

Research Article

Variation in Extemporaneous Glucocorticoid Formulations and Doses for Asthma-like Symptoms

Schmidt M^{1*}, Haslund-Krog S^{1*}, Kryger Jensen A², Jorgensen IM³, Holst H¹

¹Department of Clinical Pharmacology, Bispebjerg University Hospital, Copenhagen, Denmark

²Biostatistics, Institute of Public Health, University of Copenhagen, Denmark

³Department of Paediatric and Adolescence Medicine, Nordsjællands Hospital, Hilleroed, Denmark

*Authors who contributed equally to the paper

***Corresponding Author:** Sissel Haslund-Krog, Department of Clinical Pharmacology, Bispebjerg University Hospital, Copenhagen, Denmark, Tel: 0045 38635806; E-mail: sissel.sundell.haslund-krog.01@regionh.dk

Maria Schmidt, Department of Clinical Pharmacology, Bispebjerg University Hospital, Copenhagen, Denmark

Overview of licensed prednisolone oral solutions in comparable EU countries, including recommended paediatric dose.

Country	Prednisolone oral solutions	Paediatric dose	Reference
UK	Concordia prednisolone 10 mg/ml	<2 yrs. 10 mg for 3 days 2-5 yrs. 20 mg >5 yrs. 30-40 mg (for asthma)	https://www.medicines.org.uk/emc/product/3370
UK	Dompe prednisolone 1 mg/ml	Same as above	https://www.medicines.org.uk/emc/product/1753
Germany	Okrido 6 mg/ml	<ul style="list-style-type: none"> 1 to 6-year olds-one quarter of the adult dose 7 to 11-year olds-one-half of the adult dose 12 to 17-year olds-three quarters of the adult dose (no dose for adult asthma is given)	https://www.geneesmiddeleninformatiebank.nl/ords/f?p=111:3:0:SEARCH:NO::P0_DOMAIN,P0_LANG,P3_RVG1:H,NL,112479
France	Solupred 1 mg/ml	Acute treatment: 0.5 to 2 mg/kg/day or 0.5 to 2 ml/kg/day (for asthma)	http://base-donnees-publique.medicaments.gouv.fr/affichageDoc.php?specid=68967656&typedoc=R
Netherlands	Okrido 6 mg/ml	<ul style="list-style-type: none"> 1 to 6-year olds-one quarter of the adult dose 7 to 11-year olds-one-half of the adult 	https://db.cbg-meb.nl/Bijsluiters/h112479.pdf

		dose • 12 to 17-year olds-three quarters of the adult dose (no dose for adult asthma is given)	
Italy	Sintredius 1 mg/ml	<2 yrs. 10 mg for 3 days 2-5 yrs. 20 mg >5 yrs. 30-40 mg (for asthma)	https://www.codifa.it/farmaci/s/sintredius-prednisolone-sodio-fosfato-corticosteroidi

Table S1: Licensed prednisolone oral solutions.

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Formulation	Strength	Monograph
Skanderborg prednisolone, raspberry flavour	5 mg/ml	500 mg prednisolone 1 g carmellosesodium 500 mg benzalkon dil 10 % Ph. Nord 63 100 mg raspberry flavour water until 100,4 g
Skanderborg prednisolone, raspberry flavour	20 mg/ml	2 g prednisolone 1 g carmellosesodium 500 mg benzalkon dil 10 % Ph. Nord 63 100 mg raspberry flavour water until 100,4 g
Skanderborg prednisolone, liquorice flavour	20 mg/ml	2 g prednisolone 1 g carmellosesodium 500 mg benzalkon dil 10 % Ph. Nord 63 2,4 g liquorice flavour 65 % water until 100,4 g
Glostrup prednisolone, liquorice flavour	20 mg/ml	500 mg caramellosesodium 500 mg dil. benzalkonium 10% 2,7 g prednisolone sodiumphosphate 12 g dil. liquorice Ph Nord water until 100 ml
Unspecified prednisolone	5 mg/ml	Information not available
Unspecified prednisolone	20 mg/ml	Information not available
Prednisolone suppositories	10 mg	10 mg prednisolone Eur Hard fat Eur until 1 suppository
Prednisolone tablets Glostrup	10 mg	Information not available

Table S2: Excipients and active ingredients in the extemporaneous formulations used in Hospital A, B and C.

Hospital-Calendar year		A-2013	A-2014	A-2015	B-2013	B-2014	B-2015	C-2013	C-2014	C-2015
Ventoline (Salbutamol or Ventoline® 1 mg/ml or Ventoline® 5 mg/ml)	N (%)	47 (100)	92 (97)	90 (99)	33 (77)	50 (89)	32 (94)	15 (100)	24 (96)	26 (96)
	Mean dose±SD	0.15±0.01	0.14±0.03	0.15±0.01	0.11±0.06	0.12±0.05	0.11±0.06	0.15±0.01	0.14±0.03	0.15±0.02
	Number of doses, median[range]	6[1;10]	4[1;10]	4[1;1]	4[1;17]	5[1;12]	6[1;18]	7[1;11]	7[1;13]	8[1;13]
Salbutamol (Airomir®, Airsalb or Ventoline® 0.1 mg/dose)	N (%)	6 (13)	8 (8)	9 (10)	3 (7)	3 (5)	4 (12)	0	1 (4)	3 (11)
	Mean dose±SD	0.18±0.04	0.14±0.05	0.18±0.04	0.2±0.17	0.2±0.17	0.13±0.04	0	0.1±0	0.1±0
	Number of doses, median[range]	1[1;3]	2[1;4]	1[1;3]	3[1;5]	1[1;2]	2[1;4]	0	2[2;2]	1[1;2]
Fluticasone (Flixotide® 50 mcg/dose)	N (%)	0	2 (2)	0	0	0	0	0	1 (4)	1 (4)
	Mean dose±SD	0	175±106, 1	0	0	0	0	0	100±0	100±0
	Number of doses, median[range]	0	2[1;2]	0	0	0	0	0	2[2;2]	1[1;1]
Fluticasone (Flixotide® 125 mcg/dose)	N (%)	22 (47)	23 (24)	33 (36)	4 (9)	1 (2)	0	3 (20)	4 (16)	8 (30)
	Mean dose±SD	221±53	222±52	242±30	125±0	125±0	0	125±0	125±0	140±44
	Number of doses, median[range]	1[1;4]	1[1;3]	1[1;3]	1[1;1]	1[1;1]	0	1[1;1]	2[1;2]	1[1;2]
Montelukast (Singulair® or Montelukast granules or chewable tablets)	N (%)	1 (2)	1 (1)	4 (4)	0	1 (2)	0	1 (7)	2 (8)	2 (7)
	Mean dose±SD	4±0	4±0	4±0	0	4±0	0	4±0	4±0	4±0
	Number of doses, median[range]	1[1;1]	1[1;1]	1[1;1]	0	1[1;1]	0	1[1;1]	1[1;1]	1[1;1]
Ipratropium bromide (Atrovent® or Ipratropium bromide 0.25 mg/ml)	N (%)	3 (6)	10 (11)	11 (12)	17 (40)	32 (57)	0	0	0	2 (7)
	Mean dose±SD	0.17±0.07	0.23±0.11	0.22±0.06	0.24±0.04	0.24±0.03	0	0	0	0.25±0
	Number of doses, median[range]	1[1;2]	1[1;3]	1[1;4]	1[1;4]	2[1;4]	0	0	0	2[2;2]
Phenoxymethylpenicillin (Primcillin®)	N (%)	3 (6)	3 (3)	1 (1)	0	1 (2)	3 (9)	0	2 (8)	2 (7)
Amoxicillin (Imacillin®)	N (%)	5 (11)	12 (13)	18 (20)	1 (2)	9 (16)	2 (6)	0	2 (8)	3 (11)
Amoxicillin and enzyme inhibitor	N (%)	0	2 (2)	0	1 (2)	0	0	0	1 (4)	1 (4)
Benzylpenicillin	N (%)	0	0	1 (1)	0	0	0	0	0	0

Azithromycin (Zitromax®) or Clarithromycin (Klacid®)	N (%)	1 (2)	0	2 (2)	2 (5)	0	0	0	0	1 (4)
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Table S3: Co-medication on the day of inclusion.

Two patients received beclomethasone (Aerobec® 50 mcg/dose) and three patients received budesonide (Spirocort®) all in Hospital A in 2014 or 2015.

Citation: Schmidt M, Haslund-Krog S, Kryger Jensen A, Jorgensen IM, Holst H. Variation in Extemporaneous Glucocorticoid Formulations and Doses for Asthma-like Symptoms. *Journal of Pediatrics, Perinatology and Child Health* 3 (2019): 104-114.



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