

Short Commentary

Antiarrhythmic Drug Surveillance: Requirements and Quality Improvement Initiatives

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Abstract

Medications such as amiodarone require ongoing active surveillance to minimize untoward side effects. There are many unwanted side effects, which when monitored may be avoided or detected early and averted. Unfortunately, the rate of appropriate surveillance falls as low as 30-50%. Additional antiarrhythmics (AAD's) requiring ongoing surveillance include Sotalol, Dofetilide, Dronedaron, and Mexiletine. These AAD medications are used throughout our country by both electro physiologists and general cardiologists. The challenge remains- how to conduct serial monitoring and required testing while maintaining adequate logs and documentation of such testing?

Introduction

Several methods of antiarrhythmic surveillance and standardization have been proposed. One commonly proposed method of follow up include a pharmacist lead program which tracks all prescriptions for antiarrhythmics which are written within a single facility. Pharmacist guided antiarrhythmic tracking programs have shown great success within the Veteran Administration (VA) hospitals [1]. One reason for the success of such programs lies within the self-contained pharmacy programs which are characteristic of VA hospitals. Another reason for the success of pharmacist lead anti arrhythmic programs are the design of the pharmacy support within the VA system. There is a mandate for full coverage for most VA prescriptions when dispensed directly

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from the VA hospital. This type of prescription delivery system allows exact tracking and represents a very reliable data base from which to continue ongoing antiarrhythmic side-effect tracking [2].

Unlike the VA systems of care, private hospital systems do not have such a pharmacy system which attracts all patients to receive no cost or at cost prescriptions. This VA benefit is available to veterans and their families but not to the general-public. Prescriptions written at private hospitals and within the practice offices of those treating within private hospitals may be filled at any pharmacy. To track the rate of follow up on such prescriptions would entail a gigantic data base encompassing all pharmacies within a local region as well as all long term and mail pharmacies from which patients receive the antiarrhythmics.

Variable surveillance programs

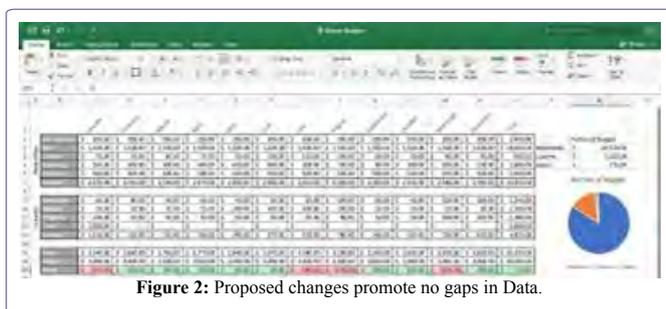
Alternatives to the pharmacist lead anti-arrhythmia tracking programs include nurse practitioner and physician assistant based anti-arrhythmia follow up programs [3]. One of the limiting factors in such programs have been time and resources. Often these professional care givers are burdened with daily clinics, daily rounding within the hospital, obligations to complete quality assurance logs, follow up phone calls with patients, and procedural obligations within the department within which one works. Maintaining an antiarrhythmic data base (Figure 1) may be a daunting project when coupled with all the daily work obligations. The most well-intentioned provider often becomes overwhelmed at the sheer numbers and hours involved in maintaining a data base and providing the needed follow up testing.



Figure 1: Current methods are haphazard, missed data, gaps in data.

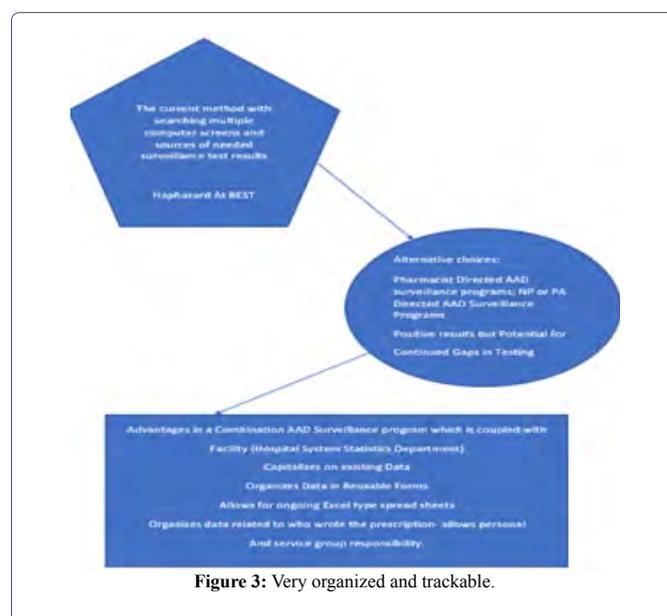
An alternative solution to the pharmacist lead or nurse practitioner lead antiarrhythmic surveillance program may be a program which utilizes the attending physician, Advanced Practice Professional (APP; Nurse Practitioner-NP or Physician Assistant, PA-c), and the quality analytics and statistics department within the hospital service. The analytics and statistics department may be a branch of the computer

specialty department within each hospital service. This department has the luxury of using key words or phrases to easily track links related to the prescribing of antiarrhythmics. Our local hospital within the southeastern Michigan area has proposed such a system. We are actively utilizing our statistics department to track each prescription for key antiarrhythmic medications to create a data base for each prescriber. The system works by using for example the name of an attending physician John P Doctor as one key data piece, coupled with the words amiodarone, dronedarone, sotalol, or dofetilide. When such key data items are noted the piece of information will be stored in the name of the attending physician. Once this is accomplished the data set will include the date of the prescription, key information on the patient, and the medication in question. These pieces of data or then shared within the care team, including the attending physician, NP or PA-c with who the physician works, supporting nursing and technical staff and the hospital pharmacist. This information is then combined with key data points for the antiarrhythmic medication. Such data points are dates of needed eye exams, chest x-rays, pulmonary function tests with Diffusion Capacity (DLCO), Thyroid Stimulating Hormone (TSH), and liver enzyme studies for amiodarone [4]. For all other medications, required follow up dates include a comprehensive panel test (which has liver enzymes and renal function labs within) and magnesium levels are checked once every six months. The advantage of such a system allows the analytics and statistics department to present the data points and link the points to all prescriptions provided. Our computing system for care delivery requires all prescriptions to be created and sent electronically [5], thus creating an ongoing log of antiarrhythmics written for each attending physician. The APP staff who may write a prescription for such a service are automatically linked to the appropriate provider with which the medication is prescribed. This system also allows anyone within the service, including the APP, the attending physician, the supporting nursing- staff and all within the practice group, to see the data on the services group of patients. It effectively creates a data base for all attending physicians (and supporting staff members) of all the patients on antiarrhythmics, the date a prescription is provided, and the needed dates of follow up testing. It then becomes the individual physician group of provider's responsibility to use and manipulate the data.



A skeptic of this system may ask- what is the advantage in such a system? Previously, all this data on the patient was located within the system (Figure 2) or the Electronic Medical Record (EMR), but it was not combined in a usable package. For each patient on an antiarrhythmic a provider would have to toggle amongst several care screens to gather the information on what medication is the patient currently taking, what date was the prescription written, when was the last lab test such as Thyroid Stimulating Hormone (TSH) or liver

enzyme panel, when was the last Pulmonary Function Test (PFT), and when was the last chest x-ray [6]. The provider would often spend 20-30 minutes locating and combining such data pieces. This new system allows a few keystrokes in the EMR to recognize the patient is receiving antiarrhythmic care [7] and to locate all the data points at once. The system also creates monthly logs of all patient data sets which are sent to the providers. This data report allows the attending physician, APP or support nurse to easily check one patient at a time and assure all testing has been completed. With such few keystrokes of the computer it also allows the provider to recognize abnormal values in a much more expeditious fashion. The fatigue and frustration previously experienced tracking (Figure 3) surveillance data has been minimized. This system allows the key data points to be delivered and maintained in a far superior fashion, then previous well intentioned, but failing processes.



Long-term implications

Implications for practice are very wide on this process improvement project. We are an electrophysiology department within a busy over 1000 bed tertiary care facility who have recognized the importance of using our computer experts and statisticians for their talents to help us maintain ongoing patient quality care. Our institution intends to utilize such a system with all cardiology departments [8] within our facility which includes the pediatric cardiology teams, the surgical cardiac specialists, the general cardiologists, the heart failure cardiologists, and the genetic cardiology specialists. This system has hospital wide implications and applicability. It is a widespread process improvement program of which we are in hopes of maximizing its full potential. The final implication applies to other medications which entail ongoing surveillance. Once can only imagine its applicability with general medical practices, immunology practices, geriatric practices and rheumatology practices who prescribe antidepressants, immune modulated medications, and mood-altering medications which all require ongoing surveillance. The need for providing ongoing surveillance for medications is a system wide, country-wide and world-wide obligation and has been a daunting obligation to all

providers for several years. The implications of such a system can lend to other areas of medicine and care which have medications which require ongoing surveillance. We hope the proposed system of utilizing our experts within our system proves advantageous and successful.

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