at the American College of Medical Toxicology Annual Scientific Meeting. 2014, Phoenix, Arizona.

## **Background**

Serotonergic agents have become ubiquitous throughout medical care and include drugs such as selective serotonin reuptake inhibitors (SSRI), monoamine oxidase inhibitors, select opioids (tramadol, fentanyl, and meperidine), antimicrobials (linezolid), over-the-counter preparations (dextromethorphan), lithium, and drugs of abuse (MDMA, LSD, cocaine, mushrooms). Despite the frequent prescribing pattern of serotonergic medications, medical students have often been unable to identify serotonergic medications during their Medical Toxicology rotation. The objective of this study is to determine if senior medical students are cognizant of drugs that have high serotonergic activity and could potentiate serotonin syndrome.

## **Methods**

A clinical vignette regarding an adolescent male who daily takes an SSRI and who presented with fulminant serotonin syndrome after abusing dextromethorphan was distributed to a fourth year medical school class at one institution. Students were given a list of drugs commonly used in the ICU setting and asked to identify which were known to increase serotonergic activity and thus be avoided in the management of this patient. Response to the survey was entirely voluntary and two reminder emails were sent to increase responses.

## **Results**

120 participants replied out of a class of 155 for a 77.4% response rate. The following agents were correctly identified for their potential to increase serotonergic activity: sertraline, 87.5%; meperidine, 50.8%; linezolid, 35.8 %; fentanyl, 18.3%; lithium, 16.7%. The following agents were incorrectly identified as worsening serotonin syndrome: quetiapine, 45%; dexmedetomidine, 12.5%; propofol, 5%; midazolam, 3.3%, and cefepime, 0%.

## **Discussion**

Our results demonstrate significant gaps in understanding of serotonergic agents among fourth year medical students. While 87.5% were able to identify that sertraline would worsen the syndrome, only 50% identified meperidine as serotonergic despite the historical implications of this interaction. Also concerning was the belief that quetiapine had serotonin agonist activity, reflecting failure to understand the mechanism of this commonly prescribed xenobiotic.

## **Conclusion:**

Senior medical students require increased education on the pharmacology of commonly used serotonergic drugs in the ICU setting to avoid worsening serotonin syndrome or causing an iatrogenic adverse drug reaction.