La qualité de la documentation sur l'antibiothérapie dans les dossiers médicaux : évaluation d'une série d'interventions dans un hôpital universitaire par une étude de type « *interrupted time series* »

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CHU de Liège

GGA
CHU de Liège
Groupe de Gestion de l'Antibiothérapie

Plan

- Introduction
- Contexte
- Etude
  - Objectifs
  - Méthode
  - Résultats
  - Discussion
  - Conclusion

Introduction - Contexte

GGA au CHU de Liège

- Réunions : 4 x/an
- Composition:
  - Intensivistes: 3
  - Pharmaciens : 4
  - Infectiologues : 5
  - Microbiologiste: 1
  - Médecin hygiéniste: 1
  - Infirmier: 1
  - Pédiatre: 1
  - Hématologue: 1
  - Direction médicale: 1

GGA
CHU de Liège
Groupe de Gestion de l'Antibiothérapie

Président GGA:
Dr. P. Damas (Intensiviste)

Délégué GGA:
C. Vercheval (pharmacien)

GUIDELINES

Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America Guidelines for Developing an Institutional Program to Enhance Antimicrobial Stewardship

Timothy H. Dellit,[1] Robert C. Owens,[2] John E. McGowan, Jr.,[3] Dale N. Gerding,[4] Robert A. Weinstein,[5] John P. Burke,[6] W. Charles Huskins,[7] David L. Paterson,[8] Neil O. Fishman,[9] Christopher F. Carpenter,[10] P. J. Brennan,[9] Marianne Billeter,[11] and Thomas M. Hooton[12]

[1]Harborview Medical Center and the University of Washington, Seattle; [2]Maine Medical Center, Portland; [3]Emory University, Atlanta, Georgia; [4]Hines Veterans Affairs Hospital and Loyola University Stritch School of Medicine, Hines, and [5]Stroger (Cook County) Hospital and Rush University Medical Center, Chicago, Illinois; [6]University of Utah, Salt Lake City; [7]Mayo Clinic College of Medicine, Rochester, Minnesota; [8]University of Pittsburgh Medical Center, Pittsburgh, and [9]University of Pennsylvania, Philadelphia, Pennsylvania; [10]William Beaumont Hospital, Royal Oak, Michigan; [11]Ochsner Health System, New Orleans, Louisiana; and [12]University of Miami, Miami, Florida

Dellit et al., Clinical Infectious Diseases 2007; 44:159–77

2 stratégies principales

- Audit avec feedback et intervention
  - Diminution de l'utilisation inappropriée des anti-infectieux (A-I)
- Restriction au formulaire et pré-autorisation de certains anti-infectieux
  - Diminution rapide de l'utilisation de ces anti-infectieux et des coûts (A-II)
  - Impact sur les résistances non établie
    - Utilisation d'autres antibiotiques, développement d'autres résistances (B-II)

Dellit et al., Clinical Infectious Diseases 2007; 44:159–77

Clinical Infectious Diseases

IDSA GUIDELINE

Implementing an Antibiotic Stewardship Program: Guidelines by the Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America

Tamar F. Barlam,[1,a] Sara E. Cosgrove,[2,a] Lilian M. Abbo,[3] Conan MacDougall,[4] Audrey N. Schuetz,[5] Edward J. Septimus,[6] Arjun Srinivasan,[7] Timothy H. Dellit,[8] Yngve T. Falck-Ytter,[9] Neil O. Fishman,[10] Cindy W. Hamilton,[11] Timothy C. Jenkins,[12] Pamela A. Lipsett,[13] Preeti N. Malani,[14] Larissa S. May,[15] Gregory J. Moran,[16] Melinda M. Neuhauser,[17] Jason G. Newland,[18] Christopher A. Ohl,[19] Matthew H. Samore,[20] Susan K. Seo,[21] and Kavita K. Trivedi[22]

Barlam et al., Clinical Infectious Diseases, 2016;62(10):e51–e77

RECOMMENDATIONS FOR IMPLEMENTING AN ANTIBIOTIC STEWARDSHIP PROGRAM

Interventions

I. Does the Use of Preauthorization and/or Prospective Audit and Feedback Interventions by ASPs Improve Antibiotic Utilization and Patient Outcomes?

Recommendation

1. We recommend preauthorization and/or prospective audit and feedback over no such interventions *(strong recommendation, moderate-quality evidence)*.

Comment: Preauthorization and/or prospective audit and feedback improve antibiotic use and are a core component of any stewardship program. Programs should decide whether to include one strategy or a combination of both strategies based on the availability of facility-specific resources for consistent implementation, but some implementation is essential.

Barlam et al., Clinical Infectious Diseases, 2016;62(10):e51–e77

Audits au CHU de Liège

2009

- 2 audits sur l'utilisation appropriée des anti-infectieux
  - Méthodologie selon Gyssens *et. al.*

2010

- 1 audit sur l'utilisation appropriée des anti-infectieux
  - Méthodologie selon Gyssens *et. al.*

TABLE 1. Score system for the appropriateness of antimicrobial therapy

Action and score	Description
Correct decision	
1	No AMT; no infection; no AMT needed
2	No AMT; infection; no AMT needed
3	AMT; infection; AP[a] choice; AP use
Incorrect decision	
1	No AMT; infection; AMT needed
2	AMT; no infection; no prophylaxis; no AMT needed
3	AMT; no infection; prophylaxis; no AMT needed
Incorrect choice	
1	Divergence from guideline
Incorrect use	
1	IA[b] dosage
2	IA timing
3	IA administration
4	IA duration of therapy
Missing data	
1	No AMT; not enough diagnostic information about infection
2	Infection; not enough diagnostic information if AMT is needed
3	AMT; not enough diagnostic information about infection
4	Infection; not enough information about AMT

[a] AP, appropriate.
[b] IA, inappropriate.

Gyssens IC, *et al*. Optimizing antimicrobial therapy. A method for antimicrobial drug use evaluation. J Antimicrob Chemother. 1992;30:724-7.

Audits au CHU de Liège

2009

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  - Méthodologie selon Gyssens *et. al.*

2011

- Audit européen
  - «ECDC PPS of healthcare- associated infections and antimicrobial use in european acute care hospitals»

Audits au CHU de Liège

2011

- Questionnement sur nos audits

2011 - 2012

- Questionnement sur nos audits
  - Méthode standardisée
    - Reproductibilité
  - Comparaison à un « standard »
    - Guidelines internationaux
    - Guidelines nationaux
    - Guidelines locaux
  - Intervention(s) après audit

2011 - 2012

- Information indiscutable
  - Nombre moyen de patients sous antibiotiques
    - par unité de soins
    - par site
  - Distribution traitement-prophylaxie
  - Type de molécule employée
  - Distribution IV – PO
- Nouvel objectif :
  - Amélioration de la tenue des dossiers médicaux informatisés dans le domaine de l'antibiothérapie

Audits au CHU de Liège

2011

- Questionnement sur nos audits

2012

- Prospective « interrupted time series »

Eur J Clin Microbiol Infect Dis
DOI 10.1007/s10096-016-2690-0

ORIGINAL ARTICLE

Quality of documentation on antibiotic therapy in medical records: evaluation of combined interventions in a teaching hospital by repeated point prevalence survey

C. Vercheval[1,2] · M. Gillet[1] · N. Maes[3] · A. Albert[3] · F. Frippiat[4] · P. Damas[5] · T. Van Hees[1]

Aims of the study

- Prospective, uncontrolled, interrupted time series (ITS) study
  - Repeated point prevalence survey (PPS) to audit the quality of documentation on antibiotic therapy in the medical records before and after a combined intervention strategy from the antimicrobial stewardship team (AST)
- The goal was to achieve at least 90% compliance on each of the following elements:
  - Indication documented
  - Antibiotics documented
  - Duration or review date documented

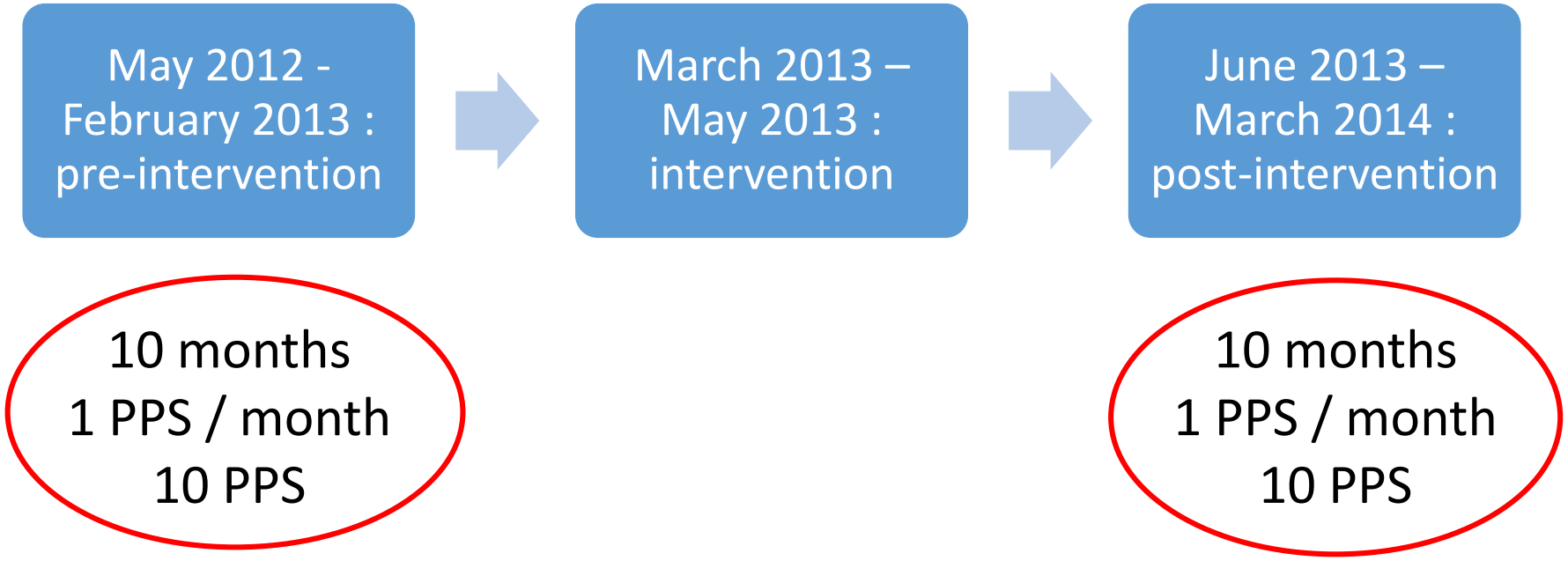
Method

Study setting

- The study was performed at the Teaching Hospital of Liège, Belgium.
  - Our hospital has 925 beds spread over 3 sites.
  - This study concerned the main site, which has 625 beds covering all major medical discipline.

Program design

- 23-month study divided by 3 stages

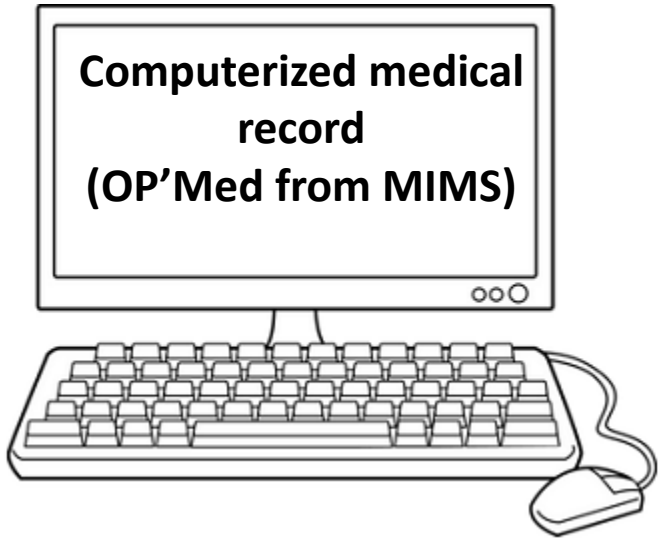


Adapted PPS

- Clinical pharmacist ± a physician (both from the antimicrobial stewardship team)
- Identification of patients receiving ≥ 1 antibacterial agents (J01 ATC)
  - From the Medication Administration Record (MAR) or e-MAR
- Inclusion criteria
  - All eligible inpatients admitted in the hospital at 8:00 and receiving an antibacterial agent on the day of the PPS
- Exclusion criteria
  - (1) patients underwent, on the same day, a specific medical treatment or surgery; (2) received antibiotic prophylaxis (surgical or immunosuppressed patients); (3) were seen at the outpatient clinic, in the emergency room, or in the dialysis ward (outpatients)

Adapted PPS

- Data to collect
  - Age, gender, hospital ward
  - Antibacterial agent(s) (J01) : dose, times a day, route



3 quality indicators

1. Indication
2. Name of the choosen antibiotic(s)
3. Duration or review date

+ Infectious disease physician consultation

Adapted PPS

- Physicians were not pre-informed about the day of the PPS
- A monthly feedback of PPS results was sent to all healthcare providers

Program design

- 23-month study divided by 3 stages

10 months
1 PPS / month
10 PPS

10 months
1 PPS / month
10 PPS

Table 1 Summary of antimicrobial stewardship interventions implemented

Intervention	Details of intervention	Target audience
Implementation of guidelines	New policy of the AST: a prescriber must document indication to start or continue antibiotics, the name of antibiotics prescribed, and the duration or review date in the computerized medical records for all patients receiving antibiotic therapy Goal: achieve at least 90 % documentation compliance on each quality indicator French translation and adaptation of the "Start smart - then focus" approach of the Advisory Committee on Antimicrobial Resistance and Healthcare Associated Infection (ARHAI)	Physicians and nurses from all wards (including emergency room)
Distribution of educational materials	Dissemination of the guidelines and optimization of their accessibility (via email and intranet) Distribution of posters in every ward, including emergency room	Physicians and nurses from all wards (including emergency room)
Educational outreach visits	Oral communication by a clinical pharmacist highlighting the intervention during educational materials distribution	Physicians and nurses from all wards (including emergency room)
Group educational interactive sessions	Presentation of the new policy of the AST by a clinical pharmacist and a physician from the team with questions and answers session and group discussion	Targeted wards: ICU, oncology, infectious disease, hematology, cardiology, and respiratory disease

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CHU de Liège

Bon patient, Bon médicament, Bonne dose, Bonne voie d'administration, Bon moment, Bonne durée

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Attaquons malin

Ciblons Dès Demain

Révision et décision clinique à 48 h

Ne commencer les antibiotiques qu'en présence de signes cliniques

- S'assurer des prélèvements microbiologiques
- Prescrire l'antibiotique adéquat le plus rapidement possible chez les patients avec une infection sévère
- Respecter l'antibioguide
- Tenir compte de l'histoire allergique du patient
- Notifier l'indication clinique et l'antibiotique dans le dossier médical
- Notifier date de réévaluation et durée du traitement

Examen clinique, vérification des résultats microbiologiques, confirmation diagnostique, justification du traitement dans le dossier

1. STOP
2. Let's go PO
3. Désescalade
4. Continuer et revoir après 24 h
5. Avis Infectio

Notifier les décisions

Restons bons copains...

Results

Program design

- 10 437 Medication Administration Records (MAR) reviewed during pre- and post-intervention phases

10 PPS

5171 MARs reviewed

10 PPS

5266 MARs reviewed

Table 2 Characteristics of treated patients in the pre-intervention and post-intervention periods

Variable[a]	Pre-intervention (phase I), $n = 1177$	Post-intervention (phase II), $n = 1129$	p-Value
Age (years), mean ± SD	63 ± 17	63 ± 16	0.57
Male	694 (59)	640 (57)	0.27
Parenteral therapy	866 (74)	815 (72)	0.45
No. of antibacterial agents prescribed			0.35
1	873 (74)	837 (74)	
2	266 (23)	243 (22)	
≥3	38 (3)	49 (4)	
Piperacillin/tazobactam	231 (20)	205 (18)	0.37
Cefepime	71 (6)	54 (5)	0.19
Meropenem	103 (9)	121 (11)	0.11
Imipenem	4 (0.3)	1 (0.09)	0.38

[a] Number of treated patients (%)

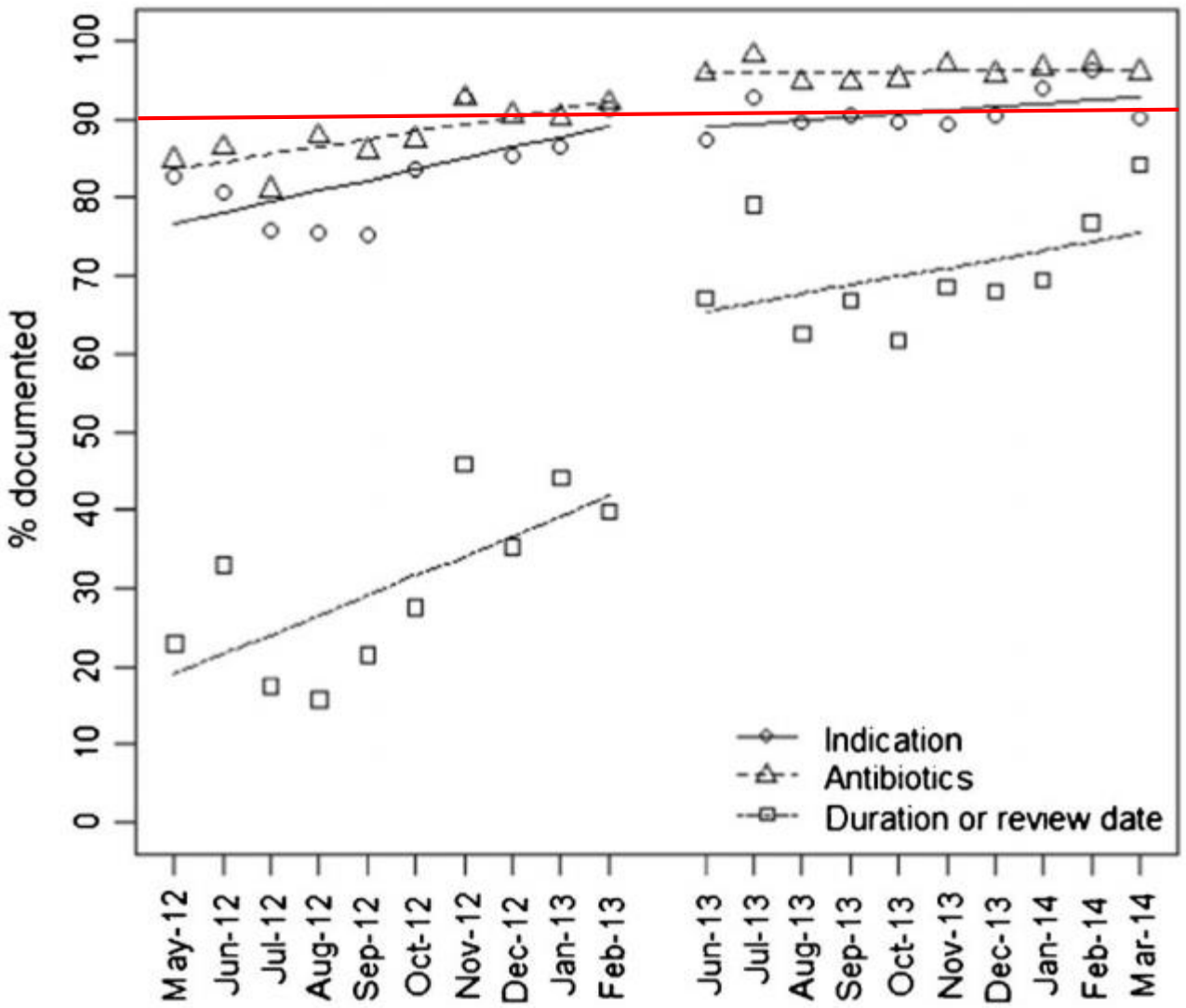

Fig. 1 Evolution of documentation rate within and between study periods (pre-intervention and post-intervention). Documentation trends are represented by lines

The mean percentage indication documented increased from 83.4 ± 10.4 % in the pre-intervention period to 90.3 ± 6.6 % in the post-intervention period ($p = 0.0013$). Likewise, the average percentage antibiotics documented rose from 87.9 ± 9.0 % in phase I to 95.6 ± 5.1 % in phase II ($p < 0.0001$). When considering the mean percentage duration or review date documented, it was 31.9 ± 15.4 % before the intervention and 67.7 ± 15.2 % after the intervention ($p < 0.0001$).

Before the intervention, 25 % of the study wards reached the target of 90 % for indication documented. After the intervention, 54 % of the study wards exceeded the target of 90 % for indication documented ($p = 0.020$). The percentage of wards achieving the goal of 90 % for antibiotics documented increased from 37.5 % in phase I to 87.5 % in phase II ($p = 0.0005$). For the duration or review date documented, none of the wards reached the targeted standard.

ID consultation

- On average, the percentage of medical records referring to a medical note with an ID consultation remained unchanged in the two intervention periods
  - 23.3 ± 18.2% (preintervention) and 23.3 ± 20.0% (postintervention).
- Similarly, the intervention had no impact on the number of ID consultations (p=0.98)
- By contrast, among the medical records with an ID consultation, the average percentage of cases with documentation considered complete (in other words with the three quality indicators documented) increased from 70.7 ± 21.2% before the intervention to 90.7 ± 8.2% after the intervention (p <0.0001).

Discussion / conclusion

Strenghts

- Benefits of an AST in introducing new guidelines in an hospital setting
- Potential intervention of a clinical pharmacist to improve the quality documentation on antibiotic therapy
- Interrupted time series design

Weaknesses

- Long-term impact of the intervention not evaluated
- « One size fits all » approach in a single hospital
- Appropriateness use of antibiotics not evaluated

Conclusion

- Documenting the clinical indication and the duration or review date in the medical records is a recognized standard of good practice
- The quality of documentation is part of the quality improvement strategy for patient safety to help reduce inappropriate prescribing and optimize antibiotic use
- As improving quality is a continuous process, the interventions and audits should be repeated in the future, especially in an academic teaching structure with a high turnover of doctors in training.

Merci pour votre attention.

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