

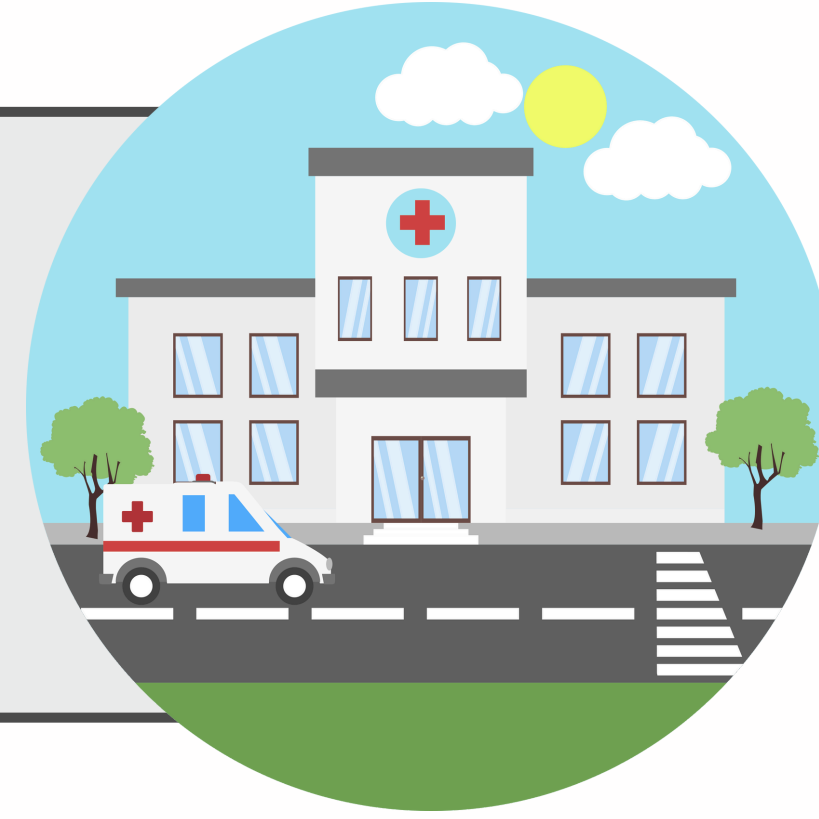
Analysis of antibiotic consumption due to the implementation of front-end and back-end strategies of antimicrobial stewardship: an Interrupted Time Series Analysis

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Background and importance

The inappropriate use of antibiotics significantly contributes to **antimicrobial resistance** (AMR), leading to side effects and high healthcare costs. In **hospital settings**, the best strategy to deal with AMR is the implementation of **Antimicrobial Stewardship** (AMS) programs, which include various strategies, mainly categorized as front-end (FE) and back-end (BE), respectively **restrictive** and **persuasive** measures. A combination of these two strategies has proven effective in reducing the inappropriate use of antibiotics in this context.



Aim and objectives

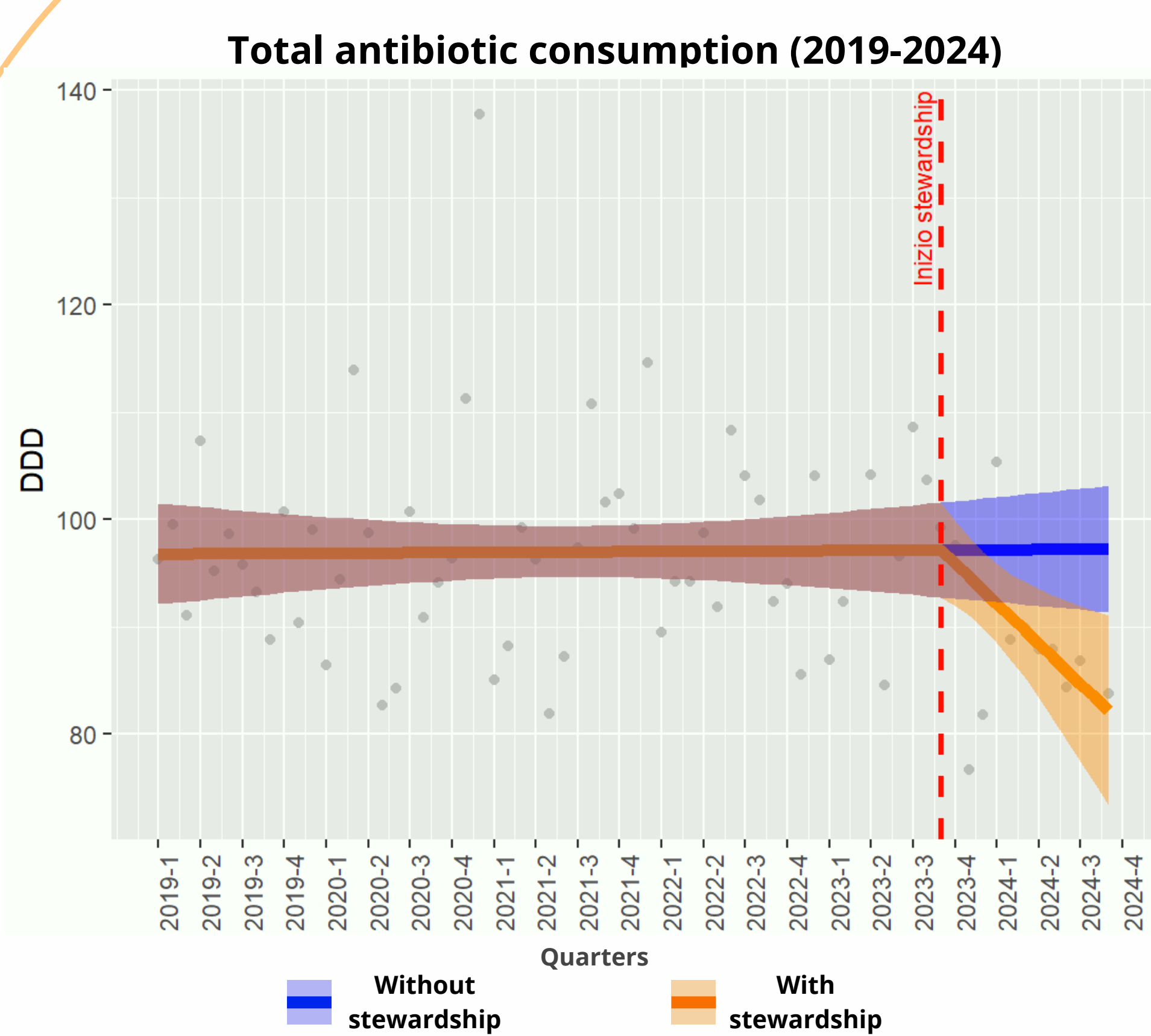
To describe the modification in antibiotic consumption in relation to **front-end** (FE) and **back-end** (BE) Antimicrobial Stewardship (AMS) strategies.

Materials and methods



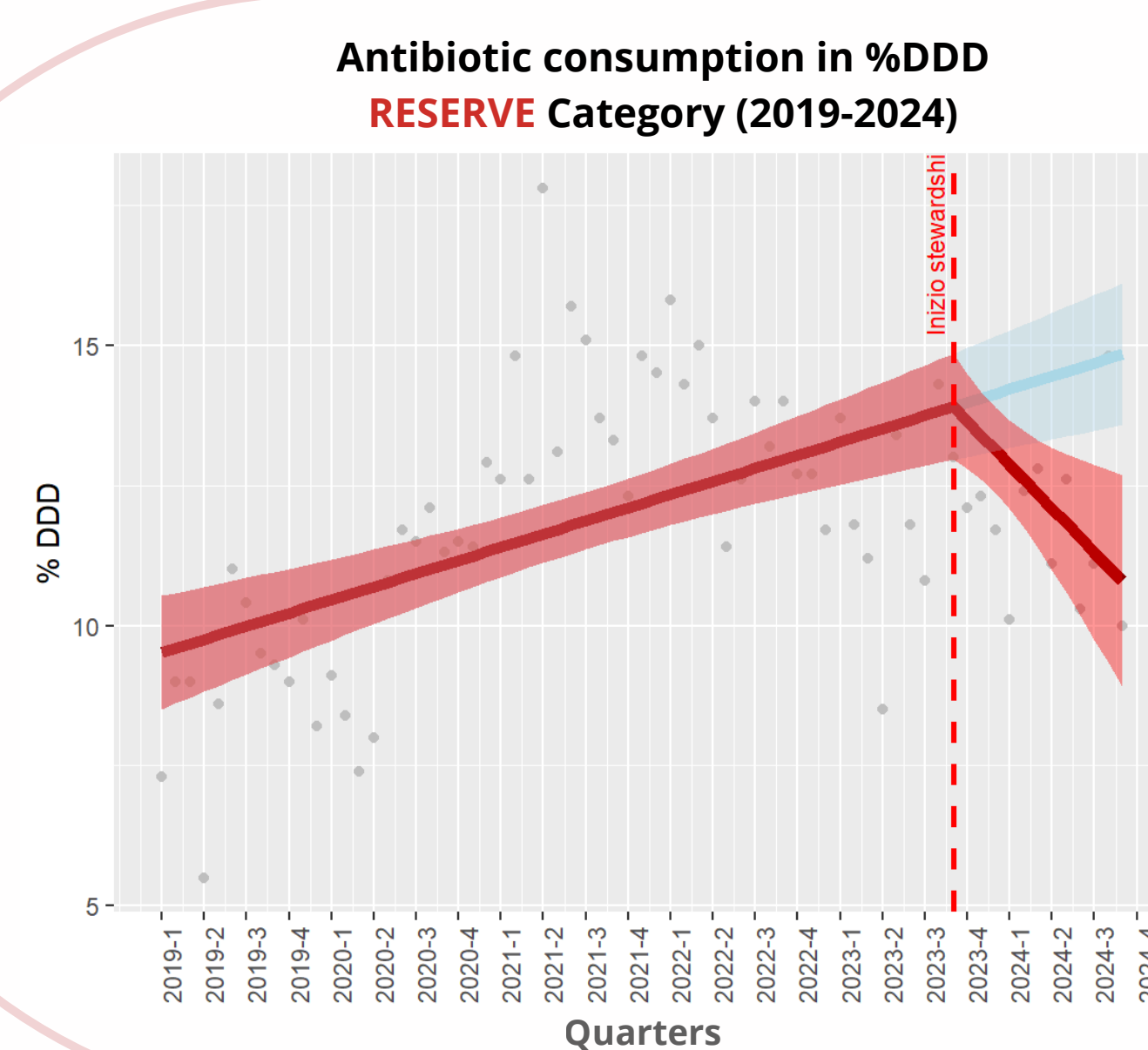
In October 2023, in a hospital setting, front-end (FE) and back-end (BE) strategies were implemented. The FE involves restrictions on **prescriptions** and **supplies** of antibiotics to hospital departments. The BE consists of post-prescriptional monitoring of antibiotic therapies, in a multidisciplinary team. The antibiotic consumption was analyzed through the **Interrupted Time Series Analysis**, from January 2019 to September 2024, focusing on the variation before and after October 2023, both quantitatively (DDD/100 hospital days) and qualitatively (percentage of consumption based on the **WHO AWaRe classification**).

Results



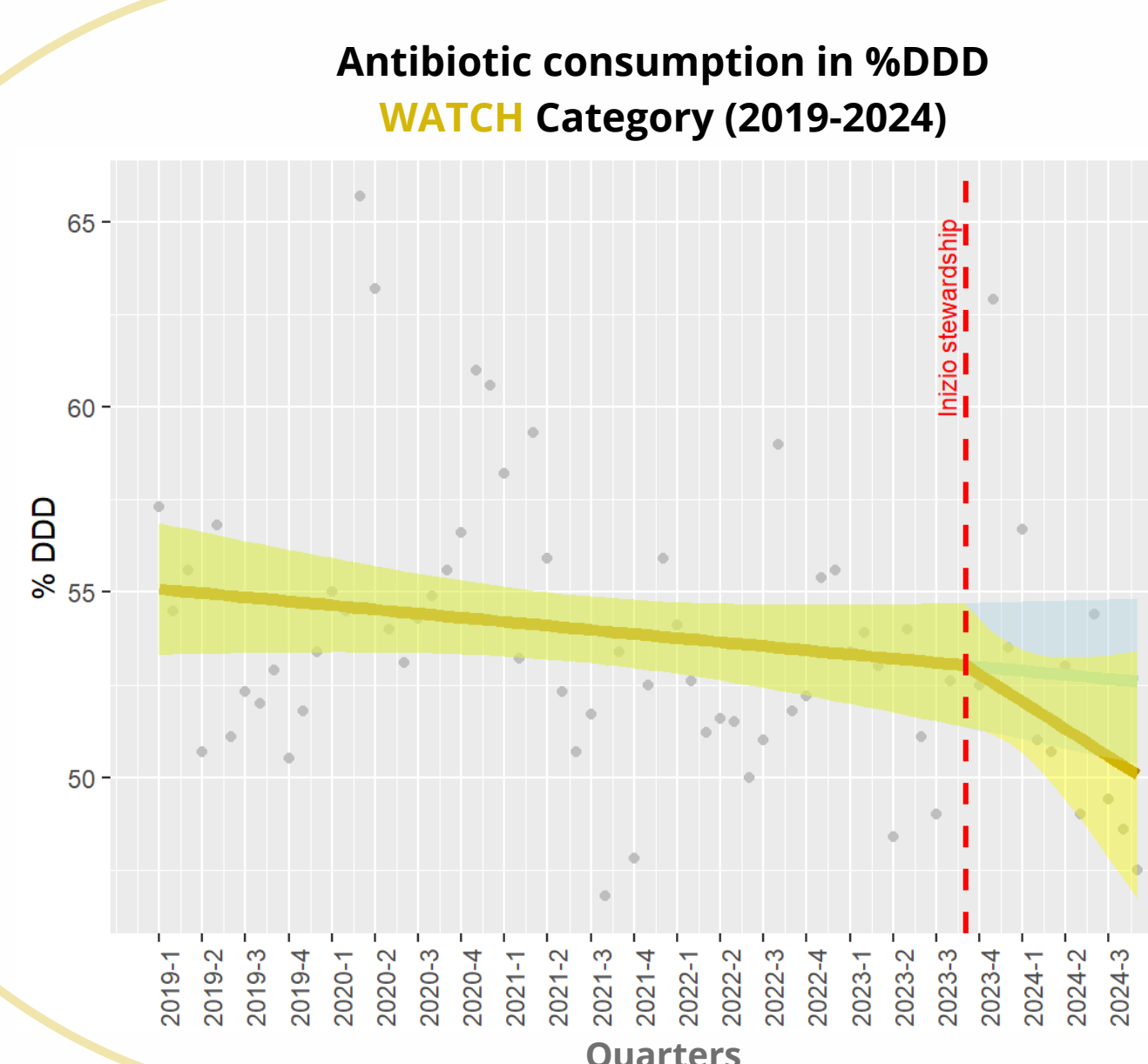
1) The total antibiotic consumption has shown a slight increase from January 2019 to October 2023 (pre-intervention trend = +0.01 DDD/100 days per quarter) and a **statistically significant decrease** with the introduction of FE and BE.

Trend post-intervention:
-1.26 DDD/100 days per quarter
 $p < 0.05$



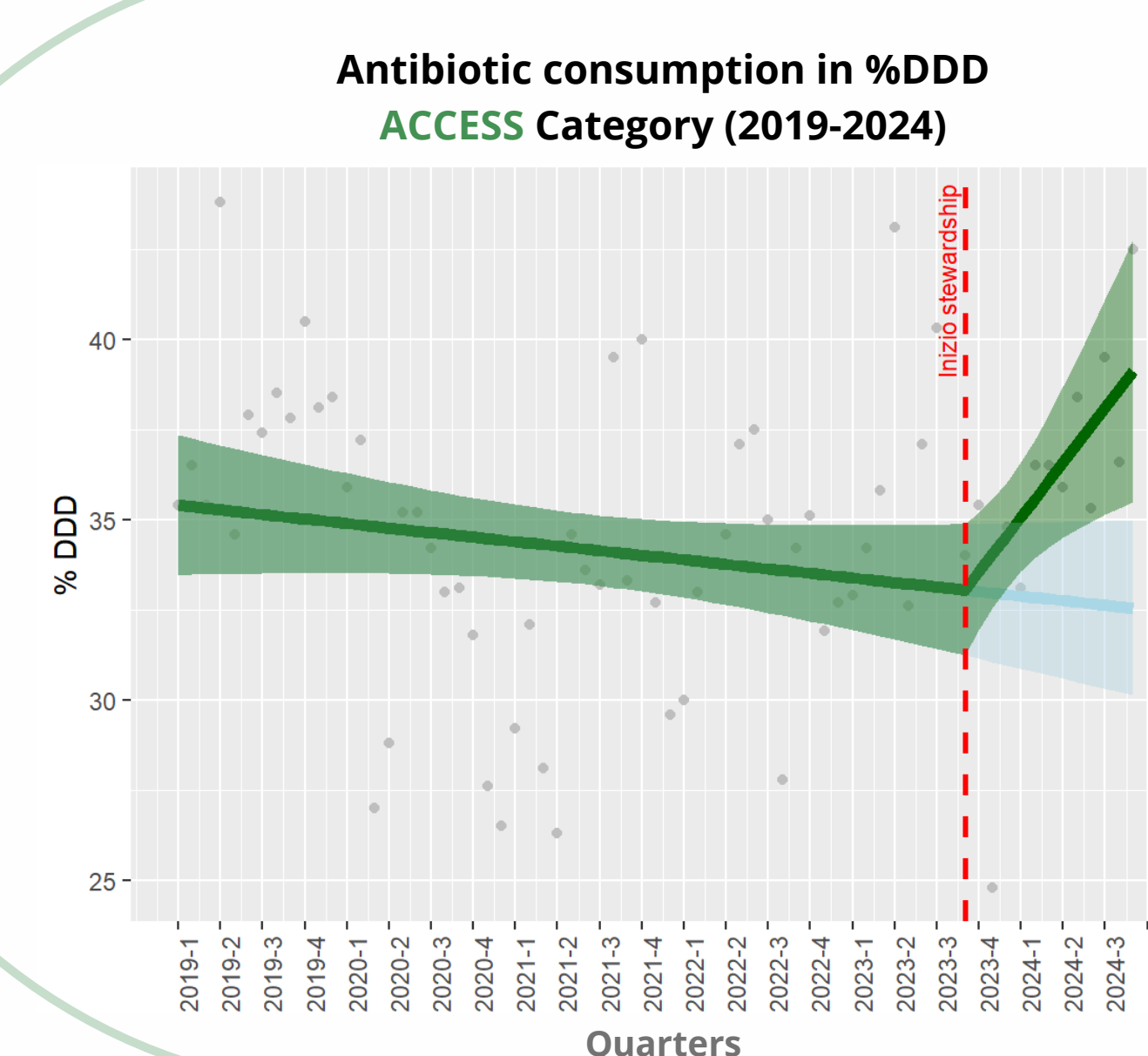
2) **Post-intervention**, there was a **statistically significant decrease** in **Reserve** antibiotic consumption

-0.34% per quarter;
 $p < 0.05$



a non-significant **decrease** in **Watch** antibiotic consumption

-0.21% per quarter



a **significant increase** in **Access** antibiotic consumption

+0.55% per quarter;
 $p < 0.05$

Conclusion and relevance

As revealed by the literature and by our experience, the introduction of FE and BE interventions is effective in decreasing antibiotic consumption and increasing the use of Access antibiotics. In fact, the **collaboration** in a **multidisciplinary team**, including clinicians, pharmacists, microbiologists, and nurses, has been essential for the success of AMS initiatives, as it allows for an **integrated** and **shared assessment** of therapeutic choices.

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