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ePoster Viewing
Antibiotic stewardship programmes

IMPROVING IN-HOSPITAL ANTIMICROBIAL PRESCRIBING BY PARTICIPATING WITH PRESCRIBERS TO DEVELOP TAILOR MADE INTERVENTION BUNDLES

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Background

Many antimicrobial stewardship programs fail to consider behavioral, cultural and organizational factors in their approach.They lack a clear analysis of the root causes of inappropriate prescribing at the ward level. This may lead to suboptimal interventions, especially on the long term. The Dutch Unique Method for Antimicrobial Stewardship (DUMAS) project represents a new approach by using participatory action research (PAR). We expect this method will improve a sustained antimicrobial guideline adherence and reduce antimicrobial use. We present the first results from an academic general medicine and surgical ward.

Objectives

- To determine root causes of antimicrobial prescribing in hospital departments

- To decrease inappropriate antimicrobial prescribing

- To decrease overall antimicrobial consumption

- To evaluate the effectiveness of the PAR approach

Methods

Design: first results from a multi-center interrupted time series intervention study evaluating the effect of tailor made intervention bundles on antimicrobial prescribing using a mixed methods participatory design.

Participants and setting: two inpatient wards in a Dutch academic medical center.

Primary outcomes:

1. appropriateness of systemic inpatient antimicrobial prescribing determined by 2-monthly point-prevalence surveys.

2. monthly cumulative days of inpatient therapy with systemic antimicrobials

3. qualitative results from the root cause analysis using semi-structured interviews and group discussion.

Study phases: DUMAS starts with collecting of baseline quantitative outcomes during at least 12 months per department (at least 6 & 12 data points for outcome 1 & 2 respectively), after which the root cause analysis starts with semi-structured interviews and establishment of local antibiotic team consisting of ward personnel, followed by choosing, developing and implementing a tailor made intervention bundle by the local team, after which active research involvements ends and quantitative data collection is continued for at least 12 months. If bundle effectiveness is deemed too low, the PAR-cycle will be repeated.

Statistical analysis: longitudinal multilevel logistic and log-linear regression analysis comparing baseline and intervention phase segments on level and slope of outcomes 1&2.

Results

Results of the root cause analysis and chosen intervention bundles are shown in table 1. The DUMAS intervention approach was associated with a reduction of inappropriate prescribing from 22% to 11%, and 49% to 42% for the general medicine and surgical ward respectively, overall OR= 0.48 (95% CI 0.27-0.90, p=0.02); and with a reduction of monthly days of systemic antimicrobial therapy from 369 to 329 and 226 to 145 for these wards respectively, overall rate ratio (corrected for monthly number of ward-admissions) = 0.82 (95% CI 0.81-0.84, p<0.001).

Conclusion

Root cause analysis showed that on both wards many essential conditions for good antimicrobial use were missing, such as good guideline quality and awareness; antimicrobial knowledge and a good prescribing culture. Preliminary results are promising and show significant reduction in both antimicrobial inappropriateness and antimicrobial consumption.

Examples of inappropriate antimicrobial use before intervention phase	Root cause examples	Chosen intervention examples (root cause aim)
Both too broad and too narrow spectrum therapy for respiratory infections	1. Guideline awareness is low. Importance of the guideline is not always understood.	Improve guideline and guideline committee publicity: periodic ward presentations, intranet news articles etc. (1,2,4)
IV-to-oral switch often later than indicated by guidelines	2. Guideline is not user-friendly and not up-to-date	Guideline committee work process restructuring, incl. topic prioritization and improving guideline-usability and access (2)
Therapy duration exceeding guideline recommendations	3. Physicians' baseline antimicrobial knowledge is low	Monthly, participatory education sessions on antimicrobial use for residents and specialists (1,3,4,6,7)
Inappropriate post-surgical broad spectrum prophylaxis	4. Lack of (awareness of) clear guidelines and reminders for therapy duration and IV-to-oral switch	Improving IV-to-oral antimicrobial prescribing by introducing decision support guideline, implemented via LEAN-sessions (4)
Broad spectrum therapy for infections grampositive causative bacteria	5. Local ID physicians deviate from the guidelines themselves	ID physicians are always present during clinical meetings and give active feedback on inappropriate prescriptions (5)
Prescription indication not known by resident	6. Lack of negative experiences with antimicrobial resistance	Establishment of 2 local antibiotic teams with 1 specialist, 1 nurse and 1 resident, responsible for the intervention bundles
	7. Fear for surgical-site infections	Appointing one surgeon as 'antibiotic champion', to set the example in appropriate prescribing (1,4)

Table 1: examples of the results of the root cause analysis combined with the tailor made intervention bundles, both wards combined