



Folkhälsomyndigheten
PUBLIC HEALTH AGENCY OF SWEDEN

Zoster vaccination in the Nordic Countries

- pros and cons

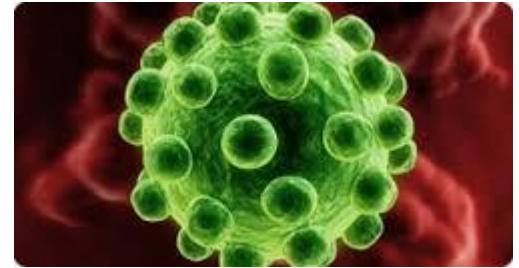
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MD MPH PhD-student



Herpes zoster

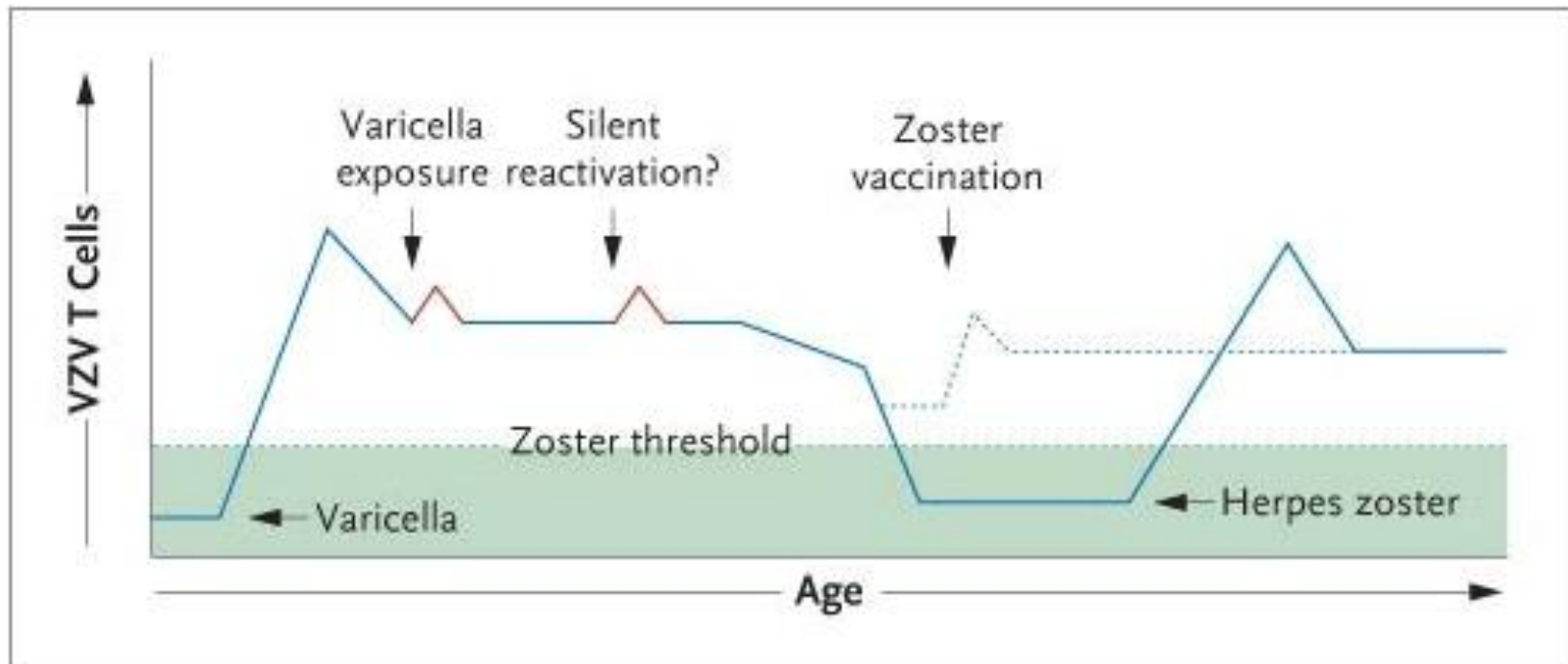
- Varicella zoster virus latent in dorsal root ganglia of nervous system
- Symptomatic reactivation: Pain and vesicular rash within one dermatoma
- Complications:
 - Postherpetic neuralgia (PHN)
 - Bacterial secondary infections
 - Meningitis/encephalitis
 - Vasculitis
- Life time risk of 25-30%



Shingles

The Nature of Herpes Zoster: A Long-term Study and a New Hypothesis

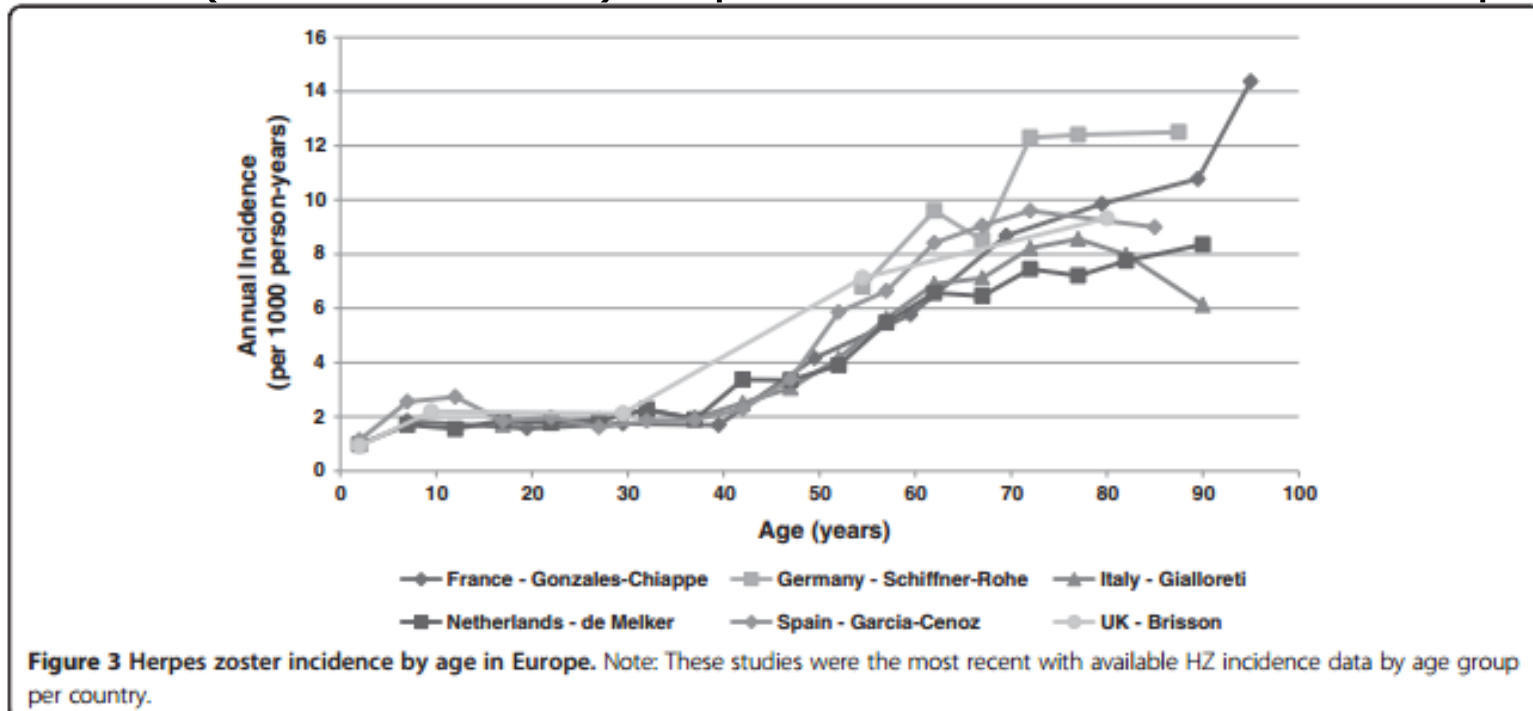
by R Edgar Hope-Simpson MRCS
(Epidemiological Research Unit, Cirencester)



Kimberlin et al. NEJM. 2007.

Incidence over Europe

Similar (or not so similar) herpes zoster incidence across Europe



Pinchinat et al. BMC Inf D. 2013.

Differences in force of infection and boosting
or differences in surveillance systems

Zoster surveillance

	Notifiable		
	Chickenpox	Shingles	Meningo-encephalitis
Iceland			
Denmark			
Norway			
Finland			
Sweden			

HZ incidence in Finland

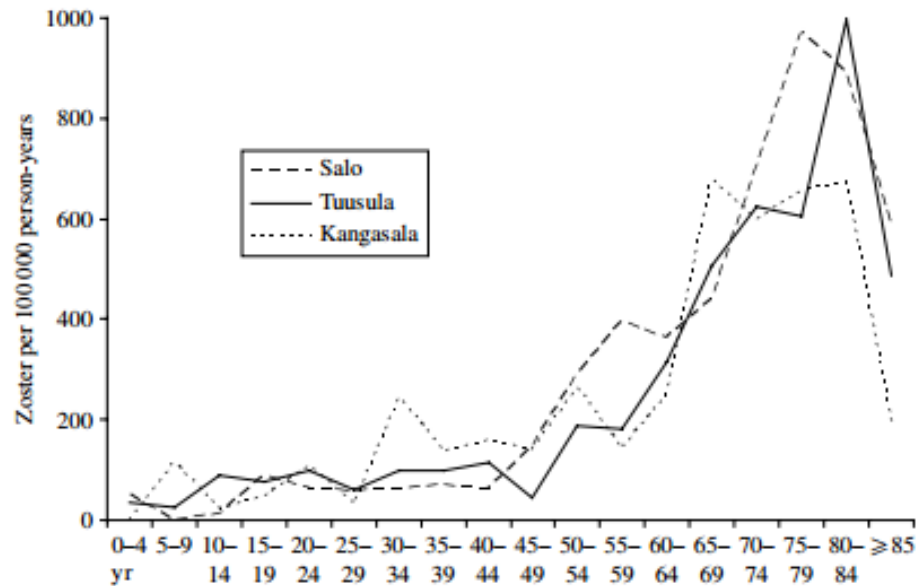


Fig. 2. Case-notifications of zoster by age group. The age-specific incidence of zoster per 100 000 person-years was calculated from the outpatient visits recorded at three healthcare centres and the respective age-specific base populations in the catchment areas. The decrease in the incidence in the ≥ 85 years age group is probably an artefact since a large proportion of this age group is, for example, in nursing homes and they do not visit outpatient clinics in healthcare centres.

Karhunen et al. *Epid. Inf.* 2010.

HZ incidence in Sweden – age and gender

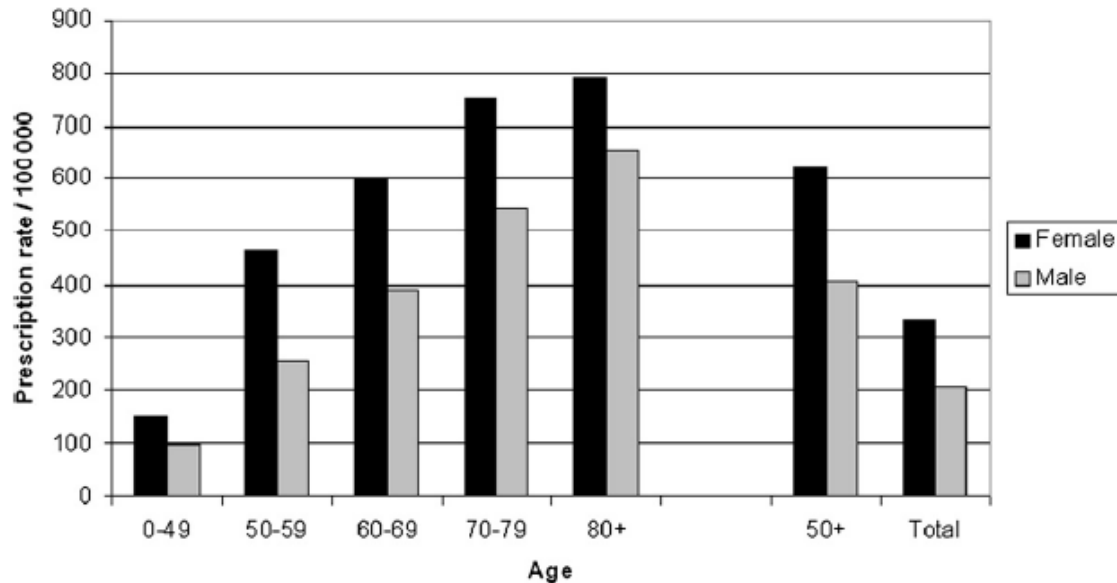


Figure 1 Age-stratified number of male and female patients in Sweden receiving antiviral prescriptions in the dosage used in herpes zoster treatment during 2006-2010.

Also, increasing incidence over the years.

Studahl et al. BMC Inf D. 2013.

Societal costs for herpes zoster

- Direct and indirect costs

Including: hospitalizations, specialist and primary care consultations, treatment, sick leave, diagnostics.

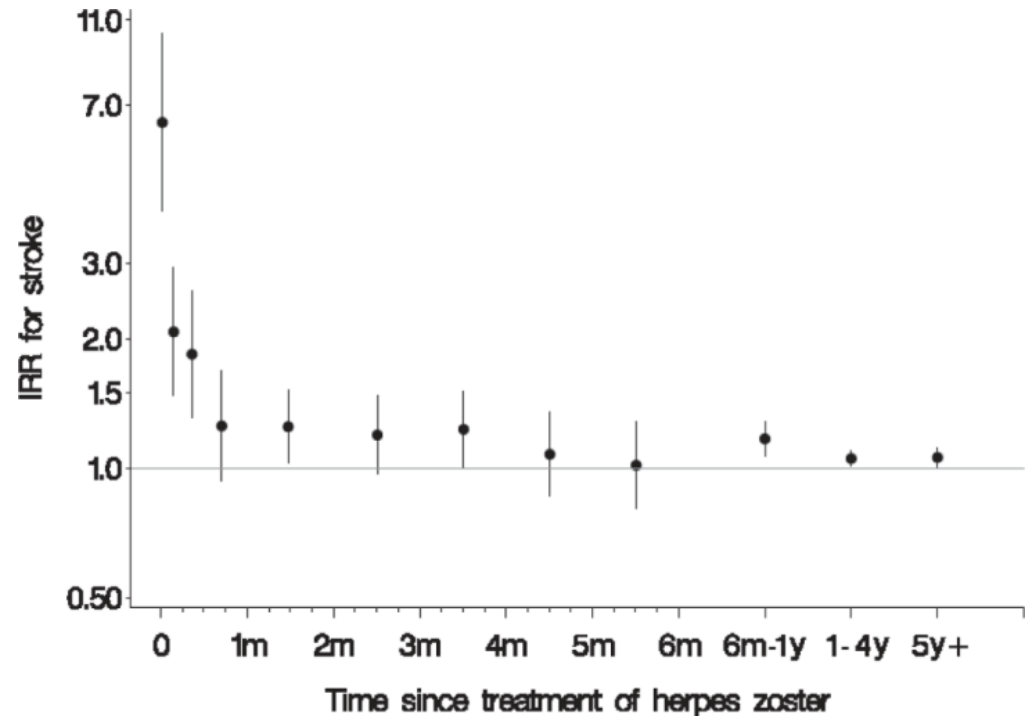
- Total cost in Sweden: 227 MSEK (€ 26.2M) all ages
- Cost per case in people ≥ 50 years: 8200 SEK (€ 885)

Nilsson et al. BMC Inf D. 2015

Stroke as VZV-complication

- Elevated risk of stroke after herpes zoster in Denmark

Sreenivasan et al. PLOS One. 2013.



- In Sweden correlation only seen in ≤ 40 year-olds.

Sundström et al. BMC Inf D. 2015.

Live attenuated vaccine

Zostavax® - OKA-strain 19400 PFU, Chickpox vaccine >1350 PFU

Shingles Preventions Study (SPS)

	50-59 yrs	60-69 yrs	≥70 yrs	All
Herpes zoster Burden of illness		65.5% 51.5-75.5%	55.4% 39.9-66.9%	61.1% 51.1-69.1%
Herpes zoster	69.8% 54.1-80.6%	63.9% 55.5-70.9%	37.6% 25.0-48.1%	51.3% 44.2-57.6%
Postherpetic neuralgia		65.7% 20.4-86.7%	66.8% 43.3-81.3%	66.5% 47.5-79.2%

ZEST Study

Schmader et al. CID. 2012.

Oxman et al. NEJM. 2005.

Number needed to vaccinate

Number Needed to Vaccinate to Prevent Herpes Zoster-related Outcomes

	Base Case*		Age at Vaccination (years)†			
	Base	(90% CI)	60	70	75	80
Case of HZ‡	11	(10 to 13)	9	16	27	55
HZ consultations	5	(* to 8)	4	7	12	25
Hospitalization	380	(135 to *)	374	393	410	428
Inpatient day	33	(10 to *)	33	33	32	32
PHN‡ Case	43	(33 to 53)	41	45	55	67
Death	23,319	(15,312 to 33,138)	24,601	23,014	21,499	28,276
LY‡ lost	3,762	(1650 to 4629)	4187	3905	3485	5952
QALY‡ lost	165	(105 to 197)	154	180	225	289

Assuming life-long protection

Brisson. Can J Public Health. 2008.

Duration of protection

- Short term prevention study, **STPS**
 - 12 of 22 original sites
 - Follow up: to year 7 after vaccination
 - Decreasing efficacy with time since vaccination
 - VE against HZ BOI, 50.1%

Schmader et al. CID. 2012.

- Long term prevention study, **LTPS**
 - Follow up: year 7 to 11 after vaccination
 - No placebo group. Placebo group was modelled.
 - VE against HZ BOI, 37.3%
 - year 11: 7.9% (-49-42%)

Morrison et al. CID. 2015.

TLV

TANDVÅRDS- OCH

LÄKEMEDELSFÖRMÅNSVERKET

Zostavax utesluts ur högkostnadsskyddet

Current indication and contraindications

Indication:

- ≥ 50 years

Contraindications:

- Hypersensitivity/allergic reaction to any of the components
- Primary or acquired immunodeficiency
- Immunosuppressive therapy incl. high-dose corticosteroids
- Active, untreated TB
- Pregnancy

European Medicines Agency, EMA

Coming subunit vaccine

- VZV glycoprotein E + AS01_B adjuvance
- Immunosuppression not contraindication
- Acceptable safety profile and robust immune response
- Phase 3 study
 - Overall vaccine efficacy after 2 doses: 97.2% (93.7-99.0%)
 - No significant difference in VE between the age groups
 - So far: 3.2 year follow-up

Lal et al. N Engl J Med. 2015.

Europe

Vaccine Schedule

Recommended immunisations for herpes zoster

[Back to search](#)
[Export as spreadsheet](#)

General recommendation
 Recommendation for specific groups only
 Catch-up (e.g. if previous doses missed)
 Vaccination recommended but not funded by the National Health system

	Years				
	50-64	65-74	75-79	80+	
Austria	ZOS				
Belgium					
Bulgaria					
Croatia					
Cyprus					
Czech Republic	ZOS ¹				
Denmark					
Estonia					
Finland					
France	ZOS ²		ZOS ³		
Germany					
Greece					
Hungary					
Iceland					
Ireland					
Italy					
Latvia					
Liechtenstein					
Lithuania					
Luxembourg					
Malta					
Netherlands					
Norway					
Poland					
Portugal					
Romania					
Slovakia					
Slovenia					
Spain					
Sweden					
United Kingdom	ZOS ⁴				

Footnotes

United Kingdom

- Zoster vaccination since September 2013
- Routine programme: 70 year-olds
- Catch-up: 78 year olds
- As of yet no effectiveness studies, only monitoring of uptake

Public Health England.

Shingles vaccine coverage report, 2015.



World Health
Organization

Organisation mondiale de la Santé

Weekly epidemiological record Relevé épidémiologique hebdomadaire

20 JUNE 2014, 89th YEAR / 20 JUIN 2014, 89^e ANNÉE

No. 25, 2014, 89, 265–288

<http://www.who.int/wer>

Due to the unknown burden of HZ in most countries and insufficient data concerning the use of this relatively new vaccine, WHO does not offer any recommendation concerning the routine use of HZ vaccine at this time.

Currently, data on the **duration of protection** provided by HZ vaccination are insufficient and there is initial evidence of waning of protection over time, as well as **uncertainty regarding the optimal age for vaccination** and the potential role of a booster dose. However, countries, especially those with an aging population and demographic shift towards older ages, may decide to introduce routine HZ vaccination if they have an important burden of disease and consider the programme.



Zoster surveillance and vaccine recommendations

	Notifiable			Vaccination
	Chickenpox	Shingles	Meningo-encephalitis	Routine programme
Iceland				
Denmark				
Norway				
Finland				
Sweden				

Follow!

- Results from routine vaccination programmes in the UK and other countries
- Data on duration of the adjuvanted subunit vaccine