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Medication Safety During COVID 19- Fatima Yousef ghethan - King Abdullah medical city

Fatima Yousef ghethan
King Abdullah medical city, Saudi Arabia

Abstract

The COVID-19 pandemic and the response of the healthcare system has affected the ability of healthcare to ensure medication safety in several ways. These include challenges associated with medication shortages, changes to the pharmacy workflow, an ever-changing evidence base associated with the pharmaceutical treatment of COVID-19 complications, and limited availability of personal protective equipment (PPE)

Pharmacists are the best-positioned professionals to ensure safety through the preparation, delivery, and ongoing management of medications. However, like the majority of healthcare providers, the usual pharmacy workflow and operations have been greatly impacted by the response to COVID-19. have modified the physical settings of care for pharmacists, necessitating changes to their workflows. Additionally, pharmacist workflows may be interrupted or require modification due to increased informatics and technology changes associated with monitoring medication supplies or when systems are operating with a decreased workforce (colleagues are forced to work from home, are sick, or may be furloughed). Lastly, redeployment of healthcare personnel to new areas and specialty of care may introduce safety risks due to unfamiliarity with workflows and processes. For example, the Institute for Safe Medication Practices recently shared a case study in which there was a failure to engage barcode medication administration, a best practice in medication safety, when healthcare staff was assigned to a new patient care area. Also the recommendation of using automation during COVID-19

The COVID-19 pandemic has put extraordinary pressure on all aspects of the healthcare system around the world. As of February 6, 2021, there have been over 100 million confirmed infections and over 2 million deaths. The considerable morbidity and mortality among those with severe disease has driven a critical need for effective therapies. Particularly in the beginning of the pandemic, this created an environment ripe for widespread use of unproven medications. One of the earliest of these was the use of hydroxychloroquine with or without azithromycin.

Initially, evidence supporting chloroquine-based management of COVID-19 infection was drawn from in vitro studies. The first clinical study by Gautret et al. popularized not only hydroxychloroquine but also combination therapy with azithromycin. Although the studies published were methodologically flawed, these findings had amonumental impact on COVID-19 treatment worldwide. These publications, in addition to the U.S. presidential press conference highlighting their results, were followed by dramatic increases in internet searches and prescription fills6 for hydroxychloroquine. Subsequent, higher quality studies have consistently found no benefit with the use of hydroxychloroquine with or without azithromycin for the treatment of COVID-19 infection.

An advantage of repurposing medications during a pandemic is the potentially well-known safety profiles of these therapies. Hydroxychloroquine and azithromycin are generally well tolerated; however, both drugs inhibit the delayed rectifier potassium current, delaying cardiac repolarization. Both drugs have been linked to QTc prolongation which is associated with Torsades de pointes (TdP), other ventricular arrhythmias and sudden cardiac death. Several patient-specific factors can increase the risk for QTc prolongation including age, gender, comorbidities and electrolyte abnormalities. Both hydroxychloroquine and azithromycin are considered nonantiarrhythmic drugs with known risk for TdP. When initiating these drugs in patients with underlying risk factors for TdP, the American Heart Association recommends baseline and subsequent electrocardiogram (ECG) monitoring to minimize the risk of QTc prolongation and arrhythmia.

In this study, there was widespread use of medications ultimately proven to be ineffective for the treatment of COVID-19 infection. Eighty percent of patients hospitalized for ≥48 h during the study period received

hydroxychloroquine and 95.8% of those received combination therapy with azithromycin. QTc monitoring was indicated in 99.6%, nearly all patients who received hydroxychloroquine. While the evidence regarding the efficacy of hydroxychloroquine and azithromycin for COVID-19 was inconclusive at the time, the safety profiles and monitoring requirements of each drug were well known. Despite this, there were suboptimal medication safety practices at the peak of the pandemic. Appraising practices from this pandemic are key to identifying opportunities to improve responses to future pandemics. With overwhelming numbers of cases and strained resources, providers may not have approached medication safety with the same diligence as they would have outside of a pandemic. The purpose of this study was to evaluate medication safety practices at a height of both COVID-19 cases and hydroxychloroquine use.

Reflecting on the COVID-19 pandemic is critical to identifying enduring lessons for future pandemics. It is impossible to know what repurposed drugs will show promise as treatments for the next pandemic. Yet, their toxicities may be well known. Seymour et al call for clinicians to practice sensible medicine amidst the COVID-19 pandemic. They offer several strategies, including elevating usual care and focusing on practices with known patient benefits. In this study, there was widespread use of unproven medications and inadequate medication monitoring at the height of the COVID-19 pandemic. Adverse outcomes were rare, although this is difficult to know with certainty due to limitations in monitoring. Preparation for the next pandemic must include an emphasis on practices known to improve patient outcomes, including a significant attention to medication safety.