EPOS2020 from bench to bedside Management of patients, what is new

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EPOS 2020:
Management of patients, what is new

- Integrated care pathways in ARS
- New classification of CRS, primary versus secondary CRS: consequences for treatment
- Evidence based treatment
- New integrated care pathways in CRS

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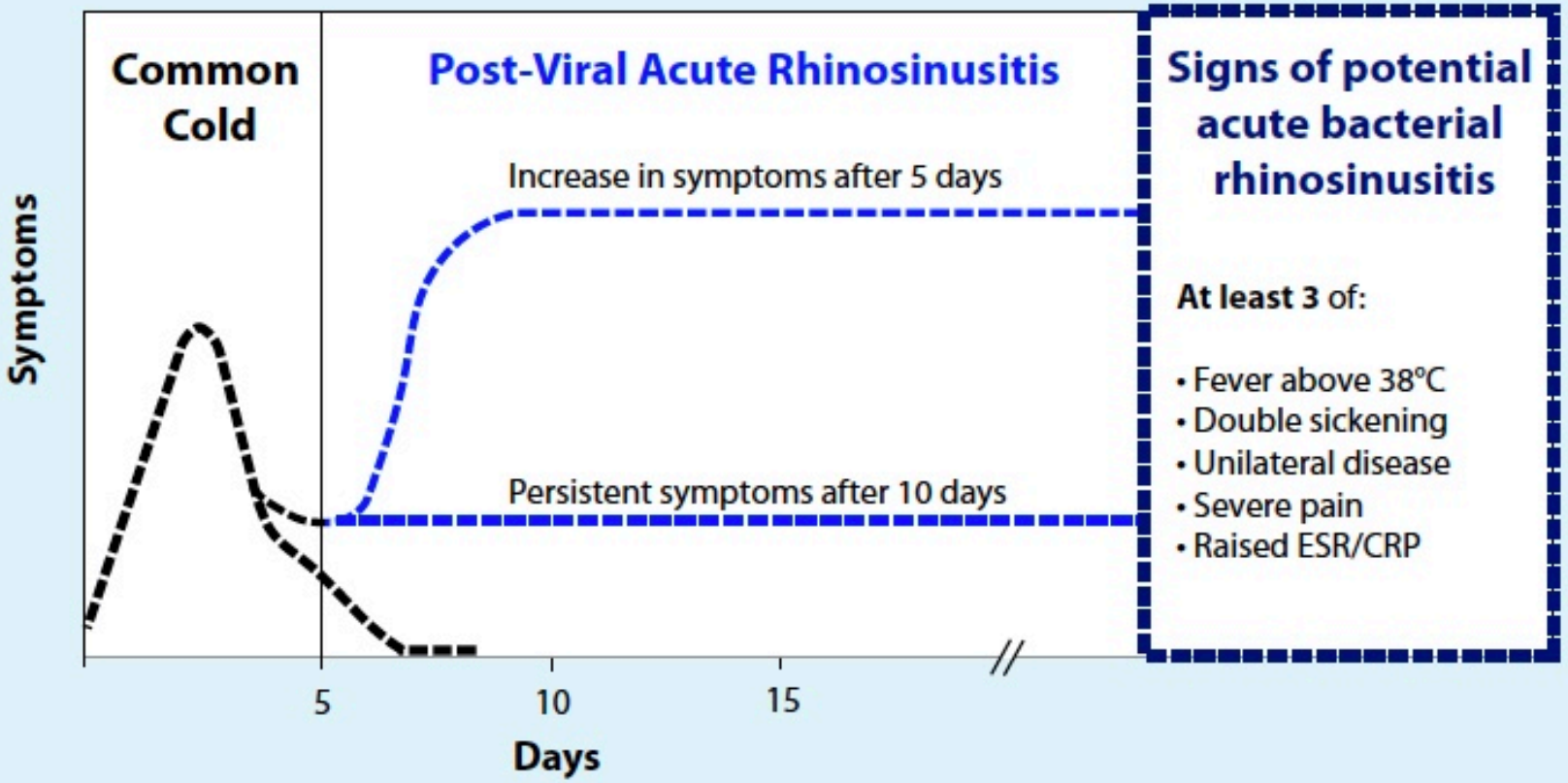
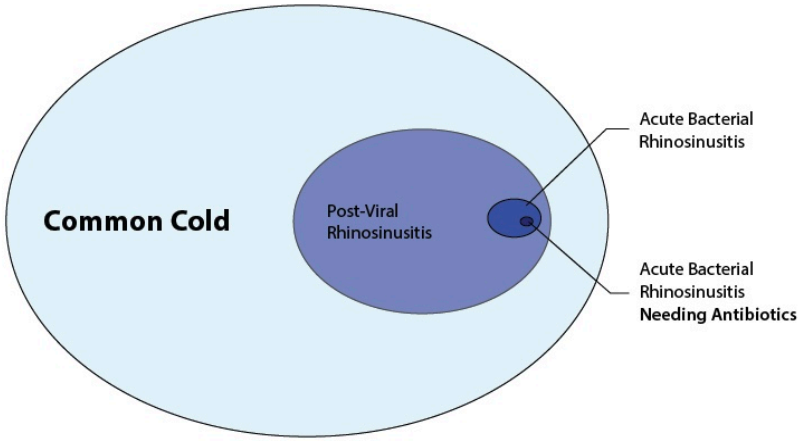
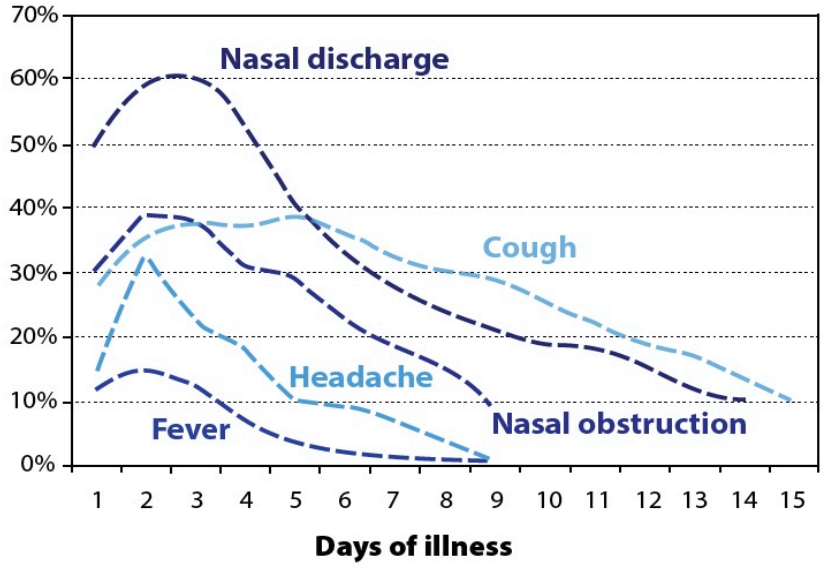
Definition of Acute Rhinosinusitis

Increase in symptoms after 5 days, or **persistent symptoms after 10 days** with less than 12 weeks duration







...ntibiotics in patients with ABRS

Figure 4.6.1. Forest plot of the effect of antibiotic versus placebo for cure at completion of intervention (day 6-10) in adult patients with acute bacterial rhinosinusitis.

Study or Subgroup	Antibiotics Events	Antibiotics Total	Placebo Events	Placebo Total	Weight	Risk Ratio M-H, Fixed, 95% CI
Hadley 2010	57	73	30	45	43.4%	1.17 [0.92, 1.49]
Lindbaek 1996 (Amoxi)	39	44	25	44	29.2%	1.56 [1.18, 2.06]
Lindbaek 1996 (Penicillin)	32	39	25	44	27.4%	1.44 [1.07, 1.94]
Total (95% CI)		**156**		**133**	**100.0%**	**1.36 [1.16, 1.59]**
Total events	128		80			

Heterogeneity: $Chi^2 = 2.58$, $df = 2$ ($P = 0.27$); $I^2 = 23\%$
Test for overall effect: $Z = 3.89$ ($P < 0.0001$)

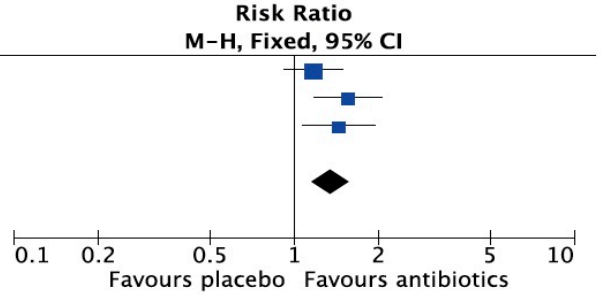
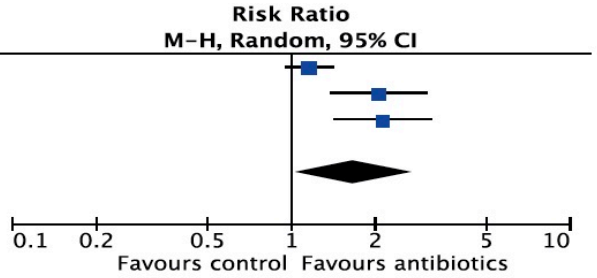


Figure 4.6.2. Forest plot of the effect of antibiotic versus placebo to assess improvement at day 3 of treatment of adult patients with acute bacterial rhinosinusitis

Study or Subgroup	Antibiotics Events	Antibiotics Total	Placebo Events	Placebo Total	Weight	Risk Ratio M-H, Random, 95% CI	Year
Hadley 2010	62	73	33	45	37.4%	1.16 [0.95, 1.42]	2010
Lindbaek 1996 (Amoxi)	35	44	17	44	31.3%	2.06 [1.38, 3.08]	1996
Lindbaek 1996 (Penicillin)	32	39	17	44	31.3%	2.12 [1.42, 3.17]	1996
Total (95% CI)		**156**		**133**	**100.0%**	**1.68 [1.04, 2.71]**	
Total events	129		67				

Heterogeneity: $Tau^2 = 0.15$; $Chi^2 = 12.84$, $df = 2$ ($P = 0.002$); $I^2 = 84\%$
Test for overall effect: $Z = 2.10$ ($P = 0.04$)



CI, confidence interval; M-H, Mantel Haenszel.

Antibiotics in patients with postviral ARS

Figure 4.6.7. Forest plot of the effect of antibiotic versus placebo for cure at completion of the intervention (days 10-14) in adult patients with acute post-viral acute rhinosinusitis.

Garbutt 2012	63	81	57	71	18.8%	0.97 [0.82, 1.14]
Haye 2000	80	86	72	82	22.9%	1.06 [0.96, 1.17]
Lindbaek 1998 (Amoxy)	17	22	14	21	4.4%	1.16 [0.79, 1.69]
Lindbaek 1998 (pen V)	15	20	14	21	4.2%	1.13 [0.76, 1.67]
Merenstein 2005	32	67	25	68	7.7%	1.30 [0.87, 1.94]
Stalman 1997	56	94	55	92	17.2%	1.00 [0.79, 1.26]
Van Buchem 1997	87	105	78	101	24.7%	1.07 [0.94, 1.23]
Total (95% CI)		**475**		**456**	**100.0%**	**1.06 [0.98, 1.14]**
Total events	350		315			

Heterogeneity: $Chi^2 = 2.75$, $df = 6$ ($P = 0.84$); $I^2 = 0\%$

Test for overall effect: $Z = 1.50$ ($P = 0.13$)

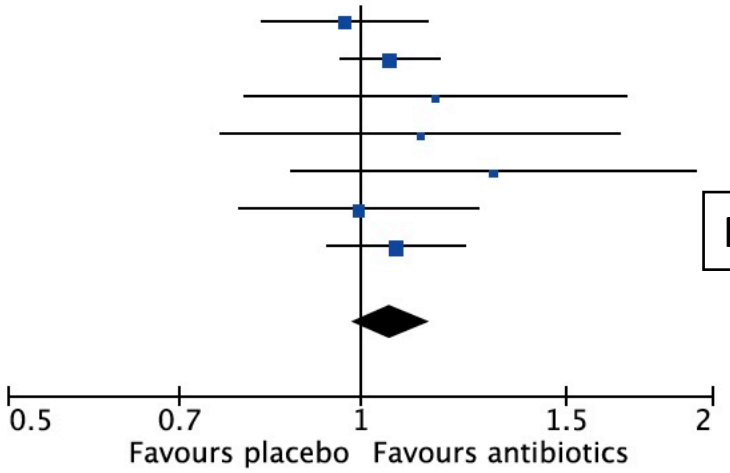


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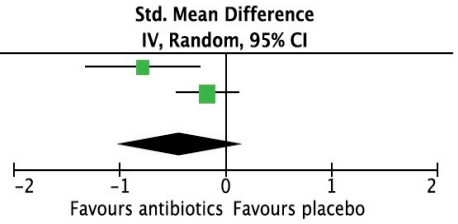
Figure 4.6.8. Forest plot of the effect of antibiotic versus placebo to assess the difference (mean difference) in the number of days to achieve cure after treatment in adult patients with acute post-viral acute rhinosinusitis

	Antibiotics			Placebo				Std. Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% CI
Merenstein 2005	8.1	3.6	32	10.7	2.8	25	42.7%	-0.78 [-1.33, -0.24]
Stalman 1997	4	5.7	85	5	5.7	91	57.3%	-0.17 [-0.47, 0.12]
Total (95% CI)			**117**			**116**	**100.0%**	**-0.43 [-1.02, 0.16]**

Heterogeneity: $Tau^2 = 0.14$; $Chi^2 = 3.71$, $df = 1$ ($P = 0.05$); $I^2 = 73\%$

Test for overall effect: $Z = 1.44$ ($P = 0.15$)



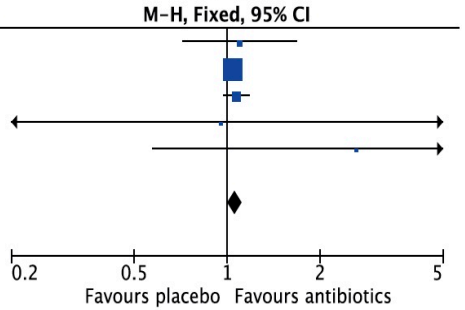
CI, confidence interval; M-H, Mantel Haenszel.

Figure 4.6.9. Forest plot of the effect of antibiotic versus placebo to assess improvement at day 3 of treatment of adult patients with acute post-viral acute rhinosinusitis.

	Antibiotics		Placebo			Risk Ratio
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Fixed, 95% CI
Garbutt 2012	30	81	25	74	8.0%	1.10 [0.72, 1.68]
Meltzer 2005	233	251	225	252	68.7%	1.04 [0.98, 1.10]
Haye 2000	79	84	71	81	22.1%	1.07 [0.97, 1.18]
Lindbaek 1998 (Amoxy)	2	22	2	21	0.6%	0.95 [0.15, 6.17]
Lindbaek 1998 (pen V)	5	20	2	21	0.6%	2.63 [0.57, 12.02]
Total (95% CI)		**458**		**449**	**100.0%**	**1.06 [1.00, 1.12]**
Total events	349		325			

Heterogeneity: $Chi^2 = 1.95$, $df = 4$ ($P = 0.74$); $I^2 = 0\%$

Test for overall effect: $Z = 1.97$ ($P = 0.05$)

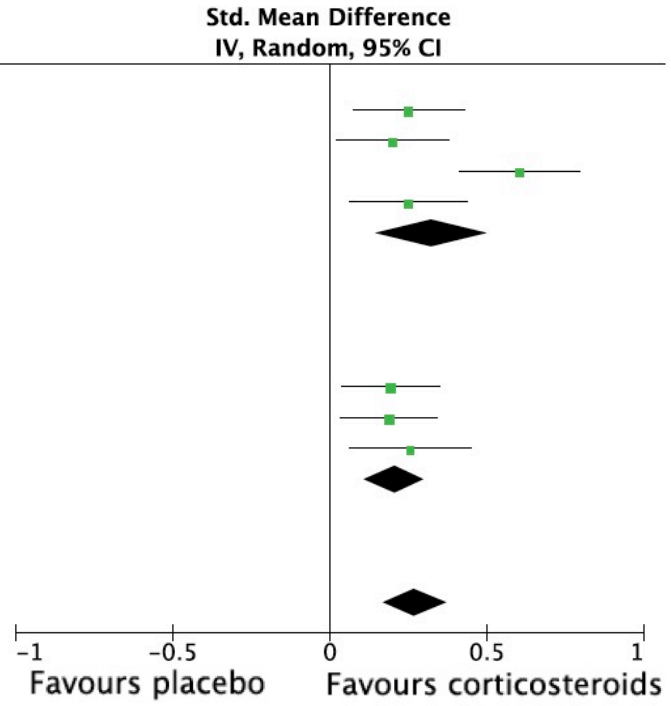


CI, confidence interval; M-H, Mantel Haenszel.

Intranasal corticsteroids in postviral ARS

Figure 4.6.16. Forest plot of the effect of intranasal corticosteroids versus placebo on change from baseline of total symptom score in acute post-viral rhinosinusitis.

Study or Subgroup	Intranasal corticosteroid Mean	SD	Total	Placebo Mean	SD	Total	Weight	Std. Mean Difference IV, Random, 95% CI	Year
2.1.1 Single treatment									
Keith 2012 220	3.33	0.82	252	2.97	1.87	245	14.3%	0.25 [0.07, 0.43]	2012
Keith 2012 110	3.36	2.03	240	2.97	1.87	245	14.1%	0.20 [0.02, 0.38]	2012
Meltzer 2005 400	4.48	1.21	220	3.75	1.21	219	13.3%	0.60 [0.41, 0.79]	2005
Meltzer 2005 200	4.01	0.82	220	3.75	1.21	219	13.5%	0.25 [0.06, 0.44]	2005
Subtotal (95% CI)			**932**			**928**	**55.3%**	**0.32 [0.15, 0.50]**	
Heterogeneity: $Tau^2 = 0.02$; $Chi^2 = 11.22$, df = 3 (P = 0.01); $I^2 = 73\%$									
Test for overall effect: Z = 3.58 (P = 0.0003)									
2.1.2 Addition to antibiotics									
Nayak 2002 400	5.89	3.45	318	5.22	3.45	325	15.8%	0.19 [0.04, 0.35]	2002
Nayak 2002 800	5.86	3.39	324	5.22	3.39	325	15.9%	0.19 [0.03, 0.34]	2002
Meltzer 2000	5.87	3.2	200	5.05	3.2	207	13.1%	0.26 [0.06, 0.45]	2000
Subtotal (95% CI)			**842**			**857**	**44.7%**	**0.21 [0.11, 0.30]**	
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 0.32$, df = 2 (P = 0.85); $I^2 = 0\%$									
Test for overall effect: Z = 4.25 (P < 0.0001)									
Total (95% CI)			**1774**			**1785**	**100.0%**	**0.27 [0.17, 0.37]**	
Heterogeneity: $Tau^2 = 0.01$; $Chi^2 = 14.26$, df = 6 (P = 0.03); $I^2 = 58\%$									
Test for overall effect: Z = 5.21 (P < 0.00001)									
Test for subgroup differences: $Chi^2 = 1.30$, df = 1 (P = 0.26), $I^2 = 22.8\%$									



CI, confidence interval; M-H, Mantel Haenszel.

Antibiotics prescription and resistance

Figure 4.6.13. Consumption of antibiotics for systemic use in the community by antibiotic group in 30 EU/EEA countries, 2013 (expressed in DDD per 1000 inhabitants and per day(251).

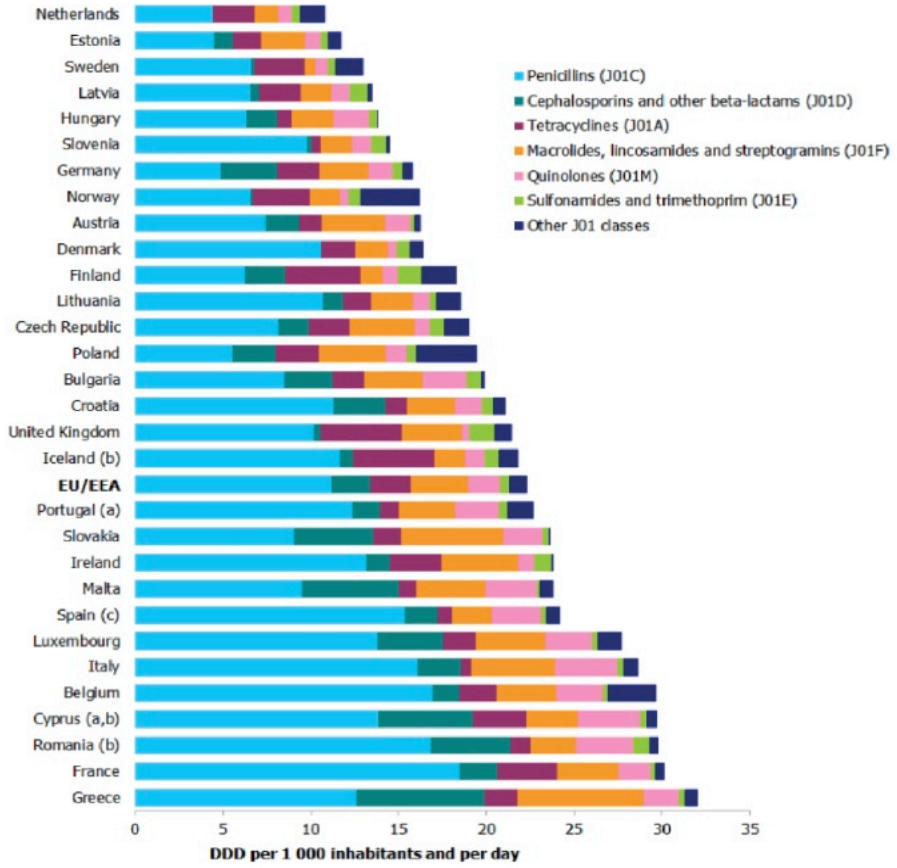
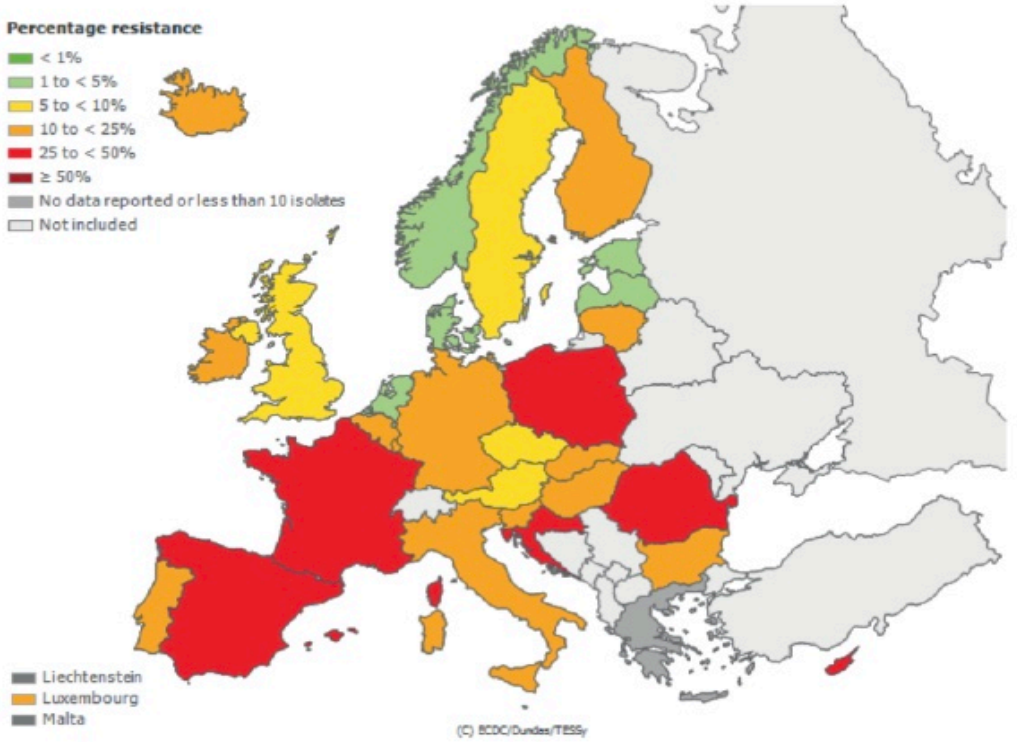
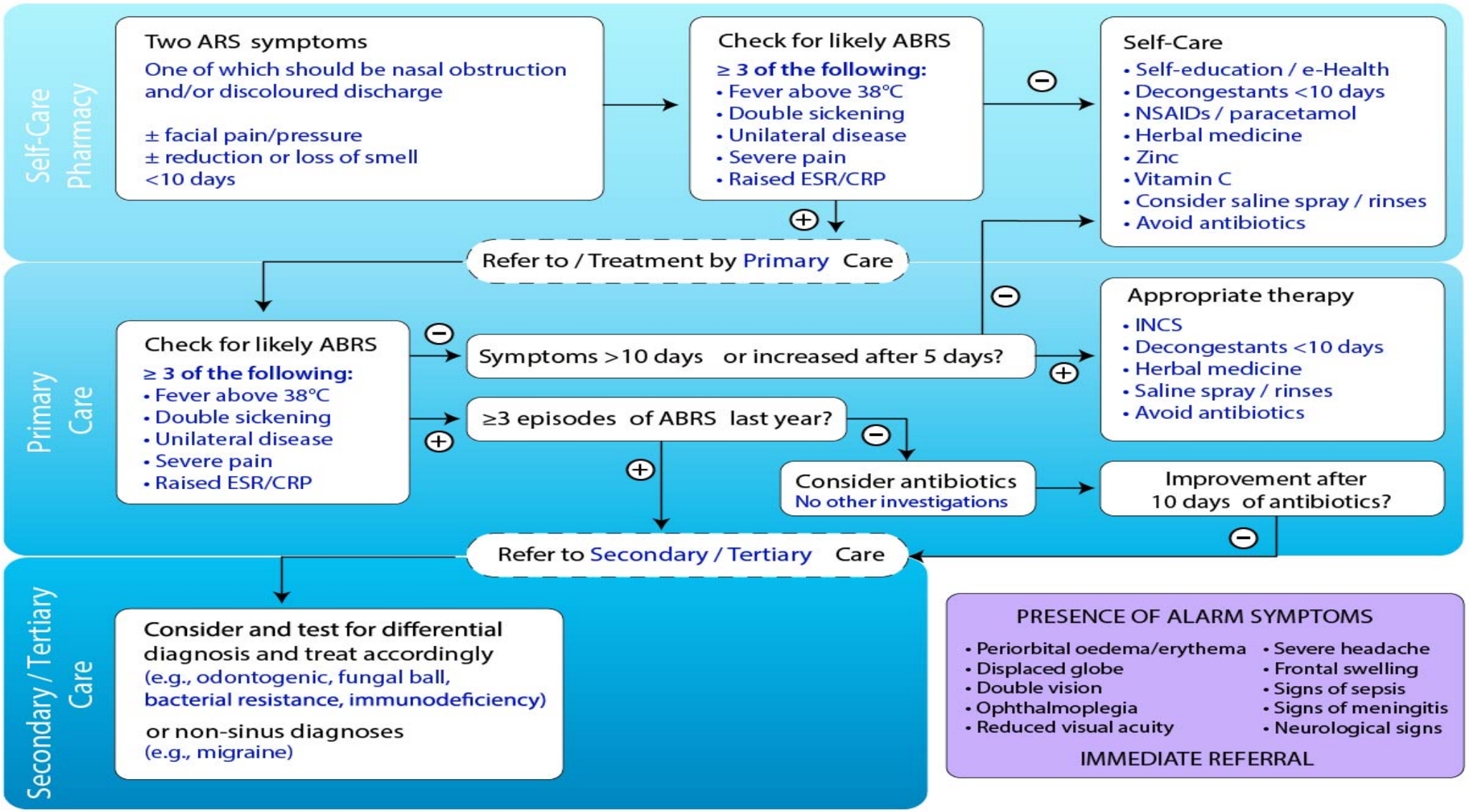


Figure 4.6.14. Proportion of macrolide Resistant (R) *Streptococcus pneumonia* isolates in participating countries in 2013(250).



EPOS 2020: Care pathways for acute rhinosinusitis (ARS)



EPOS 2020:
Management of patients, what is new

- Integrated care pathways in ARS
- New classification of CRS, primary versus secondary CRS: consequences for treatment
- Evidence based treatment
- New integrated care pathways in CRS

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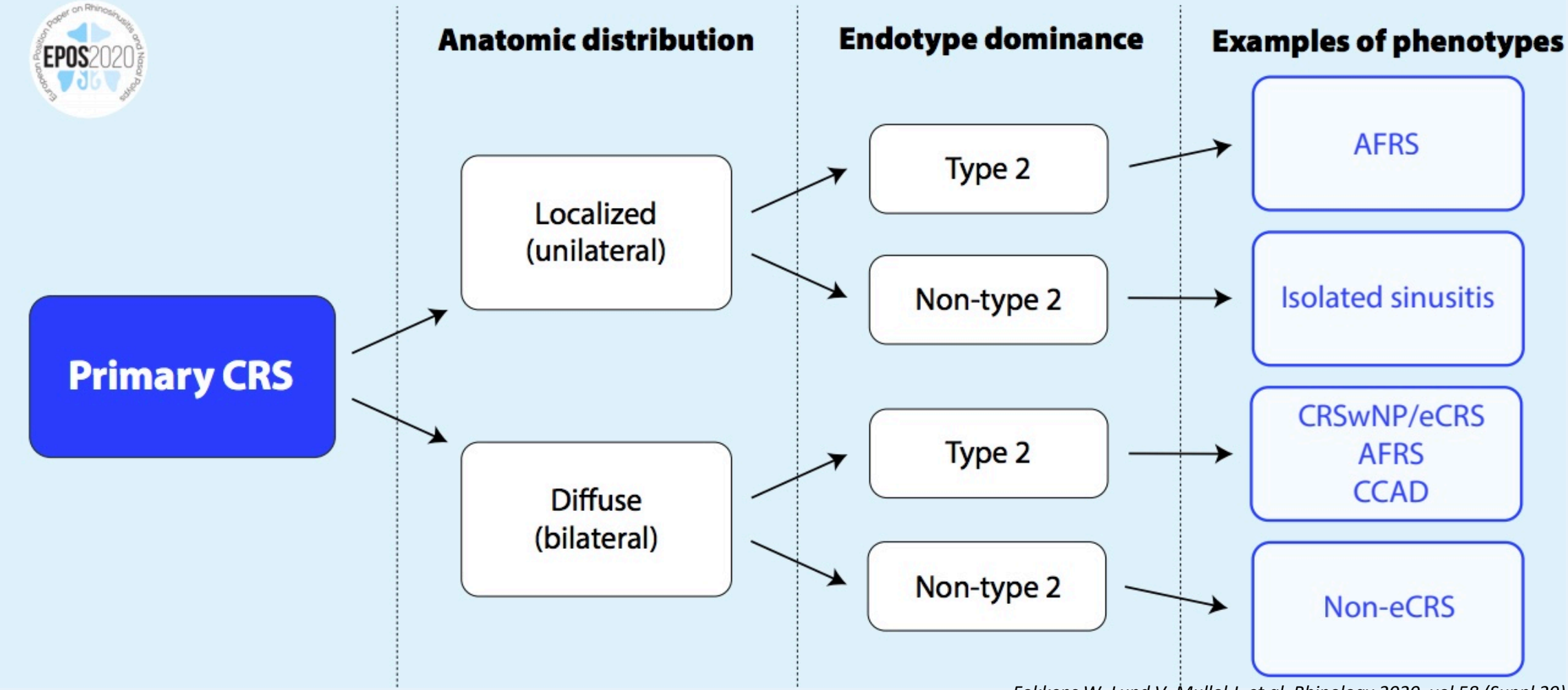
New Classification of CRS



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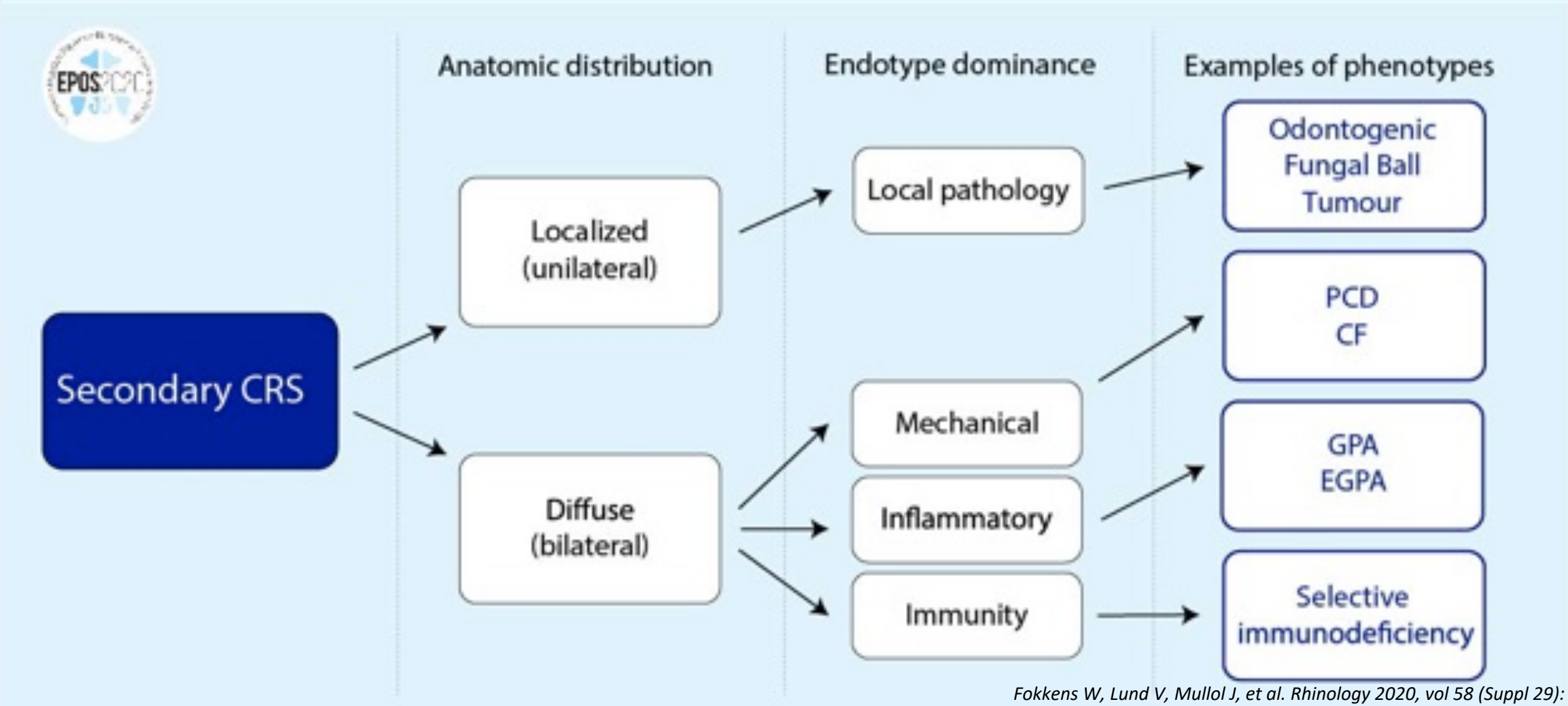
New Classification of CRS



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Montelukast in diffuse bilateral CRS

Table 6.1.9.1. Montelukast for the treatment of patients with CRS.

Study	Methods	Participants	Interventions	Outcomes	Results
Schaper, 2011[139]	SBPCT crossover	24 CRSwNP patients and asthma (12 with N-ERD)	• Montelukast 10 mg 1dd for 6 weeks (n=24) • Placebo 1dd for 4 weeks (n=24)	• Nasal symptoms (0-12) • Nasal endoscopy • Anterior rhinomanometry • Olfactometry • Mediators in nasal secretion and blood • Lung function	• Total symptom score improved from 5.9 to 1.75 in montelukast group and not in placebo. No direct comparison. No data for placebo • Significant reduction in oedema, hypersecretion, blockage compared to placebo at nasal endoscopy • Significant improvement in nasal airflow • Significant reduction in inflammatory mediators and eosinophils in nasal secretion • Significant improvement in lung function
Pauli, 2007[138]	DBPCT	30 CRSwNP patients	• Montelukast 10 mg 1dd for 4 weeks (n=20) • Placebo 1dd for 4 weeks (n=10)	• HRQL (health related quality of life questionnaire) at 4 wks • Nasal endoscopy at 4 wks • ECP in nasal secretion at 4 wks	• Significant reduction in most domains of HRQL • No significant difference in nasal endoscopy score or ECP in nasal secretion

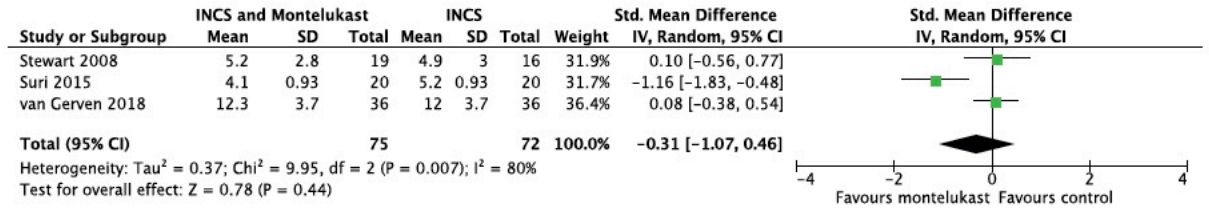
CRSwNP, chronic rhinosinusitis with nasal polyps; DBPCT, double-blind placebo-controlled trial; ECP, eosinophil cationic protein; HRQOL, health related quality of life; N-ERD, NSAID-exacerbated respiratory disease; SBPCT, single-blind placebo-controlled trial.

Table 6.1.9.2. Montelukast added to intranasal corticosteroids for the treatment of patients with CRS.

Study	Methods	Participants	Interventions	Outcomes	Results
Van Gerven 2018[144]	RCT	72 CRSwNP postoperative	• CRSwNP Montelukast 10 mg 1dd together with mometasone furoate 200 µg 2 times a day for 1 year (n=36) • CRSwNP mometasone furoate 200 µg 2 times a day for 1 year (n=36)	• T5SS (T5SS) at 3, 6 and 12 months • Nasal polyp score (NPS) at 3, 6 and 12 months • LMS at 3, 6 and 12 months • BAST 24 at 3, 6 and 12 months	• No significant difference between the treatments for any outcome measured
Suri 2015[143]	RCT	40 CRSwNP	• Montelukast 10 mg for 8 weeks+ prednisolone 35 mg reducing by 5 mg every second day over 14 days+ budesonide nasal spray 2 metered doses to each nostril for 8 weeks (n=20) • Prednisolone 35 mg reducing by 5 mg every second day over 14 days+ budesonide nasal spray 2 metered doses to each nostril for 8 weeks (n=20)	Total symptoms and nasal blockage, headache, facial pain, sense of smell, nasal discharge and sneezing (0-10) at 8 and 12 weeks	• Significant better effect of montelukast group for total symptoms (8 and 12 wks), headache (12 wks), sense of smell (8 and 12 wks) and sneezing (8 wks)
Stewart 2008[141]	RCT	38 CRSwNP (35 analysed)	• Montelukast 10 mg for 8 weeks+ prednisolone 35 mg reducing by 5 mg every second day over 14 days+ budesonide nasal spray 2 metered doses to each nostril for 8 weeks (n=20) • Prednisolone 35 mg reducing by 5 mg every second day over 14 days+ budesonide nasal spray 2 metered doses to each nostril for 8 weeks (n=20)	• Total symptoms and nasal blockage, headache, facial pain, sense of smell, nasal discharge, sneezing at 8 and 12 weeks • SF36	• Significant better effect of montelukast group for facial pain (8 wks) headache (8 wks), sneezing (8 wks) • No significant difference between the treatments for any outcome measured at 12 wks • No significant difference in SF36

BAST-24, Barcelona Smell Test 24 odours; CRSwNP, chronic rhinosinusitis with nasal polyps; LMS, Lund-McKay score; RCT, randomized clinical trial; SF-36, short form 36; T5SS; Total 5 Symptom Score.

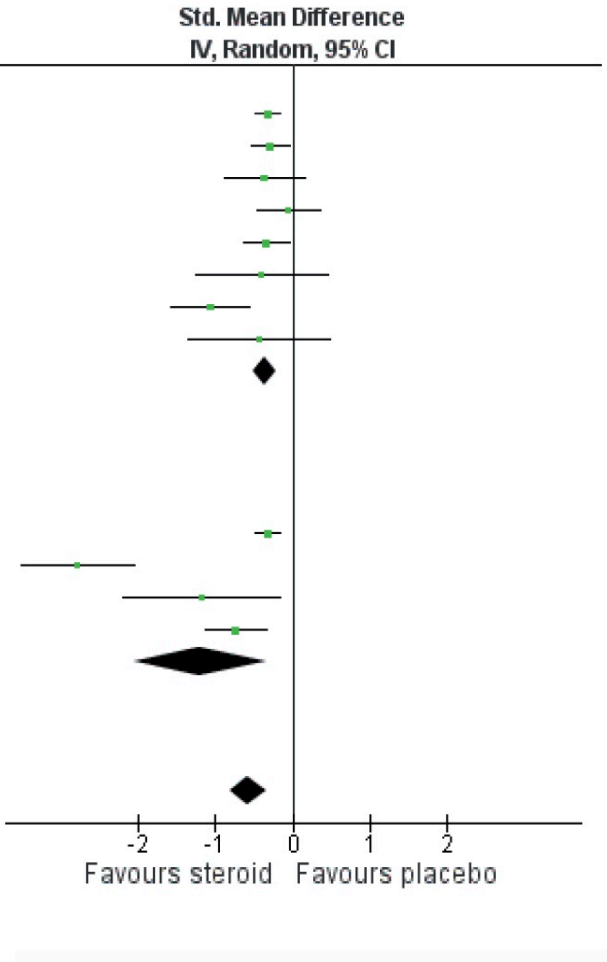
Figure 6.1.9.1. Forest plot of the effect of the added effect of montelukast on intranasal corticosteroids at 12 weeks in CRSwNP patients



Regular or high dose of INCS in diffuse bilateral CRS

Figure 6.1.5.8. Forest plot of the effect of different dosages of nasal corticosteroids versus placebo on symptoms in CRS patients.

Study or Subgroup	steroid Mean	steroid SD	steroid Total	placebo Mean	placebo SD	placebo Total	Weight	Std. Mean Difference IV, Random, 95% CI	Year
1.16.1 Regular dosages									
Zhou 2016	-1.08	0.75	350	-0.84	0.73	336	12.4%	-0.32 [-0.47, -0.17]	2016
Dixon 2015	-9.46	12.76	117	-5.64	13.58	120	11.3%	-0.29 [-0.54, -0.03]	2015
Mosges 2011	-7.27	6.39	29	-5.35	3.72	30	8.0%	-0.36 [-0.88, 0.15]	2011
Jorissen 2009	-14.3	9.1	46	-13.8	8.63	45	9.3%	-0.06 [-0.47, 0.36]	2009
Lund 2004	-1.85	1.93	81	-1.02	2.88	86	10.7%	-0.34 [-0.64, -0.03]	2004
Parikh 2001	-21.3	32.9	9	3.6	73	13	4.7%	-0.40 [-1.26, 0.46]	2001
Filiaci 2000	-1.15	0.91	36	-0.15	0.95	31	8.0%	-1.06 [-1.58, -0.55]	2000
Lund 1998	2	4.44	10	4	4.44	9	4.4%	-0.43 [-1.34, 0.48]	1998
Subtotal (95% CI)			**678**			**670**	**68.7%**	**-0.35 [-0.50, -0.20]**	
Heterogeneity: $Tau^2 = 0.01$; $Chi^2 = 9.70$, df = 7 (P = 0.21); $I^2 = 28\%$									
Test for overall effect: Z = 4.59 (P < 0.00001)									
1.16.2 Higher dosages									
Leopold 2019	-1.08	0.75	350	-0.84	0.73	336	12.4%	-0.32 [-0.47, -0.17]	2019
Wang 2015	-11.5	3.82	29	-0.7	3.82	28	5.6%	-2.79 [-3.53, -2.05]	2015
Hansen2010	-2.9	3.1	9	0.18	1.7	9	3.8%	-1.17 [-2.19, -0.15]	2010
Vlckova 2009	-1.11	1.91	54	0.31	1.93	52	9.5%	-0.73 [-1.13, -0.34]	2009
Subtotal (95% CI)			**442**			**425**	**31.3%**	**-1.20 [-2.06, -0.33]**	
Heterogeneity: $Tau^2 = 0.68$; $Chi^2 = 44.63$, df = 3 (P < 0.00001); $I^2 = 93\%$									
Test for overall effect: Z = 2.71 (P = 0.007)									
Total (95% CI)			**1120**			**1095**	**100.0%**	**-0.58 [-0.81, -0.34]**	
Heterogeneity: $Tau^2 = 0.11$; $Chi^2 = 56.64$, df = 11 (P < 0.00001); $I^2 = 81\%$									
Test for overall effect: Z = 4.82 (P < 0.00001)									
Test for subgroup differences: $Chi^2 = 3.54$, df = 1 (P = 0.06), $I^2 = 71.7\%$									



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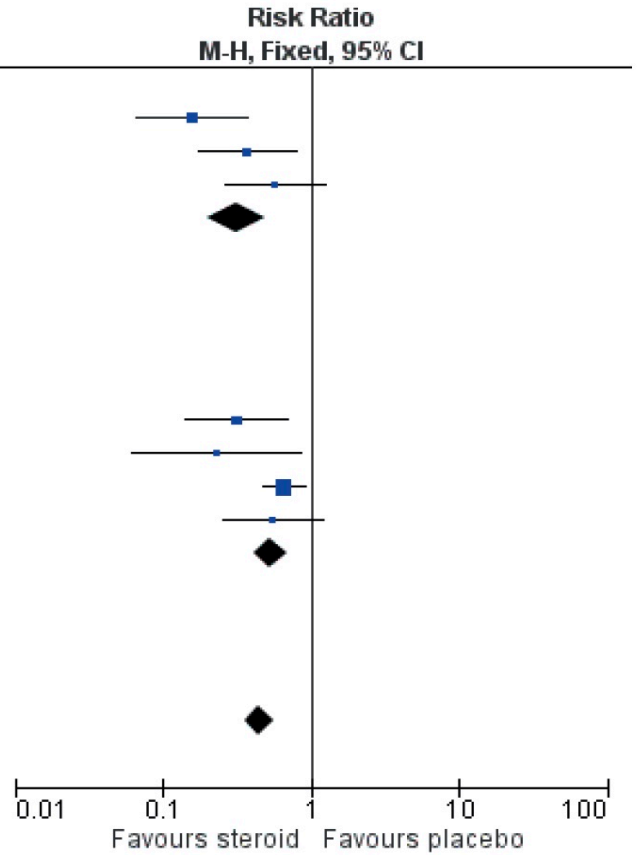
Difference in effect of INCS in CRS patients without or with surgery

Figure 6.1.5.15. Forest plot of the effect of nasal corticosteroid versus placebo on the proportion of patients with nasal polyp score reduction in subgroups of CRS patients with and without sinus surgery.

	placebo		steroid			Risk Ratio	
Study or Subgroup	**Events**	**Total**	**Events**	**Total**	**Weight**	**M-H, Fixed, 95% CI**	**Year**
1.11.1 Patients with sinus surgery							
Vlckova 2009	5	55	31	54	18.3%	0.16 [0.07, 0.38]	2009
Penttila 2000	7	47	19	47	11.1%	0.37 [0.17, 0.79]	2000
Keith 2000	8	52	14	52	8.2%	0.57 [0.26, 1.25]	2000
Subtotal (95% CI)		**154**		**153**	**37.5%**	**0.31 [0.20, 0.49]**	
Total events	20		64				
Heterogeneity: Chi² = 4.87, df = 2 (P = 0.09); I² = 59%							
Test for overall effect: Z = 5.07 (P < 0.00001)							
1.11.2 Patients without sinus surgery							
Leopold 2019	7	79	23	82	13.2%	0.32 [0.14, 0.69]	2019
Kobayashi 2018	2	12	8	11	4.9%	0.23 [0.06, 0.85]	2018
Stjarne 2006b	39	145	63	153	35.8%	0.65 [0.47, 0.91]	2006
Holmstrom 1999	8	49	15	51	8.6%	0.56 [0.26, 1.19]	1999
Subtotal (95% CI)		**285**		**297**	**62.5%**	**0.54 [0.41, 0.70]**	
Total events	56		109				
Heterogeneity: Chi² = 4.74, df = 3 (P = 0.19); I² = 37%							
Test for overall effect: Z = 4.46 (P < 0.00001)							
Total (95% CI)		**439**		**450**	**100.0%**	**0.45 [0.36, 0.57]**	
Total events	76		173				
Heterogeneity: Chi² = 13.20, df = 6 (P = 0.04); I² = 55%							
Test for overall effect: Z = 6.67 (P < 0.00001)							
Test for subgroup differences: Chi² = 4.07, df = 1 (P = 0.04), I² = 75.5%							



Aspirin treatment after desensitisation (ATAD)

Figure 6.1.12.1. Forest plot of the effect of ATAD versus standard treatment alone on the SNOT score six months after start of the treatment in patients with CRSwNP.

Study or Subgroup	ATAD Mean	ATAD SD	ATAD Total	placebo Mean	placebo SD	placebo Total	Weight	Mean Difference IV, Fixed, 95% CI	Year
Świerczyńska-Krępa 2014	1.08	0.56	8	1.85	1.07	7	6.5%	-0.77 [-1.65, 0.11]	2014
Esmaeilzadeh 2015	1.17	0.52	16	1.63	0.5	16	40.4%	-0.46 [-0.81, -0.11]	2015
Mortazavi 2017	1.23	0.49	19	1.8	0.48	19	53.1%	-0.57 [-0.88, -0.26]	2017
Total (95% CI)			**43**			**42**	**100.0%**	**-0.54 [-0.76, -0.31]**	

Heterogeneity: Chi² = 0.49, df = 2 (P = 0.78); I² = 0%
Test for overall effect: Z = 4.70 (P < 0.00001)

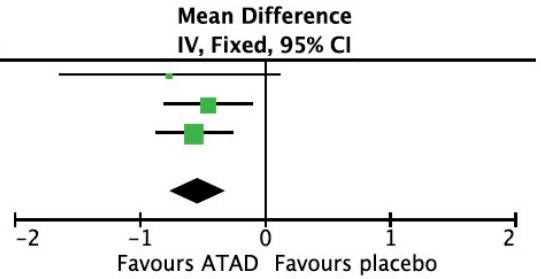
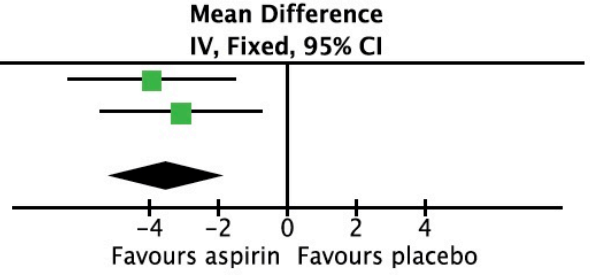


Figure 6.1.12.2. Forest plot of the effect of ATAD versus standard treatment alone on the symptom score six months after start of the treatment in patients with CRSwNP.

Study or Subgroup	ATAD Mean	ATAD SD	ATAD Total	Placebo Mean	Placebo SD	Placebo Total	Weight	Mean Difference IV, Fixed, 95% CI
Mortazavi 2017	7.95	3.4	19	11.89	4.2	19	48.5%	-3.94 [-6.37, -1.51]
Esmaeilzadeh 2015	7.5	3.2	16	10.6	3.6	16	51.5%	-3.10 [-5.46, -0.74]
Total (95% CI)			**35**			**35**	**100.0%**	**-3.51 [-5.20, -1.81]**

Heterogeneity: Chi² = 0.24, df = 1 (P = 0.63); I² = 0%
Test for overall effect: Z = 4.06 (P < 0.0001)



No effect of short term antibiotics after (F)ESS

Table 6.2.7.1. Short-term postoperative antibiotics in CRS.

Study	Methods	Participants	Interventions	Outcomes	Results
Albu 2010[857]	DBPCT	75 CRS patients (40 CRSwNP)	• Amoxicillin + clavulanate 625 mg twice daily for 14 days (n=40) • Placebo twice daily for 14 days (n=35)	• Symptom questionnaire day 5, 12, 21 and 30 • Perioperative sinus endoscopy (POSE) score at day 5, 12, 21 and 30 • Endoscopic examination at day 5 until all blood crusts resolved	Amoxicillin + clavulanate versus placebo resulted in: • Significant lower scores for nasal obstruction and nasal discharge on postoperative day 5 • Significant lower POSE scores on day 5 and 12 • No statistical difference between groups in overall symptom scores or POSE scores at 21 or 30 days • Patients displaying blood crusts within 12 days post-surgery were lower in the antibiotic treated group as compared to the placebo group (p=0.02)
Schalek 2009[856]	DBPCT	23 CRS patients	• Amoxicillin + clavulanate, quinolone or co-trimoxazole for 3 weeks (n=13) • Placebo for 3 weeks (n=10)	• SNOT-22 (Czech translation) at 3 and 6 months • Clinical symptom-specific scores at 3 and 6 months • Endoscopic score at 3 and 6 months	• No statistically significant difference in SNOT-22 quality of life scores, average symptom score, or endoscopic scores compared to placebo at 3 and 6 months • Mean endoscopic scores after 3 months approached significance (p=0.056) • There was no statistical difference with regard to which particular antibiotic was used
Jiang 2008[539]	RCT	71 CRS patients	• Amoxicillin + clavulanate 375 mg three times daily for 3 weeks (n=31) • No treatment (n=40)	• Rhinosinusitis symptom scores at week 3 • Antibiotic sensitivity rate at week 3 • Culture rate at week 3 • Endoscopic scores at week 3	• No significant difference in the short-term subjective or objective outcomes of CRS 3 weeks after endoscopic sinus surgery • Bacterial culture rates increased in the study group after FESS (38.7% vs. 61.3%, p=0.014) but no significant difference in antibiotic sensitivity to amoxicillin/clavulanate
Annys 2000[858]	DBPCT	202 CRS patients	• Cefuroxime axetil 250 mg twice daily (n=101) • Placebo twice daily all patients received nasal saline and nasal corticosteroids (n=101)	• Symptoms • Nasal endoscopy	• No significant differences between the groups

DBPCT, Double Blind Placebo Controlled Trial; CRS,Chronic Rhinosinusitis; CRSwNP, Chronic Rhinosinusitis with nasal polyps; RCT, Randomised Controlled Trial; SNOT-22, Sino-Nasal Outcome Test-22; POSE, Perioperative Sinus Endoscopy score;

Reverse Trendelenburg position reduces blood loss during (F)ESS

Figure 6.2.4.1. Forest plot of the effect of reverse Trendelenburg position compared to the horizontal position on surgical field quality.

Study or Subgroup	trendelenburg (10–20) Mean	SD	Total	horizontal (0–5) Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
Gan 2014	1.6	0.6	25	2	0.6	25	37.0%	−0.40 [−0.73, −0.07]
Hathorn 2013	1.66	0.55	32	2.33	0.67	32	45.4%	−0.67 [−0.97, −0.37]
Ko 2008	1.95	1	30	2.68	0.9	30	17.7%	−0.73 [−1.21, −0.25]
Total (95% CI)			**87**			**87**	**100.0%**	**−0.58 [−0.78, −0.38]**

Heterogeneity: $Chi^2 = 1.84$, df = 2 (P = 0.40); $I^2 = 0\%$
Test for overall effect: Z = 5.63 (P < 0.00001)

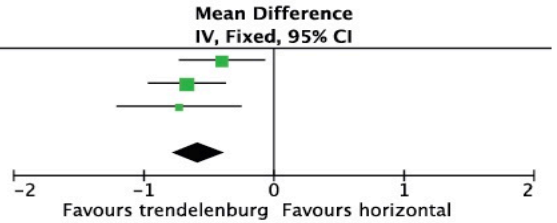


Figure 6.2.4.2. Forest plot of the effect of reverse Trendelenburg position compared to the horizontal position on blood loss.

Study or Subgroup	trendelenburg (10–20) Mean	SD	Total	horizontal (0–5) Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
Gan 2014	135	108	25	231	148	25	35.8%	−96.00 [−167.82, −24.18]
Hathorn 2013	247	198	32	426	333	32	10.2%	−179.00 [−313.23, −44.77]
Ko 2008	126	86	30	252	139	30	54.0%	−126.00 [−184.49, −67.51]
Total (95% CI)			**87**			**87**	**100.0%**	**−120.69 [−163.66, −77.73]**

Heterogeneity: $Chi^2 = 1.21$, df = 2 (P = 0.55); $I^2 = 0\%$
Test for overall effect: Z = 5.51 (P < 0.00001)

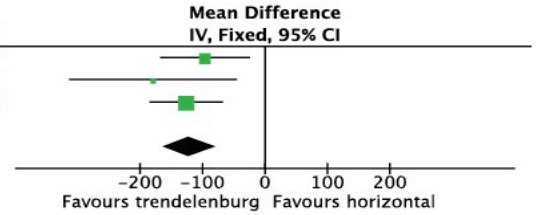
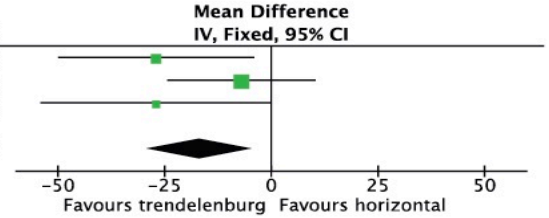


Figure 6.2.4.3. Forest plot of the effect of reverse Trendelenburg position compared to the horizontal position on operation time.

Study or Subgroup	trendelenburg (10–20) Mean	SD	Total	horizontal (0–5) Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
Gan 2014	93	42	25	120	41	25	28.8%	−27.00 [−50.01, −3.99]
Hathorn 2013	87	36	32	94	35	32	50.4%	−7.00 [−24.40, 10.40]
Ko 2008	139	51	30	166	56	30	20.8%	−27.00 [−54.10, 0.10]
Total (95% CI)			**87**			**87**	**100.0%**	**−16.92 [−29.27, −4.57]**

Heterogeneity: $Chi^2 = 2.52$, df = 2 (P = 0.28); $I^2 = 21\%$
Test for overall effect: Z = 2.68 (P = 0.007)



EPOS 2020: Care pathways for CRS

Self-Care Pharmacy

Two CRS symptoms
One of which should be nasal obstruction and/or discoloured discharge
± facial pain/pressure
± reduction or loss of smell
> 12 weeks

Self-Care
- Self-education / e-Health
- Saline spray / rinses
- INCS (if OTC)
- Avoid antibiotics
- Avoid exacerbating factors

6-12 weeks: improvement?

PRESENCE OF ALARM SYMPTOMS
- Periorbital oedema/erythema
- Displaced globe
- Double vision
- Ophthalmoplegia
- Reduced visual acuity
- Severe headache
- Frontal swelling
- Signs of sepsis
- Signs of meningitis
- Neurological signs
- Unilateral symptoms
- Bleeding
- Crusting
- Cacosmia

IMMEDIATE REFERRAL

Refer to Primary Care

Primary Care

Primary care follow-up
- Saline rinses
- INCS (if not OTC)
- Educate compliance/technique
- Avoid antibiotics
- Check treatable traits and comorbidities

6-12 weeks: improvement?

Refer to Secondary / Tertiary Care

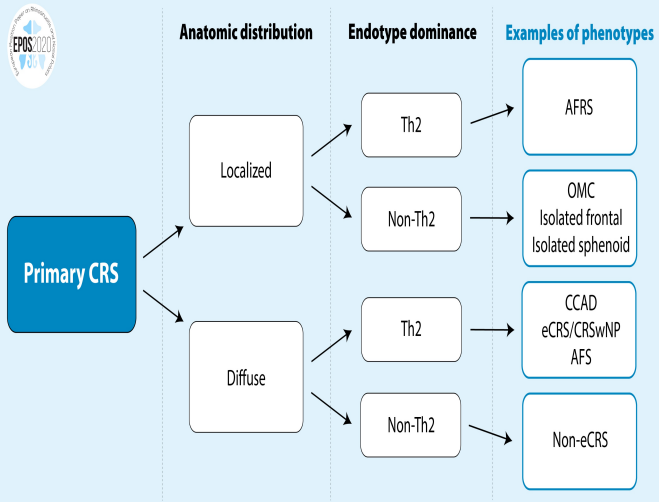
Secondary / Tertiary Care

Check treatable traits / comorbidities
History and full ENT exam
Nasal endoscopy

Diffuse / bilateral CRS → Follow EPOS 2020 management scheme on diffuse / bilateral CRS

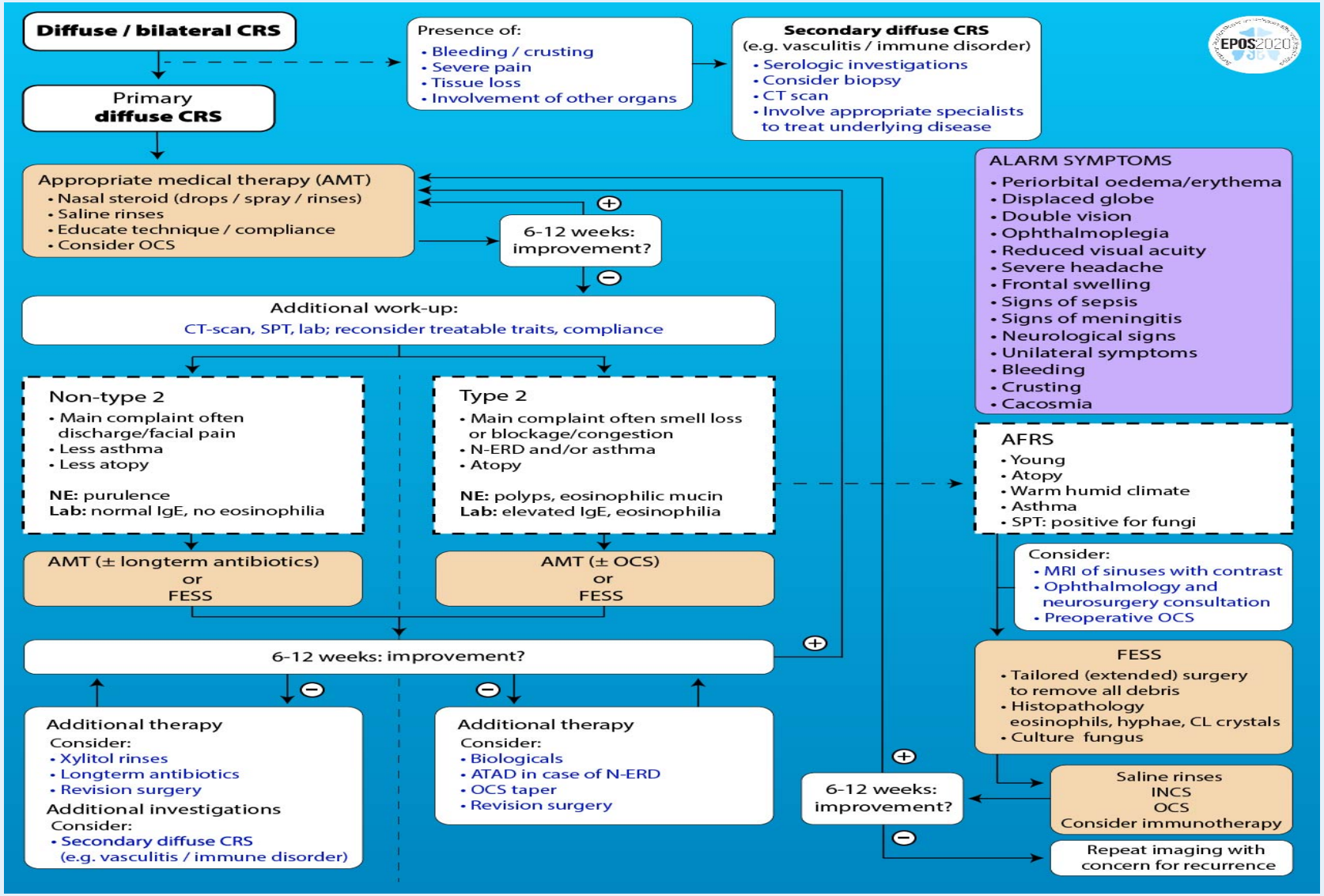
Localized / unilateral CRS → CT scan (urgent if suspicion of tumour)
- Diagnosis rejected — Reconsider differential diagnosis
- **Diagnosis confirmed** — Surgery likely — Refer if necessary / suspected malignancy

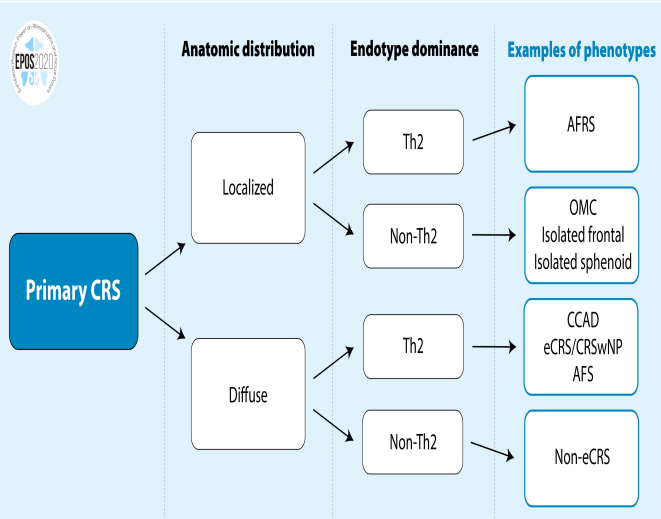
No (apparent) CRS → Consider CT scan — Reconsider differential diagnosis



Fokkens W, Lund V, Mullol J, et al. Rhinology 2020, vol 58 (Suppl 29): 1-464.
web: www.epos2020.com, rhinologyjournal.com

Diffuse bilateral CRS management scheme

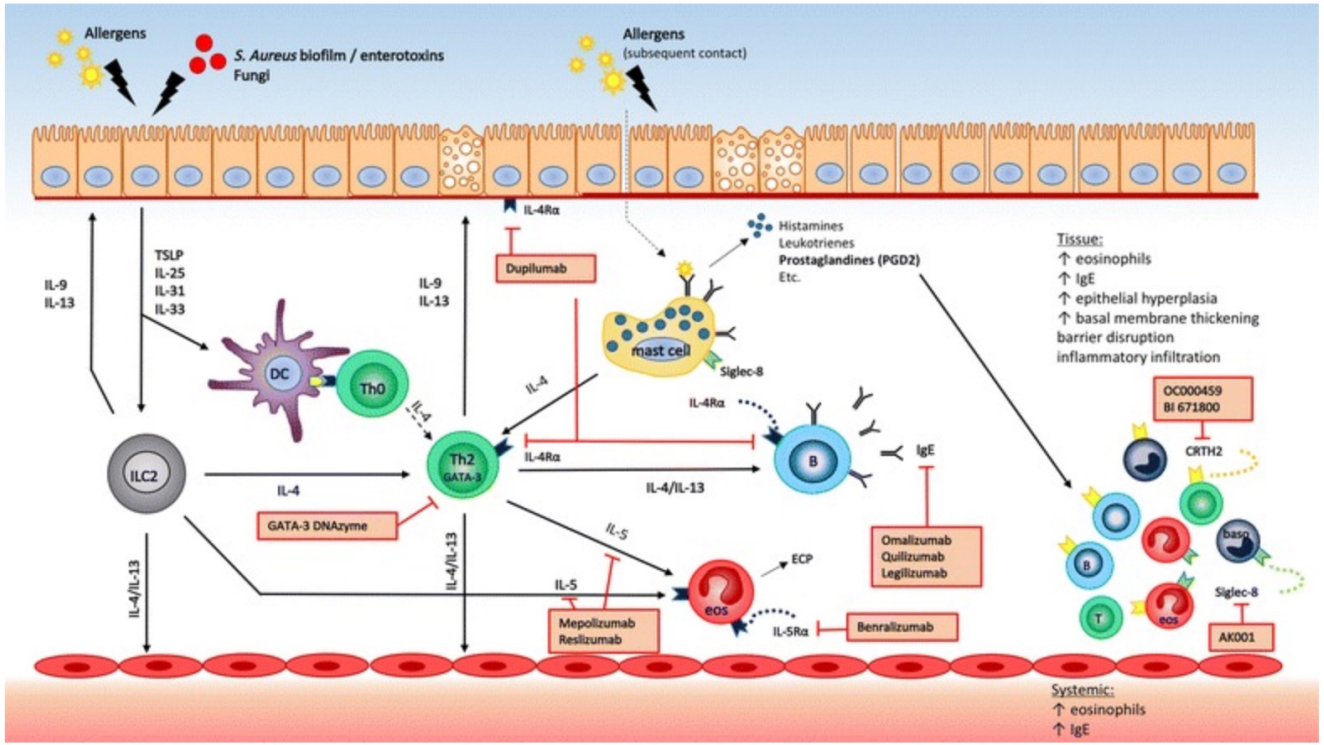




AMT, appropriate medical treatment; INCS, intranasal corticsteroids;

Fokkens W, Lund V, Mullol J, et al. Rhinology 2020, vol 58 (Suppl 29): 1-464.
web: www.epos2020.com, rhinologyjournal.com

Treatment of Type 2 Inflammation in Chronic Rhinosinusitis



Type 2 inflammation and biologicals. *B* B cell; *baso* basophil; *DC* dendritic cell; *ECP* eosinophilic cationic protein; *eos* eosinophils; *ILC2* type 2 innate lymphoid cell; *Th* T helper cell

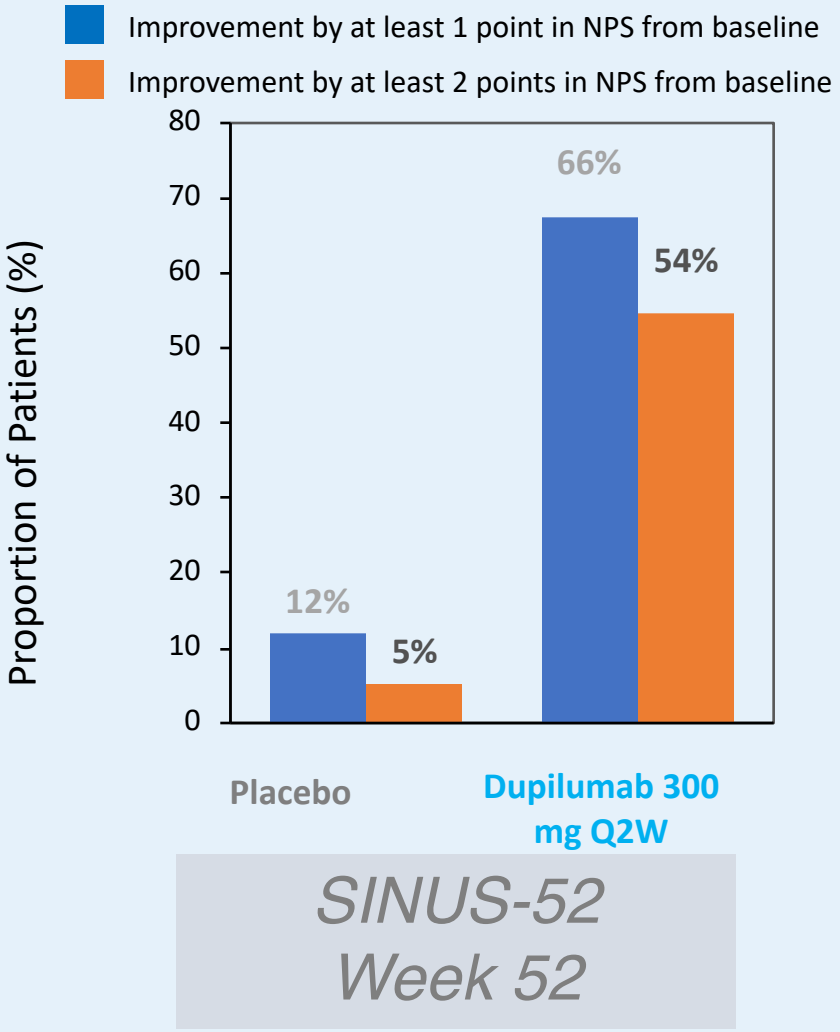
anti- IL-5
- mepolizumab
- reslizumab.

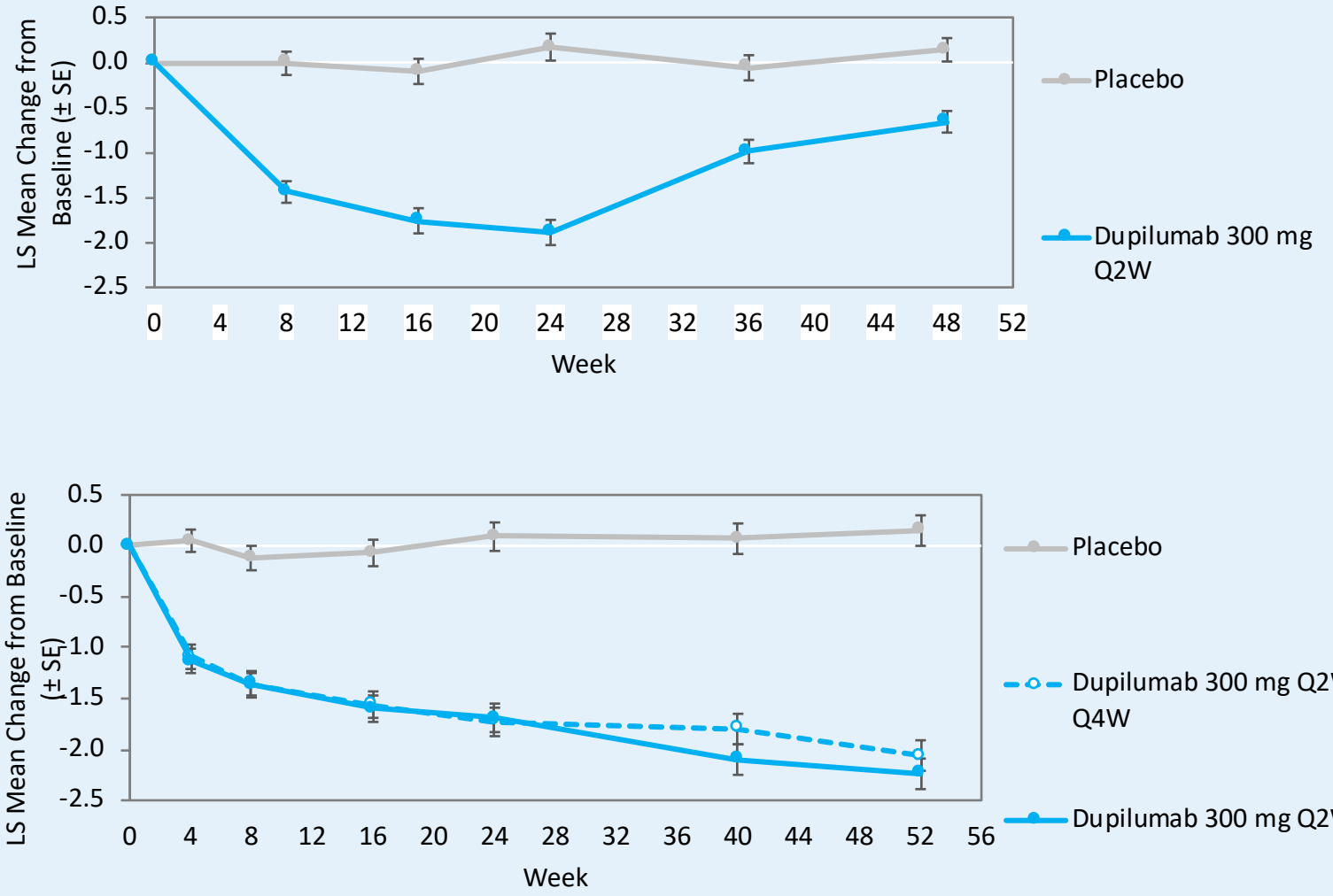
anti-IL-4/anti-IL-13
- dupilumab

anti-IgE
- omalizumab

De Greve, Hellings, Fokkens et al Clin Trans. Allergy 2017

Dupilumab in CRSwNP
Responder Analysis: Percent of Patients With NPS Improvement from Baseline



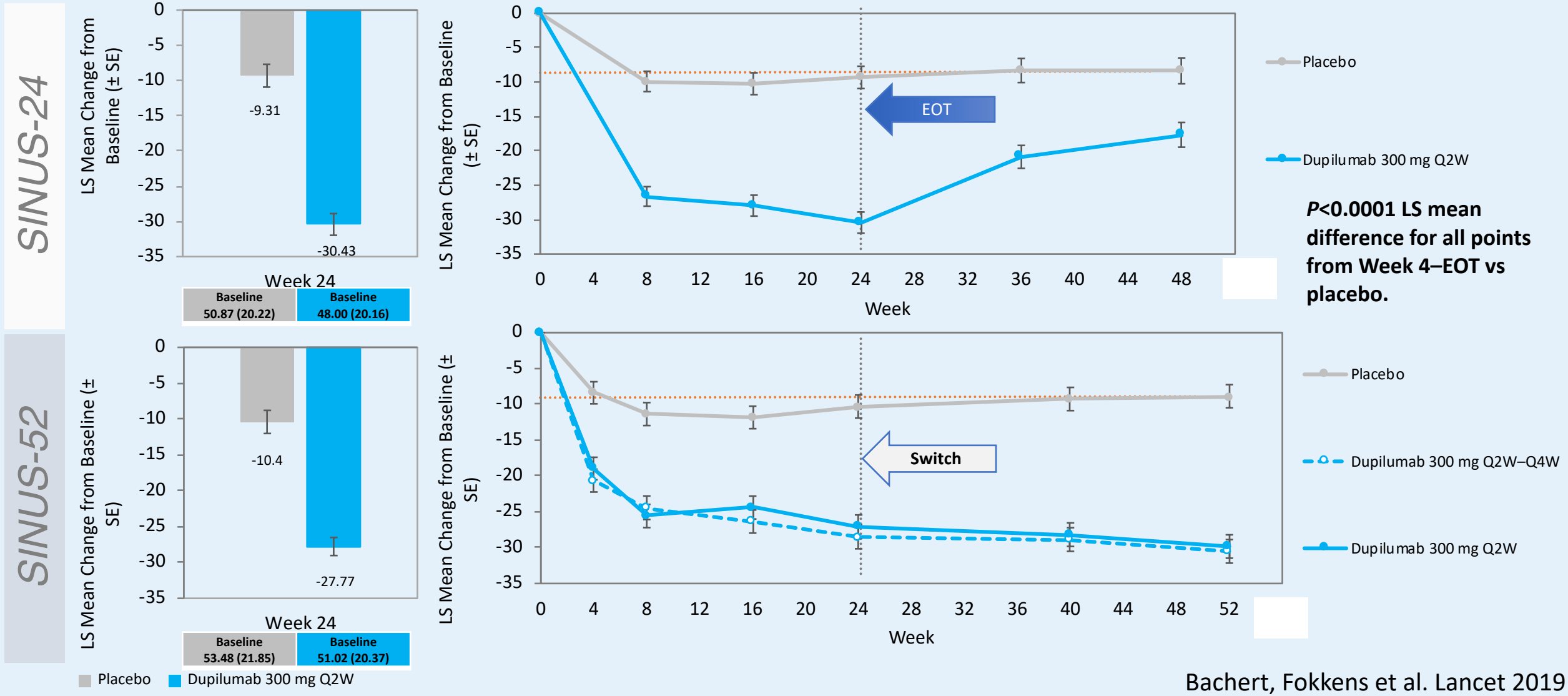


All *P*-values <0.0001

NPS, nasal polyp score; Q2W, every 2 weeks.
Data on file.

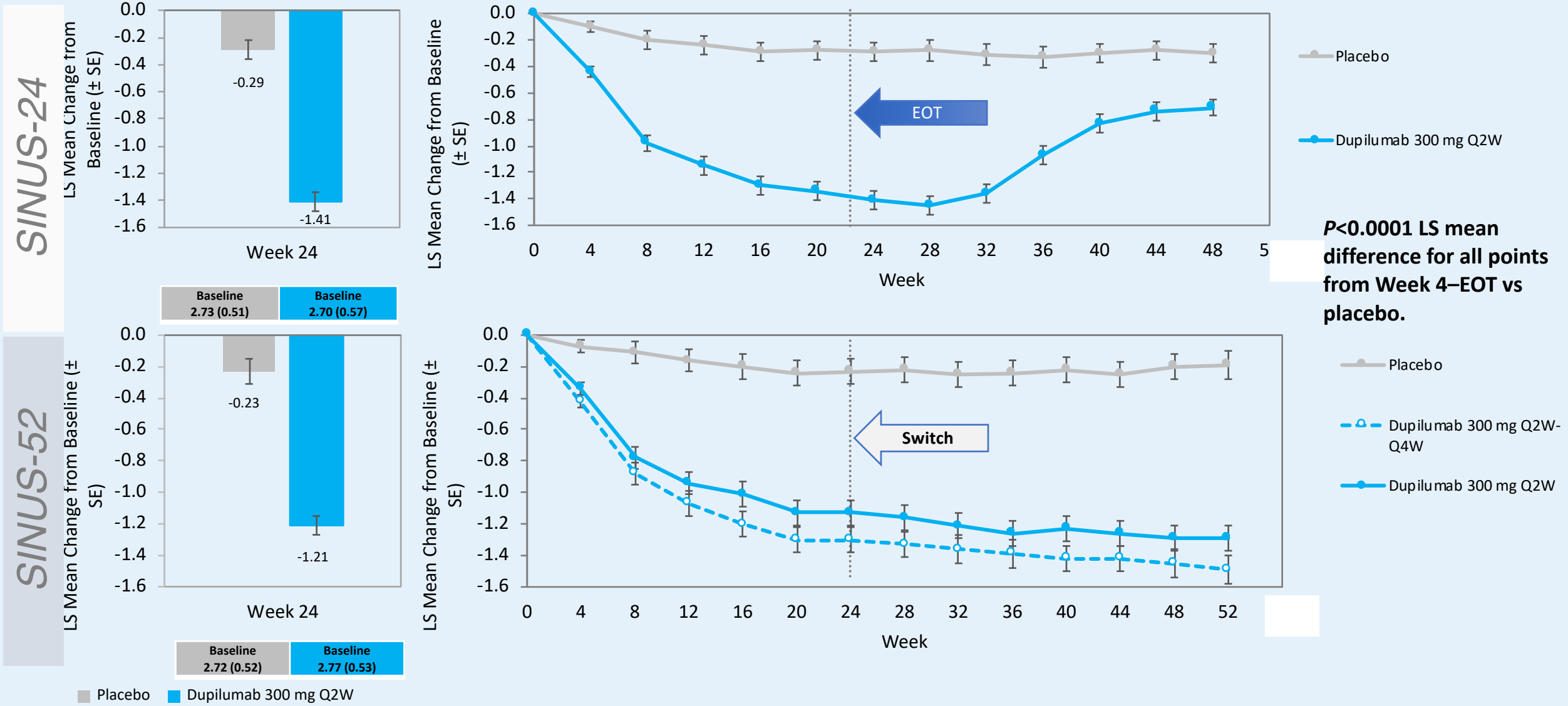
Bachert, Fokkens et al. Lancet 2019

Dupilumab in CRSwNP:
Secondary Efficacy: LS Mean Change from Baseline in SNOT-22 Total Score



Bachert, Fokkens et al. Lancet 2019

Dupilumab in CRSwNP:
Secondary Efficacy: LS Mean Change from Baseline in Daily Assessed Loss of Smell



Indications for biological treatment in CRSwNP

Presence of bilateral polyps in a patient who had ESS*

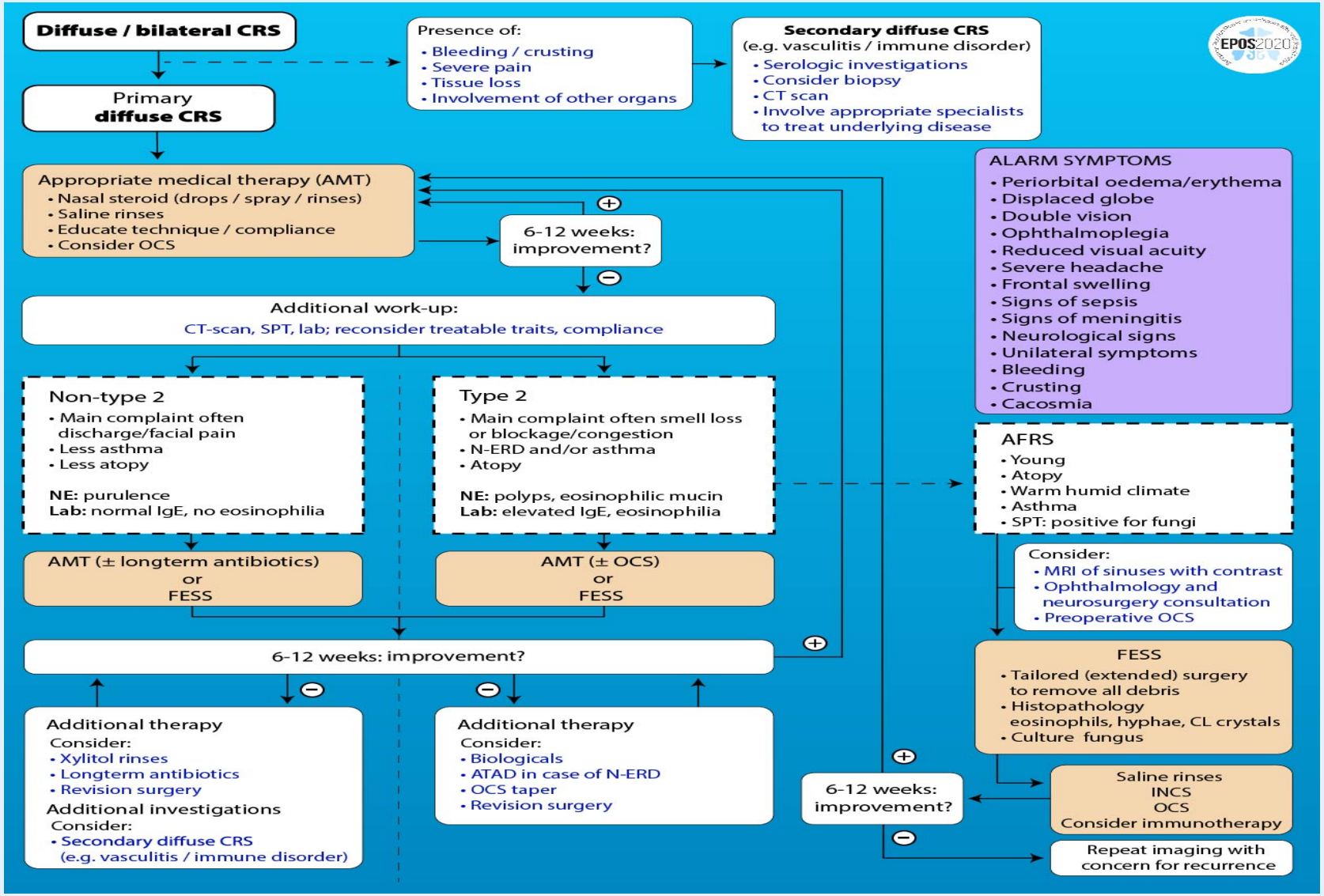
THREE criteria are required

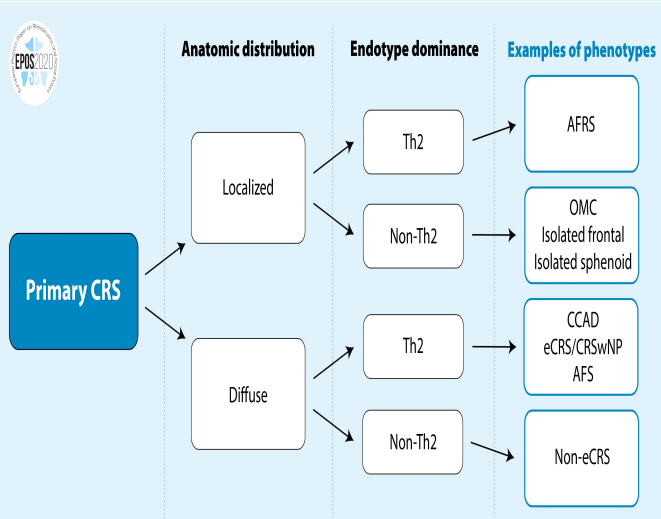
Criteria	Cut-off points
• Evidence of type 2 inflammation	Tissue eos ≥10/hpf, OR blood eos ≥250, OR total IgE ≥100
• Need for systemic corticosteroids or contraindication to systemic steroids	≥ 2 courses per yr, OR long term (>3 months) low dose steroids
• Significantly impaired quality of life	SNOT-22 ≥ 40
• Significant loss of smell	Anosmic on smell test (score depending on test)
• Diagnosis of comorbid asthma	Asthma needing regular inhaled corticosteroids

*exceptional circumstances excluded (e.g., not fit for surgery)

EUFOREA consensus on biologics for CRSwNP with or without asthma. Allergy. 2019
Fokkens W, Lund V, Mullol J, et al. Rhinology 2020, vol 58 (Suppl 29): 1-464.
web: www.epos2020.com, rhinologyjournal.com

Diffuse bilateral CRS management scheme

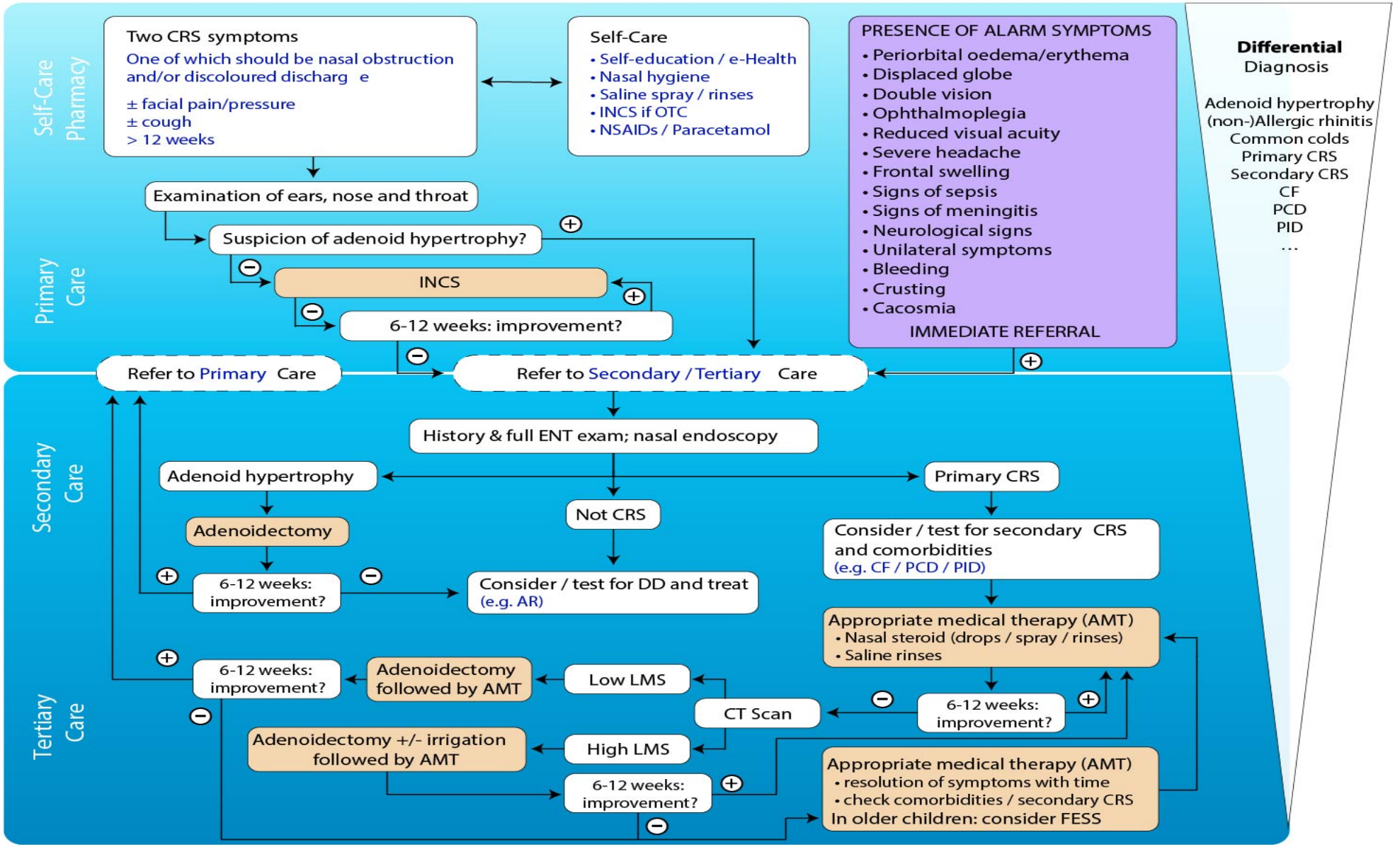




AMT, appropriate medical treatment; INCS, intranasal corticsteroids;

Fokkens W, Lund V, Mullol J, et al. Rhinology 2020, vol 58 (Suppl 29): 1-464.
web: www.epos2020.com, rhinologyjournal.com

EPOS 2020: Care pathways for Paediatric CRS



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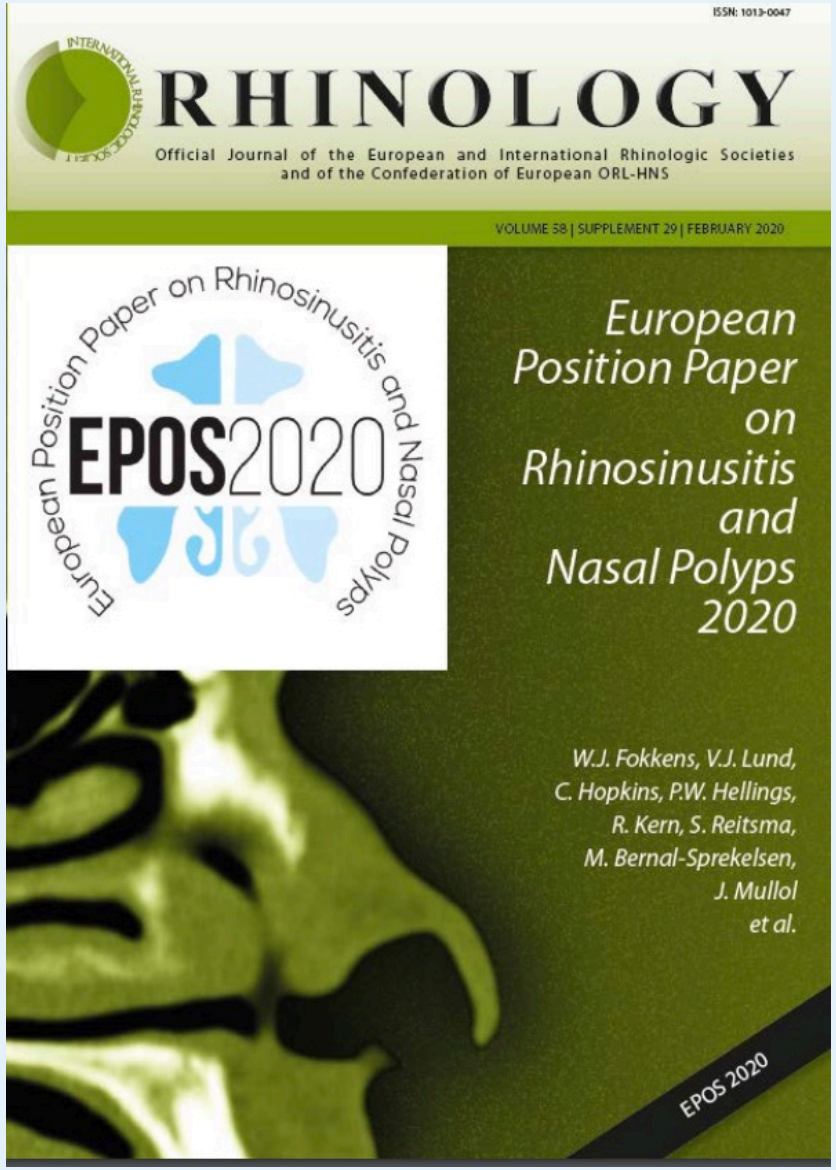

Thank you for listening

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