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การปฏิบัติตามมาตรการควบคุมการสั่งใช้ยาต้านจุลชีพในโรงพยาบาล

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บทคัดย่อ

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ว. เภสัชศาสตร์อีสาน, มีนาคม 2558; 11(ฉบับพิเศษ) : 104-107

บทนำ: มาตรการควบคุมการสั่งใช้ยาต้านจุลชีพในโรงพยาบาลเป็นหนึ่งในวิธีการสนับสนุนการใช้ยาอย่างสมเหตุผล **วัตถุประสงค์:** การศึกษานี้มีวัตถุประสงค์เพื่อประเมินการปฏิบัติตามมาตรการควบคุมการสั่งใช้ยาต้านจุลชีพในโรงพยาบาล **วิธีการดำเนินการวิจัย**: เก็บข้อมูลจากใบประกอบการสั่งใช้ยาต้านจุลชีพ 5 ชนิดและเวชระเบียนของผู้ป่วยที่นอนโรงพยาบาลระหว่างเดือนกรกฎาคมถึงเดือนกันยายน พ.ศ. 2556 **ผลการศึกษา**: มีการสั่งจ่ายยาต้านจุลชีพในผู้ป่วย 343 ราย จำนวน 422 ครั้ง ผ่านเกณฑ์คัดกรองจำนวน 355 ครั้ง เป็นการสั่งใช้ยา meropenem vancomycin piperacillin/tazobactam imipenem และ cefoperazone/sulbactam ร้อยละ 31.0 26.5 18.6 18.3 และ 5.6 ตามลำดับ ข้อมูลมีความครบถ้วนทุกหัวข้อ 117 ใบ (ร้อยละ 33.0) หัวข้อที่มีความไม่ครบถ้วนมากที่สุดคือ ผลการเพาะเชื้อ (ร้อยละ 41.4) รองลงมาคือ เหตุผลการใช้ยานานกว่า 4 วัน (ร้อยละ 16.9) และผลย้อมสีแกรม (ร้อยละ 15.8) ข้อมูลมีความสอดคล้องกันทุกหัวข้อ 56 ใบ (ร้อยละ 15.8) หัวข้อที่มีความไม่สอดคล้องมากที่สุดคือจำนวนวันใช้ยา (ร้อยละ 18.8%) รองลงมาคือ รูปแบบการสั่งใช้ยา (ร้อยละ 7.3) และประเภทการติดเชื้อ (ร้อยละ 6.8) **สรุปผล**: การสั่งใช้ยาต้านจุลชีพเป้าหมายเป็นไปตามมาตรการควบคุมการสั่งใช้ยาต้านจุลชีพของโรงพยาบาล แต่ข้อมูลในใบประกอบการสั่งใช้ยาส่วนใหญ่ขาดความครบถ้วน และไม่สอดคล้องกับข้อมูลในเวชระเบียนผู้ป่วย

คำสำคัญ: มาตรการควบคุมการสั่งใช้ยาต้านจุลชีพ ใบประกอบการสั่งใช้ยาต้านจุลชีพ

Abstract

Complying with Control Measure for Antimicrobial Prescribing in Hospital

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Introduction: Control measure for antimicrobial prescribing in the hospital was a way to support the rational drug use. **Objective:** This study was aimed to assess the complying to control measure for antimicrobial prescribing in the hospital. **Materials and methods:** Data were collected from antimicrobial order form of 5 antimicrobials and patient medical record of hospitalized patients during July to September 2013. **Results:** There were 422 prescribing in 343 patients, but only 355 prescribing were recruited into the study. Meropenem, vancomycin, piperacillin/tazobactam, imipenem and cefopereazone/sulbactam were prescribed 31.0%, 26.5%, 18.6%, 18.3% and 5.6%, respectively. Complete record was found in all items in 117 forms (33.0%). Most common incomplete item was culture report (41.4%) followed by reason for prescribing over 4 d (16.9%) and gram stain (15.8%). Information was consistent in all items in 56 prescribing (15.8%). Most common inconsistent item was duration of drug use (18.8%), followed by pattern of use (7.3%) and type of infection (6.8%). **Conclusion**: Prescribing of target antimicrobial was complied with the hospital control measure for antimicrobial prescribing but most of data were incomplete and inconsistent.

Keyword: Control measure for antimicrobial prescribing, Antimicrobial order form

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Introduction

At present, consumption of antimicrobials has been growing up worldwide including Thailand. The Management Sciences for Health and World Health Organization had highlighted that inappropriately prescribing of antimicrobial was accounted for 30-60% and 6-90% of patients in primary health care and in university hospitals, respectively (MSH and WHO, 1997; Hogerzeil HV, 1995). The consequence of irrational and uncontrolled use was the highly expense and the evolution of resistant microorganisms. According to a study in Thailand in 2010, antimicrobial resistance was responsible for at least 3.24 million extra hospitalization days, 38,481 deaths, and loose amounting to 2.5-6.0 million Baht in direct medical costs and more than 40 million Baht in indirect costs (Pumart *et al*., 2012). Moreover, Thailand was currently facing to critical problems with high rate of drug resistant microorganisms such as *Acinetobacter baumannii* resisted to imipenem (63%) and meropenem (64%), *Escherichia coli* resisted to ciprofloxacin (49%), *Staphylococcus* coagulase negative resisted to methicillin (49%) and *Pseudomonas aeruginosa* with multiple drug resistance (13%) (Dejsirilert, 2012). Due to the problems with irrational drug uses, WHO encouraged many methods to promote rational drug use and drug use evaluation (DUE) of antimicrobial was chosen and implemented in Thailand as an indicator for drug safety management by health authority including the Healthcare Accreditation Institute (formerly The Institute of Hospital Quality Improvement & Accreditation) and the National Health Security Office (HA, 2006; NHSO, 2010). Five antimicrobials in National List of Essential Medicines which consumed costly amount of drug expenditure and/or caused drug resistant problems were chosen for controlling use in hospital composed of cefoperazone/sulbactam, imipinem/cilastin, meropenem, piperacillin/tazobactam and levofloxacin. At Srinagarind Hospital, DUE of the antimicrobials in essential drug lists were adopt except for vancomycin instead of levofloxacin. Prescriber must fill patient information and disease condition in antimicrobial order to complete the prescribing and comply with the control measure.

Objective

The aim of the present study was to monitor the complying with control measure for antimicrobial prescribing including the completeness and consistency of data recorded in antimicrobial order form and patient medical record.

Materials and methods

The study protocol was approved by the institutional research ethics committee at Khon Kaen University (HE561398). The population was prescribing of target antimicrobials; cefoperazone/sulbactam, imipenem/cilastain, meropenem, piperacillin/tazobactam or vancomycin injection, at Srinagarind Hospital, KhonKaen during July-September 2012. The sample size was calculated using Yamane formula (Yamane, 1973) as followed equation.

$$n = \frac{N}{1 + Ne^2}$$

When the size of the population (N) was based on 3,027 in the year 2012, and the error of a sample (e) was 0.05, sample size (n) was about 355. Therefore, data from 355 prescribing were collected.

Qualified patient list was obtained from computer database. Data in antimicrobial order form and patient medical record about antimicrobial prescribing were collected including patients' characteristics, type of infection, site of infection, pattern of use, organism, type of antimicrobial and duration of therapy. Then, all information about antimicrobial prescribing was compared between antimicrobial order form and patient medical record. All data were quantitatively analyzed using descriptive statistics and presented as number and percentage.

Results

There were 355 from 409 prescribing recruited into the study. Fifty four prescribing were excluded due to the loss of medical records. Most of patients were male (60.3%) with average age 55.2 $\pm$ 22.5 years. Hospital acquired infection (76.6%) and respiratory tract infection (26.8%) were the major type and site of infection, respectively. The pattern of use was usually for empiric therapy (70.7%) followed by for document therapy (26.2%). Culture report showed no growth in 53.3% of prescribing. Meropenem was mostly prescribed

antimicrobial (31.0%) followed by vancomycin (26.5%) and piperacillin/tazobactam (18.6%). The duration of therapy was usually more than 4 days (74.9%) as shown in Table 1. Information in all items was completely filled in 117 antimicrobial order forms (33.0%) but was incompletely filled in all items in 238 forms (77.0%). Culture result or microorganism (41.4%) was the highest rank of incomplete item, followed by reason for use over 4 day (16.9%) and gram stain result (15.8%). The data in antimicrobial order form and patient medical record was consistent in all items in 56 prescribing (15.8%). Inconsistency in all items was not found. Duration of antimicrobial therapy was the highest inconsistent item (18.8%) followed by specimen (11.5%) and type of infection (6.8%) as shown in Table 2.

Table 1 Characteristics of the prescribing

Characteristics	Numbers (%)
Type of infection	
- Community acquired	63 (17.8)
- Hospital acquired	272 (76.6)
- Unidentified	20 (5.6)
Sites of infection	
- Respiratory tract	95 (26.7)
- Gastrointestinal	75 (21.1)
- Sepsis	71 (20.0)
- Urinary tract	28 (7.9)
- Eye, ear, nose and throat	22 (6.2)
- Other	62 (17.5)
- Unidentified	2 (0.6)
Pattern of use	
- Empiric therapy	251 (70.7)
- Document therapy	93 (26.2)
- Unidentified	11 (3.1)
Organisms (n=373)	
- *Escherichia coli*	41 (11.0)
- *Klebsiella pneumoniae*	39 (10.5)
- *Acinetobacter baumannii* and *Acinetobacter spp.*	26 (6.9)
- *Pseudomonas aeruginosa*	14 (3.8)
- *Enterococcus spp.*	12 (3.2)
- *Staphylococcus aureus*	12 (3.2)
- *Staphylococcus epidermidis*	4 (1.1)
- *Enterobacter spp.*	3 (0.8)
- Other	23 (6.2)
- no growth	199 (53.3)
Type of antimicrobial	
- Meropenem	110 (31.0)
- Vancomycin	94 (26.5)
- Piperacillin/tazobactam	66 (18.6)
- Imipenem/cilastatin	65 (18.3)
- Cefoperazone/sulbactam	20 (5.6)
Duration of therapy	
< 4 day	89 (25.1)
> 4 day	266 (74.9)

Discussion and conclusion

Most prescribing was complied with the control measure. Data in each item of antimicrobial order form were filled completely over 80% and were consistent to patient medical record over 70%, although the overall completeness and consistency were 33.0% and 72.7%, respectively. Incomplete data about culture report or microorganism were in the highest ranked (41.4%) followed by reason for use over 4 day (16.9%) and gram stain (15.8%). This may be caused by incompleteness of antimicrobial order form since it lacked of some option for physician waiting for culture result (pending). Moreover, incomplete data may also arise from the hustle of the doctors in document recording. Inconsistency of item was found with duration of therapy (18.8%) followed by pattern of use (7.3%) and type of infection (6.8%). The explanation may be the consequence of incomplete data in antimicrobial order form. Moreover, if the patient had infection caused by multiple micro-organisms, physician may document only the most probable one. Therefore, to improve the completeness and consistency of documentation complying with the control measure for antimicrobial prescribing, the antimicrobial order form must be revised and physician should be familiar with the new forms. Finally, physician should recognize about the importance of filling data into the antimicrobial order form and comply with the control measure of antimicrobial prescribing that might promote rational drug use as well as avoid problem in microorganism resistance in the future (Ayuthya *et al*., 1998; Kusuma *et al*., 2003)

Table 2 Completeness of data fulfillment in prescribing form and consistency to patient medical record

Topic	Completeness (%)		Consistency (%)		
	Yes	No	Yes	No	Can't assess
Infection					
Diagnosis	334 (94.1)	21 (5.9)	327 (92.1)	0	28 (7.9)
Type of infections	341 (96.1)	14 (3.9)	308 (86.7)	24 (6.8)	23 (6.5)
Microbiology					
Gram stain	299 (84.2)	56 (15.8)	263 (74.1)	23 (6.5)	69 (19.4)
Culture sending	336 (94.6)	19 (5.4)	338 (95.2)	7 (2.0)	10 (2.8)
Microorganism	208 (58.6)	147 (41.4)	201 (56.6)	15 (4.2)	139 (39.1)
Antimicrobial					
Date of prescribing	329 (92.7)	26 (7.3)	303 (85.4)	10 (2.8)	42 (11.8)
Drug name	352 (99.2)	3 (0.8)	352 (99.1)	2 (0.6)	1 (0.3)
Pattern of use	345 (97.2)	10 (2.8)	317 (89.3)	26 (7.3)	12 (3.4)
Duration of use	-	-	303 (85.4)	42 (18.8)	10 (2.8)
Prescriber					
Name of prescriber	351 (98.9)	4 (1.1)	333 (93.8)	3 (0.8)	19 (5.4)
Name of ID staff	337 (94.9)	18 (5.1)	-	-	-
Signature of ID staff[a]	259 (97.4)	7 (2.6)	-	-	-
Reason for prescribing[a]	221(83.1)	45(16.9)	-	-	-
All items	117 (33.0)	238 (77.0)	56 (15.8)	0	299 (84.2)

[a]For duration of antimicrobial use was over 4 day in 266 prescribing

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