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### **The Pattern of Antiinfection Therapy and its Costs in the Emergency Room in Regional Public Hospital in Kudus city, Indonesia.**

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The Emergency Room (ER) is the initial gate for patients to enter the hospital and has a high risk of medication errors. The use of anti-infections (especially antibiotics) in patients in the ER needs special attention because the inappropriate use of antibiotics at the beginning of treatment can affect subsequent antibiotic therapy. This study aims to determine the pattern of anti-infections used and its cost in the ER of the regional public hospital in Kudus city, Indonesia. The benefit of this research is as input and evaluation for the hospital to improve the quality of pharmaceutical services in terms of drug supply at the ER. The population in this study were all patients who came to the ER in February 2019 (2732 patients) and the number of men and women were 49,24% and 50,76%, respectively. Most patients were at the age of 46-65 years (old people) as many as 822 (30,09%) and the smallest amount was at age of < 45 years (elderly). Anti-infections were used for 62,96% of patients in ER. Antibiotics were the most used anti-infections, but the anti-tetanus serum spent the most money (14,75%). The most antibiotics used in the emergency department are ceftriaxone (for 258 patients, 9,44%) and Cefotaxime (for 240 patients, 8,78%). The total drug cost in February 2019 period was 139.970.200 rupiahs, Anti-infections spend 21,23% and Antibiotics spend 6,33% of the total drug cost. The most expensive anti-infection was Antitetanus serum 1500 IU vac (157.200 rupiahs). Forty-five patients used double antibiotics, ceftriaxone+metronidazole was the most (21 patients) and only 1 patient used triple antibiotics (ceftriaxone+metronidazole+gentamycin). The anti-infections were used efficiently in the Emergency Room.

**Keywords:** antibiotic, anti\_infection, cost, emergency department

**Preferred presentation:**  Oral  Poster

**Presenter (title and name):** Dr. apt Maria Caecilia Nanny Setiawati, M.Sc

**Introduction**

The research was conducted in the Emergency Room because the Emergency Room is the initial gate for patients entering the hospital and has a risk of medication errors, and the number of patients fluctuates greatly depending on the condition of the community (Nurhanifah, 2015).

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## The Pattern of Antiinfection Therapy and its Costs in the Emergency Room in Regional Public Hospital in Kudus city, Indonesia.

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The Emergency Room (ER) is the initial gate for patients to enter the hospital and has a high risk of medication errors. The use of anti infections (especially antibiotics) in patients in the ER needs special attention because the inappropriate use of antibiotics at the beginning of treatment can affect subsequent antibiotic therapy. This study aims to determine the pattern of anti infections used and its cost in the ER of the regional public hospital in Kudus city, Indonesia. The benefit of this research is as input and evaluation for the hospital to improve the quality of pharmaceutical services in terms of drug supply at the ER. The population in this study were all patients who came to the ER in February 2019 (2732 patients) and the number of men and women were 49,24% and 50,76%, respectively. Most patients were at the age of 46-65 years (old people) as many as 822 (30.09%) and the smallest amount was at age of > 65 years (elderly). Anti infections were used for 62,96% of patients in ER. Antibiotics were the most used anti infections, but the anti-tetanus serum spent the most money (14,75%). The most antibiotics used in the emergency department are ceftriaxone (for 258 patients, 9,44%) and Cefotaxime (for 240 patients, 8,78%). The total drug cost in February 2019 period was 139.970.200 rupiahs, Anti infections spend 21,23% and Antibiotics spend 6,33% of the total drug cost. The most expensive anti-infection was Antitetanus serum 1500 IU vac (157.200 rupiahs). Forty-five patients used double antibiotics, ceftriaxone+metronidazole was the most (21 patients) and only 1 patient used triple antibiotics (ceftriaxone+metronidazole+gentamycin). The anti infections were used efficiently in the Emergency Room.

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### Introduction

The research was conducted in the Emergency Room because the Emergency Room is the initial gate for patients entering the hospital and has a risk of medication errors, and the number of patients fluctuates greatly depending on the condition of the community (Nurhanifah, 2015).

Measurement of the Length Of Stay (LOS) for each patient is measured from the initial arrival of the patient until the transfer of the patient to another unit which is used as a key indicator for evaluating the efficiency of improving operational and clinical performance (Niels, et al, 2012).

Emergencies occur regardless of whether a health system is prepared to address them. An organized emergency care system can theoretically leverage economies of scope and scale by employing simple low-cost interventions that will save millions of lives. However, little is known about the cost-effectiveness of emergency care interventions in low- and middle-income countries, where such interventions may have the greatest impact. Cost-effectiveness data is essential to inform the resource allocation decisions of policy-makers and regulators. Such data encourages the prioritization of systems and interventions most likely to provide a health and economic benefit.(Werner, 2020)

#### Methodes

Type of research: This research is a non-experimental research, a descriptive analysis research. The population in the implementation of this study were all patients who arrived at the hospital in the February 2019 period and got medicine from the pharmacy depo.

This study aims to determine the pattern of anti infections used and its cost in the ER of the regional public hospital in Kudus city, Indonesia.

The benefit of this research is as input and evaluation for the hospital to improve the quality of pharmaceutical services in terms of drug supply at the ER.

#### Result and Discussion

##### Data on Patient Characteristics at the Emergency Room Pharmacy Unit

No	Gender	amount	Percentage (%)
<b>1</b>	<b>Male</b>	<b>1345</b>	<b>49,24</b>

2	Female	1387	50,76
TOTAL		2732	100

Most of the patients who came for treatment at the Emergency Room at Regional Public Hospital and took some drugs at the emergency room pharmacy depot were mostly male patients with 1345 patients with a percentage of 49.24%. and Female patients as many as 1387 patients with a percentage of 50.76%. The results of this study are in line with the research of Deviantony, et al (2017) which found that more male patients who came to the emergency room were 55.1%.

Most patients were at the age of 46-65 years (old people) as many as 822 (30.09%) and the smallest amount was at age of > 65 years (elderly). The results of the age characteristics in this study are in line with the research of Rudiansyah (2016), namely that the age range of the most patients in the Emergency Room is 46-65 years, namely 25%. This means that the older you get, the more risk factors for disease

From the results of research conducted for the period of February 2019, many drugs were used included analgesics (pain relievers), Gastrointestinal (treating the stomach), Antibiotics (anti-bacterial), Anti-hypertensive (reducing high blood pressure), heart medications, antipsychotics, antipyretics (fever reducers), anticholinergics, asthma medications, diuretics, corticosteroids, antihistamines, anticoagulants, serum, sedatives, anticonvulsants, neurotropics, antiemetics (nausea, vomiting), and anesthetics. In this article, we just exhibit the antiinfections.

Anti infections were used for 62,96% of patients in ER. Antibiotics were the most used anti infections, but the anti-tetanus serum spent the most money (14,75%). The most antibiotics used in the emergency department are ceftriaxone (for 258 patients, 9,44%) and Cefotaxime (for 240 patients, 8,78%).

The use of anti infections (especially antibiotics) in patients in the ER needs special attention because the inadequacy of antibiotic treatment for infected patient may lead to an increase in the length of hospital stay, and therefore costs associated (Gonzalez et al., 2017)

The Antiinfection use in this research period was Antibiotics: cephalosporine such as ceftriaxone, cefotaxime, cefadroxil, ceftazidime, cefixime, Metronidazole, amoxicillin, clindamycine, gentamycine, meropenem, levofloxacin , ciprofloxacin, cotrimoxazole

Antifungi: nystatin drops, fluconazole infusion, ketoconazole tablets. Antiviral: acyclovir cream use in 2 patients and tablets in 3 patients. Vaccine used in many patients, most ATS, ABU vaccine and tetagam (human tetanus immunoglobulin). Antibiotic prescriptions written to outpatients in the emergency department are often inadequate. Enhancing prescribers' training and handing out guidelines is therefore necessary. The quality of these prescriptions should then be re-assessed. (Grenet,2016)

All ceftriaxone prescriptions in the first complete week of each month during 2019 in the hospital emergency department were analyzed using an infectious disease specialist referent in antibiotic prescriptions. Ceftriaxone was considered appropriate if justified (antibiotic required), relevant (ceftriaxone is an indicated choice for given symptoms/presumed infection), and appropriately adapted (in terms of dose, route, and period of administration). In emergency departments, it is crucial to preserve ceftriaxone, selecting better indications and considering alternatives.

Of the 2732 patients included in the study, ceftriaxone was deemed not appropriate in 37.6%, unjustified in 13.5%, not relevant in 12.8%, and not adapted in 11.3%. Factors associated with unjustified prescriptions were urinary, dermatologic, and less frequent infection sites ( $P < .001$ ).

Choice of antibiotics depends on the most likely causative micro-organism, local antibiotics sensitivity patterns, mechanism of infection and patient's predisposing condition.

Most commonly recommended empirical antibiotic regimens include third-generation cephalosporin plus vancomycin, third-generation cephalosporin monotherapy and penicillin monotherapy. Addition of amoxicillin, ampicillin or benzyl-penicillin has been recommended in patients older than 50 years.

#### Conclusion

The total drug cost in February 2019 period was 139.970.200 rupiahs, Anti infections spend 21,23% and Antibiotics spend 6,33% of the total drug cost. The most expensive anti-infection was Antitetanus serum 1500 IU vac (157.200 rupiahs). Forty-five patients used double antibiotics, ceftriaxone+metronidazole was the most (21 patients) and only 1 patient used triple antibiotics (ceftriaxone+metronidazole+gentamycin). The anti infections were used efficiently in the Emergency Room.

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