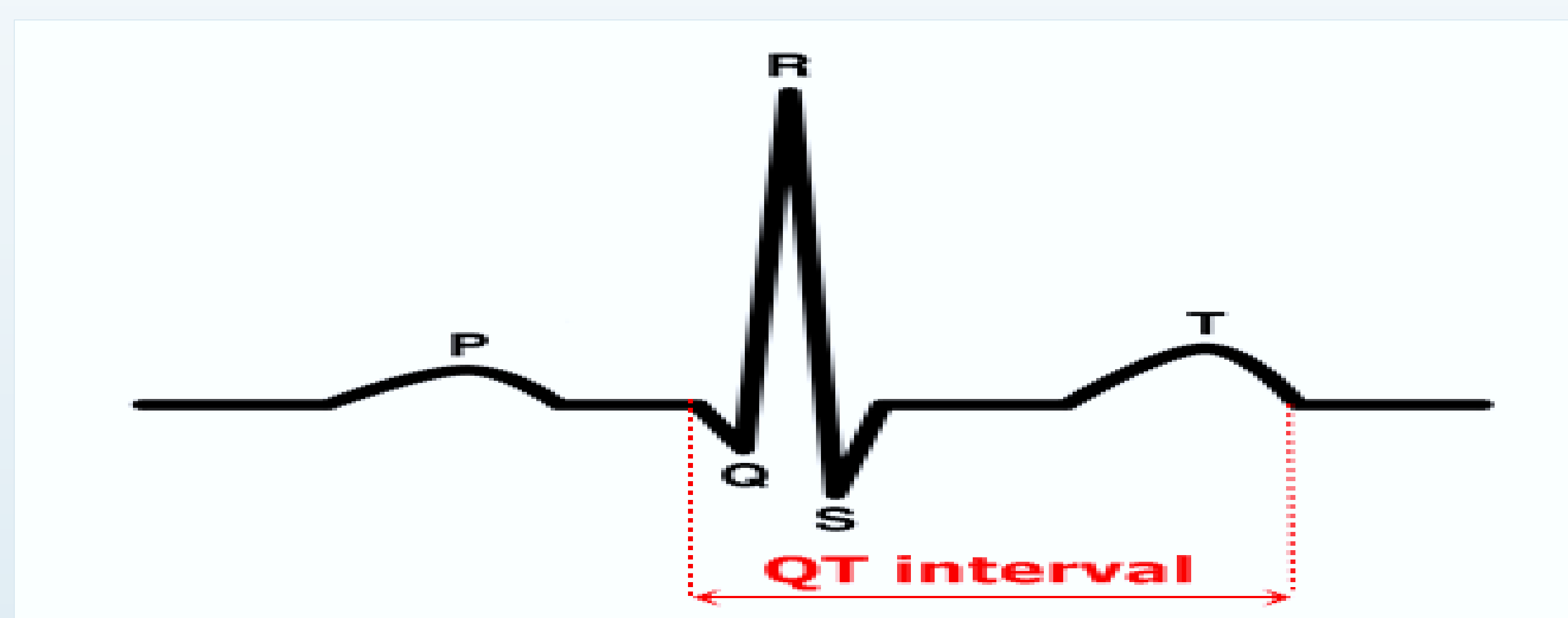


# Utilizing the PSO to Identify Medication Prescriptions that may Prolong QT Interval and Identify Pharmacy Interventions

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## Background

Many medications prescribed to the college-aged population, alone or in combination with other medications, are known to increase the risk of QT interval prolongation, thus placing the patient at an increased risk for cardiac events including sudden death. The QT interval is the measure of the time between the start of the Q wave and the end of the T wave in the heart's electrical cycle. Long QT Syndrome (LQTS) is a disorder of the heart's electrical activity that can cause sudden, uncontrollable, and dangerous arrhythmias in response to exercise or stress. Long QT interval can be congenital or acquired (medication Adverse Drug Reaction). The risk increases when more than one of these medications is taken simultaneously. Long QT Syndrome often goes undiagnosed or is misdiagnosed as a seizure disorder.



## Intervention

When the patient is already taking one of the many medications that may prolong the QT interval, and is prescribed an additional medication with the same properties, the risk of QT interval prolongation increases. Yeast infections, for example, are a common diagnosis in the college-aged population that are often treated with fluconazole which carries a known risk of QT interval prolongation. Fluconazole is one of the most commonly prescribed medicines that has an accompanying risk of QT prolongation risk. However, yeast infections can be treated with an Over the Counter (OTC) medication, avoiding the ingestion of fluconazole and the increased risk of a prolonged QT interval. Pharmacists review drug/drug interactions at the time they are prescribed and proactively contact healthcare providers and offer alternative options. The goal of this project was to decrease pharmacy interventions for fluconazole by 25% through the use of data, analysis of trends, and education.

## Methods

These types of interventions by Pharmacy are described as a Near Miss in the patient safety event reporting system. Near Miss medication errors involving the risk of QT interval prolongation reported by Pharmacy were compiled and reviewed over a 2-year period from July 2015 through July 2017. A report was also generated from the pharmacy system showing total fluconazole tablets dispensed for the same 2-year time period. Intervention also resulted in an increase in calls from providers to pharmacists for clarification of medications with possible QT interval issues and a 32% reduction in fluconazole tablets dispensed. In addition, there were zero QT interval events reported August 2016, February 2017 and March 2017.

## Results and Analysis

July 2015 – June 2016 : 16 QT interval Near Miss events.  
July 2016 – June 2017 : 25 QT interval Near Miss events.

July 2015 – June 2016 : 1736 tablets of fluconazole dispensed.  
July 2016 – June 2017 : 1172 tablets of fluconazole dispensed.

32% reduction in the number of fluconazole tablets dispensed.

15% increase in the number of Near Miss events reported, attributed to increased reporting through education of all staff regarding the PSO.

No QT interval prolongation Near Miss events reported for August 2016, February 2017 and March 2017.

## Patient Safety Improvements

- An educational PowerPoint on medication interactions with QT interval issues was presented to the Medical Staff (32 providers – MD, PA, ARNP).
- Additional provider education on QT interval medication interactions was created including a chart of common medications/combinations that was then distributed to providers.
- Following this intervention, Pharmacy management has documented more providers proactively calling to discuss prescribing other medications which do not cause QT interval issues.
- Revisions were made to the patient safety event reporting system to further capture QT Interval issues.

## Conclusions and Next Steps

Continuing to encourage patient safety event reporting will allow us to assess the success of patient safety improvements at 3 and 5 years that will also allow us to identify trends. With the maturation of data and through the analysis of these trends, we hope to develop more effective education programs for our health care providers that will reduce the workload on Pharmacy staff and provide meaningful development for all providers.

