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## Effect of tailored antibiotic stewardship programmes on the appropriateness of antibiotic prescribing in nursing homes.

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### Abstract

**OBJECTIVES:** To evaluate the effect of tailored interventions on the appropriateness of decisions to prescribe or withhold antibiotics, antibiotic use and guideline-adherent antibiotic selection in nursing homes (NHs).

**METHODS:** We conducted a quasi-experimental study in 10 NHs in the Netherlands. A participatory action research (PAR) approach was applied, with local stakeholders in charge of selecting tailored interventions based on opportunities for improved antibiotic prescribing that they derived from provided baseline data. An algorithm was used to evaluate the appropriateness of prescribing decisions, based on infections recorded by physicians. Effects of the interventions on the appropriateness of prescribing decisions were analysed with a multilevel logistic regression model. Pharmacy data were used to calculate differences in antibiotic use and recorded infections were used to calculate differences in guideline-adherent antibiotic selection.

**RESULTS:** The appropriateness of 1059 prescribing decisions was assessed. Adjusting for pre-test differences in the proportion of appropriate prescribing decisions (intervention, 82%; control, 70%), post-test appropriateness did not differ between groups (crude:  $P=0.26$ ; adjusted for covariates:  $P=0.35$ ). We observed more appropriate prescribing decisions at the start of data collection and before receiving feedback on prescribing behaviour. No changes in antibiotic use or guideline-adherent antibiotic selection were observed in intervention NHs.

**CONCLUSIONS:** The PAR approach, or the way PAR was applied in the study, was not effective in improving antibiotic prescribing behaviour. The study findings suggest that drawing prescribers' attention to prescribing behaviour and monitoring activities, and increasing use of diagnostic resources may be promising interventions to improve antibiotic prescribing in NHs.

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**KEYWORDS:** appropriateness of prescribing decisions; guideline-adherent antibiotic selection; participatory action research

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