

# Secondary data analysis of Adverse Drug Reactions reported by healthcare professionals and patients: interventions to manage ADRs

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## Introduction

Prescribing cascades occur when an adverse drug reaction (ADR) of a first medication (index medication) is treated with a second medication (marker medication) (*Figure 1*). They can result in polypharmacy and harm.<sup>1-4</sup> While various interventions are recommended in literature to prevent harm, it is unknown which are implemented in daily practice.

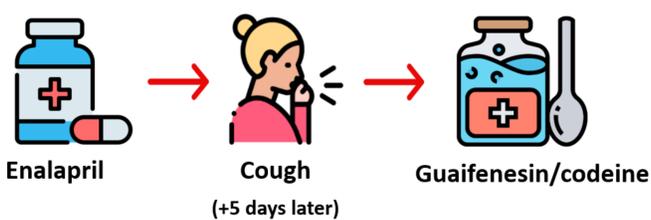


Figure 1: A prescribing cascade associated with enalapril.<sup>5,6</sup>

## Methods

- Cross-sectional study
- Secondary data analyses from spontaneous ADR reports submitted to the Netherlands Pharmacovigilance Center Lareb (2019 -2025)
- Inclusion: reports submitted for ADRs suspected to be caused by angiotensin-converting enzyme (ACE) inhibitors or angiotensin receptor blockers (ARB) for which an intervention was documented
- Primary outcome: type of intervention, i.e. dose reduction, discontinuation, discontinuation and introduction of other medication, switch to alternative medication, introduction of marker medication
- Secondary outcome: resolution status, i.e. resolved, still resolving, unresolved at time of report
- Descriptive analysis

## Objectives

The primary aim of this study was to determine the proportion of different types of interventions reported to address ADRs.

The secondary aim was to evaluate the proportion of reported ADRs that were resolved after the intervention.

## Results

Table 1: Patient characteristics

Patient characteristics (n = 487)	
Sex	
Female, n (%)	271 (55.6)
Age, mean (sd)	62.8 (14.1)
ADR report characteristics (n = 902)	
Type of reporter	
Patient or their relative, n (%)	578 (64.1)
Physician, n (%)	229 (25.4)
Pharmacist, n (%)	67 (7.4)
Other healthcare professional, n (%)	28 (3.1)

Table 2: ADR outcomes according to different intervention types

	ADRs resolved, n (%)	ADRs still resolving, n (%)	ADRs unresolved, n (%)	ADRs that were fatal, n (%)	Unknown, n (%)
<b>Discontinuation of the suspected medication and introduction of other medication, n = 383</b>	178 (46.5)	152 (39.7)	30 (7.8)	1 (0.3)	22 (5.7)
<b>Discontinuation of the suspected medication, n = 186</b>	93 (50.0)	43 (23.1)	30 (16.1)	0 (0)	20 (10.8)
<b>Introduction of marker medication, n = 107</b>	27 (25.2)	24 (22.4)	46 (43.0)	0 (0)	10 (9.3)
<b>Switch to alternative medication, n = 75</b>	34 (45.3)	14 (18.7)	24 (32.0)	0 (0)	3 (4.0)
<b>Dose reduction of the suspected medication, n = 39</b>	13 (33.3)	11 (28.2)	13 (33.3)	0 (0)	2 (5.1)

## Conclusion

The most common intervention was discontinuation of the suspected medication followed by the introduction of other medication to treat the ADR. This resulted in a large proportion of resolved ADRs (46.5%), as did the discontinuation of the suspected medication alone (50%) and switch to alternative medication (45.3%). However, prescribing cascades were also introduced in a considerable number of reports, resolving the ADR in only 25.2% of reports. Using real-world pharmacovigilance data, this study offers a valuable insight into the treatment of ADRs, associated with ACE inhibitors and ARBs, in daily practice. Further research is needed to establish the most effective interventions for specific types of ADRs.

## References

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