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Burden of Hospitalization Related to Adult Herpes Zoster Infection in Portugal

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Conclusions

This study characterized **HZ hospitalizations in Portugal**, evidencing longer hospital stay for older patients and for patients who developed HZ complications.

The **annual economic burden** related to HZ hospitalizations exceeded **half a million euros**, translating into an average cost per patient of almost €3,000.

Background

Herpes zoster (HZ) is a viral disease characterized by a **painful or pruritic vesicular rash**, which is caused by the reactivation of the latent **varicella zoster virus**.[1–4]

In **Europe**, the **HZ incidence** is estimated to be between **2.0 and 4.6 cases per 1,000 person-years**, and sharply increases among patients aged ≥50 years.[5,6]

Immunocompromised (IC) patients are at **higher risk of HZ**, due to reduced T cell-mediated immunity.[3,4,6,7]

HZ and its complications cause an important clinical and economic burden in older adults and immunocompromised patients because of their impact on quality of life and associated costs, including hospitalization costs.

Aims

This study aimed to **characterize the inpatient burden associated with HZ in mainland Portugal, as well as the associated costs**.

Methods

We conducted a retrospective study based on secondary healthcare data collected from the 2017 Portuguese Hospital Morbidity Database.

This study characterized hospitalized adult patients (≥18 years) with a primary diagnosis of HZ and their inpatient episodes.

Each hospitalization episode cost was calculated considering the diagnosis-related group funding values for 2018 defined by order No. 254/2018.

Subgroup analyses were performed for patients aged ≥50 years and for IC patients aged ≥18 years.

Additional methods information available in supplementary material (QR-code).

Results

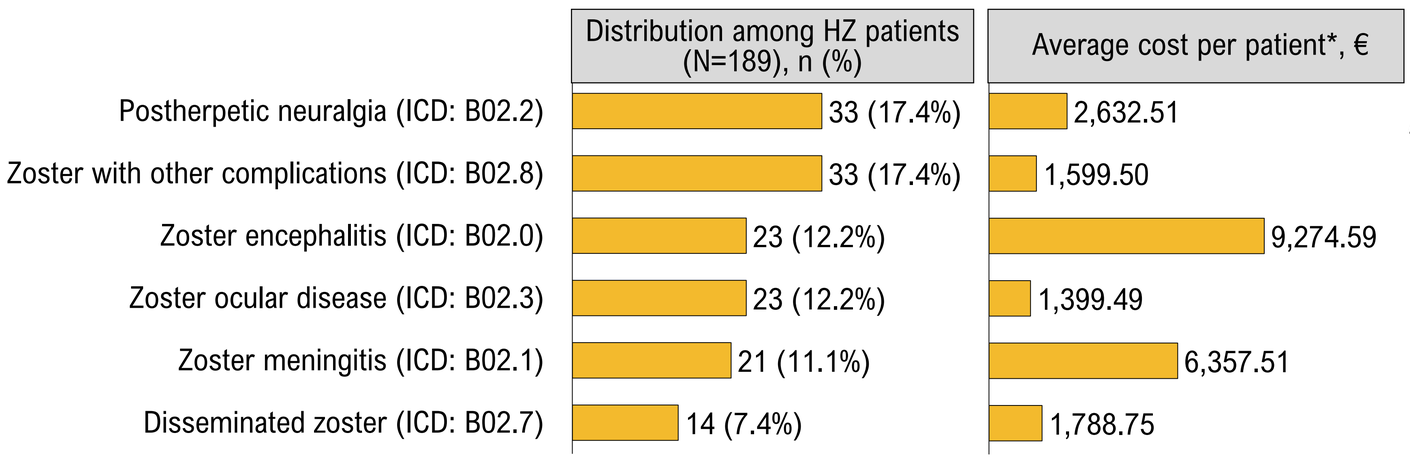
- There were 813 patients identified with at least one episode of HZ or HZ complication, out of 804,451 patients in the database (see HZ patient's flowchart, QR-code).
- 189 patients (23%) had an HZ episode as primary diagnosis (191 hospitalization episodes in total).

Demographic characteristics of HZ patients (see additional information available in supplementary material (QR-code))

	HZ with complications			HZ without complications		
	All patients*	≥50 yo	IC ≥18 yo	All patients*	≥50 yo	IC ≥18 yo
Number of patients, n	134	92	22	55	39	15
Men, n (%)	69 (51.5)	41 (44.6)	16 (72.7)	20 (36.4)	14 (35.9)	5 (33.3)
Mean age (SD), years	68.1 (18.5)	76.1 (11.1)	64.4 (15.6)	71.7 (14.3)	77.1 (10.1)	60.7 (12.2)
Age group, n (%)						
18-49 yo	24 (17.9)	-	4 (18.2)	4 (7.3)	-	3 (20.0)
50-59 yo	17 (12.7)	14 (15.2)	3 (13.6)	5 (9.1)	3 (7.7)	2 (13.3)
60-69 yo	14 (10.4)	8 (8.7)	6 (27.3)	11 (20.0)	5 (12.8)	6 (40.0)
70-79 yo	35 (26.1)	29 (31.5)	6 (27.3)	15 (27.3)	11 (28.2)	4 (26.7)
≥80 yo	44 (32.8)	41 (44.6)	3 (13.6)	20 (36.4)	20 (51.3)	0 (0.0)
Inpatient deaths for all-cause mortality, n (%)	8 (6.0)	5 (5.4)	2 (9.1)	2 (3.6)	2 (5.1)	0 (0.0)

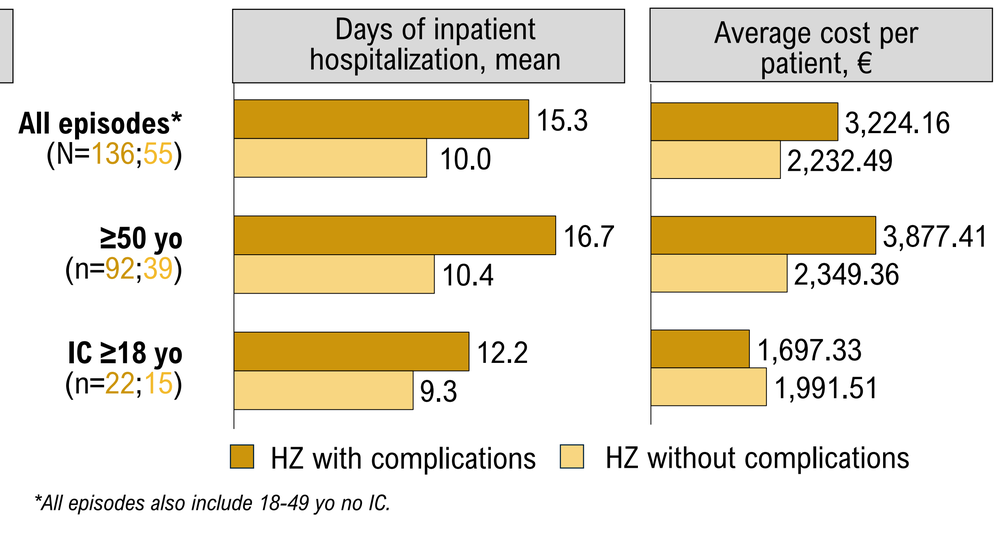
**All patients also include 18-49 yo no IC.*

Distribution of HZ complications among HZ patients and costs associated with hospitalization episodes per HZ complication



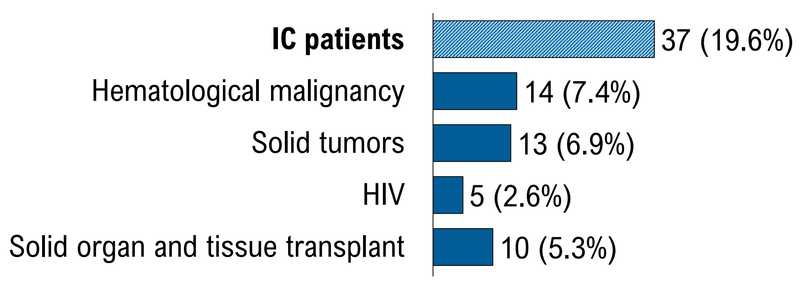
**Among patients ≥50 yo.*

Characteristics and costs associated with hospitalization episodes due to HZ with and without complications by subgroup



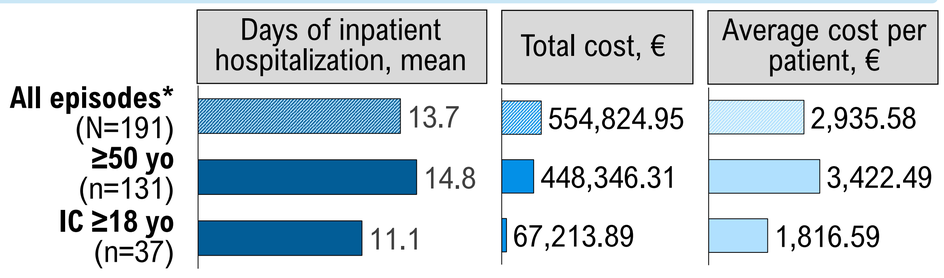
**All episodes also include 18-49 yo no IC.*

Distribution of IC conditions among HZ patients (N=189), n (%)



IC ≥18-year-old patients represented ~20% of patients at primary diagnosis

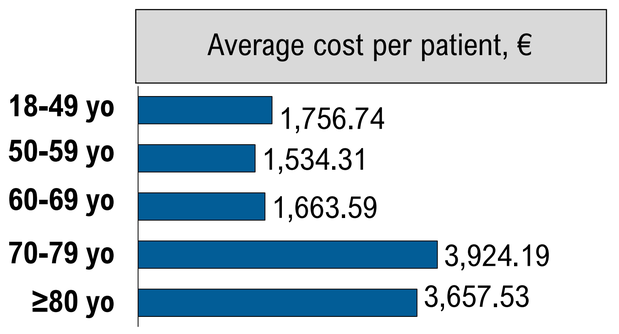
Characteristics and costs associated with hospitalization episodes due to HZ by subgroup



Hospitalization costs for the ≥50-year-old patients represented 81% of the total cost

**All episodes also include 18-49 yo no IC.*

Costs associated with hospitalization episodes due to HZ by age group



Abbreviations

HIV, human immunodeficiency virus; HZ, herpes zoster; IC, immunocompromised; ICD, International Classification of Diseases; n, number of patients/hospitalizations; N, total number of patients/hospitalizations; SD, standard deviation; yo, year-olds.

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Disclosures

Funding: GlaxoSmithKline Biologicals SA (GSK study identifier: VEO-000494).

Full **conflict of interest declaration** available in supplementary material (QR-code).

Digital poster
Supplemental data
Narrated summary
SCAN ME
Audio File

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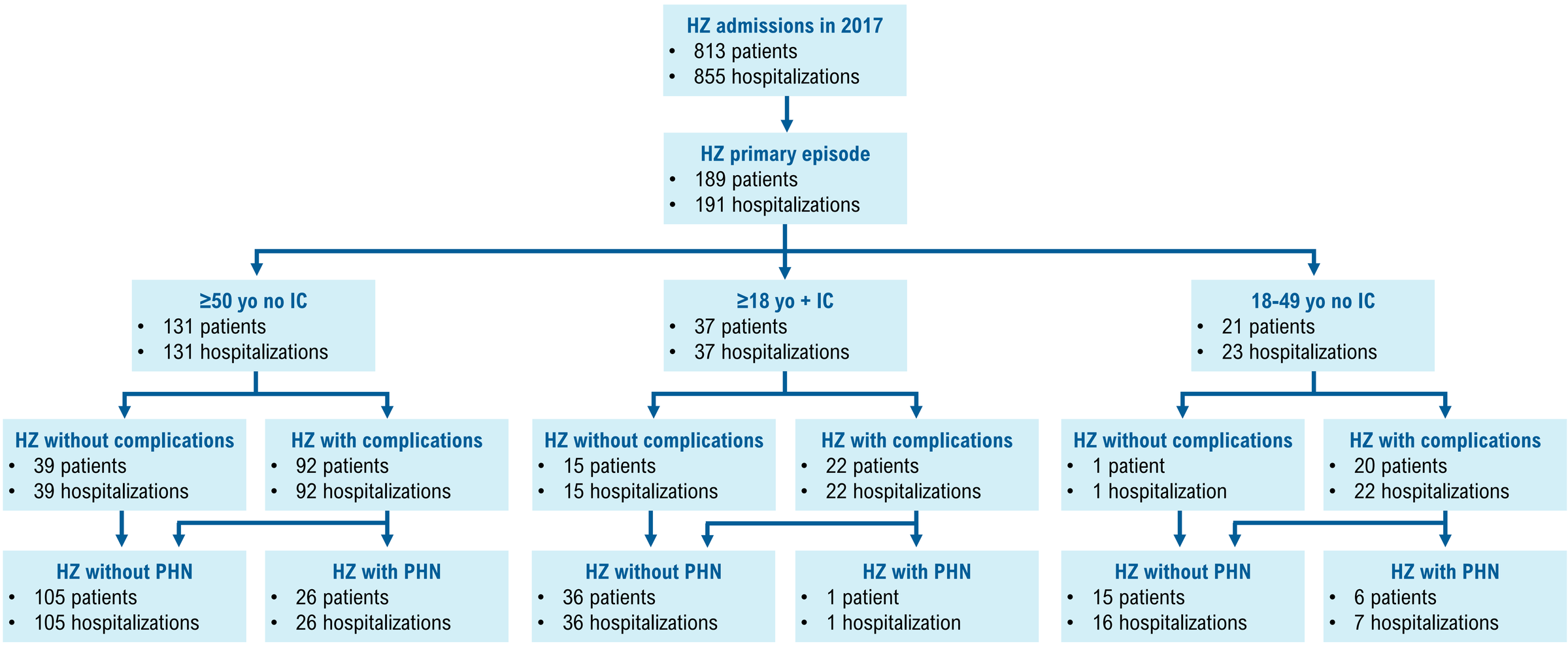
Supplementary material

Methods (supplemental information)

- 2017 Portuguese Hospital Morbidity Database includes diagnosis and procedures coded from Portuguese National Health System hospital records collected by medical coders trained in the use of ICD.
- Primary diagnosis refers to the diagnosis that, after the user's discharge and the complete study of the hospitalization episode, is considered (in terms of clinical coding) as the cause of patient's admission to the hospital.
- A patient is considered IC, if they have at least one of the following conditions: solid or hematological neoplasm, HIV, history of solid organ transplant, history of hematologic stem cell transplant, and immunodeficiency common variable.

HZ patient's flowchart



Total HZ without complications: 55 patients and 55 hospitalizations; total HZ with complications: 134 patients and 136 hospitalizations; total HZ without PHN: 156 patients and 157 hospitalizations; total HZ with PHN: 33 patients and 34 hospitalizations

Demographic characteristics of HZ patients

	All primary diagnosis	≥50 yo	IC ≥18 yo	HZ with complications			HZ without complications		
				All patients	≥50 yo	IC ≥18 yo	All patients	≥50 yo	IC ≥18 yo
Number of patients, n	189	131	37	134	92	22	55	39	15
Men, n (%)	89 (47.1)	55 (42.0)	21 (56.8)	69 (51.5)	41 (44.6)	16 (72.7)	20 (36.4)	14 (35.9)	5 (33.3)
Mean age (SD), years	69.1 (17.5)	76.4 (10.8)	62.9 (14.3)	68.1 (18.5)	76.1 (11.1)	64.4 (15.6)	71.7 (14.3)	77.1 (10.1)	60.7 (12.2)
Minimum age; maximum age, years	21; 97	53; 97	23; 92	21; 97	53; 97	23; 92	25; 93	55; 93	37; 77
Median age, years	74	78	65	74	77.5	65.5	76	80	64
Age group, n (%)									
18-49 yo	28 (14.8)	-	7 (18.9)	24 (17.9)	-	4 (18.2)	4 (7.3)	-	3 (20.0)
50-59 yo	22 (11.6)	17 (13.0)	5 (13.5)	17 (12.7)	14 (15.2)	3 (13.6)	5 (9.1)	3 (7.7)	2 (13.3)
60-69 yo	25 (13.2)	13 (9.9)	12 (32.4)	14 (10.4)	8 (8.7)	6 (27.3)	11 (20.0)	5 (12.8)	6 (40.0)
70-79 yo	50 (26.5)	40 (30.5)	10 (27.0)	35 (26.1)	29 (31.5)	6 (27.3)	15 (27.3)	11 (28.2)	4 (26.7)
≥80 yo	64 (33.9)	61 (46.6)	3 (8.1)	44 (32.8)	41 (44.6)	3 (13.6)	20 (36.4)	20 (51.3)	0 (0.0)
Charlson Comorbidity Index, n (%)									
0	78 (41.3)	59 (45.0)	1 (2.7)	64 (47.8)	46 (50.0)	1 (4.5)	14 (25.5)	13 (33.3)	0 (0.0)
1-2	70 (37.0)	52 (39.7)	15 (40.5)	45 (33.6)	35 (38.0)	7 (31.8)	25 (45.5)	17 (43.6)	8 (53.3)
≥3	41 (21.7)	20 (15.3)	21 (56.8)	25 (18.7)	11 (12.0)	14 (63.6)	16 (29.1)	9 (23.1)	7 (46.7)
Inpatient deaths for all-cause mortality, n (%)	10 (5.3)	7 (5.3)	2 (5.4)	8 (6.0)	5 (5.4)	2 (9.1)	2 (3.6)	2 (5.1)	0 (0.0)

Abbreviations

HIV, human immunodeficiency virus; HZ, herpes zoster; IC, immunocompromised; ICD, International Classification of Diseases; n, number of patients; PHN, postherpetic neuralgia; SD, standard deviation; yo, year-olds.

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Supplementary material

Additional cost results

Costs associated with hospitalization episodes due to HZ with and without complications by age group

	HZ with complications		HZ without complications	
	Total cost, €	Average cost per patient (SD), €	Total cost, €	Average cost per patient (SD), €
18-49 yo	43,438.76	1,809.95 (1,015.57)	5,749.97	1,437.49 (425.24)
50-59 yo	22,062.90	1,297.82 (553.02)	11,691.89	2,338.38 (1,087.54)
60-69 yo	15,792.31	1,128.02 (373.14)	25,797.44	2,345.22 (2,085.91)
70-79 yo	163,548.28	4,672.81 (10,444.07)	32,661.27	2,177.42 (907.56)
≥80 yo	187,195.51	4,254.44 (6,702.13)	46,886.62	2,344.33 (1,762.64)

There was a significant increase in the average cost per patient aged ≥70 years who develop at least one HZ complication

Characteristics and costs associated with hospitalization episodes per HZ complications in the ≥50-year-old patients

	Zoster encephalitis	Zoster meningitis	Postherpetic Neuralgia	Zoster ocular disease	Disseminated zoster	Zoster with other complications
Number of patients, n	19	8	26	20	8	21
Days of inpatient hospitalization, mean (SD)	31.3 (40.2)	29.3 (43.0)	11.8 (16.9)	9.4 (7.0)	5.9 (4.4)	13.6 (13.6)
Total cost, €	176,217.20	50,860.09	68,445.29	27,989.88	14,310.01	33,589.40
Average cost per patient (SD), €	9,274.59 (13,017.07)	6,357.51 (12,138.53)	2,632.51 (5,474.93)	1,399.49 (673.59)	1,788.75 (1,638.18)	1,599.50 (2,072.30)

Among patients with HZ complications, costs were higher in patients who developed zoster encephalitis, zoster meningitis and postherpetic neuralgia

Authors information and disclosures

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Conflicts of interest

FS, EZ, and RC are employees of GSK. OC was an employee of GSK at the time of study conduct and abstract development. JC, LSM, CB, DF, and MB report financial support from GSK for the present work. JC, LSM, and MB also report funding to their institution (Centre for Evidence Based Medicine at Faculty of Medicine, University of Lisbon) from over 20 different pharmaceutical companies – including AstraZeneca Produtos Farmacêuticos, Lda., Bayer Portugal, Lda., Boehringer Ingelheim Portugal, Lda., Daiichi Sankyo Portugal, Lda., Sanofi Produtos Farmacêuticos, Lda., not related to the submitted work. The authors declare no other financial and non-financial relationships and activities.

Commercial disclosure

GlaxoSmithKline Biologicals SA funded this study (GSK study identifier: VEO-000494) and was involved in all stages of study conduct, including analysis of the data. GlaxoSmithKline Biologicals SA also took in charge all costs associated with the development and publication of this abstract and poster presentation. Business & Decision Life Sciences platform provided editorial assistance and publications coordination, on behalf of GSK. Jonathan Ghesquière (Business & Decision Life Sciences, on behalf of GSK) provided medical writing support.

Abbreviations

HZ, herpes zoster; ; n, number of patients; SD, standard deviation; yo, year-olds.

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