Antibiotic resistance is an ongoing problem. Strike that - an ongoing crisis. Although the reasons are varied and many, we know that more usage results in more resistance.

There are massive efforts going on in medical centers all over the country to try to minimize the needless overprescription of antibiotics. We highlighted one of these efforts [2] last year. But, are they working?

Unfortunately, not well enough. A new study published in the *Annals of Internal Medicine* from the Institute for Clinical Evaluative Sciences (ICES) in Canada finds that there are still many unnecessary antibiotics being prescribed. In fact, one in two seniors who presented to a primary care physician with symptoms of viral infections were given an antibiotic prescription. Because antibiotics are only effective on bacterial infections, these are all considered unnecessary.

The study included 185,014 low-risk seniors (65 years and older) who were sick with a non-bacterial upper respiratory infection such as the common cold (53 per cent), acute bronchitis (31 per cent), acute sinusitis (14 per cent) or acute laryngitis (2 per cent). The patients visited roughly 9,000 primary care physicians over the course of 2012. 85,538 (46%) of them were prescribed an antibiotic. That's almost one in two people.

To make matters worse, the majority of prescriptions were for broad-spectrum antibiotics - the category that is associated with a higher rate of the development of antibiotic resistance.

*Our study shows that antibiotics are being prescribed too often for conditions that they cannot help despite published professional guidelines that discourage this practice. Unnecessary
antibiotics can cause serious harm," says Dr. Michael Silverman, the lead author of the study.

Although the study was published this month, it was conducted in 2012. As nice as it would be to think that this situation has changed dramatically in the past five years, unfortunately that is not the case. In early 2016, the CDC published that 30% of antibiotic prescriptions are unnecessary [3]. Although that is still far too many needless antibiotics, perhaps it gives some hope that the needle is moving in the right direction.

It is unlikely that we will be able to get rid of all antibiotic excess but, we have to do better. Half (or even a third) of antibiotics out there are not needed which is a truly astounding amount. This crisis requires a paradigm shift in the training of health care professionals. With the problem of antibiotic resistance increasing at a rapid pace, and the slow nature of new antibiotic discovery, this shift has to start to happen now.

Reference