Implement it!

Nasjonal kompetansetjeneste
for antibiotikabruk i
spesialisthelsetjenesten

Stig Harthug, professor UiB og spesialrådgiver Haukeland universitetssjukehus

Implement it!

Scoping review

Delprosjekt av større prosjekt finansiert av Norges forskningsråd:

Eirik Søfteland, Miram Hartveit, Jonas Torp Ohlsen, Hilde Valen Wæhle, Per Espen Akselsen

IMPLEMENTERING AV PASIENTSIKKERHETSTILTAK EKSEMPLIFISERT VED ANTIBIOTIKASTYRING, LEGEMIDDELSAMSTEMMING OG TIDLIG OPPDAGELSE AV FORVERRET TILSTAND

Nasjonal kompetansetjeneste for antibiotikabruk i spesialisthelsetjenesten

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Originale publikasjoner siste 10 år

- Rapporterer vellykket implementering av ASP
  - implementeringsutfall
  - Valg av implementeringsstrategi(er)
  - kontekstuelle faktorer som påvirker graden av suksess
- Søk i 3 store litteraturbaser
  - 2060 artikler (ASP-armen)
  - Screening ved hjelp av forskerassistert maskinlæring (AI) identifiserte 552 Artikler for fulltekst gjennomgang
  - 49 artikler av interesse fra sykehus, sykehjem og ambulant praksis
  - Ettergår også andre review-artikler for sikre at ikke noe blir oversett

Det som skal implementeres:

- **Antibiotikastyringsprogram**
- **Retningslinjer**

Valg av tilnærming

- lederforankring
- metodisk tilnærming
- restriktiv og understøttende
- A-team (fasilitatorgruppe)

Konteksten påvirker disse faktorene

- Ytre: aktuelle resistensforhold, myndighetskrav mm
- Indre: kompetanse, teamsammensetning, verktøy, motivasjon, endringskultur (readiness for change)

implementeringsstrategi + implementeringsfaktorer = implementeringsutfall

- Etterlevelse etter retningslinjer
- Antibiotikaforbruk (AUR)

Implementeringsutfall

- Graden av opptak av den nye arbeidmåten (f. eks retningslinjen) i daglig praksis.
- Kan måles ved etterlevelse av retningslinjer (sjelden) som compliance og fidelity
- Måles oftest indirekte ved ulike mål for antibiotic usage rate (AUR)

Foreløpige funn I

- Noen anvender rammeverk for implementering
- De fleste har benyttet kvalitetsforbedringsmetodik (QI)
  - Inkluderer repeterende PDSA sirkeler
  - Varierende grad av analytisk tilnærming
    - Hemmere og fremmere av implementeringen som grunnlag for justering
    - Rotårsaksanalyser og fiskebensdiagram for å identifisere justeringsfaktorer
    - Adaptasjon av retningslinjer, endret arbeidsflyt eller justere innsatsfaktorer (personell)

Foreløpige funn II

- Hyppig nevnte faktorer som blir justert i varierende grad er:
  - Utilstrekkelig dataverktøy
  - Retningslinjer ikke som ikke passer med lokale forhold
  - Svak informasjonsflyt i det kliniske mikroteamet (mellom lege, – farmasøyt og sykepleier
  - Misforhold mellom behov og tilgjengelig nøkkelpersonell
  - Svakt engasjement fra ledelse
  - Behov for kompetanse

Noen gode eksempler

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QUALITY IMPROVEMENT ARTICLE

Reducing antibiotic utilization rate in preterm infants: a quality improvement initiative

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Abstract

Background Judicious use of antibiotic therapy in preterm infants is necessary as prolonged and unwarranted use of antibiotics have been associated with adverse short-term and long-term outcomes.

Local problem Our baseline data review revealed overuse and unnecessary prolonged antibiotic exposure among preterm infants despite a low suspicion for sepsis.

Methods and interventions The baseline overall AUR was calculated retrospectively from our pharmacy database for a period of 4 months prior to the quality improvement (QI) initiative (pre-QI phase). The principal QI intervention included the development and implementation of guidance algorithms for evaluation and management of suspected sepsis incorporating key QI measures, such as an emphasis on early discontinuation of antibiotics by 36 h if blood culture remained negative and the introduction of multiplex polymerase chain reaction assay for early identification of causative organisms. This QI initiative was implemented through multiple Plan-Do-Study-Act cycles, starting in February 2016 (QI phase), with an objective to achieve a 10% reduction in the baseline overall AUR by December 2016, in preterm infants with gestational ages between $25^{0/7}$ and $33^{6/7}$ weeks. Data for the QI phase of the study were collected prospectively.

Result The overall AUR (outcome measure) decreased from 154.8 to 138.4 days of treatment per 1000 hospital days (10.6% decrease, $p < 0.05$) over the 11-month period. However, the overall rate of adherence to guidance algorithm (process measure) remained below the target goal of 90%.

Conclusion This multiphase QI initiative was able to reduce the overall AUR at our NICU. The beneficial impact of this decrease in AUR in preterm infants remains to be determined.

Introduction

Antibiotics are one of the most commonly used medications in the neonatal intensive care units (NICU) [1, 2]. Perinatal maternal risk factors, including preterm labor, preterm premature rupture of membranes, prolonged rupture of membranes, chorioamnionitis, maternal Group B Streptococcal (GBS) colonization, or the severity of neonatal illness, trigger the initiation of antibiotics for suspected sepsis in preterm infants [2]. Because clinical manifestations of neonatal sepsis are generally subtle, nonspecific, and difficult to differentiate from other common neonatal illnesses [3], and perinatal antibiotic exposure or errors in the collection of blood cultures may lead to falsely negative blood cultures in neonates [4, 5], many clinicians rely on inflammatory markers for treating "clinical sepsis" in preterm infants in the absence of positive blood cultures [6]. The evidence base for determining the duration of antibiotic therapy for clinical sepsis in preterm infants is weak. Generally, a prolonged exposure to antibiotic therapy in the setting of clinical sepsis is common [7], and the duration of antibiotic treatment varies widely from center to center [8]. Recent evidence suggests that

Ramachandra Bhat and Haidee Custodio contributed equally to this work.

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antibiotics MDPI

Article

Antimicrobial Stewardship Program Implementation in a Saudi Medical City: An Exploratory Case Study

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Abstract: Antimicrobial stewardship programs (ASPs) in hospitals have long been shown to improve antimicrobials' use and reduce the rates of antimicrobial resistance. However, their implementation in hospitals, especially in developing countries such as Saudi Arabia, remains low. One of the main barriers to implementation is the lack of knowledge of how to implement them. This study aims to explore how an antimicrobial stewardship programme was implemented in a Saudi hospital, the challenges faced and how they were overcome, and the program outcomes. A key stakeholder case study design was used, involving in-depth semi-structured interviews with the core members of the ASP team and analysis of 35 ASP hospital documents. ASP implementation followed a top-down approach and involved an initial preparatory phase and an implementation phase, requiring substantial infectious diseases and clinical pharmacy input throughout. Top management support was key to the successful implementation. ASP implementation reduced rates of multi-drug resistance and prescription of broad-spectrum antimicrobials. The implementation of ASPs in hospital is administrator rather than clinician driven. Outsourcing expertise and resources may help hospitals address the initial implementation challenges.

Keywords: antimicrobial stewardship programs; hospitals; multi-drug resistance

check for updates

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1. Introduction

Antimicrobial stewardship programs (ASP) in hospital are interventions to reduce risks of antimicrobial treatment failures, adverse events, hospital acquired infections, rates of antimicrobial resistance and costs associated with antimicrobial prescriptions and prolonged length of stay in hospital [1]. These programs focus on optimizing the choice, dosing and route of administration of antimicrobials, monitoring their prescription and resistance patterns, and continuous provision of education and feedback to prescribers.

The programs were first implemented in the USA in the late 1990s, and started to gain popularity in Europe soon after that [2]. In an international survey carried out in 2015 by the ESCMID Study Group for Antimicrobial Policies (ESGAP) and ISC Group on Antimicrobial Stewardship, 52% of the countries had a national antimicrobial stewardship plan, 58% had ASPs in hospitals and 4% of the countries were planning antimicrobial stewardship strategies [3]. The Netherlands, France [4] and England [5] reported high rates of ASP implementation in hospitals. In the USA, a recent study suggests that 51% of the leading hospitals in the country have an active ASP. Around 59% of these hospitals had

Wathne et al. Antimicrobial Resistance and Infection Control (2018) 7:109
https://doi.org/10.1186/s13756-018-0400-7

Antimicrobial Resistance and Infection Control

RESEARCH Open Access

The effect of antibiotic stewardship interventions with stakeholder involvement in hospital settings: a multicentre, cluster randomized controlled intervention study

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Abstract

Background: There is limited evidence from multicenter, randomized controlled studies to inform planning and implementation of antibiotic stewardship interventions in hospitals.

Methods: A cluster randomized, controlled, intervention study was performed in selected specialities (infectious diseases, pulmonary medicine and gastroenterology) at three emergency care hospitals in Western Norway. Interventions applied were audit with feedback and academic detailing. Implementation strategies included co-design of interventions with stakeholders in local intervention teams and prescribers setting local targets for change in antibiotic prescribing behaviour. Primary outcome measures were adherence to national guidelines, use of broad-spectrum antibiotics and change in locally defined targets of change in prescribing behaviour. Secondary outcome measures were length of stay, 30-day readmission, in-hospital- and 30-day mortality.

Results: One thousand eight hundred two patients receiving antibiotic treatment were included. Adherence to guidelines had an absolute increase from 60 to 66% for all intervention wards ($p = 0.04$). Effects differed across specialties and pulmonary intervention wards achieved a 14% absolute increase in adherence ($p = 0.003$), while no change was observed for other specialties. A pulmonary ward targeting increased use of penicillin G 2 mill IU × 4 for pneumonia and COPD exacerbations had an intended increase of 30% for this prescribing behaviour ($p < 0.001$).

Conclusions: Pulmonary wards had a higher increase in adherence, independent of applied intervention. The effect of antibiotic stewardship interventions is dependent on how and in which context they are implemented. Additional effects of interventions are seen when stakeholders discuss ward prescribing behaviour and agree on specific targets for changes in prescribing practice.

Keywords: Antibiotic stewardship, Intervention, cRCT, Audit with feedback, Academic detailing, Hospital, Goal setting

Background

Globally, the overuse and misuse of antibiotics, especially broad-spectrum agents, has accelerated the development and selection of resistant bacteria [1–3]. The increase in broad-spectrum antibiotic prescribing cannot be explained by increased antibiotic resistance alone [4].

Antibiotic stewardship programs have been introduced to hospitals worldwide to promote more prudent antibiotic use [5, 6]. The basis of stewardship programs are evidence based clinical guidelines for antibiotic prescribing to ensure effective treatment for individual patients, while minimizing development of antimicrobial resistance (AMR). Adherence to antibiotic guidelines varies among countries and institutions [6]. Interventions like audit with feedback, providing a summary of clinical performance over time and educational outreach through academic detailing have been shown to be effective in increasing

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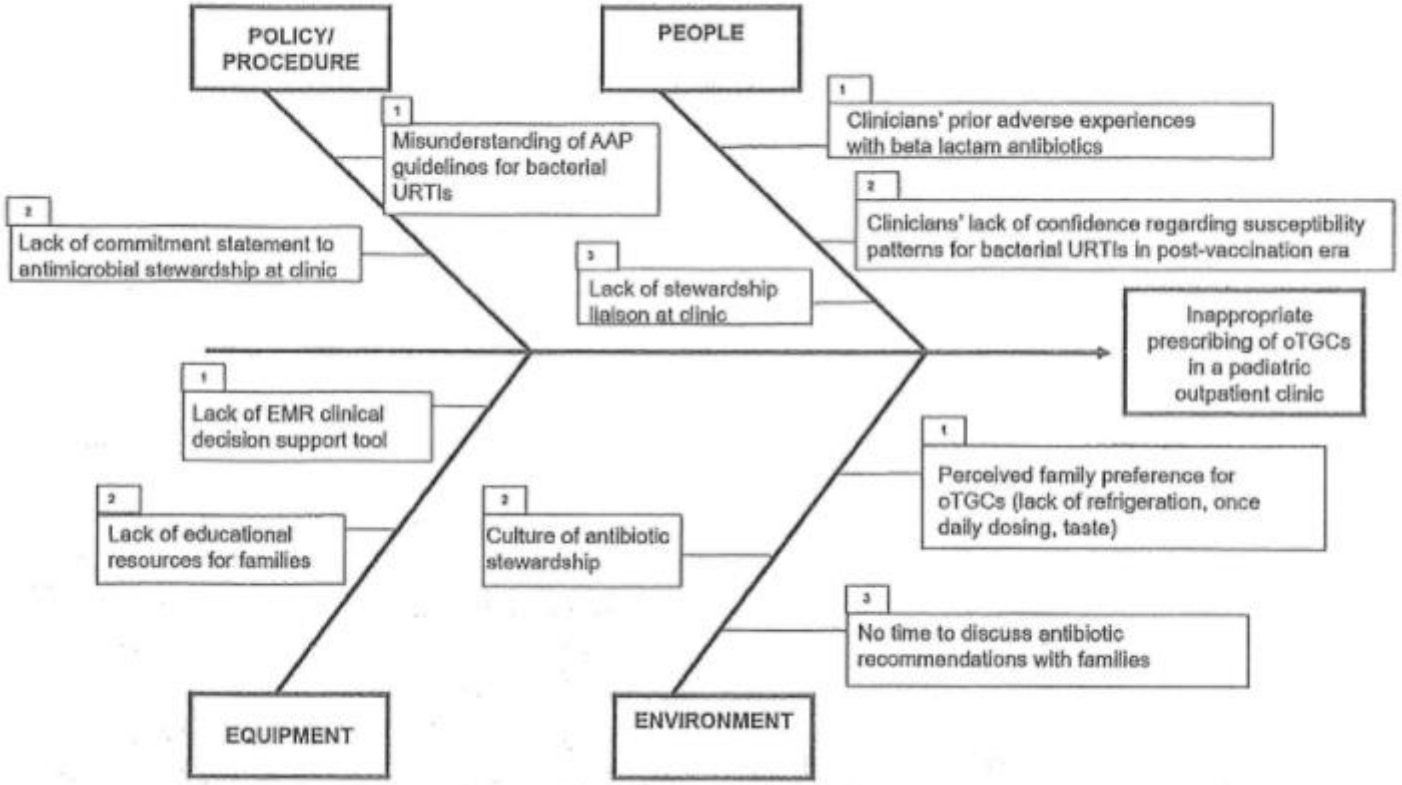
Eksempel på aktiv bruk av PDSA

Table 1. Plan, do, study, act cycle interventions

Week	Description	Effect
1	**Incident report email** A trust-wide e-mail mandating pharmacists to submit an incident report when a 48-hour review is not completed. Note: intervention not initiated by quality improvement project team	**Slight improvement** The threat of an incident report did motivate action, but the authors felt this was a negative way to encourage change which may have limited short-term effect
2	**Consultant announcement** Consultant speaking directly to all multidisciplinary team members present at the morning board round to explain the quality improvement project and to provide education on the importance of good antimicrobial stewardship	**Significant improvement** This may have been as it was a personal announcement from a senior member of the team to a wide range of disciplines of the ward team. It also signified the 'beginning' of the quality improvement programme
3	**Visual prompt** A4 poster in doctors' areas of the wards to educate and remind them of the importance of the 48-hour review	**No effect** This had a negligible effect as the posters were small and not eye catching enough. Also, they were not visible in nursing areas
4	**Magnets on patient whiteboard** Pharmacists to put magnets on the patient board to highlight patients requiring a 48-hour review	**No effect** Unfortunately, magnets were not available at the start of the week so the intervention was not carried out properly, and was later abandoned
5	**Reminder on handover sheet** Doctors work from paper handover lists. A section highlighting whether the 48-hour review had been done for each patient was created on the sheet to remind the team	**Significant improvement** This may have been as the handover sheet is constantly referred to by doctors on the ward round and throughout the working day
6	**Active pharmacist involvement** Pharmacists were encouraged to verbally highlight incomplete 48-hour reviews to the doctors	**Significant improvement** Previously pharmacists had documented the need for review on the front of the drug chart which was often not looked at by doctors. A verbal prompt thus had a strong effect
7	**Email to consultants** An email was sent to senior members of respiratory team detailing the improvement that had been achieved by week six of the project and encouraging ongoing engagement with completion of the 48-hour review	**Effect uncertain** 100% of 48-hour review had been reached by this stage so the effect cannot be quantified, but consultants generally expressed satisfaction with what the programme had achieved and appeared engaged with its continuation

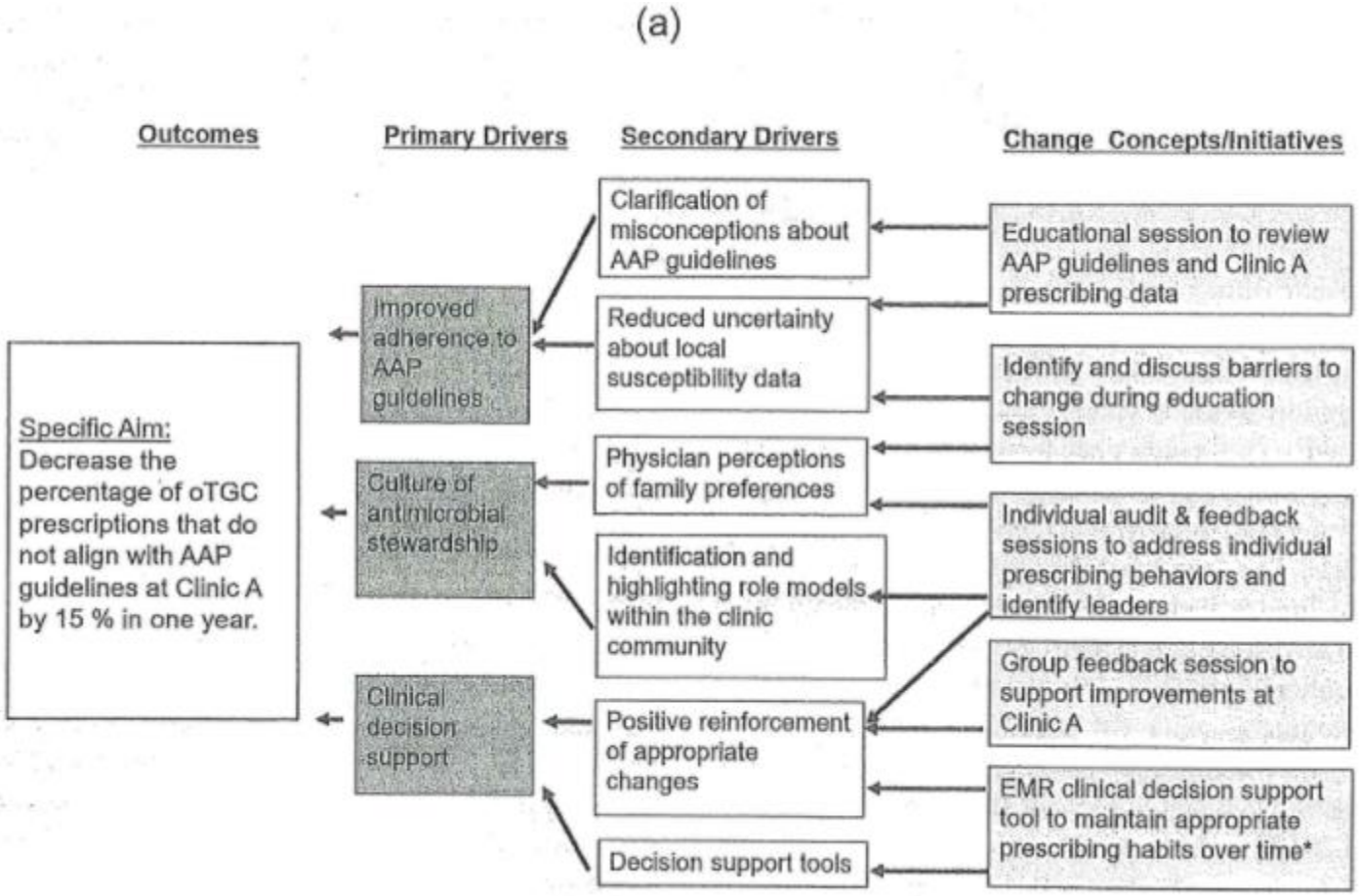
https://www.magonlinelibrary.com/doi/epub/10.12968/hmed.2018.79.3.163

Eksempel på fiskebensanalyse



Taylor, M.; Liechti, S.; Palazzi, D.; Joint Commission Journal on Quality and Patient Safety - Volume 47, Issue 4, pp. 250-257 - published 2021-01-01

Eksempel på driverdiagram



Taylor, M.; Liechti, S.; Palazzi, D.; Joint Commission Journal on Quality and Patient Safety - Volume 47, Issue 4, pp. 250-257 - published 2021-01-01

Hva karakteriserer dem som lykkes?

- Sterk ledelsesforankring med aktivt engasjement fra toppleder og kliniske ledere
- Implementeringsteam – a-team med tverrfaglig sammensetning
- Smarte mål kombinert med QI verktøy
- Aktiv bruk av gode prosessmålinger
- Involvering av nøkkelpersonell