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Mini Review

Antibiotic Stewardship Program in Ambulatory Care Setting

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INTRODUCTION

At least 30% of antibiotics prescribed in the outpatient setting are unnecessary, meaning that no antibiotic was needed at all. CDC Data 2014. So implementing ASP in ambulatory care is a very challenging mission (Mather *et al.*, 2013), which need proper monitoring of antibiotic consumptions, patients visits, DDD (Defined Daily Dose) and cost.

Objective

- The implementation of ASP in ambulatory care is Antibiotic stewardship is the effort to
- Promote the optimal use of antimicrobial agents and decrease antibiotic consumption based on DDD data
- Educate health professionals, patients and the public.
- Reduce cost

METHOD

- ASP in ambulatory care in Zafranah Clinic AHS SEHA Abu Dhabi was performed through
- Pharmacist intervention during dispensing prescriptions to check necessity and dose of antibiotics prescribed.
- CDC recommendations for Antibiotic Prescribing in adults and children are sent by email to all physicians frequently to confirm their adherence to the treatment guidelines (Thompson, 2005; Tüll P, 2006).
- Patients were targeted through Antibiotic Awareness Week Campaign to improve their education and awareness.
- Asp Project Progress Report was sent Quarterly to motivate physicians adherence

Antibiotics were classified into five classes according to their chemical structure

(Amoxicillin-Amoxicillin/Clavualante-Macrolide-Cefalospoins-Quinolones-Others)

Antibiotic prescribing and consumption was measured on monthly basis through

- Antibiotic prescription rate =Total number of antibiotic prescriptions/Total number of Prescriptions dispensed (Gaume JP, 2011; Talon D, 2014).
- DDD/100 patients visits (DDD=Defined Daily Dose) Using WHO DDD of antibiotics
- Cost of dispensed antibiotic monthly (using price data) also Price spent on antibiotics/100 patients(Peterson LR,2005; Johnstone J, 2016)

DESIGN

Regional guidelines drafted by a multidisciplinary group of specialists were developed to improve the prescription of FQs. A regional audit evaluating the prescribers' compliance with guidelines in hospital and community settings was then conducted in the Franche-Comté region in 2006 (Peterjack LR, 2006; Downing M, 2018) Professional practices were evaluated before the beginning of the prescriber training program. Results of the audit highlighted a misuse of FQs in the hospital of Morteau as none of the evaluated prescriptions complied with regional guidelines. Local guidelines on empirical treatment regimens were released in 2007. The aim of the antibiotic stewardship program was to reduce the rate of unnecessary prescriptions of FQs. Two main messages were for instance included in the guidelines for UTIs.

Prevalence of antibiotic use and assessment of appropriateness

The adequacy evaluation was conducted targeting antibiotics prescribed on 29 August 2018. The prevalence of antibiotic use on the study date was calculated by dividing the number of patients who received antibiotics by the number of patients who were hospitalized (general ward and intensive care unit) or visited ambulatory care facilities or the emergency room.

Assessment of appropriate prescription on 29 August 2018 was conducted on the individual prescriptions of all antibiotics and antifungal agents prescribed. Antiviral, anti-tuberculosis, and anti-parasitic drugs were excluded. Intravenous, intramuscular injection and oral administration routes were included. Antibiotics administered for ointment, cleaning, and nebulization were excluded. Infants aged under 30 days were excluded from the evaluation. Antibiotics were classified as therapeutic antibiotics, medical prophylaxis, and surgical prophylaxis according to the purpose of the prescription (Figure 1).

The evaluation was made based on infectious disease–related diagnosis or medical records. If the evaluation was not available due to the lack of information in the medical records, the evaluation was based on the infectious disease diagnosis presumed by the evaluator, referring to the laboratory or image study results related to the antibiotic prescription. However, if the evaluator could not evaluate at all based on antibiotic prescription from the medical records and test results, it was concluded that the appropriateness of antibiotic prescription could not be evaluated(Figure 2).

This study revealed that the prevalence of antibiotic prescription was 14.1%, and significant proportions (27.7%) of the prescriptions were inappropriate. The prevalence of antibiotic use was concentrated among more than half of the inpatients, especially in the intensive care unit. Antibiotic use was least prevalent in ambulatory care, but most frequently inappropriate use was observed. Two-thirds of antibiotic prescriptions for surgical prophylaxis were inappropriate. In addition, we identified the most frequently used antibiotics, their appropriateness, and the indications for antibiotic use. This study was the first nationally representative qualitative antibiotic prescription adequacy evaluation in the Korea.

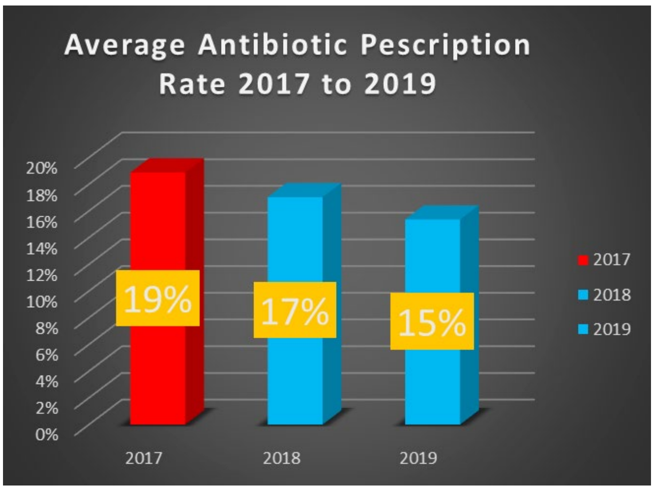

Figure 1: Antibiotic prescription rate.

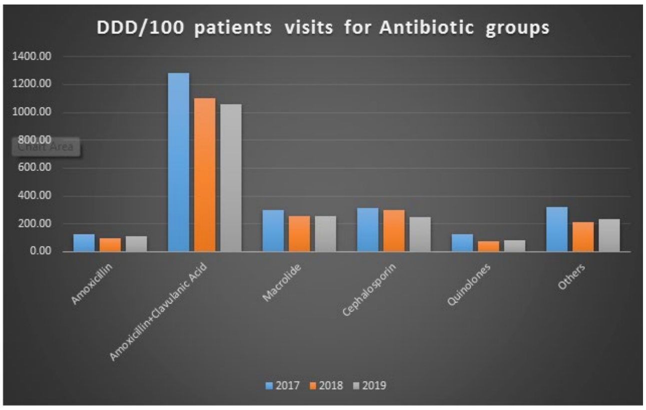

Figure 2: DDD/100 patients visit.

There are limitations in thus study. First, the evaluation did not consider the duration of the antibiotic prescriptions (Figure 3). More accurate results will be known only after the evaluation of optimal antibiotic prescription, including the appropriate treatment duration as an evaluation criterion. Second, a total of 20 hospitals from around the country were included for representativeness (Paul M, 2016). However, only one long-term care hospital was evaluated, and primary care hospitals were not evaluated. The evaluation of long-term care or primary care hospitals was difficult to include because there were no infectious disease experts who could conduct the evaluation. In the future, the prevalence and appropriateness of antibiotic prescriptions in long-term care or primary care hospitals should be evaluated. This would present an opportunity to manage antibiotic prescriptions and develop methods for implementation.

RESULTS

157988 prescriptions or pharmacy visits from CERNER (HIS system in SEHA)

(51134-2017, 50955-2018, 55899-2019) were analysed to evaluate the ASP Project progress

- ASP was implemented form April 2018 onwards
- Antibiotic prescription rate
- Dropped to 15% (2019) and 17%(2018) compared to 19% (2017-no ASP)
- DDD/100 patients visits
- Dropped in 2019 and 2018 (ASP Implemented) compared to 2017(no ASP)
- Antibiotic Cost
- Cost of dispensed antibiotics decreased in 2019 and 2018 compared to 2017(no ASP)

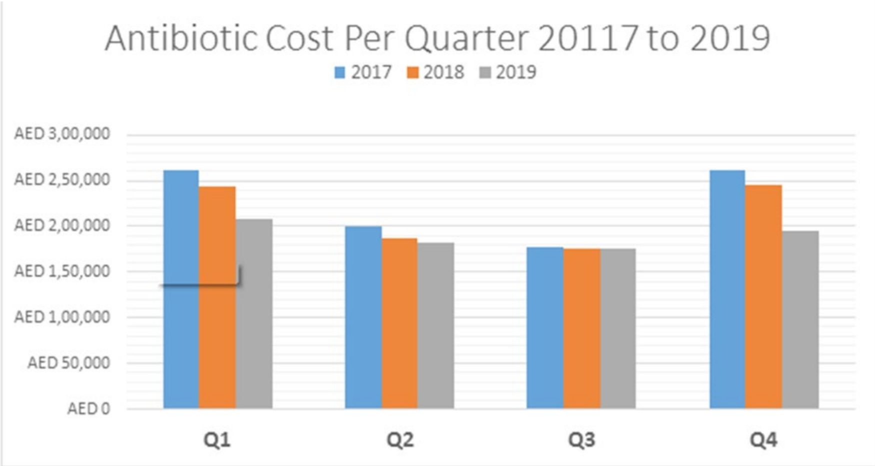

Figure 3: Antibiotic cost data.

- In addition, Price of antibiotic per 100 patients dropped in 2019 and 2018 compared to 2017

CONCLUSION

Implementation of ASP Project in ambulatory care clinics through pharmacy intervention along with physicians and patients' education had proved to improve antibiotic prescribing; Antibiotic consumption (DDD/100 patients' visits) ad also decreased healthcare costs.

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