

Antibiotic stewardship and route of administration - evolution of the share of oral and parenteral days of therapy in a teaching hospital

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Background

- **Antimicrobial stewardship** ensures monitoring of the proper use of antimicrobials.
- The conversion **from intravenous to oral route** is encouraged rapidly: it reduces some inherent risks and facilitates patient discharge.

Objectives

- To evaluate the **share of parenteral days of therapy (DOT)** in a teaching hospital from **2005-2006 to 2021-2022**.

Methods

Study design:



- Descriptive and retrospective study;
- Taking place in a mother-child university hospital center with 500 beds.

Extraction data:



- Fiscal year from 2005-2006 to 2021-2022;
- Extraction of antimicrobial consumption data;
- Pharmacy Information System (CGSI Inc, Qu bec, Qu bec, Canada).

Type of data calculated:



- DOT/1000 patient days for all oral and parenteral drugs;
- Proportion of the number of parenteral DOTs to the total number of DOTs;
- Number of DOT/1000 patient days for pairs of antimicrobials available for the oral and parenteral routes.

Results

- Total number of DOT/1000 patient days (Table I.):
 - **2005-2006:** 710 ;
 - **2021-2022:** 609.
- Decrease of the proportion of DOT/1000 patient days for the parenteral route overtime (Fig 1):
 - **2005-2006:** 77%;
 - **2021-2022:** 62%.
- Decrease of the proportion of DOT/1000 patient days for the parenteral route from 2005-2006 to 2021-2022 overtime for the following antimicrobial pairs (Fig 2):
 - **Acyclovir** (97% c. 32%);
 - **Azythromycin** (12% c. 5%);
 - **Ciprofloxacin** (58% c. 31%);
 - **Fluconazole** (69% c.64%);
 - **Levofloxacin** (49% c.24%);
 - **Metronidazole** (71% c.16%);
 - **Voriconazole** (68% c.43%).

Discussion/Conclusion

- We observed a **global reduction in the share of DOT** by parenteral route in favor of the enteral route from 2005-2006 to 2021-2022.
- This reduction may be linked to the **increased availability of some oral forms** of antimicrobials overtime and to the **interventions of our antibiotic stewardship program** that contributes to the good use of antimicrobials within our hospital.
- Otherwise, it can be related to some **back orders** these last years and **changes in practices**.

Table I. DOT/1000 patient days from 2005-2006 to 2021-2022

Year	Parenteral route: DOT/1000 PD	Enteral route: DOT/1000 PD	Total of DOT/1000 PD
2005-2006	547	164	711
2006-2007	543	196	739
2007-2008	561	219	780
2008-2009	472	195	667
2009-2010	593	229	821
2010-2011	599	229	827
2011-2012	630	266	897
2012-2013	554	206	760
2013-2014	558	244	802
2014-2015	553	246	799
2015-2016	543	258	801
2016-2017	524	261	785
2017-2018	520	245	765
2018-2019	513	264	777
2019-2020	468	269	738
2020-2021	444	262	706
2021-2022	378	232	610

Abreviation: DOT: Days of therapy; PD: Patient days

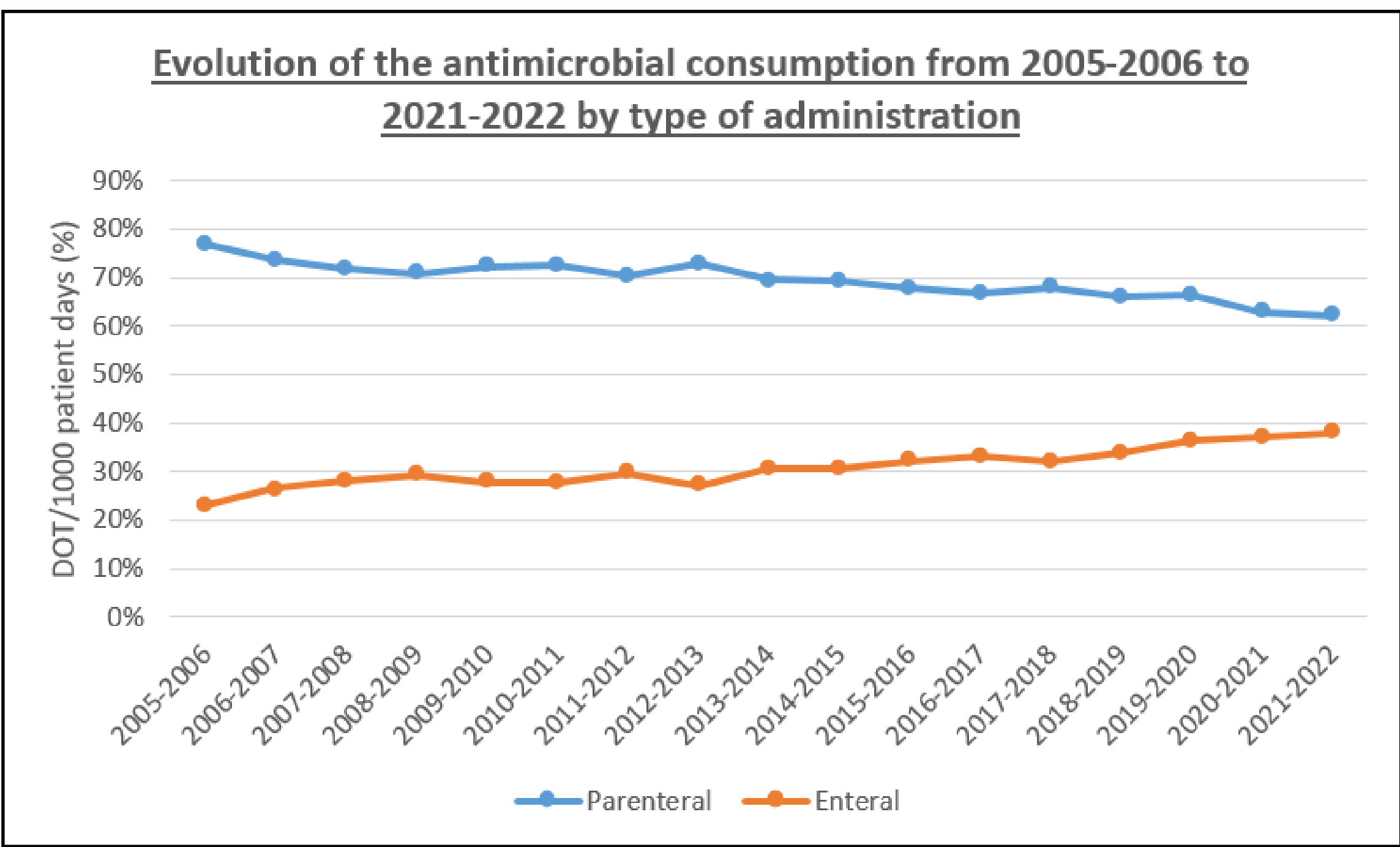


Fig 1. Share of parenteral and enteral route from 2005-2006 to 2021-2022

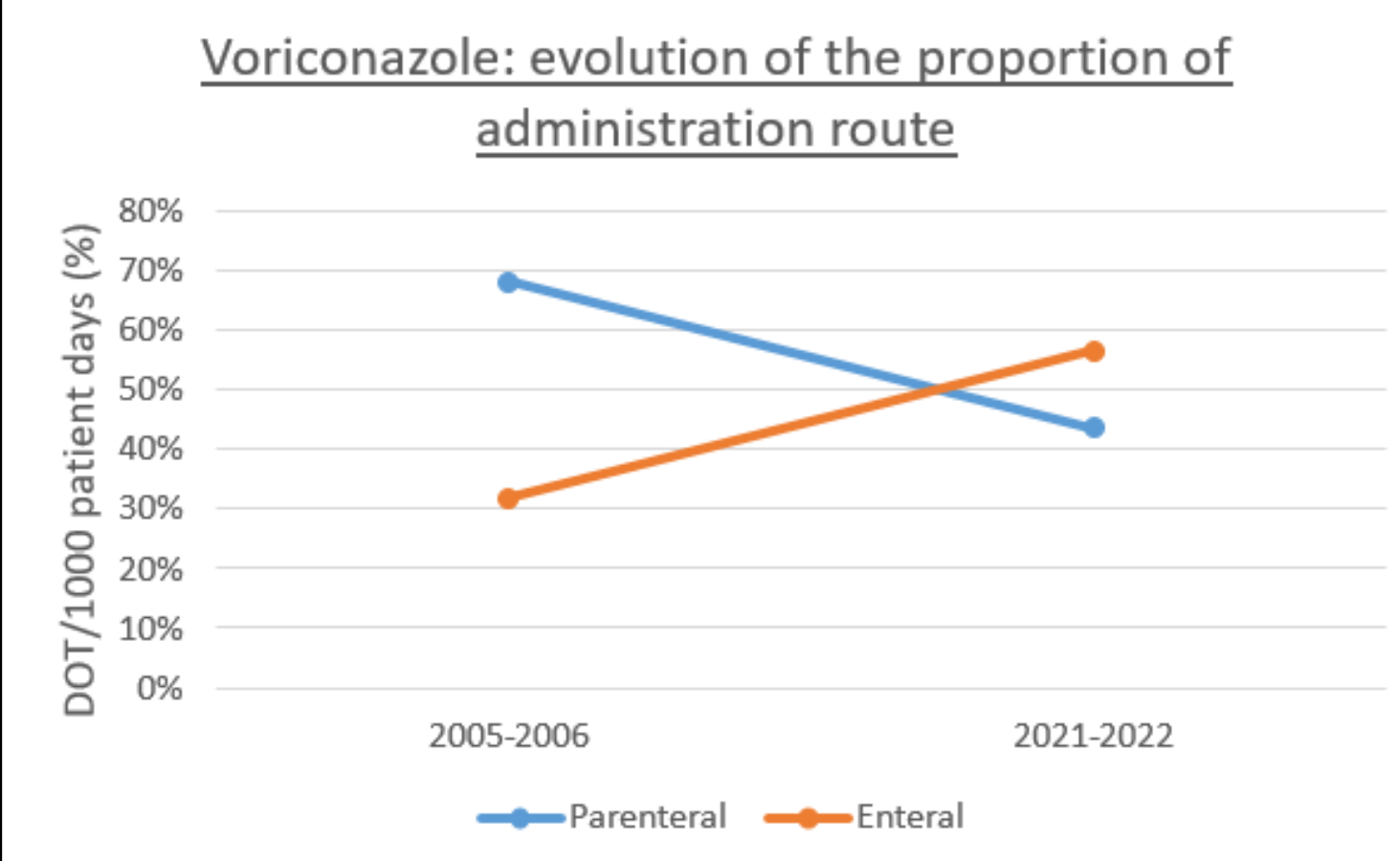
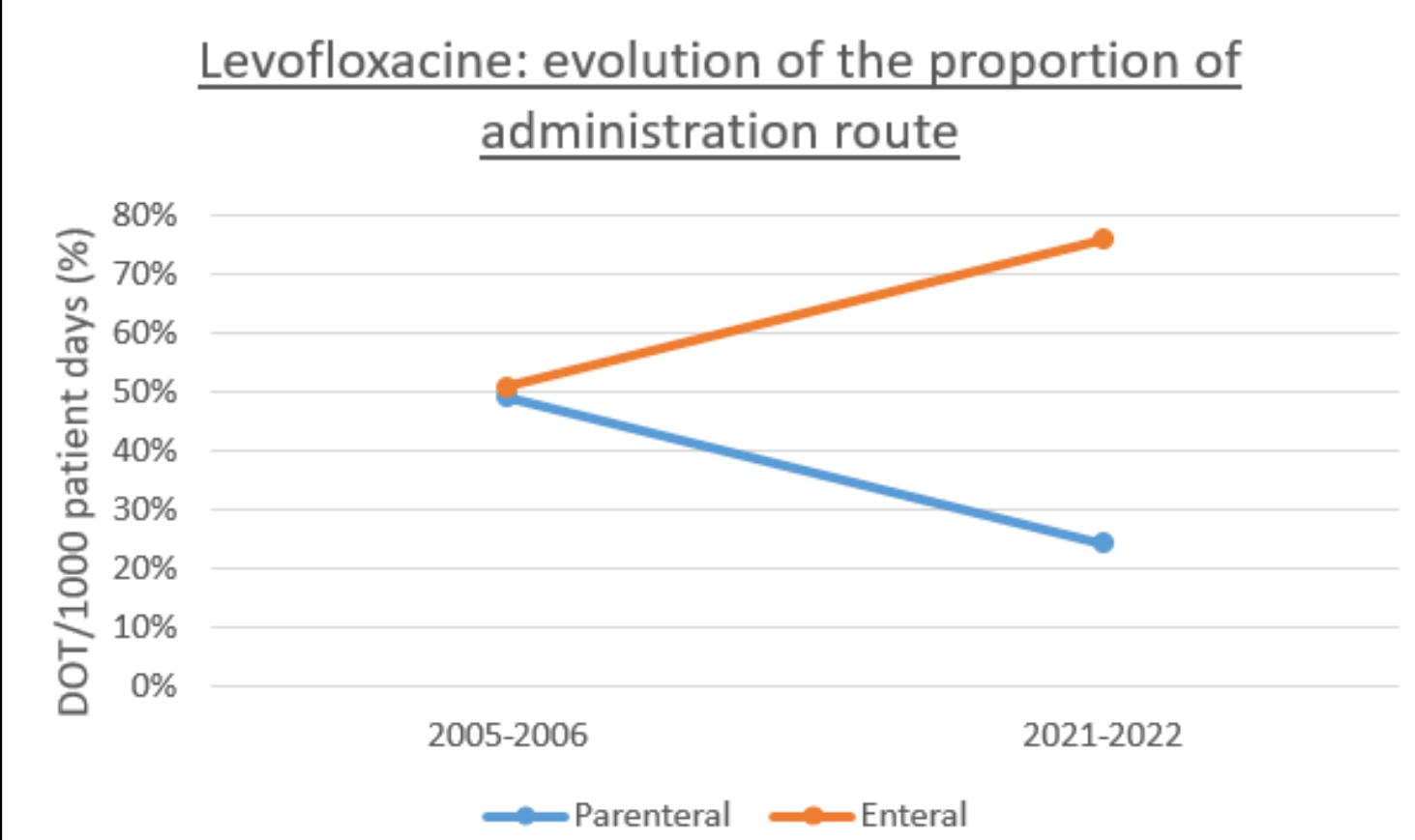
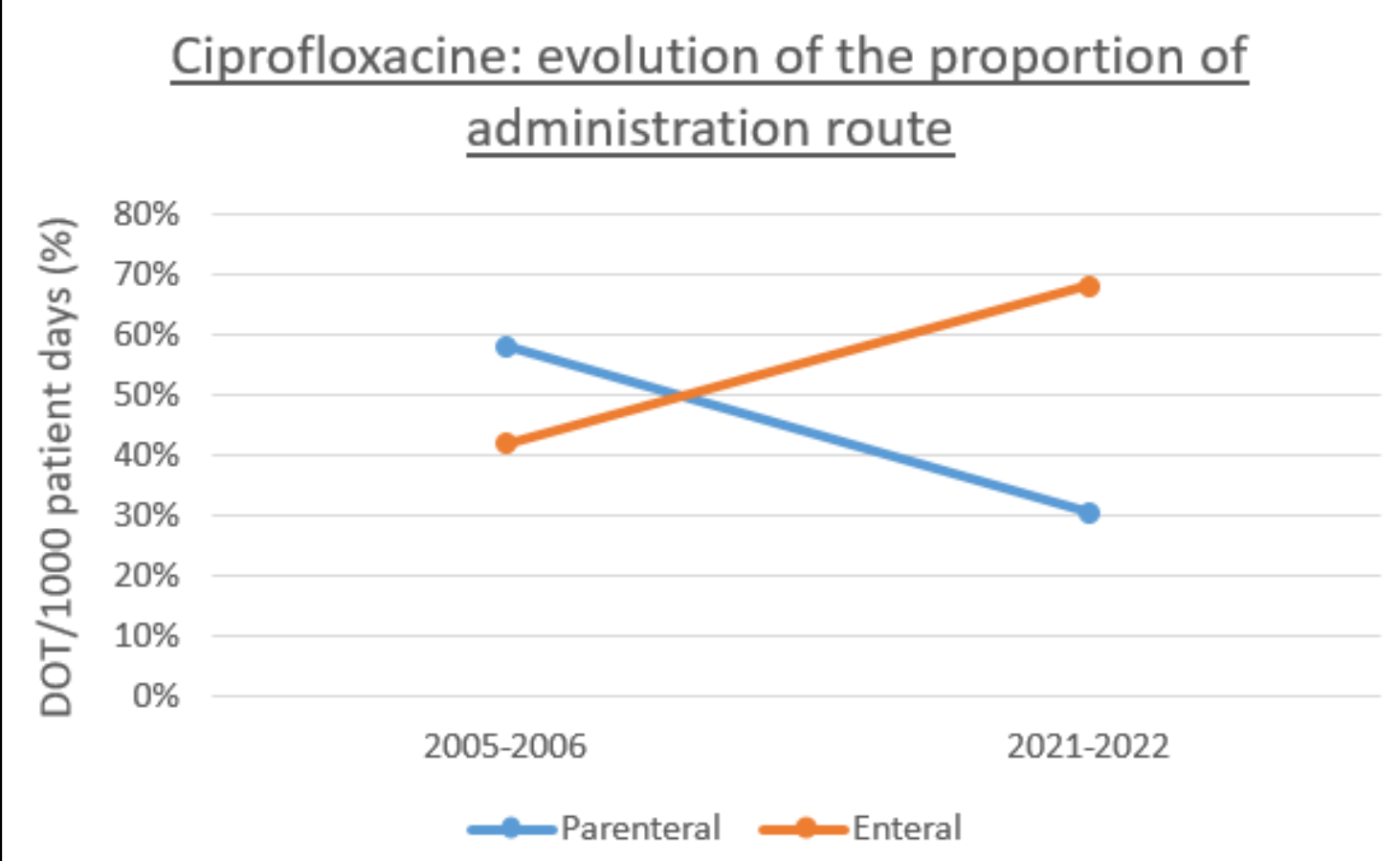
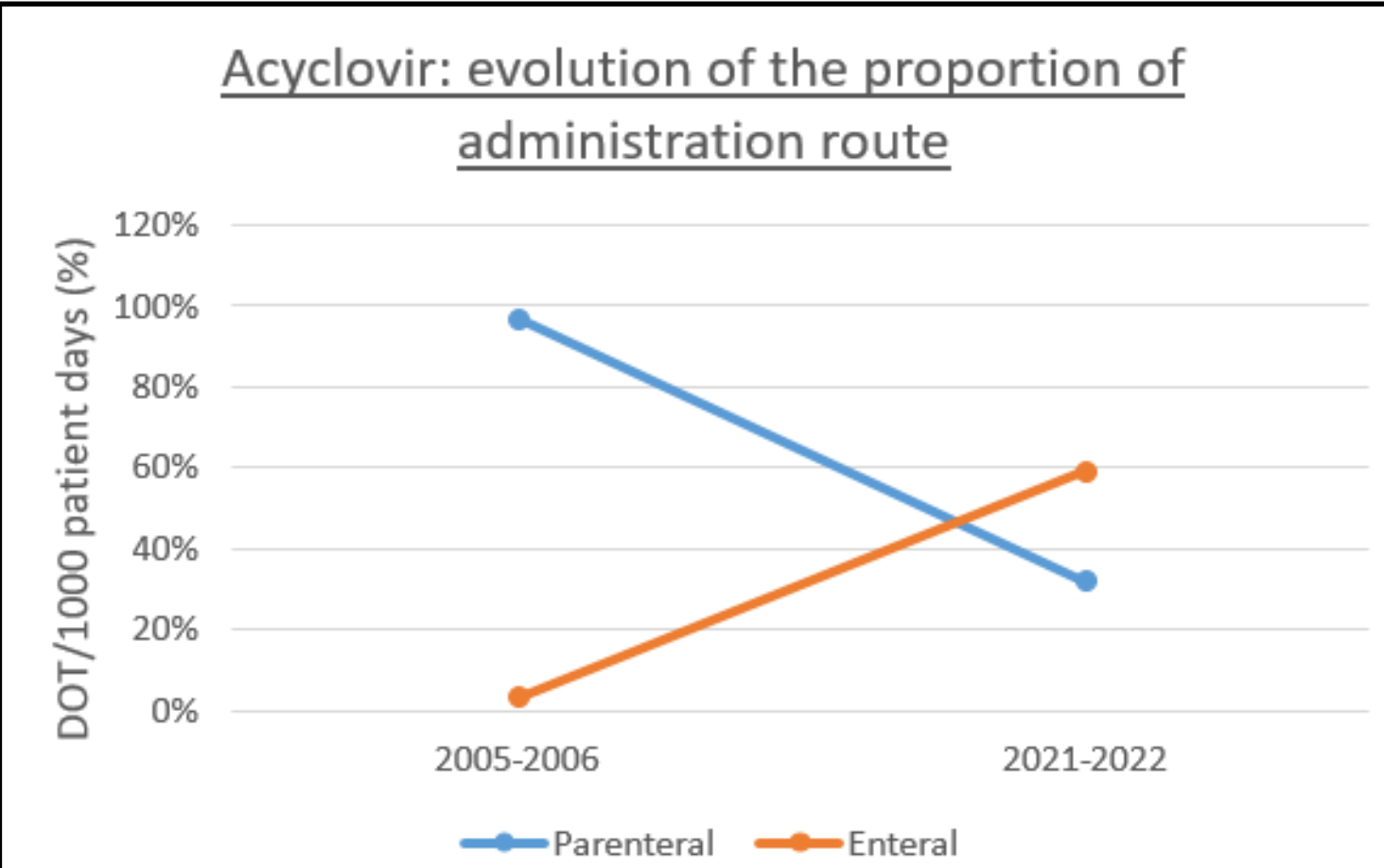


Fig 2. Share of parenteral and enteral route from 2005-2006 to 2021-2022 for some antimicrobials pairs

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