

Quality assessment of infection treatment by urologists at ZGT: a mixed methods study

Florinde Pas², Elske M. Engel-Dettmers¹, Nashwan al Naiemi¹, Hero E. Dijkema¹, Annemarie L.M.A. Braakman-Jansen³, Katja Taxis²

¹Hospital Group Twente (ZGT), Hengelo/Almelo, The Netherlands; ²University of Groningen, Groningen, The Netherlands; ³University of Twente, Enschede, The Netherlands

Background

Worldwide, antimicrobial resistance (AMR) threatens healthcare.¹ This results in extended hospital stays, multiple hospital visits, increased mortality and higher costs.^{1,2} AMR is strongly related to the use of antimicrobials, therefore it is important that antimicrobials are prescribed appropriately.^{3,4}

Method: Quality assessment

Electronic medical record research

- Datasources: HiX (electronic patient record), General Laboratory Information Management System (GLIMS), and the National Exchange Point (LSP).
- Studyperiod/sample size: the 98 most recent outpatient prescriptions in November 2020.
- Study objects: therapeutic outpatient antimicrobial prescriptions by urologists at ZGT for patients ≥ 18 years with an urological infection.

The quality assessment:

- Prescription in accordance with: (local) guideline, culture results, previous treatments, allergies, contraindications, and interactions.

Outcome measures:

- Number and % deviating prescriptions.
- Number of deviating prescriptions per quality criterion.

Objectives

This study aims to:

- Assess the quality of outpatient antimicrobial prescriptions by urologists at ZGT.
- Explore the decision-making process of prescribing antimicrobials by urologists at ZGT in outpatients with urological infections.

Results: Quality assessment

Patients' characteristics

Table 1. The characteristics of the patients of the prescriptions (n= 98). IQR= interquartile range.

	Number
Men; median age (IQR)	51; 73 (11)
Women; median age (IQR)	47; 63 (27)
Median age total (IQR)	71 (17)

Prescribers and quality

- 6 urologists and 4 residents.
- 53 (54%) deviating antimicrobial prescriptions.

Causes for the deviating prescriptions

- 66 deviations for 53 deviating prescriptions, because a prescription could deviate from more than 1 quality criterion.
- No deviating prescriptions because of interactions.

Table 2. The causes/deviations (n=66) for the deviating prescriptions (n=53).

Quality criterion (local) guideline	Sub criterion	Number of deviating prescriptions
	Indication	6
	Antimicrobial choice	12
	Duration/dosage	22
Previous treatments		11
Culture results		5
Contraindications		
	Other contraindications	5
	Renal function	2
Allergies		3

Method: Decision-making process

Observations

- Studyperiod: 5 weeks in April/May 2021
- Consultations:
 - Outpatient consultations with an urologist, resident or intern at the outpatient clinic.
 - Patients ≥ 18 years with an urological problem that could be infection-related.
- Non-participant, structured observations:
 - Observing the consultation set-up, actions related to the information gathering about the quality criteria, and the role of the patient

All observations were transcribed and analysed with coding.

Conclusion

- Gathering information about infection related quality criteria is complex.
- 54% of the outpatient prescriptions by urologists deviate from 1 or more quality criteria, mainly due to an incorrect duration/dosage (guideline).
- This number corresponds with literature, although it is on the high side.^{5, 6, 7}
- Medical record research only provides insight in written down information. When causes for deviation are not recorded, this can lead to overestimation of the number of deviating prescriptions.
- Observations show which sources are used and what actions are needed.
- Follow-up research is necessary to gain insight into prescribers' considerations and support needs in treating infection patients.
- Based on this research, better education (about guidelines), better information presentation and better information transfer between GPs and hospitals is needed.

Results: Decision-making process

Patients' characteristics

Table 3. The characteristics of the patients (n=21). IQR=interquartile range. *The median ages were based on 20 or 14 patients, because of one woman the age was not asked.

	Number
Men; median age (IQR)	6; 42 (28)
Women; median age (IQR)	15; 78 (32)*
Median age total (IQR)	67 (45)*

Observations characteristics

Table 4. The characteristics of the observations (n=21). *These were 2 different urologists. **These were 3 different residents. ***Consultation together with a resident.

	Number of observations
Urologists	10*
Residents	11**
Intern	1***
Consultations with an antimicrobial prescription	2

Information gathering about quality criteria

- The observations showed that multiple sources were consulted and many actions were required to gain information for each quality criterion.
- For example table 5 shows the sources and actions for the information gathering about the quality criterion "previous treatments".

Table 5. The sources and actions related to the information gathering during the preparation and during the consultation for the quality criterion "previous treatments".

Sources	Actions
GP Letter	Clicking on multimedia → clicking on the GP letter.
Medication list	Clicking on medication list → F8 → looking at the medication (LSP). Clicking on medication list and looking at the medication.
The status	Scrolling through status.
The front page	Clicking on the front page and looking at the medication.
The patient	The patient provides information about the medication on his own. Asking the patient about previous antimicrobial treatments.

References

1. World Health Organization (WHO). Antimicrobial resistance [website]. Accessed at 2 November 2020. Available via: <https://www.who.int/health-topics/antimicrobial-resistance>
2. NethMap 2020: consumption of antimicrobial agents and antimicrobial resistance among medically important bacteria in the Netherlands in 2019 [PDF]. June 2020. Accessed at 13 October 2020. Available via: <https://swab.nl/nl/nethmap>.
3. Rijksuniversiteit voor Volksgezondheid en Milieu (RIVM). Antibioticresistentie [website]. 7 June 2020. Accessed at 2 November 2020. Available via: <https://www.rivm.nl/antibioticresistentie>.
4. Gysens IC. Antibiotic policy. International Journal of Antimicrobial Agents. 2011;38 Suppl:11-20.
5. Stichting Werkgroep Antibioticabeleid (SWAB). SWAB guidelines for antimicrobial stewardship [PDF]. 2016. Accessed at 30 October 2020. Available via: <https://swab.nl/nl/antimicrobial-stewardship>.
6. Akhioffi H, Streefkerk RH, Melles DC, et al. Point prevalence of appropriate antimicrobial therapy in a Dutch university hospital. Eur J Clin Microbiol Infect Dis. 2015;34(8):1631-1637.
7. Van den Broek AK, van Hest RM, Lettinga KD, et al. The appropriateness of antimicrobial use in the outpatient clinics of three hospitals in the Netherlands. Antimicrob Resist Infect Control. 2020;9(1):40.