Drug Class Review
on
Nasal Corticosteroids

Final Report
Evidence Tables

June 2006

The Agency for Healthcare Research and Quality has not yet seen or approved this report

The purpose of this report is to make available information regarding the comparative effectiveness and safety profiles of different drugs within pharmaceutical classes. Reports are not usage guidelines, nor should they be read as an endorsement of, or recommendation for, any particular drug, use or approach. Oregon Health & Science University does not recommend or endorse any guideline or recommendation developed by users of these reports.

Dana Selover, MD
Colleen Smith, PharmD
Kim Peterson, MS

Oregon Evidence-based Practice Center
Oregon Health & Science University
Mark Helfand, MD, MPH, Director
Terri Bianco, PharmD, Project Director

TABLE OF CONTENTS

EVIDENCE TABLES

Funding:

Washington State Preferred Drug Program selected the topic, had input into the Key Questions, and funded this review. The content and conclusions of the review are entirely determined by the Evidence-based Practice Center researchers. The authors of this report have no financial interest in any company that makes or distributes the products reviewed in this report.

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period	Allowed other medications/ interventions
Berger 2003 USA (Fair) ---------- Kaiser 2004 USA	Parallel-group, single-blind, RCT Multicenter	Adult and adolescents with spring SAR for at least 24 mos. Positive epicutaneous or intradermal test to one or more of grass or tree pollen and/or outdoor molds TNSS (the sum of discharge, stuffiness, itching, and sneezing scores recorded the morning of randomization visit plus scores from 3 of the 4 previous days were required to equal at least 42 (of a possible 84) points for patients to continue in the study.	TAA AQ 220 mcg daily FP 200 mcg daily Study duration: 3 weeks	Wash-out period x 5 days involving discontinuation of all rhinitis medications Run-in: none	NR

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Berger 2003 USA (Fair) ---------- Kaiser 2004 USA	Patient reported severity (0=absent to 3=severe of nasal symptoms (nasal drainage, stuffiness, itching, and sneezing) scores twice daily during wash-out period through week 3 Primary outcome: TNSS (sum of individual symptom scores-max=12) RQLQ (patients >17 years of age) baseline and week 3 SAQ at week 3	Mean age (years): 31.6 % Female: 62 Race (%): White 81.7 Black 10.2 Other 8.1	TAA AQ vs. FP Years with allergic rhinitis Mean: 16.6 vs. 19.1 TNSS at baseline Mean: 8.06 vs. 7.64 ---------- Moderate severity (<8.14)(n=69 vs n=76) mean score :6.14 and 6.22 Severe (> or equal to 8.14) (n=79 vs n=71) mean score:10.03 vs 9.47	NR/NR/295	8 (2.7%)/4/ INSS n=290, RQLQ n=232 For Kaiser INSS/TNSS= 295, RQLQ=292

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Outcomes
Berger 2003 USA (Fair) ---------- Kaiser 2004 USA	**TNSS** TAA AQ=FP (data NR) TNSS moderate: TAA AQ (n=69) =39% improvement from baseline vs FP (n=76)=36% improvement from baseline (p=NS) TNSS severe: TAA AQ (n=79)=38% improvement from baseline vs FP (n=71)=41% improvement from baseline (p=NS) INSS moderate and severe difference in mean change from baseline was statistically significant TAA AQ=FP (p=NS) **INSS** (mean estimated from graph): N**asal discharge**: -0.76 vs -0.76 (p=NS) N**asal stuffiness:** -0.80 vs -0.78 (p=NS) **Sneezing:** -0.78 vs -0.80 (p=NS) **Nasal itching:** -0.85 vs -0.88 (p=NS) **RQLQ:** (TAA AQ n=110, FP n=122) Mean overall score: TAA AQ=FP (data NR) RQLQ moderate (TAA AQ n=58) vs (FP n=67): -1.9 vs -1.8 (p<0.0001) RQLQ severe (TAA AQ n=89) vs (FP n=78): -2.4 vs -2.3 (p<0.0001) **SAQ**: less odor reported with TAA AQ than FP (P<0.0001) *Moderate severity: < 8.14 baseline score Severe: > or equal to 8.14 baseline score

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of adverse effects assessment	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events	Comments
Berger 2003 USA (Fair) ---------- Kaiser 2004 USA	Reported by patient Responses to 2 SAQ items prospectively defined as "treatment-related adverse events" (e.g. nose bleeds, nasal irritation)	TAA AQ (n=148) vs FP (n=147) (any causality, (%); possibly related, (%)) Headache: 10 (6.8) vs 6 (4.1); 2 (1.4) vs 1 (0.7) Epistaxis: 4 (2.7) vs 7 (4.8);3(2) vs 6 (4.1) Rhinitis: 3 (2) vs 6 (4.1); 3 (2) vs 4 (2.7) Infection: 2 (1.4) vs 5 (3.4); 0 vs 0 Pain: 4 (2.7) vs 2 (1.4); 0 vs 0 Sinusitis: 3 (2) vs 0; 0 vs 0 Back pain: 1 (0.7) vs 3 (2); 0 vs 0 Pharyngitis: 1 (0.7) vs 4 (2.7); 0 vs 2 (1.4) Cough increased:1 (0.7) vs 3 (2); 0 vs 1 (0.7) Accidental injury: 0 vs 3 (2); 0 vs 1 (0.7)	Withdrawals (overall): 8 Withdrawals (adverse events): 0	Kaiser re-analyzed Berger et al data to examine the effects of each drug on symptoms and HRQL in patients stratified into cohorts based on symptom severity.

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)
Berger 2003 USA (Fair)

Kaiser 2004 USA

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period	Allowed other medications/ interventions
Gross 2002 USA (Fair)	Parallel-group, single-blind, RCT Multicenter	Adult and adolescents with fall (ragweed) AR for at least 24 months. Positive skin prick test for ragweed. TNSS (the sum of discharge, stuffiness, itching, and sneezing scores recorded the morning of randomization visit plus scores from 3 of the 4 previous days were required to equal at least 42 (of a possible 84) points for patients to continue in the study.	TAA AQ 220 mcg daily FP 200 mcg daily Study duration: 3 weeks	Wash-out period x 5 days involving discontinuation of all rhinitis medications Run-in: none	No

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Gross 2002 USA (Fair)	Patient reported nasal symptom scores (nasal discharge, stuffiness, itching; sneezing; ocular itching/tearing/redness) twice daily during wash-out period through week 3 RQLQ baseline and week 3	Mean age (years): 38.8 Female gender (%): 66.5 Race (%): Caucasian 81.3 Black 4.25 Asian 0.85 Hispanic 12.75 Other 0.85	TAA AQ vs FP TNSS at baseline Mean: 8.95 vs 9.01	NR/NR/352	10/NR/ unclear for INSS, safety n= 352. RQLQ n= 349

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Outcomes
Gross 2002 USA (Fair)	TAA AQ vs FP **TNSS:** 49.4% vs 52.7% change from baseline scores at wk 3 (p=NS) **INSS:** TAA AQ=FP (P=NS) in all INSS categories except FP provided greater reduction in sneezing at week 2 (P=0.046) **HRQL:** TAA AQ (n=170) vs FP (n=179) TAA AQ=FP (p=NS) **RQLQ**: individual dimensions TAA AQ = FP (p=NS) except emotions in which FP demonstrated significant improvement (P=0.04)

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of adverse effects assessment	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events	Comments
Gross 2002 USA (Fair)	Reported by patient via daily questionnaires	TAA AQ (n=172) vs FP (n=180) (possibly related, (%); probably related, (%)): Body as a whole: 2 (1.2) vs 3 (1.7); 0 vs 2 (1.1) Headache: 2 (1.2) vs2 (1.1); 0 vs 2 (1.1) Digestive system: 1 (0.6) vs 1 (0.6); 1 (0.6) vs 1 (0.6) Dyspepsia:0 vs 1 (0.6); 0 vs 0 Respiratory system:6 (3.5) vs 7 (3.9); 4 (2.3) vs 5 (2.8) Pharyngitis:1 (0.6) vs 2 (1.1); 0 vs 0 Rhinits:4 (2.3) vs 2 (1.1); 3 (1.7) vs 3 (1.7) Skin and appendages: 35 (20.3) vs 32 (17.8); 82 (47.6) vs 102 (56.7) Application (local) reaction 36 (21) vs 32 (17.8); 81 (47) vs 102 (56.7)	Withdrawals (overall): 10 Withdrawals (adverse events): 2 Two patients in the TAA group withdrew from the study, one patient due to nausea and the other due to nasal dryness, sinus dryness, and insomnia	Application reaction included post-dose burning, stinging, sneezing, or blood in mucus. Outcomes for INSS and TNSS is not reported. Raw data for INSS and TNSS is only reported in a bar graph which is very small so estimating actual numbers would be difficult.

Evidence Table 1. Head-to-head trials in patients with SAR

Author **Year** **Country** **Trial Name** **(Quality Score)**
Gross 2002 USA (Fair)

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period	Allowed other medications/ interventions
Ratner 1992 USA (Fair)	Placebo-controlled Double-blind RCT Multicenter	Adult patients with moderate to severe SAR for at least 24 months Positive skin test to Mountain Cedar, *Juniperus ashei* Normal adrenal function Women of non-childbearing potential At least 200/400 points on INSS on at least 4 out of 7 days of run-in period	FP 200 mcg in the morning + placebo in the evening BDP 168 mcg twice daily Placebo twice daily Study duration: 2 weeks	Run-in period 4-14 days Wash-out: none	Chlorpheniramine 4 mg tablets

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Ratner 1992 USA (Fair)	Nasal exam days 1, 8, and 15 and day 22 of post-treatment f/u INSS severity (nasal obstruction, rhinorrhea, sneezing, and itching) scored by clinician at each visit and by pts at the end of each day(scale of 0 (no symptoms) to 100 (severe symptoms)) Pt reported nasal obstruction upon awakening each day Clinician rated overall effectiveness (7 pt scale) at the end of study Morning plasma cortisol, exam, lab tests, 12-lead ECGs at screening visit and after 2 wks of treatment.	Mean age (years): 37.1 Female gender (%): 45.3 Race not reported	FP vs BDP vs PL asthma, n (%): 27(25) vs 24 (23) vs 20 (19) perennial rhinitis, n (%) 72(68) vs 53(51) vs 58(56) seasonal rhinitis (other than to mountain cedar), n (%) 59(56) vs 61(59) vs 63(61)	NR/NR/NR	4/NR/313

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Outcomes
Ratner 1992 USA (Fair)	FP vs BDP vs PL **INSS** (clinician-rated, patient-rated): For all INSS FP=BDP>PL (P<0.05 for both drugs vs placebo) **Nasal obstruction:** -0.32 vs -0.33 vs -0.23 -0.34 vs -0.37 vs -0.26 **Rhinorrhea:** -0.46 vs -0.44 vs -0.26 -0.38 vs -0.41 vs -0.20 **Sneezing:** -0.36 vs -0.39 vs -0.25 -0.35 vs -0.41 vs -0.19 **Nasal Itching:** -0.42 vs -0.43 vs -0.30 -0.35 vs -0.41 vs -0.24 **Nasal obstruction upon awakening:** FP=BDP on day 2 (p<0.05) and throughout treatment (p<0.01) **Overall efficacy (clinician rated):** FP=BDP>PL (P<0.001)

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of adverse effects assessment	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events	Comments
Ratner 1992 USA (Fair)	Elicited by investigator at each clinic visit	FP (n=106) vs BDP (103) vs PL (n=104) Sore throat: 2(2%) vs 2 (2%) vs 1 (1%) Blood in nasal mucus: 6(6%) vs 1(1%) vs 2(%) Nasal burning: 5(5%) vs 2(2%) vs 4(4%) Epistaxis: 3(3%) vs 2(2%) vs 0 Headache: 0 vs 1(1%) vs 3(3%) Any event: 19(18%) vs 10(10%) vs 19(18%)	Withdrawals (overall): 4 Withdrawals (adverse events): 2 (placebo group for insomnia, objectionable odor of study drug)	Authors only listed adverse events if reported by 3 or more patients across treatment groups All centers were in Texas with an allergen specific to that region. Treatment period was 2 weeks.

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)
Ratner 1992 USA (Fair)

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period	Allowed other medications/ interventions
Graft 1996 USA (Fair)	Placebo-controlled Double-blind Parallel group RCT Multicenter	Adult and adolescent (at least 12 years old) pts with SAR for at least 24 months Positive skin prick test to ragweed Women of non-childbearing status or using acceptable form of birth control Free of nasal and non-nasal symptoms (score less than or equal to 1) and TNSS less than or equal to 2 at screening and baseline.	MF 200 mcg in the morning + placebo in the evening BDP 168 mcg twice daily Placebo twice daily Study duration: 8 weeks	Run-in period: none Wash-out period: 1 day to stop nasal, oral, or ocular decongestants. Oral antihistamines for a variable amount of time depending on duration of action Systemic corticosteroids for 1 month (IM or intraarticular for 3 months), nasal or ocular corticosteroid medications or cromolyn for 2 weeks	No

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Graft 1996 USA (Fair)	INSS : 4 nasal symptoms (rhinorrhea, nasal stuffiness/congestion, nasal itching, and sneezing) and 4 non-nasal symptoms (eye itching/burning, eye tearing/watering, eye redness, itching of ears/palate) using a 4-point rating scale. MD evaluated INSS on screening, day 1 (baseline), and days 8, 22, 29, 36, 50, 57 and the patient evaluated twice daily in a diary. Global Evaluation by patient and MD at each visit Compliance evaluated with phone call day 15 and 43 Adverse events (safety) reviewed with MD at each visit.	Mean age (years): 34.7 Female gender (%):47 Race (%): Caucasian: 93 Black: 3.3 Other: 2.7	Mean duration of disease (years): 19 for all 3 groups Patients entered the study an average of 23 days before onset of ragweed season symptoms.	NR/NR/349	2/NR/330 for efficacy, 347 for safety

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Outcomes
Graft 1996 USA (Fair)	MF (n=114) vs BDP (n=112) vs PL (n=104) The average proportion of minimal symptom days (am and pm scores averaged < or = 2) from the start of ragweed season to study completion: 0.83 vs 0.77 vs 0.64 MF=BDP>PL (p<0.01) The average proportion of minimal symptom days from the start of treatment to study completion: MF=BDP>PL (p<0.01) (numbers not reported) Number of days from start of ragweed season to a non-minimal symptom day (TNSS >/= 3): Median reported in text: 27 vs 27 vs 10.5 Fig.2 % pts with minimal symptoms at day 44: 39 vs 29 vs 29 Number of days to first occurrence of a non-minimal symptom day from start of treatment: 51.5 vs 50 vs 34 MF=BDP>PL (p=<0.01) **TNSS based on diary data** (mean change from baseline-start of ragweed season): Days 1-15 (estimated from graph): 0.4 vs 0.6 vs 1.4 MF=BDP>PL (p>0.01) Days 16-30 (estimated from graph): 0.8 vs 1.1 vs 2 MF=BDP>PL (p>0.01) Days 31-45 (estimated from graph): 0.9 vs 1.3 vs 2 MF=BDP>PL (p>0.01) **Investigator NSS change from baseline(all results estimated from graph** :) Day 8: 0.1 vs 0 vs 0.1 MF=BDP=PL Day 15: 0.4 vs 0.4 vs 0.75 MF=BDP=PL Day 29: 0.8 vs 0.7 vs 1.2 MF=BDP>PL (p>0.01) Day 36: 1.2 vs 1.4 vs 2.9 MF=BDP>PL (p>0.01) Day 50:1.2 vs 1.1 vs 2.4 MF=BDP > PL (p>0.01)

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of adverse effects assessment	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events	Comments
Graft 1996 USA (Fair)	Elicited by investigator at each clinic visit	MF (n=116) vs BDP (n=116) vs PL (n=115) Any adverse event, n (%): 73 (63) vs 59 (51) vs 60 (52) Headache, n (%): 42 (36) vs 25 (22) vs 27 (23) Pharyngitis, n (%): 7 (6) vs 12 (10) vs 6 (5) Upper respiratory tract infection, n (%): 7 (6) vs 3 (3) vs 1 (<1%) Dysmenorrhea*, n (%): 4 (6) vs 0 vs 4 (8%) *percents calculated based on total female population	Withdrawals (overall): 27 Withdrawals (adverse events): 10 (MF=1, BDP=5, PL=4)	Authors only listed adverse events if reported by 5% or more patients across treatment groups Study evaluated the use of MF and BDP as prophylactic agent for SAR Pollen counts collected from each center Typos in figure 2 (key) and table IV dose of BDP Statements in text don't seem to match text with regard to Fig.2. MF had less severe symptoms at baseline until the start of the season.

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)
Graft 1996 USA (Fair)

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period	Allowed other medications/ interventions
McArthur 1994 UK (Fair)	Single-blind Parallel group RCT	Adult pts with a history of at least 2 seasons of SAR At least 2 defined seasonal allergic rhinitis symptoms (blocked nose, runny nose, itchy nose, or sneezing)	BUD 200 mcg twice daily BDP AQ 200 mcg twice Study duration: 3 weeks	Run-in: NR Wash-out: NR	antazoline-xylometazoline eye drops

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
McArthur 1994 UK (Fair)	INSS: recorded daily by pt: runny nose, blocked nose, sneezing, itchy nose, sore eyes, runny eyes (0-no symptoms to 3-severe symptoms) INSS: Clinician visit at entry Global assessment of study medication by pt at wk 3 AE reported by pt in diary card	Mean age (years):27 Female gender (%): 51 Race not reported	Mean duration of disease (years):10 Mean symptom score at baseline: BUD (n=50) vs BDP (n=38) Blocked nose: 1.6 vs 1.39 Runny nose: 1.96 vs 1.95 Itchy nose: 1.43 vs 1.66 Sneezing: 2.06 vs 2.03 P=NS for all INSS at baseline	NR/NR/88	22/NR/77 for efficacy, 88 for safety,73 for global effectiveness survey

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Outcomes
McArthur 1994 UK (Fair)	Mean symptom score for entire treatment period: BUD (n=41) vs BDP (n=36) Blocked nose: 0.39 vs 0.55 (p=NS) Runny nose: 0.38 vs 0.66 (p= 0.01) Itchy nose: 0.3 vs 0.60 (p=0.01) Sneezing: 0.45 vs 0.92 (p<0.001) For mean total weekly scores during wk 1: BUD=BDP (p=NS) wk 2: BUD<BDP (p<0.005) wk 3: BUD<BDP (p<0.005) Global efficacy at end of treatment BUD (n=41) vs BDP (n=33) Noticeably, very or totally effective: 35 (85%) vs 27 (82%)

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of adverse effects assessment	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events	Comments
McArthur 1994 UK (Fair)	Reported by pt	BUD (n=50) and BDP (n=38) Adverse event: n (%) Coughing: 2 (4) vs 0 Headache: 1 (2) vs 0 Nose Bleed:0 vs 1 (2.6) Sneezing: 1 (2) vs 0 Peculiar taste: 1 (2) vs 0 Slight wheezing: 2 (4) vs 0 Nausea/sickness: 0 vs 1 (2.6) Itching: 0 vs 1 (2.6) Diarrhea: 0 vs 1 (2.6) Chest tightness: 1(2) vs 0 Itchy nose: 0 vs 1 (2.6) Sore throat: 1 (2) vs 0 Total: 9 (18) vs 5 (13)	Withdrawals (overall): 22 BUD: 14, (25%) BDP: 8, (21%) Withdrawals (adverse events): 2 (BUD: sneezing and coughing/wheezing)	No SPT for eligibility Other withdrawals were due lack of efficacy, unassociated illness, or refusal to cooperate Withdrawals 22/88 (25%) 11/22 withdrew due to refusal to cooperate.

Evidence Table 1. Head-to-head trials in patients with SAR

Author **Year** **Country** **Trial Name** **(Quality Score)**
McArthur 1994 UK (Fair)

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period	Allowed other medications/ interventions
Langrick 1984 England (Fair)	Single-blind Parallel group RCT Number or Centers: NR	Adult pt with history of moderate to severe hay fever Agreed to treatment during the same 7-week period (May-July)	Flunisolide 100 mcg twice daily BDP AQ 200 mcg twice daily Study duration: 7 weeks	Run-in: NR Wash-out: NR	NR

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Langrick 1984 England (Fair)	INSS on a 4 pt scale (0=none to 3=severe) recorded daily by the pt and at admission and weeks 3 and 7 by the clinician (INSS: sneezing, stuffy nose, nose blowing, runny nose, post-nasal drip, epistaxis, eye symptoms) Overall efficacy: pt and clinician at each visit Nasal exam at week at admission and wks 3 and 7.	Mean age (years): 66.7 Female gender (%): 37.5 Race not reported	Mean duration of disease (years)=7.3 FN vs BDP Diagnosis, n (%): SAR: 32 (94) vs 28 (80) PAR with seasonal exacerbation: 2 (6) vs 7 (20) asthma: 8 (23.5) vs 11 (31) dermatitis: 4 (11.8) vs 5 (14) Family history of allergies: 12 (35.3) vs 8 (23) Usual severity: Moderate: 15 (44) vs 24 (69) Severe: 19 (56) vs 11 (31)	NR/NR/69	9/6/60 overall efficacy, 66 at wk 3, 51 at wk 7

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Outcomes
Langrick 1984 England (Fair)	FN vs BDP **INSS** FN=BDP (p=NS) for all pt reported INSS. Numbers not given, results only in graphical presentation. **Overall efficacy:** FN(n=28)= BDP (n=32)(p=NS) for any of the responses: Physician, Patient n, (%) Total control: 8 (29) vs 11 (34), 8(29) vs 12 (38) Good control: 18 (64) vs 15 (47), 18(64) vs 18 (56) Minor control: 2 (7) vs 6 (19), 2 (7) vs 2 (6) No Control: No pt reported this outcome

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of adverse effects assessment	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events	Comments
Langrick 1984 England (Fair)	Elicited by investigator via indirect questioning	FN vs BDP AQ Dry throat of moderate severity: 1 (3) vs 0 Tickling sensation inside of nose: 0 vs 1 (3)	Withdrawals (overall): 9 Withdrawals (adverse events): 0	No SPT for eligibility Other withdrawals were due to non-compliance, pregnancy, lack of treatment effect

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)
Langrick 1984 England (Fair)

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period	Allowed other medications/ interventions
Ratner 1996 USA (Fair)	Double-blind Placebo-controlled Parallel group Multicenter RCT	Adult and adolescent pts with a history of SAR of Mountain Cedar allergy for at least 24 months Positive Skin test to Mountain Cedar Total symptom score at baseline/screening within range of 2 to 7. Stabilized on anti-allergy injection or had not had injection in 1 year proceeding study enrollment Otherwise healthy	FN (old formulation) 100 mcg twice daily FN (new formulation) 100 mcg twice daily Placebo vehicle (new formulation) twice daily Placebo vehicle (old formulation) twice daily Study duration: 6 weeks	Run-in period: NR Wash-out: NR	Chlorpheniramine 4 mg tablets (maximum of 6 tablets per 24 hours)

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Ratner 1996 USA (Fair)	**INSS**: recorded daily by pt and assessed by the clinician at weekly office visit: Rhinorrhea complex (runny nose, stuffy nose, post-nasal drip), sneezing, nasal itching, and eye symptoms (0-no symptoms to 3-severe symptoms) **TSS**: 4 symptom scores (Rhinorrhea complex, sneezing, nasal itching, and eye symptoms) summed **TNSS**: The scores for rhinorrhea complex, sneezing, and nasal itching were summed	Mean age (years): 44 Female gender: 134 (62%) Race not reported	Baseline TNSS: Numbers not reported but text indicates that there were no differences.	256/NR/218	14/2/136 for efficacy, 216 for safety

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Outcomes
Ratner 1996 USA (Fair)	FN (new) n=34 vs VH (new) n=35 vs FN (old) n=36 vs VH (old) n=31 **INSS (mean score):** **Rhinorrea complex**: 1.64 vs 2.53 vs 1.38 vs 2.36 FN (new) = FN (old) (p=NS) Each active drug > VH (old) and VH (new) respectively (p=0.0003, 0.0001) **Sneezing**: 0.6 vs 1.24 vs 0.64 vs 1.28 FN (new) =FN (old) (p=NS) Each active drug > VH (old) and VH (new) respectively (p<0.0001, <0.0001) **Nasal Itching**: 0.54 vs 1.13 vs 0.53 vs 1.08 FN (new) =FN (old) (p=NS) Each active drug > VH (old) and VH (new) respectively (p=0.0004, 0.001) **Eye symptoms**: 1.02 vs 1.20 vs 1 vs 1.26 FN (new)=FN (old)=VH (new)=VH (old) (p=NS) **Combined Scores on Peak Pollen days (mean score):** **TSS:** 3.81 vs 6.11 vs 3.55 vs 5.97 FN (new) = FN (old) (p=NS) Each active drug > VH (old) and VH (new) respectively (p<0.0001, <0.0001) **TNSS**: 2.79 vs 4.90 vs 2.54 vs 4.73 FN (new) = FN (old) (p=NS) Each active drug > VH (old) and VH (new) respectively (p<0.0001, <0.0001) **Global Assessment:** Would you use this product again? FN (new) n=34) vs VH (new) n=-32 vs FN (old) n=36 vs VH (old) n=29 Yes: 31 (91) vs 21 (66) vs 32 (89) vs 18 (62) No: 3 (9) vs 11 (34) vs 4 (11) vs 11 (38) FN (new) = FN (old) (p=NS) Each active drug > VH (old) and VH (new) respectively (p=0.012, 0.012) Would you prescribe this medication again? FN (new) n=34) vs VH (new) n=-33 vs FN (old) n=36 vs VH (old) n=29 Yes: 31 (91) vs 20 (61) vs 33 (92) vs 16 (55) No: 3 (9) vs 13 (39) vs 3 (9) vs 13 (45) FN (new) = FN (old) (p=NS) Each active drug > VH (old) and VH (new) respectively (p=0.004, <0.001)

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of adverse effects assessment	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events	Comments
Ratner 1996 USA (Fair)	Reported by pt	Rhinitis (34%) and headache (8%) were the most frequently reported drug-related AE, and the most severe. FN (new) vs VH (new) vs FN (old) vs VH (old) **Burning/stinging,** n (%): none: 44 (80) vs 47 (87) vs 32 (58) vs 21 (60) Present: 11 (20) vs 7 (13) vs 23 (42) vs 21 (40) FN (new)>FN(old) (p=0.006) FN (new)=VH (new) (p=NS) FN (old) =VH (old) (p=NS) **Sneezing**, n (%): 2 (4) vs 3 (6) vs 0 vs 1 (2) **Rhinorrhea**, n (%): 4 (7) vs 1 (2) vs 1 (2) vs 0 **Dry nose** n, (%): 2 (4) vs 0 vs 6 (11) vs 1 (2) **Irritation/tenderness**, n (%): 2 (4) vs 3 (6) vs 2 (4) vs 3 (6) **Other**, n (%): 1 (2) vs 4 (7) vs 2 (4) vs 3 (6) **Aftertaste**: none, n (%): 23 (42) vs 34 (63) vs 34 (62) vs 37 (71) less than 10 mins, n (%): 17 (31) vs 13 (24) vs 15 (27) vs 13 (25) 10 mins or more, n (%):15 (27) vs 7 (13) vs 6 (11) vs 2 (4) FN (new) > FN (old) (p=0.006) FN (new) > VH (new) (p=0.005) (FN (old) = VH (old) (p=NS)	Withdrawals (overall):14 Withdrawals (adverse events): 0 One withdrawal was a death from myocardial infarction pt was on FN (old) and his death was deemed unrelated to the study medication. 68 patients excluded due to low pollen count at one center.	68 pt excluded from one center due to low pollen cnt and inability to demonstrate superior efficacy All centers in Texas and pts only SPT for Mountain cedar NS difference for eye symptoms b/n VH and active drug

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)
Ratner 1996 USA (Fair)

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period	Allowed other medications/ interventions
Welsh 1987 USA (Fair)	Single-Blind (Cromolyn vs FN) Double-Blind (BDP AQ vs PL) RCT	Adult and adolescent pt with a history of ragweed SAR for 24 mos. (With symptoms in Aug and Sept.) No ragweed hyposensitization for at least 2 years Positive SPT to ragweed Increase in pre-seasonal level of serum IgE antibody to ragweed Patent nasal airway without polyps Not pregnant or lactating Good general health without illness that would interfere with study	DB: BDP AQ 168 mcg twice daily vs PL twice daily SB: FN 100 mcg twice daily vs Cromolyn Sodium 4% 1 spray each nostril four times daily Study duration: 6 weeks Cromolyn and FN (Nasalide) were commercially available. BDP AQ and PL were delivered in metered-dose, manual pump nasal spray containing microcrystalline cellulose, carboxymethylcellulose sodium, dextrose, benzalkonium chloride, polysorbate 80, and 0.25% (weight/volume) phenylethyl alcohol as vehicle. Beconase AQ consists of a microcrystalline suspension of beclomethasone dipropionate monohydrate in this aqueous medium.	Run-in: Yes x 14 days in which pts recorded symptoms of hay fever/asthma, supplemental antihistamine use, no. of hours spent in air conditioning	supplemental antihistamines, pseudoephedrine (or other equivalents), bronchodilators, theophylline for asthmatic pts

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Welsh 1987 USA (Fair)	**INSS:** Pt kept daily record of symptoms beginning July 11 to Sept 18th. Pt diary included record of time spent in air conditioning as well as use of supplemental antihistamines. **Global assessment** of efficacy by pts at the final visit	Mean age (years): 28 Female gender: 33 (27.5%) Race not reported	Hay fever score (mean out of possible max score of 24): 15.4 Asthma score (mean out of possible max score of 12): 1.89 Pre-seasonal IgEAR (mean ng/mL): 218 Current smokers (mean number of pts): 5 Past ragweed hyposensitization (mean number of pts): 9.5	NR/NR/120	FN vs CR vs BDP AQ vs PL 22/1/ analyzed at baseline: 30 vs 30 vs 29 vs 29 pre-peak: 29 vs 30 vs 28 vs 28 peak: 27 vs 24 vs 27 vs 22 post peak: 23 vs 21 vs 24 vs 22

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Outcomes
Welsh 1987 USA (Fair)	FN vs BDP AQ **Total hay fever scores:** Baseline (FN n=30 vs BDP AQ n=29): 3.8 vs 2.8 Pre-peak (FN n=29 vs BDP AQ n=28): 2.9 vs 2.7 Peak (FN n=27 vs BDP AQ n=27): 4.3 vs 5.5 Post-peak (FN n=23 vs BDP AQ n=24): 3.1 vs 2.8 FN=BDP AQ (p=ns) **Eye symptoms:** FN vs BDP AQ vs PL 8.02 vs 12.63 vs 15.93 (FN=BDP AQ and FN>PL (p<0.05) Mean scores were augmented for use of antihistamines (chlorpheniramine 4 mg and pseudoephedrine 30 mg added a score of 1 and longer-acting medications or larger doses added a score of 2 or 3 accordingly.) **Global assessment of efficacy:** FN=BDP AQ for substantial reduction in hay fever symptoms when compared with previous years.

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of adverse effects assessment	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events	Comments
Welsh 1987 USA (Fair)	Not reported	FN vs CR vs BDP AQ vs PL **Nasal burning:** 10 (33%) vs. 0 vs 0 vs 0 **Sore nose:** 1 (3.3) vs 1 (3.3) BDP AQ 1 (3.3) vs 0 **Headache:** 0 vs 5 (16.7) vs 5 (16.7) vs 1 (3.3) **Nosebleeds:** 0 vs 1 (3.3) vs 0 vs 1 (3.3) **Bad taste:** 0 vs 1 (3.3) vs 1 (3.3) vs 0 **Canker sores:** 1 (3.3) vs 0 vs 0 vs 1 (3.3) **Dry nose:** 1 (3.3) vs 0 vs 0 vs 2 (6.7) **Upper respiratory tract infections** "common cold" during post-peak period: 6 (20) vs 7 (23) vs 15 (50) vs 9 (30)	Withdrawals (overall): 22 Withdrawals (adverse events): 2 (burning and stinging FN)	FN is Nasalide AE 50% common cold with BDP AQ Pollen count included

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)
Welsh 1987 USA (Fair)

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period	Allowed other medications/ interventions
Stern 1997 UK, Denmark (Fair)	Placebo-controlled Double-blind (BUD vs PL) Single-blind (BUD vs FP) Multicenter RCT	Adult pts with a history of at least 24 mos. Of SAR provoked by grass pollen Positive SPT or RAST to grass pollen	BUD AQ 64 mcg in one bottle and placebo in the other bottle (one spray in each nostril from each bottle daily=128 mcg once daily) BUD AQ 64 mcg in both bottles (one spray in each nostril from each bottle daily=256 mcg once daily) FP 50 mcg in both bottles (one spray in each nostril from each bottle once daily=200 mcg once daily) Study duration: 4-6 weeks	Run-in: NR Wash-out: NR	terfenadine 60 mg tablets (60-120 mg daily) disodium cromoglycate (20 mg/mL) 1-8 drops to be instilled into each eye daily

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Stern 1997 UK, Denmark (Fair)	**INSS:** daily diary records kept by pts with a 4 pt scale (0=none, 3=severe) Blocked nose, runny nose, sneezing, and eye symptoms **Combined NSS:** Addition of INSS scores **Global assessment of efficacy:** At visit 5 using a 5-pt scale **Safety:** Standard questions from investigators at each visit	Mean age not given Age range: 18-72 Female gender: 266 (44%) Caucasian, n (%) 595 (99) Asian, n (%): 2 (0.33) Black, n (%): 4 (0.66) Other, n (%): 1 (0.1)	Mean disease duration (years): 18.85 Baseline Combined nasal symptoms: PL vs BUD 128 vs BUD 256 vs FP UK/DK: 3.25/1.93 vs 3.24/2.38 vs 2.95/2.25 vs 3.13/2.21	NR/NR/635	84/NR/583 "per protocol analysis" 602 "all pts treated" analysis (out of 602 pt 19 were considered protocol violators and the data was analyzed with and without data from those individuals)

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Outcomes
Stern 1997 UK, Denmark (Fair)	INSS PL (n=59) vs BUD 128 (n=181)* vs BUD 256 (n=182) vs FP (n=178) Blocked nose: +0.26 vs -0.35 vs -0.33 vs -0.28 Runny nose: +0.46 vs -0.47 vs -0.46 vs -0.44 Sneezing: +0.31 vs -0.48 vs -0.54 vs -0.45 BUD 256 > FP (p=0.04) Eye symptoms: +0.25 vs -0.02 vs -0.06 vs 0 TNSS (combined nasal symptoms score): +1.02 vs -1.29 vs -1.31 vs -1.18 FP=BUD 128/256 > PL (p<0.001) On days in which pollen cnt > 10 grains/m^3 BUD 256> BUD 128=FP for TNSS (p=0.04), runny nose (p=0.04) and sneezing (p=0.02) *n=180 for blocked nose and combined nasal symptoms Global assessment: PL (n=51) vs BUD 128 (n=177) vs BUD 256 (n=173) vs FP (n=171) Total control of symptoms 31% vs 85% vs 88% vs 82%

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of adverse effects assessment	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events	Comments
Stern 1997 UK, Denmark (Fair)	Elicited by investigator and reported by pt	33% of individuals reported adverse events during the study. Most frequently reported adverse events were aggravation of asthma (not significantly different between the three treatment groups), followed by flu-like disorder, and headache.	Withdrawals (overall): 84 33 at baseline and 51 during the treatment period Withdrawals (adverse events): 6 (PL=1, BUD 128=1, BUD 256=1, FP=3)	

Evidence Table 1. Head-to-head trials in patients with SAR

Author **Year** **Country** **Trial Name** **(Quality Score)**
Stern 1997 UK, Denmark (Fair)

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period	Allowed other medications/ interventions
Greenbaum 1988 Canada (Fair)	Double-blind Cross-over Multicenter RCT	Adult and adolescent pts with a 12 month history of SAR associated with tree and/or grass pollen Positive SPT to tree and/or grass pollen Sufficiently severe rhinitis to require therapy with NCS (okay if pt had FL (old) in the past)	FN (new) 100 mcg twice daily x 2 weeks FN(old) 100 mcg twice daily x 2 weeks Then cross-over to whichever one pt hadn't used for another 2 weeks	Run-in: NR Wash-out: NR	Chlorpheniramine 4mg tablets If chlorpheniramine was ineffective and/or if side effects occurred with the medication, other marketed antihistamines or decongestants were allowed to be taken concomitantly

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Greenbaum 1988 Canada (Fair)	Pt recorded SE profile daily and reported at 2 and 4 wk visits Pt and investigator subjective evaluation of control of pt's nasal symptoms at 2 and 4 wk visits Pt global assessment of efficacy wk 4	Demographics not reported	24/122 pts had secondary diagnosis of asthma, allergic conjunctivitis, atopic dermatitis Two times as many patients had SAR>5 yrs compared to those who had rhinitis for <5 yrs (numbers not reported) 120/122 pts described their nasal symptoms during the past pollen season as either moderate or severe	NR/NR/122	18/10/ FN(new) (n=110), FN (old) (n=112) for nasal burning/stinging n=110 for throat irritation Overall comparisons of medications (efficacy/safety) (n=107)

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Outcomes
Greenbaum 1988 Canada (Fair)	Overall comparison of medications: (n=107) Nasal burning and throat irritation: FN (new)<FN (old) (p<0.001 and p=0.009) (less severe SE with New formulation) Overall efficacy: No difference reported between formulations: 58 (54%) Pts who did not perceive a difference in control of nasal symptoms between the two medications: 21 pts preferred FN (old) and 28 pts preferred FN (new) Overall acceptability: 73 pts preferred FN (new), 22 preferred FN (old) (p<0.001) Relief of nasal symptoms reported at the end of each treatment period (2 wks) Pt reported:FN (new)> FN (old) (p=0.43) Investigator evaluation: FN (new) =FN (old) (p=0.399) Antihistamine use (mean number of days used): FN (new)=4.37 FN (old)= 4.39

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of adverse effects assessment	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events	Comments
Greenbaum 1988 Canada (Fair)	Reported by pt	FN (old) (n=112) vs FN (new) (n=110) **Nasal burning/stinging:** None: 13 (11) vs 52 (47) Just noticeable: 12 (31) vs 36 (33) Mild: 38 (34) vs 15 (14) Moderate: 25 (22) vs 7 (6%) Severe: 15 (13) vs 0 **Throat irritation** (n=110 for both groups): None: 59 (54) vs 65 (59) Just noticeable: 24 (22) vs 26 (24) Mild: 15 (14) vs 11 (10) Moderate: 12 (11) vs 6 (5) Severe: 0 vs 2 (2) **Duration of nasal stinging/burning** (Median) (n=97): FN (new): 0.1 min FN (old): 1 min FN(new)<FN (old) (p<0.001) **Duration of throat irritation** (median) (n=57) FN (new): 1 min FN (old): 0.5 min FN(new)=FN(old) (p=ns) 80 pts reported a difference on duration of nasal burning/stinging between the two products FL (new)<FL (old) (p<0.001) Nausea: < 5% of pts Headache: < 12% of pts	Withdrawals (overall): 18 Withdrawals (adverse events): 8 (5 pt in FN (old), 3 pts FN (new))	Pts didn't record symptom control daily only at the end of each 2 wk treatment period.

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)
Greenbaum 1988 Canada (Fair)

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period	Allowed other medications/ interventions
Hebert 1996 Canada and Europe (Fair)	Double-blind Parallel group Double-dummy Placebo-controlled Multicenter RCT	Adult pts with history of moderate to severe SAR for at least 24 months Positive skin test to at least one aeroallergen (i.e. tree and/or grass) TSS (nasal and non-nasal symptoms) of at least 6 and INSS scores of at least 2 (moderate severity) for nasal congestion plus one other nasal symptom	MF 100 mcg once daily + PL BDP AQ twice daily and PL MF in the evening MF 200 mcg once daily + PL BDP AQ twice daily and PL MF in the evening BDP AQ 200 mcg twice daily + PL MF twice daily PL BDP AQ and PL MF twice daily (Each pt received a total of 16 sprays per day--double dummy) Treatment duration: 4 weeks	Run-in: No Wash-out: No	Loratadine 10 mg tablets (maximum permitted one tablet per day)

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Hebert 1996 Canada and Europe (Fair)	Efficacy and safety assessed at 4,8, 15, 22, and 29 days Rating scale (0=no symptoms to 3=severe symptoms) INSS: pt recorded score in diary twice daily, physician evaluated/scored at each visit TNSS: combined total score of 4 nasal symptoms TSS: combined total score of nasal and non-nasal symptoms Global evaluation of overall efficacy (5-point scale) at each visit by pt and physician(referred to pt diary cards to determine score)	Mean age (years): 32 Female gender (%): 8.5 Race not reported	MF 100 mcg (n=126) vs MF 200 mcg (n=125) vs BDP AQ (n=125) vs PL (n=121) Disease severity (%) Moderate: 72 vs 83 vs 80 vs 77 Severity: 28 vs 17 vs 20 vs 23 Mean TNNS: 8.1 vs 8.1 vs 7.9 vs 8 Mean TSS: 12.7 vs 12.2 vs 12.4 vs 12.8	NR/NR/501	67/NR/497 for safety and 477 for efficacy

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Outcomes
Hebert 1996 Canada and Europe (Fair)	MF 100 mcg vs MF 200 mcg vs BDP AQ vs PL **physician evaluated INSS** (mean percentage change from baseline:) **Rhinorrhea:** Day 4: 32 vs 44 vs 47 vs 30 Day 8: 51 vs 55 vs 58 vs 26 End point: 71 vs 75 vs 73 vs 49 MF 100=MF 200=BDP AQ > PL (for all days except day 4 in which baseline percentage change for MF 100 was not statistically significant when compared with PL) **Nasal stuffiness/congestion:** Day 4: 27 vs 36 vs 43 vs 27 Day 8: 41 vs 35 vs 45 vs 28 End point: 62 vs 67 vs 61 vs 45 MF 100=MF 200=BDP AQ> PL ($p<0.01$ or $p<0.05$) except for MF 100 and MF 200 on Day 4 were not statistically significant when compared to PL **Nasal itching:** Day 4: 35 vs 38 vs 41 vs 23 Day 8: 56 vs 59 vs 58 vs 31 End point: 76 vs 77 vs 74 vs 52 All treatments>PL except MF 100 and 200 at day 4 **Sneezing:** Day 4: 45 vs 49 vs 52 vs 20 Day 8: 63 vs 64 vs 71 vs 32 End point: 80 vs 77 vs 80 vs 58 All treatments>PL ($p<0.01$) at all time points **TNSS physician evaluated** (percentage change from baseline) (estimated from graph:) Day 4:35 vs 43 vs 45 vs 29 Day 8: 53 vs 59 vs 59 vs 34 Day 15: 60 vs 73 vs 64 vs 43 Day 22: 68 vs 85 vs 66 vs 50 Day 29: 78 vs 85 vs 75 vs 59 The only value not statistically superior to placebo was MF 100 at day 4.

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of adverse effects assessment	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events	Comments
Hebert 1996 Canada and Europe (Fair)	Reported by pt and observed by physician	n=497 MF 100 vs MF 200 vs BDP AQ vs PL Any adverse event n, (%): 32 (25) vs 32 (26) vs 38 (30) vs 34 (28) Headache: 10 (8) vs 12 (10) vs 10 (8) vs 8 (7) Epistaxis 4 (3) vs 8 (6) vs 6 (5) vs 4 (3) Nasal burning: 8 (6) vs 4 (3) vs 5 (4) vs 6 (5) Pharyngitis: 4 (3) vs 3 (2) vs 5 (4) vs 5 (4) Sneezing: 3 (2) vs 1 (<1) vs 5 (4) vs 6 (5) AE reported by at least 4% of pts in any treatment group	Withdrawal (overall): 67 Withdrawals (adverse events): 15 (MF 100=4 (3%), MF 200=5 (4%), BDP=0, PL=6 (5%))	0 pts withdrew from BDP AQ grp due to AE Women excluded if of child-bearing age Sprays were given directly after one another (double dummy--16 sprays) MF 100 - diluted by spray of PL would explain day 4 inferiority to MF 200.

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)
Hebert 1996 Canada and Europe (Fair)

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period	Allowed other medications/ interventions
Lumry 2003 USA (Fair)	Single-blind parallel group Multicenter RCT	Adult pts with a history of Fall ragweed pollen season during the preceding 24 mos. requiring medication use and were considered candidates for treatment with NCS Positive SPT for ragweed allergen 4 day baseline monitoring of nasal symptoms (discharge, stuffiness, itching, and sneezing) had to be at least 24 out of 48 points	TAA AQ 220 mcg once daily BDP AQ 168 mcg twice daily Treatment duration: 3 weeks	Run-in: No Wash-out: Yes no rhinitis medication was allowed 6 days preceding the baseline visit until the end of the study.	Ophthalmic vasoconstrictor/deconge stant to relieve eye symptoms

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Lumry 2003 USA (Fair)	Efficacy: pt diary card every evening (rating scale 0=none to 3 = severe) evaluating nasal discharge, stuffiness, itching, sneezing, and total eye symptoms (itchiness, tearing, and redness) A nasal index score---combined score of nasal discharge, stuffiness, and sneezing (0-9) Global evaluation of efficacy by pt and physician at final clinic visit. Pt reported SAR (daily comfort scores) every morning RQLQ-prior to treatment, wk 1, 2, and 3 (final visit)	Mean age (years): 37 Female gender (%): 51 White (%): 86.5 Other (%): 13.5	TAA AQ (n=75) vs BDP (n=77) Baseline scores: Nasal stuffiness: 2.5 vs 2.4 Nasal discharge: 2.4 vs 2.4 Sneezing: 2 vs 2.3 Nasal itching: 2.1 vs 2.2 Nasal index: 6.8 vs 7.1 Total eye symptoms: 2 vs 2	NR/NR/152	6/1/147 efficacy at wk 3, 152 for safety, 114 for QOL

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Outcomes
Lumry 2003 USA (Fair)	TAA AQ (n=74 wk 1, 2 and overall, n=72 wk 3) vs BDP AQ (n=77 wk 1, 2 and overall, n=76 wk 2) **Nasal stuffiness:** WK 1: -0.81 vs -0.84 WK 2: -1.05 vs -0.94 WK 3: -1.21 vs -1.09 Overall: -1.01 vs -0.97 **Nasal discharge:** WK 1: -0.77 vs -0.92 WK 2: -1.04 vs -1.14 WK 3: -1.26 vs -1.27 Overall: -1.01 vs -1.11 **Sneezing:** WK 1: -0.65 vs -1.01 WK 2: -0.92 vs -1.23 WK 3: -1.15 vs -1.35 Overall: -0.90 vs-1.18 **Nasal itching:** WK 1: -0.75 vs -0.90 WK 2: -0.97 vs -1.01 WK -1.21 vs -1.09 Overall: -1.01 vs -0.97 **Nasal Index:** WK 1: -2.23 vs -2.76 WK 2: -3.01 vs -3.31 WK 3: -3.63 vs -3.70 Overall: -2.92 vs -3.26 **Total eye symptoms:** WK 1: -0.56 vs -0.53 WK 2: -0.70 vs -0.56 WK 3: -0.86 vs -0.72 Overall: -0.70 vs -0.61 **Global assessment of efficacy:** (numbers not reported) Overall 82.4% of pts and 78.4% of physicians felt that symptoms of rhinitis had greatly or somewhat improved following treatm TAA AQ (n=59) vs BDP (n=55) **RQLQ:** Overall change from baseline: -1.71 vs -1.79 No significant differences between treatments in QOL variables (sleep index, non-hay fever symptoms, practical problems, nasal symptoms, eye symptoms, and activities). **SAR** TAA AQ was statistically significantly preferred (p<0.05) by pt when compared to BDP AQ for both medication odor and taste.

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of adverse effects assessment	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events	Comments
Lumry 2003 USA (Fair)	Reported by pt	TAA AQ (n=75) vs BDP AQ (n=77) Number of pts reporting adverse event, n (%): 26 (35) vs 27 (35) Number of adverse events: 39 vs 34 Body as a whole, n (%) 16 (21) vs 10 (13) Respiratory system, n (%):11 (15) vs 8(10) Skin and appendages, n (%): 1 (1) vs 7(9) Digestive system, n (%): 4 (5) vs 4 (5) Nervous system, n (%): 3 (4) vs 0	Withdrawals (overall): 6 Withdrawals (adverse events): 0	

Evidence Table 1. Head-to-head trials in patients with SAR

Author **Year** **Country** **Trial Name** **(Quality Score)**
Lumry 2003 USA (Fair)

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period	Allowed other medications/ interventions
Small 1997 Canada (Fair)	Single-blind Parallel group Multicenter RCT	Adult and adolescent pts with a history of Spring SAR for at least 24 months A positive SPT to one or more spring pollen allergens At least 2 or more nasal symptoms including rhinorrhea, congestion, sneezing, and itching upon screening Rhinitis Index score (combined score of the aforementioned symptoms) of at least 24 out of 48 on the 4 highest score of the last 5 days of the drug-free baseline period. Any pt who did not reach the limit of 24 points within 14 days was discontinued from the study.	TAA (aerosol) 220 mcg once daily FP 200 mcg once daily Study duration: 3 weeks	Run-in: No Wash-out: Yes 5-14 days before randomization.	All nonsteroidal medications required by the pt to manage acute or chronic illness unrelated to rhinitis were permitted exception medications that would interfere with the assessment of study drugs.

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Small 1997 Canada (Fair)	Pt recorded nasal symptoms (0=none, 3=severe) daily every morning before randomization and throughout the 3 week period Pt rated acceptance on 10 different aspects using a 5 pt scale every day Global assessment of efficacy from Pt and Investigator at wk 1 and 3 (0=no effect on nasal symptoms, 3=AR symptoms and overall discomfort greatly reduced)	Mean age (years): 28 Female gender (%): 52 Race not reported	TAA (n=117) vs FP (n=116) Mean duration of allergy (mo): 162 TAA (n=111) vs FP (n=112) RIS: 7.66 vs 7.9 Congestion: 2.16 vs 2.14 Rhinorrhea: 1.88 vs 2 Sneezing: 1.81 vs 1.78 Nasal itch:1.8 vs 1.76	NR/NR/233	10/0/233 for safety and 223 for efficacy

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Outcomes
Small 1997 Canada (Fair)	TAA (n=111) vs FP (n=112) Mean change from baseline, n (%) **Congestion**: -1.06 (-49) vs -1.19 (-56) (p=0.58) **Rhinorrhea**: -1.1 (-59) vs -1.24 (-62) (p=0.08) **Sneezing**: -1.05 (-58) vs -1.09 (-61) (p=0.51) **Nasal itch**: -0.99 (-55) vs -1.07 (-61) (p=0.64) **RIS**: -4.2 (-55) vs -4.6 (-60) **Global efficacy:** No statistically significant differences between the two treatments for both pt and physician assessments (numbers not reported) **Total daily scores for pt acceptance** (0= not bothersome, 4=bothersome) Medication runs down throat: 0.7 vs 6.77 (p<0.01) Medication runs out of nose: 1.19 vs 6.26 (p<0.01) Medication tastes bad 2.84 vs 5.33 (p=NS) Medication causes sore throat: 1.36 vs 0.77 (p=NS) Medication causes bleeding nose: 0.37 vs 0.14 (p=NS) Medication causes dry nostril: 4.88 vs 2.15 (p<0.01) Medication causes bloody mucus: 0.86 vs 0.65 (p=NS) Medication causes stuff-up nose: 10.67 vs 5.31 (p<0.01)

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of adverse effects assessment	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events	Comments
Small 1997 Canada (Fair)	Reported by pt	TAA (n=117) vs FP (n=116) Overall AE, no pts (%): 31 (26) vs 25 (22) Only reported AE reported by more than 2% of pts Headache, %: 5 vs 9 Epistaxis, %: 3 vs 4	Withdrawals (overall): 10 Withdrawals (adverse events): 1 (TAA group for severe headache)	TAA on market as aerosol using HFA propellant (Nasacort HFA) unclear how to interpret AE for this CFC formulation Pt acceptance scores included due to likeness with AE (eg. Dry nose, sore throat, etc.) Hard to interpret clinically in single blind study.

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)
Small 1997 Canada (Fair)

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period	Allowed other medications/ interventions
LaForce 1994 USA (Fair-good)	Double-blind Placebo-controlled Parallel group Multicenter RCT	Adult and adolescent patients (12-67 years old) with history of SAR for 2 spring seasons A positive SPT to at least one spring allergen present in geographical area Moderate to severe SAR symptoms TNSS of 200/400 on 4 out of 7 days of Run-in	FP 100 mcg twice daily FP 200 mcg once daily BDP AQ 168 mcg twice daily PL twice daily Study duration: 4 weeks	Run-in: yes x 4-14 days Wash-out: No	Chlorpheniramine 4 mg tablets

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
LaForce 1994 USA (Fair-good)	Pt recorded nasal symptoms (0=none, 3=severe) daily every morning (nasal obstruction, rhinorrhea, sneezing and itching) and through-out the entire day x 4 wks Clinician rated nasal symptom severity at weekly clinic visits Global assessment by clinician at end of trial Monitoring of HPA axis function pre-treatment and on the final study day.	Mean age (years): 24 Female gender (%): 29 Race not reported Adolescents (n=110) 10% female Adults (n=128) 45% female (see exclusion criteria)	PL (n=58) vs FP 100 (n=64) vs FP 200 (n=55) vs BDP AQ (n=61) asthma: 22 (38) vs 28(44) vs 29(53) vs 21(34) perennial rhinitis: 41(71) vs 46(72) vs 46(84) vs 46(75) + SPT to grass, n:48 vs 50 vs 44 vs 55 + SPT to tree, n: 40 vs 36 vs 36 vs 30	NR/NR/238	3/0/Number analyzed not totally clear but was either 238 or 235

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Outcomes
LaForce 1994 USA (Fair-good)	Patient-rated nasal scores FP 100 mcg > BDP AQ in reducing nasal obstruction and rhinorrhea throughout the 4 weeks(p<0.05) Improvement in obstruction, rhinorrhea, sneezing, and itching throughout the trial with FP vs PL Improvement in sneezing and nasal itching throughout the trial with BDP AQ vs PL Rhinorrhea and obstruction (and obstruction upon awakening) were reduced more quickly when compared to BDP and PL. Within the first 12 hours FP 100 mcg had less nasal obstruction than BDP **Overall patient-rated nasal symptoms** for the entire trial: FP 100 mcg >BDP AQ **Overall patient-rated nasal symtpoms** for the second and third weeks: FP 200 mcg>BDP (p<0.05) **Clinician-rated mean total nasal symptoms scores:** Week 1: FP 100 and FP 200 (-0.48) vs BDP AQ (-0.35) Final: decrease with acitve treatements ranged from (-0.55 to -0.67) improvements were significantly greater for the FP 100 mcg group compared with PL (p<0.01) For FP 200 mcg improvements reached significance vs PL only on days 8 and 15. For BDP significantly greater improvements vs PL occured on days 15, 22, and 29 (p<0.05) **Global assessment of efficacy:** FP 100 and 200> PL and BDP >PL (p<or equal to 0.02)

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of adverse effects assessment	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events	Comments
LaForce 1994 USA (Fair-good)	Unclear who reported but authors state all events were reported and followed to resolution	PL (n=58) vs FP 100 (n=64) vs FP 200 (n=55) vs BDP AQ (n=61) Any adverse event, n (%): 11(19) vs 8(13) vs 7(13) vs 13(21) Sore throat: 1(2) vs 2 (3) vs 0 vs 2(3) Nasal burning: 2(3) vs 1(2) vs 1(2) vs 4(7) Nosebleed: 2 (3) vs 0 vs 1(2) vs 3(5) Headache: 2(3) vs 3(5) vs 2(4) vs 3(5) HPA monitoring: FP 100 and 200 and BDP: no differences in free cortisol Statistically significant differences in urinary 17-ketogenic steroid levels were observed with FP 100 mcg bid group (9.6 to 11.7 mg) and decreases in the BDP AQ and PL groups (9 to 7.3 mg and 9.4 to 8.6, respectively) For FP 200 mcg--no change (8.5 mg) Authors state not clinically significant and mean values are within normal range.	Withdrawals (overall): 3 Withdrawals (adverse events): 1 (BDP AQ pt with exacerbation of asthma)	110 adults and 128 adolescents AE reported only if more than 3 patients across groups had experienced 10% female in adolescent group Nasal sx recorded throughout entire day ~70% of pts also had perennial rhinitis Raw data in the form of graphs with Y-axis scale such that lines are very close together and meaningful data would be difficult to estimate.

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)
LaForce 1994 USA (Fair-good)

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period	Allowed other medications/ interventions
Bronsky 1987 USA (Fair)	Single-blind Multicenter RCT	Adult and adolescent pts Autumn AR x 24 mos (including seasonal exacerbations of perennial rhinitis + SPT to one or more allergens indigenous to the area and season Showed signs of rhinitis > or equal to 8 on EENT evaluation	BDP AQ 84 mcg twice daily BDP AQ 168 mcg twice daily FN (orig. formulation) 100 mcg twice daily FN (orig. formulation) 100 mcg three times daily Study duration: 4 weeks	Run-in:No Wash-out: No	Chlorpheniramine 4 mg tablets

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Bronsky 1987 USA (Fair)	Pt recorded nasal symptoms daily (stuffy or runny nose, sneezing or itching, post-nasal drip, puffy itchy or red eyes and sore throat and chlorpheniramine use.) F/U visit (visit 2) 12-16 days after initial visit: EENT repeated by clinician, diary cards collected, AE reported F/U visit (final visit) 26-30 days	Mean age (years): 29 Female gender (%): 52 White n, (%):91 Black n, (%):6 Other n, (%):3	BDP 168 vs BDP 336 vs FN 200 vs FN 300 Mean baseline EENT score: 14.4 vs 15.3 vs 14.2 vs 14	NR/NR/161	NR/NR/Number analyzed not clear because only number of appts totally missed or off-schedule were reported not number of patients

Evidence Table 1. Head-to-head trials in patients with SAR

Author **Year** **Country** **Trial Name** **(Quality Score)**	**Outcomes**
Bronsky 1987 USA (Fair)	BDP 168 vs BDP 336 vs FN 200 vs FN 300 EENT evaluation scores (0=none, 3=severe) **Changes in mean score after 4 weeks** R**hinitis (physical symptoms)** turbinate swelling: -0.8 vs -1 vs -0.8 vs -0.8 nasal discharge: -0.8 vs -0.1 vs -0.8 vs -0.8 pharyngeal discharge:-0.6 vs -0.6 vs -0.6 vs-0.5 discoloration: -0.9 vs -0.8 vs -0.7 vs -0.7 **Rhinitis-symptoms** sneezing/itching: -1.6* vs -1.4 vs -1.2 vs -1.1* nasal congestion: -1.5 vs -1.4 vs -1.1 vs -1.3 Postnasal drip/snoring: -1 vs -0.7 vs -0.9 vs -0.7 Runny nose/sniffling: -1.3 vs -1.4 vs -1 vs -0.9 *p<0.05; BDP 168 vs FN 200 mcg

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of adverse effects assessment	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events	Comments
Bronsky 1987 USA (Fair)	Pt reported	BDP 168 vs BDP 336 vs FN 200 vs FN 300 Nasal stinging burning n, (%): 4(10) vs 4(10) vs 12(30) vs 13(33) Headache n, (%): 5(12) vs 4(10) vs 4(10) vs 4(10) Epistaxis n, (%): 3(7) vs 3(8) vs 3(8) vs 3(8) Post-nasal drip n, (%): 1(2) vs 4(10) vs 1(3) vs 3(8) Sore throat n, (%): 0 vs 2(5) vs 3(8) vs 2(5) Nausea n, (%): 0 vs 0 vs 3(8) vs 2(5) Nasal congestion n, (%): 1(2) vs 2(5) vs 1(3) vs 0 Others, n (%): 9 (22) vs 13(33) vs 11(28) vs 6(13)	Withdrawals (overall): NR Withdrawal (due to adverse events): NR	Unclear when pts recorded nasal symptoms No report of attrition Compliance was also recorded in diaries and it is unclear who reviewed the diaries on treatment was three times daily blinding could be broken depending on who is reviewing the diary.

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)
Bronsky 1987 USA (Fair)

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period	Allowed other medications/ interventions
Meltzer 1999 USA	Double-blind Parallel group Multicenter RCT	Pediatric pts (6 to 11 years of age) Positive SPT or intradermal testing Positive history of SAR (length unspecified) TNS > or equal to 6 out of possible 12 and nasal congestion > or equal to 2 out of 3 at screening and baseline	MF 25 mcg daily MF 100 mcg daily MF 200 mcg daily BDP 84 mcg twice daily Placebo Duration: 4 wks	Run-in: yes (2-7 days) Wash-out: yes (lengths varied depending on medication)	Chlorpheniramine syrup

Abbreviations: (TAA AQ)= triamcinolone acetate aqueous (FP) = fluticasone propionate (RQLQ) = rhinoconjunctivitis Quality of Life Questionnaire (SAQ) = sensory attributes questionnaire (TNSS) = total nasal symptom score (INSS) = Individual nasal symptom score (NR)= not reported (SAR)= seasonal allergic rhinitis (HRQL) = Health- Related Quality of Life (BUD)=Budesonide
(PL0=placebo (FN)=flunisolide, (BDP AQ)=beclomethasone dipropionate aqueous
(MF) = mometasone furoate

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Meltzer 1999 USA	Pt and parents/guardians recorded nasal and non-nasal symptoms in diary twice daily (5 point-scale 1= complete relief to 5=treatment failure) Scores were averaged over day 1 to 15 and 16 to 29 MD completed a physical evaluation days 4 ,8, 15 and 29 and scored nasal and non-nasal symptoms over the past 24 hours and the overall condition of SAR since previous visit (response to treatment compared to baseline)	Mean age (years): 9 Female gender (%):38 White n, (%): 84 Black n, (%): 7 Other n, (%): 9	~70% of pts had PAR ~40% of pts had asthma SAR 5 to 6 years "most patients"	NR/NR/679	33/0/679

Abbreviations: (TAA AQ)= t
(SAQ) = sensory attributes
seasonal allergic rhinitis (H
(PL0=placebo (FN)=flunisc
(MF) = mometasone furoat

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Outcomes
Meltzer 1999 USA	MF 25 vs MF 100 vs MF 200 vs BDP **TNSS** (MD evaluated-change from baseline estimated from graph): **Day 4**: 2.2 vs 2 vs 2 vs 2.4 **Day 8**: 2.8 for all **Day 15**: 2.9 vs 3 vs 3.1 vs 3.5 **Day 29:** 3 vs 3.7 vs 3.8 vs 3.7 MF 25=MF 100=MF 200=BDP > PL (p </= 0.2) for days 1-15 MF 100=MF 200 >MF 25 and PL days 15-29 **TNSS** (pt evaluated-change from baseline estimated from graph) **Days 1-15:** 1.5 vs 1.9 vs 1.8 vs 1.9 **Days 16-29**: 2 vs 2.7 vs 2.6 vs 2.5 MF 100 and 200=BDP > MF 25=PL MF 200 did not offer any benefit over MF 100 at any time point TSS (nasal and non-nasal-MD evaluated-mean changed from baseline estimated from graph): Day 4: 2.7 vs 3 vs 2.7 vs 3.1 Day 8: 3.7 vs 4.2 vs 3.7 vs 4.2 Day 15: 3.8 vs 4.4 vs 4.1 vs 4.5 Day 29: 4.8 vs 5.5 vs 5 vs 5.2 Endpoint: 4.1 vs 5.5 vs 5 vs 5 MF 100 = BDP > PL on days 4 and 8 MF 100 > MF 25 on Day 29.

Abbreviations: (TAA AQ)= t
(SAQ) = sensory attributes
seasonal allergic rhinitis (H
(PL0=placebo (FN)=flunisc
(MF) = mometasone furoat

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)	Method of adverse effects assessment	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events	Comments
Meltzer 1999 USA	Pt or parent/guardian reported in diary	MF 25 (n=137) vs MF 100 (n=135) vs MF 200 (n=133) vs BDP (n=138) vs PL (n=136) Any adverse event, n (%): 24 (18) vs 27(20) vs 19(14) vs 21(15) vs 31(23) Headache, n (%): 4(3) vs 4 (3) vs 9 (7) vs 8(6) vs 8(6) Epistaxis, n (%): 10 (7) vs 8 (6) vs 3 (2) vs 6 (4) vs 9 (7) Pharyngitis, n (%): 2 (1) vs 1 (1) vs 2 (2) vs 4(3) vs 3 (2) Sneezing, n (%): 6(4) vs 4(3) vs 0 vs 1(1) vs 6(4) Coughing, n (%): 1 (1) vs 2 (1) vs 2 (2) vs 2 (1) vs 1 (1) Nasal irritation, n (%): 0 vs 3 (2) vs 0 vs 0 vs 0	Withdrawals (overall): 33 (5%) Withdrawals (due to adverse events): 14 (2%)	Female pts were pre-menarchal

Abbreviations: (TAA AQ)= t
(SAQ) = sensory attributes
seasonal allergic rhinitis (H
(PL0=placebo (FN)=flunisc
(MF) = mometasone furoat

Evidence Table 1. Head-to-head trials in patients with SAR

Author Year Country Trial Name (Quality Score)
Meltzer 1999 USA

Abbreviations: (TAA AQ)= t
(SAQ) = sensory attributes
seasonal allergic rhinitis (H
(PL0=placebo (FN)=flunisc
(MF) = mometasone furoat

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Internal Validity

Author, Year Country	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Eligibility criteria specified?	Outcome assessors masked?	Care provider masked?	Patient masked?	Reporting of attrition, crossovers, adherence, and contamination
Berger 2003 USA	Methods not specified	Yes	No, TAA AQ group more severe nasal discharge and stuffiness	Yes	Yes	N/A	N/A single blind	Yes No Yes No

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Eligibility criteria specified?	Outcome assessors masked?	Care provider masked?	Patient masked?	Reporting of attrition, crossovers, adherence, and contamination
Gross 2002 USA	Methods not specified	Yes	Yes, except Mean age (years): TAA AQ vs FP 40 vs.37.5 (P<0.05)	Yes	Yes	N/A	N/A single blind	Yes No Yes No

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Eligibility criteria specified?	Outcome assessors masked?	Care provider masked?	Patient masked?	Reporting of attrition, crossovers, adherence, and contamination
Ratner 1992 USA	Methods not specified	Not reported	Yes, except P values not reported for Medical history and Perennial rhinitis was FP n=72 (68), BDP n=53 (51), PL n=58 (56)	Yes	Not specifically described, however, medication was dispensed to pts with labels that only indicate for am and pm use	N/A	Yes	Yes No No No

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Eligibility criteria specified?	Outcome assessors masked?	Care provider masked?	Patient masked?	Reporting of attrition, crossovers, adherence, and contamination
Graft 1996 USA	Yes	Not reported	Authors report groups were comparable at baseline. P values not given for demographics number of women at baseline in each group: MF 61/114, BDP 49/112, PL 46/104.	Yes	Yes	NR	Yes	Yes No Yes No
McArthur 1994 UK	Methods not specified	Not reported	Yes, however, they were brief and did not mandate a SPT.	Yes	Described by authors as "single-blind" however, methods of masking treatment were not described	N/A	N/A single blind	Yes No No No

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Eligibility criteria specified?	Outcome assessors masked?	Care provider masked?	Patient masked?	Reporting of attrition, crossovers, adherence, and contamination
Langrick 1984 England	Yes	Not reported	Usual severity of symptoms was greater in the FL group (p=0.004)	Only age and severe hay fever, did not require SPT	Described by authors as "single-blind" however, methods of masking treatment were not described	N/A	N/A single blind	Yes No No No
Ratner 1996 USA	Methods not specified	Not reported	Yes except in height/wt and female gender (62% vs 38%)	Yes	Method of blinding not described	N/A	Methods of blinding not described	Yes No No No
Welsh 1987 USA	Methods not specified	Not reported	Yes	Yes	DB and SB method, however, methods not described	N/A	Yes for BDP AQ and PL, N/A for CR vs FL (single-blind)	Yes No Yes No

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Eligibility criteria specified?	Outcome assessors masked?	Care provider masked?	Patient masked?	Reporting of attrition, crossovers, adherence, and contamination
Stern 1997 UK, Denmark	Methods not specified	Not reported	Yes, however, PL had significantly less pts (n=59) vs (n=181, 182, 180).	Yes	Yes	N/A	Yes when comparing BUD to PL but not BUD to FP	Yes No Yes No
Greenbaum 1988 Canada	Methods not specified	Not reported	Unknown: demographics not given but text indicates the groups are "well balanced"	Yes	DB but methods not specified	N/A	DB but methods not specified	Yes Yes No No

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Eligibility criteria specified?	Outcome assessors masked?	Care provider masked?	Patient masked?	Reporting of attrition, crossovers, adherence, and contamination
Hebert 1996	Methods not specified	Not reported	Women 8% Severe disease was slightly higher in MF 100 mcg group at 28% compared to 17-23%	Yes	Yes, DB, double-dummy	N/A	Yes,DB, double-dummy	Yes No No No

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Eligibility criteria specified?	Outcome assessors masked?	Care provider masked?	Patient masked?	Reporting of attrition, crossovers, adherence, and contamination
Lumry 2003 USA	Methods not specified	Yes	Yes	Yes	Single-blind, however some pts took study drug once daily and others twice daily	N/A	N/A single blind	Yes No Yes No

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Eligibility criteria specified?	Outcome assessors masked?	Care provider masked?	Patient masked?	Reporting of attrition, crossovers, adherence, and contamination
Small 1997 Canada	Methods not specified	Yes	Yes	Yes	Yes	N/A	N/A single blind	Yes No Yes No

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Eligibility criteria specified?	Outcome assessors masked?	Care provider masked?	Patient masked?	Reporting of attrition, crossovers, adherence, and contamination
LaForce 1994 USA	Methods not specified	Not reported	Yes except for gender, with the placebo group having fewer women	Yes	DB but methods not specified	Not reported	Yes	Yes No Yes No
Bronsky 1987 USA	Methods not specified	Not reported	Yes	Yes	Single-blind, however some pts took study drug twice daily and others three times daily and it is unclear who was collecting the pt diaries	Not reported	N/A single blind	No No Yes No

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

					External Validity
Author, Year Country	**Loss to follow-up: differential/high**	**Intention-to-treat (ITT) analysis**	**Post-randomization exclusions**	**Quality Rating**	**Number screened/eligible/ enrolled**
Berger 2003 USA	No/NR	No TNSS: unclear, #of pts NR Individual symptom scores: No excluded 5 (1.7%) HRQL: yes	Not reported	Fair	NR/NR/295

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Loss to follow-up: differential/high	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating	Number screened/eligible/ enrolled
Gross 2002 USA	No/NR	Not clear, number in each group for efficacy INSS/TNSS per week not reported	No	Fair	NR/NR/352

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Loss to follow-up: differential/high	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating	Number screened/eligible/ enrolled
Ratner 1992 USA	No/NR	Numbers of patients in each group are not reported in the results and there is no mention in the text of ITT	No	Fair	NR/NR/NR There were 4 patients that discontinued the study but it is not clear if no. enrolled would then be 317or 313.

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Loss to follow-up: differential/high	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating	Number screened/eligible/ enrolled
Graft 1996 USA	No/NR	Authors report ITT, however, excluded 2/349 patients who dropped out immediately after randomization and data from 17 patients were invalidated leaving 330 pts available for analysis of efficacy For primary efficacy authors stated that ITT pop showed similar results but did not report numbers	Not reported	Fair	NR/NR/349
McArthur 1994 UK	No/NR	Authors report ITT, however, for combined mean symptom score n= 77 Global efficacy n=73, AE n=88	No	Fair	NR/NR/88

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Loss to follow-up: differential/high	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating	Number screened/eligible/ enrolled
Langrick 1984 England	No/NR	No	Not reported	Fair	NR/NR/69
Ratner 1996 USA	No/NR	No	Yes 68 pts from one testing center due to low pollen count and inability to show superior efficacy	Fair	256/NR/218
Welsh 1987 USA	No	No	No	Fair	NR/NR/120

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Loss to follow-up: differential/high	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating	Number screened/eligible/ enrolled
Stern 1997 UK, Denmark	No/NR	Authors report doing an "all patients treated" analysis and stated it was not different from the other analysis. The results were not given as numerical data only description in the text.	No	Fair	NR/NR/635
Greenbaum 1988 Canada	No/NR	No	No	Fair-demographics not given therefore results cannot be reproduced.	NR/NR/122

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Loss to follow-up: differential/high	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating	Number screened/eligible/ enrolled
Hebert 1996	No/NR	No	No	Fair	NR/NR/501

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Loss to follow-up: differential/high	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating	Number screened/eligible/ enrolled
Lumry 2003 USA	No/NR	No	No	Fair	NR/NR/152

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Loss to follow-up: differential/high	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating	Number screened/eligible/ enrolled
Small 1997 Canada	No/NR	No, efficacy n=223 and safety n=233	No	Fair	NR/NR/233

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Loss to follow-up: differential/high	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating	Number screened/eligible/ enrolled
LaForce 1994 USA	No/NR	Not clear, numbers not reported in results but only 3 out of 238 patients withdrew from study	No	Fair-good	NR/NR/238
Bronsky 1987 USA	Unknown	Not clear, authors report that of 322 f/u visits 13 were missed completely, 30 were outside the appropriate schedule. No mention of made if this data from these pts was included or exactly how many patients missed appts	No	Fair	NR/NR/161

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Exclusion criteria	Run-in/Washout	Class naïve patients only	Control group standard of care	Funding	Relevance
Berger 2003 USA	Short-or long-acting steroids, a nasal corticosteroid, or nasal cromolyn within 30 days of screening; had taken an antihistamine or leukotriene modifier within 5 days of baseline visit; were pregnant or lactating; had a history of habitual use of nasal decongestants; were hypersensitive or non-responsive to intranasal steroids; had unstable asthma; had begun immunotherapy with 1 month of study initiation; had sinusitis or an underlying nasal pathology resulting in a fixed occlusion of a nostril; showed evidence of a fungal infection of the nose, mouth, or throat; or used TAA AQ of FP within the 3 months before screening.	Run-in:No Washout:Yes	No	Yes	Aventis Pharmaceuticals, role not specified	

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Exclusion criteria	Run-in/Washout	Class naïve patients only	Control group standard of care	Funding	Relevance
Gross 2002 USA	Short-or long-acting steroids (excluding oral contraceptives and hormone replacement), a nasal corticosteroid, or nasal cromolyn/astemizole within 42 days of screening; were pregnant or lactating; had a history of habitual use of nasal decongestant, were hypersensitive or non-responsive to intranasal steroids; had begun immunotherapy with 1 month of study initiation; disease with the potential to interfere with the evaluation of study medication; use of any medication that might independently affect the symptoms of seasonal AR; an underlying nasal pathology resulting in a fixed occlusion of a nostril; showed evidence of a fungal infection of the nose, mouth, or throat.	Run-in:No Washout:Yes	No	Yes	Aventis Pharmaceuticals, role not specified	

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Exclusion criteria	Run-in/Washout	Class naïve patients only	Control group standard of care	Funding	Relevance
Ratner 1992 USA	Received oral, inhaled, or intranasal steroids within 1 month or intranasal cromolyn within 2 weeks of initiation of the study were excluded	Run-in: Yes Washout: No	No	Yes	Supported by a grant from Glaxo Inc., role not specified	

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Exclusion criteria	Run-in/Washout	Class naïve patients only	Control group standard of care	Funding	Relevance
Graft 1996 USA	Pregnant or breast feeding, receiving immunotherapy (unless receiving a stable dose for at least 2 years with at least moderate symptoms during the last ragweed season); had asthma requiring therapy with inhaled or systemic corticosteroids; were dependent on nasal, oral, or ocular decongestants or antiiflammatory agents; or had rhinitis medicamentosa; multiple drug allergies; a significant medical condition and/or long-term use of medication that might interfere with the study; clinically relevant abnormal laboratory values, vital signs, or electrocardiogram results; and use of any investigational drug within the previous 30 days.	Run-in: No Wash-out: yes	No	Yes	Supported by a grant from Schering-Plough Research Institute., Author from this site was included, role not specified	
McArthur 1994 UK	Two symptoms for entry into the study were not experienced in 1 May to 31 August 1993, had received oral corticosteroids at any time during the 4 weeks before trial entry, had a bacterial, fungal, or viral airway infection, were or intended to become pregnant, had received hyposensitization therapy during the previous 12 months, or had severe asthma.	Run-in:No Wash-out: No	No	Yes	Grant from Astra Clinical Research Unit, role not specified	

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Exclusion criteria	Run-in/Washout	Class naïve patients only	Control group standard of care	Funding	Relevance
Langrick 1984 England	Pregnant or breast feeding, current respiratory tract infection or nasal abnormalities, received systemic steroid therapy within the previous 3 months or anti-allergy treatment within the previous week were not eligible.	Run-in: No Wash-out: No	No	Yes	Not reported	Poor**didn't require SPT, single-blind, differences at baseline, not ITT, funding not disclosed
Ratner 1996 USA	Uncooperative or unable to comply with study requirements, used nasal corticosteroids or nasal cromolyn sodium within 2 weeks of systemic corticosteroids within 4 weeks before randomization, had a total symptom severity score of less than 2 or greater than 7 at randomization visit, were asthmatic and required chronic bronchodilator therapy, or had a history or presence of clinically significant medical disorder that either would have compromised the study results or have been detrimental to the patient	Run-in: No Wash-out: No	No	Yes	Grant from Roche Laboratories, role not specified	Pt only in Texas, more female than male, post-randomization exclusion due to low pollen count
Welsh 1987 USA	Not specifically listed as exclusion criteria, however, pts were included if they did not have nasal polyps, were not pregnant or lactating, had good general health without illness that interfere with the study	Run-in: Yes Washout: No	No	Yes	Grant from Glaxo, Inc.	33% female pts age range 12-50

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Exclusion criteria	Run-in/Washout	Class naïve patients only	Control group standard of care	Funding	Relevance
Stern 1997 UK, Denmark	Had significant symptoms of signs related to the nose other than those of seasonal allergic rhinitis (perennial or atrophic rhinitis), any obstructive structural abnormality in the nose, or nasal polyps. Acute or chronic infectious sinusitis and if they had experienced significant upper respiratory tract infection in the 2 weeks preceding the study. Pts using topical nasal corticosteroid therapy during 1 month before the study or systemic corticosteroids in the 2 months preceding the study were excluded, as were patients who had immunotherapy for seasonal allergic rhinitis in the 2 years preceding the study or astemizole within 2 months of the study.	Run-in: No Wash-out: No	No	Yes	Grant from Astra Draco AB	
Greenbaum 1988 Canada	<12 yo, had known hypersensitivity to corticosteroids, including flunisolide; had active quiescent tuberculosis of the respiratory tract or untreated fungal, bacterial, or systemic viral infections or ocular herpes simplex, or those with unhealed nasal ulcers, surgery or trauma; had any other nasal sinus condition other than SAR; required any concomitant medications in the form of a nasal spray or solution; were pregnant or lactating; or were unable or unwilling to give an informed consent to participate	Run-in:NR Wash-out: NR	No	Yes	Not clearly reported, however, request for reprints to Author from Syntex, Inc.	Demographics not given

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Exclusion criteria	Run-in/Washout	Class naïve patients only	Control group standard of care	Funding	Relevance
Hebert 1996	Asthma requiring therapy with inhaled or systemic corticosteroids, cromoglycate, or nedocromil; were known to be unresponsive to nasal corticosteroids; were dependent on systemic corticosteroids or nasal decongestants; had an allergy to corticosteroids; or had received potent corticosteroid treatment within the last month. Chronic medication or a significant medical condition which could interfere with the study; asthenia or gross obesity; clinically relevant abnormal laboratory tests, vital signs, or electrocardiogram; patients on immunotherapy (unless on a stable regimen for at least 6 mos.); upper respiratory tract infection within the previous 4 weeks; use of any investigational drug within the previous 90 days; nasal polyps or significant nasal structural abnormality; or history of posterior subcapsular cataracts, women who were pregnant, nursing, or at risk of pregnancy (in this study, women requiring birth control or of child-bearing potential) were also excluded. Certain concomitant medications were restricted during the study, including corticosteroids (except for low-potency topical preparations such as hydrocortisone), mast cell stabilizers, antihistamines (apart from rescue loratadine), decongestants, aspirin, nonsteroidal anti-inflammatory drugs, and systemic antibiotics.	Run-in:No Wash-out: No	No	Yes	Not specifically stated however one author is associated with Shering-Plough Research Institute	8.5 % female because all women of child-bearing potential were excluded.

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Exclusion criteria	Run-in/Washout	Class naïve patients only	Control group standard of care	Funding	Relevance
Lumry 2003 USA	Clinical evidence of any significant physical abnormalities or abnormal laboratory values; nasal candidiasis, acute or chronic sinusitis, significant nasal polyposis or other gross anatomical deformity of the nose sufficient to impair nasal breathing; concurrent medical conditions likely to interfer with the course of the study; use of systemic corticosteroids in the previous 42 days or nasal or inhaled corticosteroids in the previous 30 days; use of nasal cromolyn sodium in the previous 28 days or astemizole in the previous 60 days; treatment with an investigational drug within 60 days; commencement of immunotherapy within the previous six months; use of medication for other medical conditions that might produce or relieve the signs and symptoms of allergic rhinitis for six days prior to and throughout the treatment period; and pregnancy, lactation, or inadequate contraceptive precautions in females of child-bearing potential	Run-in: No Wash-out: Yes x 6 days	No	Yes	Aventis Pharmaceuticals, role not specified	

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Exclusion criteria	Run-in/Washout	Class naïve patients only	Control group standard of care	Funding	Relevance
Small 1997 Canada	Women who were pregnant or of childbearing potential and not practiciing approved method of birth control; Pt meeting at least one of the following criteria were excluded: a clinically significant, renal, hepatic, cardiac, respiratory (including asthma), neurologic, collagen-vascular, or psychiatric disorder; cancer; untreated fungal, bacterial, or viral infections; nasal septal ulcer or perforation; nasal surgery or trauma; physical nasal obstruction greater than 50%; a history of habitual abuse of nasal decongestants; use of any systemic, nasal, inhaled corticosteroids within 30 days of screening visit; use of nasal sodium cromoglycate, anticholinergics, vasoconstrictors, or antihistamines (except astemizole) within 7 days of the screening visit; use of astemizole within 60 days of the screening visit; use of topical, oral or both types of decongestants more than three times per week for the previous 3 months(90 days): cardiovascular drugs, hormones, neuroleptics or any other drugs that can cause, suppress, or exacerbate the symptoms of allergic rhinits; immunotherapy unless on a maintenance regimen at the time of screening; history of hypersensitivity or nonresponse to corticosteroids; and participation in another investigational study within 30 days of the screening visit. Steroids were not permitted, except for oral contraceptives and estrogen replacement therapy.	Run-in: No Wash-out: yes x 5-14 days	No	Yes	Grant from Rhone-Poulene Rorer Canada, Inc. One author from this source as well	Race not reported, M/F equal age range 12-70 Wide variety of allergens due to multicenter, Pollen count not reported. Not ITT, single blind keeps from being rated good

Evidence Table 2. Quality assessment of head-to-head trials in patients with SAR

Author, Year Country	Exclusion criteria	Run-in/Washout	Class naïve patients only	Control group standard of care	Funding	Relevance
LaForce 1994 USA	Being treated with corticosteroids or intranasal sodium cromolyn, required inhaled or systemic corticosteroid therapy for ongoing asthma, had an upper respiratory tract infection, or if they were scheduled to alter their immunotherapy regimen during the study, women at risk of pregnancy (postmenarchal or premenopausal women and those not using oral contraceptives) and patients with any significant medical disorder or impaired adrenal function as indicated by clinical laboratory tests.	Run-in: Yes Washout: No	No	Yes	Grant from Glaxo, Inc.	
Bronsky 1987 USA	Pregnancy or lactation, nasal polyps, sinusitis, significant septal deviation, or any other nasal disease; history of alcohol or drug abuse; mental impairment; asthma requiring corticosteroid therapy or sensitivity to inhaled corticosteroid therapy or sensitivity to inhaled corticosteroids; immunotherapy for allergic rhinitis in the month prior to the trial; administration of any investigational drug within 30 days, or corticosteroid or cromolyn sodium within two weeks, or antihistamines within 24 hours prior to the initiation of the trial.	Run-in: No Wash-out: No	No	Yes	Not directly stated but one author is affiliated with Glaxo, Inc.	12-65 yo Multicenter, USA M=F no preg. Or lactating Race included

Evidence Table 3. Placebo-controlled trials in children with SAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period	Allowed other medications/ interventions
Kobayashi 1989	Randomized, double-blind, placebo-controlled, parallel Multicenter	Children aged 5-13 years, with seasonal allergic rhinitis Exclusion: Use of systemic corticosteroids, beginning hyposensitization treatment, underlying nasal pathology, history of adverse reactions to inhaled or systematic corticosteroids, concurrent viral infection	beclomethasone dipropionate aqueous nasal spray, 42mcg twice daily vs placebo Study duration: 3 weeks	Decongestants 24 hours before study	Rescue medication: chlorheniramine maleate 4mg
Strem 1978	Randomized, double-blind, placebo-controlled	Children aged 6-15 years	flunisolide nasal spray, 50mcg three times daily vs placebo Study duration: 4 weeks	NR/NR	NR

Evidence Table 3. Placebo-controlled trials in children with SAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period	Allowed other medications/ interventions
Gale 1980	Randomized, double-blind, placebo-controlled, parallel Single-center	Children aged 5-14 years with seasonal allergic rhinitis	flunisolide 50mcg four times daily vs placebo Study duration: 6 weeks	NR/NR	NR
Munk, 1994	Randomized, double-blind, placebo-controlled, parallel Multi-center	Children aged 12-17 years with seasonal allergic rhinitis, naive to intranasal fluticasone propionate, and/or failed therapy with other medications	Intranasal fluticasone propionate 200mcg once daily vs 100mcg twice daily vs placebo Study duration: 2 weeks	NR/NR	chlorpheniramine maleate

Evidence Table 3. Placebo-controlled trials in children with SAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period	Allowed other medications/ interventions
Boner 1995	Double-blind, placebo-controlled, parallel multi-center	Children with seasonal allergic rhinitis for at least one season Exclusion: perennial arthritis, immunotherapy treatment, use of intranasal, inhaled systemic corticosteroids, inhaled, intranasal sodium cromoglycate or neocromil sodium within one month before study	fluticasone propionate aqueous nasal spray 100mcg vs 200mcg vs placebo Study duration: 4 weeks	NR/NR	NR
Schenkel 1997	Randomized, double-blind, placebo-controlled Multicenter	Children aged 6-11 years with spring grass seasonal allergic rhinitis	triamcinolone acetonide aqueous nasal inhaler, 110mcg daily vs 220mcg daily vs placebo Study duration: 2 weeks	NR/NR	NR

Evidence Table 3. Placebo-controlled trials in children with SAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period	Allowed other medications/ interventions
Banov, 1996	Randomized, double-blind, placebo-controlled, parallel Multicenter	Children aged 6-11 years, with seasonal allergic rhinitis Exclusion: Any clinically relevant deviation from medical lab tests, history of hypersensitivity to corticosteroids, treatment with nasal, inhaled or systemic corticosteroids within 42 days of study	triamcinolone acetonide aerosol nasal inhaler, 220mcg daily, vs placebo Study duration: 2 weeks	NR/NR	NR
Galant, 1994	Randomized, double-blind, placebo-controlled, parallel Multicenter	Children aged 4-11 years	intranasal fluticasone propionate, 100mcg or 200mcg, once daily vs placebo Study duration: 4 weeks	NR/NR	NR

Evidence Table 3. Placebo-controlled trials in children with SAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period	Allowed other medications/ interventions
Grossman 1993	Randomized, double-blind, placebo-controlled, parallel Multicenter	Children aged 4-11 years	fluticasone propionate aqueous nasal spray, 100mcg vs 200mcg once daily vs placebo Study duration: 2 weeks	NR/NR	chlorpheniramine maleate

Evidence Table 3. Placebo-controlled trials in children with SAR

Author Year Country Trial Name (Quality Score)	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Kobayashi 1989	Evaluated at clinic on study days 4, 8, 15 for nasal and ocular symptoms, Cochron-matel-Haennszel Test, patient daily diary of symptoms	Mean age: 8.8 years 58.4% Male 88.1% Caucasian, 11.8% Other	Mean duration of present episode: BDP-AQ: 9.0 vs placebo: 3.4 No. of seasonal recurrences to date: BDP-AQ: 5.2 vs placebo: 5.3 Previous hyposensitization therapy: BDP: 30 vs placebo: 29	NR/NR/101	0/0/101
Strem 1978	Patient daily diary	Mean age: 10.5 years 70.8% Male Ethnicity NR	NR	NR/NR/48	0/0/48

Evidence Table 3. Placebo-controlled trials in children with SAR

Author Year Country Trial Name (Quality Score)	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Gale 1980	Patient daily diary	Mean age: 9.7 years 74.2% Male Ethnicity NR	NR	NR/NR/35	NR/NR/NR
Munk, 1994	Clinician and patient symptom scores	Mean age: 14.1 years 93% Male Ethnicity NR	NR	NR/NR/243	3/NR/NR

Evidence Table 3. Placebo-controlled trials in children with SAR

Author Year Country Trial Name (Quality Score)	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Boner 1995	Physical examination, symptoms assessment	Mean age: 8.3 years Male: 72.6% Ethnicity NR	NR	NR/NR/143	NR/NR/NR
Schenkel 1997	Patient daily diary, 4 clinical visits within 2 week period including physical examination	Mean age: 9 years Male: 65.9% Caucasian: 87%	NR	NR/NR/223	NR/NR/204

Evidence Table 3. Placebo-controlled trials in children with SAR

Author Year Country Trial Name (Quality Score)	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Banov, 1996	Patient diary symptom scores	Mean age: 9 years Male: 63.7% Caucasian: 93%, African-American: 7%	NR	NR/NR/116	1/0/115
Galant, 1994	Patient diary, analog scales	Mean age: 8 years Male: 64.3% Ethnicity NR	NR	NR/NR/249	7/0/242

Evidence Table 3. Placebo-controlled trials in children with SAR

Author Year Country Trial Name (Quality Score)	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Grossman 1993	Nasal and ocular symptoms assessed on days 1, 8, 15, 22	Mean age: 8.8 years Male: 65.3% Ethnicity NR	Positive skin test, % Any fall allergin: 100% Weed: 92% Grass: 7.6% Mold: 11.3% History of asthma: 44.6%	NR/NR/250	NR/NR/NR

Evidence Table 3. Placebo-controlled trials in children with SAR

Author Year Country Trial Name (Quality Score)	Outcomes	Method of adverse effects assessment	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events
Kobayashi 1989	Physician's overall evaluation: Greater improvement with BDP-AQ vs placebo: (p=.012) Improvement at 15 days vs placebo: Nasal obstruction: p= .002 Periocular swelling: p= .007	Patient self-report	Adverse events reported: Bloody nose: BDP: 1 vs placebo: 0 Burning or stinging in nose: BDP: 3 vs placebo: 4 Dizziness: BDP: 1 vs placebo: 0 Drowsiness: BDP: 1 vs placebo: 0 Eye pain: BDP: 0 vs placebo: 1 Headache: BDP: 3 vs placebo: 3	0;0
Strem 1978	Days when symptoms were present >2 hours: Baseline: Sneezing: F: 2.4 vs placebo: 2.5; p=0.89 Stuffy nose: F: 8.0 vs placebo: 7.8; p=0.63 Runny nose: F: 4.4 vs placebo: 3.8; p=0.69 All symptoms combined: F: 9.0 vs placebo: 8.3; p=0.35	Patient self-report	Adverse events reported: flunisolide: moderate: stomatitis, headache, cough, nosebleed, cough mild: sore throat, cough placebo: moderate: sore throat, nausea, cheilosis mild: nosebleed, sore throat, nasal stuffiness	0;0

Evidence Table 3. Placebo-controlled trials in children with SAR

Author Year Country Trial Name (Quality Score)	Outcomes	Method of adverse effects assessment	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events
Gale 1980	Percentage of patients reported total or substantial control of hay fever symptoms: F: 64% vs placebo: 33%; P<0.05 Improvement of symptoms at 4 weeks: P-values of flunisolide vs placebo: Sneezing: NS Stuffy nose: p< 0.05 Runny nose: p< 0.05	Patient self-report	Number of adverse events reported: At 2 weeks: F: 14 vs placebo: 14 At 4 weeks: F: 6 vs placebo: 9	NR;0
Munk, 1994	Mean rhinitis symptom scores at 15 days: Nasal obstruction: clinician-rated: F100: 39.5 vs F200: 40.8 vs placebo: 54.1 Nasal obstruction: patient-rated: F100: 33.4 vs F200: 38.5 vs placebo: 52.7	Patient self-report	Adverse events reported: Any event: F100: 5 vs F200: 13 vs placebo: 9 Nasal burning: F100: 1 vs F200: 1 vs placebo: 1 Epistaxis: F100: 1 vs F200: 3 vs placebo: 1 Sneezing: F100: 0 vs F200: 1 vs placebo: 3 Urticaria: F100: 1 vs F200: 1 vs placebo: 1	NR;3

Evidence Table 3. Placebo-controlled trials in children with SAR

Author Year Country Trial Name (Quality Score)	Outcomes	Method of adverse effects assessment	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events
Boner 1995	Median percentage of symptoms-free days: p-value of treatment vs placebo: F100: Sneezing: p=0.016 Rhinorrhoea: p=0.011 Nasal blockage on waking: p=0.011 Nasal blockage during day: p=0.031 F200: Sneezing: p=0.018 Rhinorrhoea: p=0.042	Patient self-report	No. of adverse events: F100: 30 vs F200: 16 vs placebo: 40 No. of patients with adverse events: F100: 20 vs F200: 13 vs placebo: 23 No.of patients with serious adverse events: F100: 1 vs F200: 0 vs placebo: 0 No.of patients withdrawn due to adverse events	NR;2
Schenkel 1997	Mean changes in symptom scores at 2 weeks Nasal Stuffiness: TA110: +0.16 vs TA220: +0.15 vs placebo: +0.15 Nasal Discharge: TA110: +0.15 vs TA220: +0.19 vs placebo: +0.15 Sneezing: TA110: +0.09 vs TA220: +0.22 vs placebo: +0.06	Patient self-report	Percentage of reported adverse events: TA110: 16.2% vs TA220: 23.3% vs placebo: 18.4% Headache reported: TA110: 7% vs TA220: 3% vs placebo: 4% Epistaxis reported: TA110: 1% vs TA220: NR vs placebo: 4%	NR;0

Evidence Table 3. Placebo-controlled trials in children with SAR

Author Year Country Trial Name (Quality Score)	Outcomes	Method of adverse effects assessment	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events
Banov, 1996	Symptom scores at 1 and 2 weeks: Nasal stuffiness: Week 1: TAA: -0.60 vs placebo: -0.33 Week 2: TAA: -0.91 vs placebo: -0.37 Nasal discharge: Week 1: TAA: -0.67 vs placebo: -0.38 Week 2: TAA: -1.02 vs placebo: -0.46	Patient self-report	Adverse events reported: TAA: 31 placebo: 22	1;0
Galant, 1994	Clinician-rated overall response: Better response with both F100 and F200 vs placebo: (p<0.01) Significant improvement: F100: 29% vs F200: 35% vs placebo: 11%	Patient self-report	Adverse events reported: Any event: F100: 4% vs F200: 13% vs placebo: 7% Crusting in nostril: F100: 2% vs F200: 0% vs placebo: 0% Nasal blockage: F100: 0% vs F200: 2% vs placebo: 0% Nasal burning: F100: 0% vs F200: 4% vs placebo: 2%	7;4

Evidence Table 3. Placebo-controlled trials in children with SAR

Author Year Country Trial Name (Quality Score)	Outcomes	Method of adverse effects assessment	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events
Grossman 1993	Clinician-rated mean symptom scores at 22 days: Rhinorrhea: F100: 43 vs F200: 46 vs placebo: 48 Sneezing: F100: 22 vs F200: 22 vs placebo: 21 Nasal itching: F100: 33 vs F200: 39 vs placebo: 37 Ocular symptoms: F100: 22 vs F200: 29 vs placebo: 26	Patient self-report	Adverse events reported: Any event: F100: 12% vs F200: 5% vs placebo: 8% Nasal burning: F100: 4% vs F200: 1% vs placebo: 0% Epistaxis: F100: 4% vs F200: 2% vs placebo: 4% Headache: F100: 0% vs F200: 1% vs placebo: 2%	NR;NR

Evidence Table 4. Quality assessment of placebo-controlled trials in children with PAR

	Internal Validity								
Author, Year Country	**Randomization adequate?**	**Allocation concealment adequate?**	**Groups similar at baseline?**	**Eligibility criteria specified?**	**Outcome assessors masked?**	**Care provider masked?**	**Patient masked?**	**Reporting of attrition, crossovers, adherence, and contamination**	**Loss to follow-up: differential/high**
Banov 1996 US (5 sites)	NR	NR	yes	yes	NR	NR	NR	yes	none
Boner 1995 Europe (18 sites, specific countries not listed)	NR	NR	yes	yes	NR	NR	NR	yes	none
Galant 1994 US (10 sites) same data reported in Anonymous, 1994 and Grossman, 1993	NR	NR	yes	yes	NR	NR	yes	yes	none

Evidence Table 4. Quality assessment of placebo-controlled trials in children with PAR

	Internal Validity								
Author, Year Country	**Randomization adequate?**	**Allocation concealment adequate?**	**Groups similar at baseline?**	**Eligibility criteria specified?**	**Outcome assessors masked?**	**Care provider masked?**	**Patient masked?**	**Reporting of attrition, crossovers, adherence, and contamination**	**Loss to follow-up: differential/high**
Gale 1980 Australia	NR	NR	yes	yes	NR	NR	yes	yes	none
Kobayashi 1989 US (2 sites)	unclear - "random code" was used	NR	yes	yes	NR	NR	NR	NR	none
Munk 1994 US (12 sites)	NR	NR	yes	yes	NR	NR	NR	NR	none

Evidence Table 4. Quality assessment of placebo-controlled trials in children with PAR

	Internal Validity								
Author, Year Country	**Randomization adequate?**	**Allocation concealment adequate?**	**Groups similar at baseline?**	**Eligibility criteria specified?**	**Outcome assessors masked?**	**Care provider masked?**	**Patient masked?**	**Reporting of attrition, crossovers, adherence, and contamination**	**Loss to follow-up: differential/high**
Schenkel 1997 US (number of sites unclear)	NR	NR	yes	yes	NR	NR	NR	NR	none
Strem 1978 US	NR	NR	no; runny nose significantly more severe in the flunisolide group	yes	NR	NR	NR	NR	none

Evidence Table 4. Quality assessment of placebo-controlled trials in children with PAR

Author, Year Country	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating	*External Validity* Number screened/ eligible/ enrolled	Exclusion criteria
Banov 1996 US (5 sites)	no - 1 patient ran out of medication prior to end of treatment period, 2 patients did not have usable data	NR	fair	NR/ NR/ 116	Any clinically relevant deviation from normal medical or laboratory values, existing nasal candidiasis or acute sinusitis, history of hypersensitivity to corticosteroids, treatment with nasal, inhaled or systemic corticosteroids within 42 days of study initiation, treatment with nasal cromolyn sodium within 14 days of study initiation, use of any investigational drug within 90 days, use of any medication that could effect signs/symptoms of allergic rhinitis, immunotherapy within 30 days of enrollment, previous participation in TAA aerosol nasal inhaler study
Boner 1995 Europe (18 sites, specific countries not listed)	yes	NR	fair	NR/ NR/ 143	Perennial rhinitis, immunotherapy (time frame not specified), use of intranasal, inhaled or systemic corticosteroids within 1 mo of study, use of intranasal or inhaled sodium cromoglycate or nedocromil sodium within 1 mo of study, use of astemizole within 6 wks of study
Galant 1994 US (10 sites) same data reported in Anonymous, 1994 and Grossman, 1993	no - 7 withdrawals (4 unrelated AEs, 2 protocol violations, 1 consent withdrawal)	NR	poor	NR/ NR/ 249	Exposure to intranasal, inhaled or systemic corticosteroids within 1 mo of enrollment, or within 3 mos of enrollment for patients requiring the equivalent of prednisone 20mg/day > 2 mos), intranasal cromolyn sodium therapy within 2 wks of enrollment, nasal symptom score of at least 200 pts (self reported) for at least 4 of 7 days preceding entry into study

Evidence Table 4. Quality assessment of placebo-controlled trials in children with PAR

Author, Year Country	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating	*External Validity* Number screened/ eligible/ enrolled	Exclusion criteria
Gale 1980 Australia	yes	NR	fair	NR/ NR/ 35	Allergen injections for at least 2 yrs, underlying symptoms of nasal pathology, use of medications which could potentially mask symptoms of allergic rhinitis or affect adrenocorticol function
Kobayashi 1989 US (2 sites)	no withdrawals	NR	fair	NR/ NR/ 101	Use of systemic corticosteroids, beginning hyposensitization treatment, underlying nasal pathology, history of adverse reactions to inhaled or systemic corticosteroids, concurrent viral or bacterial infection
Munk 1994 US (12 sites)	yes for safety, unclear for efficacy	NR	fair	NR/ NR/ 243	Use of intranasal cromolyn sodium 2 wks preceding study, use of intranasal, inhaled or systemic steroids for 1 mo prior to enrollment

Evidence Table 4. Quality assessment of placebo-controlled trials in children with PAR

Author, Year Country	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating	*External Validity* Number screened/ eligible/ enrolled	Exclusion criteria
Schenkel 1997 US (number of sites unclear)	yes for safety, unclear for efficacy	NR	fair	NR/ NR/ 223	Any medical conditions that might interfere with the study significantly, clinically relevant deviations from normal medical or laboratory parameters, nasal candidiasis, acute or chronic sinusitis, significant nasal polyposis or other gross nasal deformity sufficient to impairing nasal breathing, use of systemic corticosteroids within 42 days, use of nasal cromolyn sodium within 28 days, use of nasal or inhaled corticosteroids within 30 days, astemizole within 60 days, immunotherapy within 6 mos, use of investigational drug within 90 days
Strem 1978 US	yes	NR	fair	NR/ NR/ 48	NR

Evidence Table 4. Quality assessment of placebo-controlled trials in children with PAR

Author, Year Country	Run-in/Washout	Class naïve patients only	Control group standard of care	Funding	Relevance
Banov 1996 US (5 sites)	NR	NR	yes	Rhone-Poulemc Rorer	yes
Boner 1995 Europe (18 sites, specific countries not listed)	run-in not reported/ 2 wk washout	NR	yes	NR	yes
Galant 1994 US (10 sites) same data reported in Anonymous, 1994 and Grossman, 1993	4-14 day run-in/ washout not reported	NR	NR	Glaxo	yes

Evidence Table 4. Quality assessment of placebo-controlled trials in children with PAR

Author, Year Country	Run-in/Washout	Class naïve patients only	Control group standard of care	Funding	Relevance
Gale 1980 Australia	2 wk run-in*/washout not reported (*text indicates "2-week pretreatment baseline period...followed by a 4-week treatment period" however accompanying table appears to indicate that medication was given during the 2 wk baseline period)	NR	yes	NR	yes
Kobayashi 1989 US (2 sites)	1 wk run-in, no allergic rhinitis medications, 24 hr run-in no decongestants/ washout not reported	NR	yes	NR	yes
Munk 1994 US (12 sites)	4-14 day run-in, chlorpheniramine maleate 4mg allowed as rescue during run-in/washout not reported	no	yes	NR	yes - study population 12-17 yrs

Evidence Table 4. Quality assessment of placebo-controlled trials in children with PAR

Author, Year Country	Run-in/Washout	Class naïve patients only	Control group standard of care	Funding	Relevance
Schenkel 1997 US (number of sites unclear)	6 day run-in, no rhinitis relief medications; washout not reported	no	yes	Rhone-Poulemc Rorer	yes
Strem 1978 US	2 wk run-in/washout not reported	NR	yes	NR	yes

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions (total daily dose)	Run-in/Washout Period
Fair quality studies				
Drouin 1996 Europe/Canada (Fair)	RCT, double-blind, parallel, multicenter	Aged ≥ 12 years; ≥ 2 year history of moderate-severe PAR warranting chronic use of intranasal corticoids for symptom control; active disease at both screening and baseline; positive skin test to ≥ 1 perennial allergen of continuous exposure within last two years; wheals induced by skin prick or intradermal injection must have been ≥ 3 mm or ≥ 7 mm, respectively, larger than diluent control	Mometasone QD (200 µg) Beclomethasone BID (400 µg) Placebo x 12 weeks	None

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Allowed other medications/ interventions	Method of Outcome Assessment and Timing of Assessment	Age Gender (% female) Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Fair quality studies						
Drouin 1996 Europe/Canada (Fair)	Rescue medication=loratadine 10 mg QD PRN	**Primary outcome:** average change from baseline in total AM + PM diary nasal symptom score (sum of scores for rhinorrhea, congestions, sneezing, and nasal itching; each rated on 4-point scale of 0=none to 3=severe) over the first 15 days of treatment for comparison of mometasone vs placebo **Secondary:** total diary nasal symptom scores averaged over 15-day intervals behond day 15; all other composite total and individual diary symptom scores, physician-evaluated perennial rhinitis symptoms, as well as physician and patient evaluations of therapeutic response Assessments conducted at research center visits at weeks 1, 2, 4, 8 and 12; ratings based on patient diary assessments and physician ratings	31.7 years 45.4% Race NR	Mean duration of condition (yrs): 11.3 With asthma (% pts): 20.4 With SAR (% pts): 48.9	NR/NR/427	100 (23.4%) withdrawn/14 (3.3%) lost to follow-up/387 analyzed Mometasone n=129 vs beclomethasone n=134 vs placebo n=124

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Results	Method of adverse effects assessment	Adverse Effects Reported
Fair quality studies			
Drouin 1996 Europe/Canada (Fair)	mometasone vs beclomethasone (data NR; estimated from figure) Average change from baseline in total AM+PM nasal symptoms (patient diary): Days 1-15 (primary outcome): -25% vs -29%; NS Endpoint: -46% vs -51%, NS Average change from baseline in physician-rated individual and total nasal symptom scores (range): -34% to -58% vs -40% vs -64%, NS % patients demonstrating complete or marked symptom relief (week 12): 54% vs 53% loratadine use (% patients): 48% vs 46%, NS	Adverse events were solicited at each treatment visit and the date, time of onset, and duration were recorded; severity of each adverse event was defined as mild, moderate, or severe; investigator assigned each adverse event as unrelated, possibly, probably or related	% patients with (all p=NS): Any treatment-related adverse event=43% vs 42% Epistaxis/blood in nasal discharge: 27 (19%) vs 34 (23%) Headache=14(10%) vs 10(7%) Pharyngitis=6(4%) 9(6%) Coughing=4(3%) vs 4 (3%) Rhinitis=1(<1) vs 4(3%) Nasal irritation=4(3%) vs 5(3%) Nasal Burning=4(3%) vs 4(3%) Sneezing=1(<1%) vs 4(3%) Infection, viral 0 vs 1(<1%) Pruritus: 0 vs 0

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Total withdrawals; withdrawals due to adverse events	Comments
Fair quality studies		
Drouin 1996 Europe/Canada (Fair)	% patients with: Withdrawals due to adverse events=8(5.6%) vs 6(4.1%), NS Total withdrawals: 32 (22.4%) vs 29 (19.9%), NS	

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions (total daily dose)	Run-in/Washout Period
Richards 1996(b)	Double-blind, placebo-controlled Multi-center	Children aged 4-11, with perennial arthritis	fluticasone propionate 100mcg once daily vs 200mcg twice daily vs placebo Study duration: 4 weeks	NR/NR

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Allowed other medications/ interventions	Method of Outcome Assessment and Timing of Assessment	Age Gender (% female) Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Richards 1996(b)	Antihistamines not permitted 48 hours before study. Rescue anti-histamine provided (drug NR)	Patient daily diary of symptoms, investigator assessments every 2 weeks of symptoms, nasal condition, haematology testing, plasma cortisol levels	Mean age: 8.83 years Male: 74% Ethnicity: Caucasian: 88%; Asian: 6.3%; Other: 5.6%	Perennial allergic arthritis: 66.3% Perennial nonallergic rhinitis: 28.6%	NR/NR/415	NR/NR/NR

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Results	Method of adverse effects assessment	Adverse Effects Reported
Richards 1996(b)	Percentage of patients with reduction of rhinorrhea with FPANS, after reporting moderate/severe symptoms at baseline: 60% reporting no/mild symptoms at 4 weeks Increase of symptom-free days, vs placebo: FPANS: p=0.05 vs BDPANS: p=0.03	Patient self-report	Adverse events reported: Any event: FPANS: 48% vs BDPANS: 67% vs placebo: 40% Upper respiratory tract infection: FPANS: 12% vs BDPANS: 20% vs placebo: 8% Headache: FPANS: 6% vs BDPANS: 13% vs placebo: 4% Cough: FPANS: 6% vs BDPANS: 13% vs placebo: 4%

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Total withdrawals; withdrawals due to adverse events	Comments
Richards 1996(b)	0;9	

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions (total daily dose)	Run-in/Washout Period
Bachert 2002 Norway, Germany, Switzerland (fair)	Randomized double-blind (patient) single dose, crossover single center	Adults (18-70y) with at least a 2 year history of allergic rhinitis (seasonal or perennial), who were symptomatic at baseline with a positive response to skin prick test for at least one allergen prevalent in the geographic area Exclusion: received intranasal coorticosteroids within 1 weekof randomization, systemic or topical antihistamines, chromones or leukotriene modifiers within 48h of randomization, an investigational drug within 30d of randomization or depot corticosteroids within 8 weeks of randomization, presence of nasal candidiasis, herpes lesions, acute or chronic sinusitis, severe impairment of nasal breathing, clinically relevant deviations from normal in the general physical examination and pregnant or lactating women.	triamcinolone acetonde aqueous 220mcg vs Fluticasone proprionate aqueous, 200mcg vs. Mometasone furoate aqueous 200mcg Study period: 1 day	Washout before each treatment administration with unsalted crackers, rinse with water and sniff a swatch of wool. Washout period:30 min. between medications

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Allowed other medications/ interventions	Method of Outcome Assessment and Timing of Assessment	Age Gender (% female) Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Bachert 2002 Norway, Germany, Switzerland (fair)	NR	Adjusted scores of Nasal Spray Evaluation Questionnaire recorded by a trained interviewer (scale of 0-100) immediately after treatment: Overall comfort, Amount of medication runoff, Amount of irritation, strength of urge to sneeze, Stength of odor, Strength of taste, Bitter taste, Moist nose and throat after 2-5 minutes: Strength of aftertaste, Amount of irritation, Amount of medication runoff	33.5 years 47% female White: 96%, other: 4%	Perennial allergic rhinitis: 13% Seasonal allergic rhinitis: 48% Both: 39% Diagnostic test: skin prick 73%, RAST 24%, none 3% main symptoms: nasal discharge 63%, itchy nose 46%, sneezing 62%, nasal congestion 74% prior medications: antihistamine 42%, nasal corticosteroid 40%, cromone 14%, antileukeotriene 14%, at least one 79% concomitant medications: antileukotriene 7%, bronchodilator 5%,	NR/NR/109	14/0/95

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Results	Method of adverse effects assessment	Adverse Effects Reported
Bachert 2002 Norway, Germany, Switzerland (fair)	Adjusted scores of Nasal Spray Evaluation Questionnaire recorded by a trained interviewer Estimated from graph, not directly reported, p-values as reported below: * significant for TAA vs MF, # significant for TAA vs FP, ++ significant for FP vs MF immediately after treatment: Overall comfort: 65 vs 63 vs 59, * # Run down throat and nose: 32 vs 24 vs 23, * # Amount of irritation: 15 vs 16 vs 23, * ++ Strength of urge to sneeze:5 vs 5 vs 5, NS Stength of odor: 17 vs 63 vs 59, * # Strength of taste: 15 vs 20 vs 24, * # Bitter taste: 9 vs 10 vs 13, NS Moist nose and throat: 60 vs. 53.5 vs. 53, * # after 2-5 minutes: Strength of aftertaste: 10 vs 18 vs 18.5, * # Amount of irritation: 10 vs 16 vs 19, * # Amount of medication runoff: 20 vs 18 vs 19, NS	NR	1 patient with mild dizziness possibly drug-related with Mometasone. NSD between treatments, no serious adverse events

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Total withdrawals; withdrawals due to adverse events	Comments
Bachert 2002 Norway, Germany, Switzerland (fair)	14; 0	This seems to be the same data reported in the Stokes 2004 pooled analysis Study B

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions (total daily dose)	Run-in/Washout Period
Shah 2003 USA (fair)	Randomized single-blind (patient) single dose, crossover single center USA	Adults >18y with > 1y history of allergic rhinitis (seasonal or perennial), experiencing mild to moderate symptoms of allergic rhinitis as determined by 24h reflective total nasal symptom score on the study day. Also all patients had a history of either inadequate control of symptoms with antihistamines, decongestants, and /or immunotherapy, or previous success with intranasal corticosteroids other than budesonide or fluticasone, treatment naive for two study medications Exclusion: pregnancy, nursing, or not using accepted method of birth control presence of nasal candidiasis, rhinitis medicamentosa, atrophic rhinitis, acute of chronic rhinitis and nasal obstructions or abnormalities significant disease history or unstable medical condition, use of topical nasal corticosteroid treatment within 2 wks before study, history of hypersensitivity or intolerance to corticosteroids, use of medications that could mask symptoms of rhinitis immediately after study treatment day, use of an experimental drug within 30 days preceding study initiation, previous use of study medications	Single dose of 64mcg budesonide aqueous and 200mcg fluticasone proprionate with washout period or single single dose of 64mcg budesonide aqueous and 100mcg fluticasone proprionate with washout period	Washout before study begin with small cup of water, crackers and swatch of wool. Washout period: 1 hr. between medications in Study I and 2 hrs. between medications in Study II

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Allowed other medications/ interventions	Method of Outcome Assessment and Timing of Assessment	Age Gender (% female) Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Shah 2003 USA (fair)	NR	Sensory Perceptions Questionnaire: Patients rated their sensory perceptions and the degree of their perceptions using Likert Scales	Study I: Mean age 40y, Range 18-73y, 60.8% women, 39.2% men, 69.1% white, 16% Black, 11.6% Hispanic, 3.3% Asian, 0% other Study II: Mean age 38y, Range 18-80y, 71.6% women, 28.4% men, 75.8% white, 4.2% Black, 17.4% Hispanic, 1.1% Asian, 1.6% other	Study I vs. Study II: Baseline total nasal symptom score: Mean 7 vs. 7, Range 3-12 vs. 4-11 Allergic rhinitis duration (y): Seasonal and perennial, Mean 19 vs. 18, Range 1-58 vs. 1-62 Perennial, Mean 16 vs. 13, Range 3-49 vs. 2-30 Seasonal, Mean 14 vs. 18, Range 1-47 vs. 1-50	NR/NR/n=181 in Study I and n=190 in Study II	Study I: 1/1/179-181 Study II: 0/0/187-190

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Results	Method of adverse effects assessment	Adverse Effects Reported
Shah 2003 USA (fair)	Percentage of patients responding yes when asked if they perceived specific sensory attributes Estimates from graph *p<0.001; # p<0.019 Study I (Fluticasone 200mcg vs. beclomethasone 64mcg) Scent: 79% vs 34%* Taste: 39% vs 15%* Aftertaste: 37% vs 15%* Throat Rundown: 46% vs 25%* Nose Runout: 48% vs. 40% # Study II (Fluticasone 100mcg vs. beclomethasone 64mcg) Scent: 91% vs 30%* Taste: 34% vs 15%* Aftertaste: 33% vs 23%, NS Throat Rundown: 40% vs 32%, NS Nose Runout: 42% vs. 36%, NS	Patient report	Adverse events were not reported separately by treatment group, only by study I and II. Study I: 9 patients (5%) any-cause adverse event, 0 treatment-related Study II: 11 patients (5.8%) any-cause adverse event, 7 treatment-related rhinitis (n=4), dry mouth (n=1), nausea (n=1), headache (n=1) No serious adverse events reported in either study

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Total withdrawals; withdrawals due to adverse events	Comments
Shah 2003 USA (fair)	1/ 0 in Study I 0/ 0 in Study II	Study was designed to evaluate patients perceptions and preference for specific sensory attributes of medications

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions (total daily dose)	Run-in/Washout Period
Stokes 2004 USA, Norway, Germany, Switzerland (fair-poor)	Randomized double-blinded crossover 2 multicenter	Adults (18-70y) with at least a 2 year history of allergic rhinitis (seasonal or perennial), who were symptomatic at baseline with a positive response to skin prick test for at least one allergen prevalent in the geographic area Exclusion: received intranasal corticosteroids within 1 weekof randomization, systemic or topical antihistamines, chromones or leukotriene modifiers within 48h of randomization, an investigational drug within 30d of randomization or depot corticosteroids within 8 weeks of randomization, presence of nasal candidiasis, herpes lesions, acute or chronic sinusitis, severe impairment of nasal breathing, clinically relevant deviations from normal in the general physical examination and pregnant or lactating women	triamcinolone acetonde aqueous 220mcg vs Fluticasone proprionate aqueous, 200mcg vs. Mometasone furoate aqueous 200mcg Study period: 1 day	Washout before each treatment administration with unsalted crackers, rinse with water and sniff a swatch of wool. Washout period:30 min. between medications

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Allowed other medications/ interventions	Method of Outcome Assessment and Timing of Assessment	Age Gender (% female) Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Stokes 2004 USA, Norway, Germany, Switzerland (fair-poor)	NR	Adjusted scores of Nasal Spray Evaluation Questionnaire recorded by a trained interviewer (scale of 0-100) Immediately after treatment: Overall comfort, Amount of medication runoff, Amount of irritation, strength of urge to sneeze, Stength of odor, Strength of taste, Bitter taste, Moist nose and throat after 2-5 minutes: Strength of aftertaste, Amount of irritation, Amount of medication runoff	36.2 years 54.4% female Caucasian 92.6%, black 4.2%, Asian 1.9%, Hispanic 1.4%, Other 0.0	NR	NR/NR/215	NR/NR/NR

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Results	Method of adverse effects assessment	Adverse Effects Reported
Stokes 2004 USA, Norway, Germany, Switzerland (fair-poor)	Adjusted scores of Nasal Spray Evaluation Questionnaire recorded by a trained interviewer immediately after treatment: Overall comfort: 70.4 vs 70 vs 65, p=0.004 Amount of medication runoff: 28.1 vs 25.1 vs 27.4, p=0.289 Amount of irritation: 16.1 vs 16.8 vs 22.4, p=0.003 strength of urge to sneeze: 8.9 vs 9.3 vs 11.5, p=0.190 Stength of odor: 14.8 vs 54.3 vs 53.2, p<0.001 Strength of taste: 14.3 vs 20.5 vs 26.1, p<0.001 Bitter taste: 8.1 vs 9.2 vs 13.7, p=0.003 Moist nose and throat: 60.0 vs. 55.8 vs. 55.8, p=0.011 after 2-5 minutes: Strength of aftertaste: 12.8 vs 18.9 vs 21.1, p<0.001 Amount of irritation: 14.5 vs 16.3 vs 21.3, p<0.001 Amount of medication runoff: 20 vs 18 vs 19, NS	NR	NR

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Total withdrawals; withdrawals due to adverse events	Comments
Stokes 2004 USA, Norway, Germany, Switzerland (fair-poor)	NR	Pooled analysis of two separate trials. Study B has significantly younger ($p<0.05$) and higher percentage of Caucasians ($p<0.01$) than Study A

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions (total daily dose)	Run-in/Washout Period
Bunnag 2003 Asia (fair)	Randomized double-blinded crossover multicenter	Adults >18y with a 2y history of allergic rhinitis, positive skin prick test and/or positive RAST w/i 2 y to at least one allergen prevalent in the geographic area to which they had continuous exposure Exclusion: use of intranasal medications in the 48h preceding the first assessment, oral or systemic corticosteroids in the 2 wks.preceding the first assessment, or depot corticosteroids in the 2 wks.preceding the first assessment, topical decongestants, topical antihistamines and topical cromoglycates prior to the study, previous history of nasal surgery, nasal or paranasal sinus diseases, severe deviated nasal septm or abnormal sense of smell or odor sensation and illiterate patients	fluticasone proprionate aqueous, 200mcg vs. mometasone furoate aqueous 200mcg vs. triamcinolone acetonde aqueous 220mcg	Washout before study begin with small cup of water and crackers. Washout period: 30 min. between medications

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Allowed other medications/ interventions	Method of Outcome Assessment and Timing of Assessment	Age Gender (% female) Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Bunnag 2003 Asia (fair)	NR	Patients responded to questions given by a trained, independent, blinded interviewer after administration of each of the products. Patients rated drugs using a 100-point scale immediately for comfort of use, amount of medicine that ran down throat from the nose, irritation, sneezing, strength of odor, liking of odor, strength of taste, liking of taste, and dry or moist sensation of nose and throat. After 2 minutes, patients rated: strength of aftertaste, irritation, amount of medicine taht ran down throat from nose, and overall liking	Mean age 30.5y, age range 18-72 54.4% female, 45.6% male Indonesia 32.9%, Singapore 31.6% and Thailand 35.4%	NR	NR/NR/364	3/NR/361

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Results	Method of adverse effects assessment	Adverse Effects Reported
Bunnag 2003 Asia (fair)	Sensory Perception attribute ratings-upon adminstration: Comfort 55.9 (24.0) vs 53.5(23.9) vs 58.2(26.5) p=0.0406 Medicine ran down throat 17.5(25.4) vs 16.8(23.9) vs 15.4(23.2) NS Irritation 23.8(26.7) vs 25.5(27.9) vs 22.9(28.6) NS Sneeze urge 13.1(25.9) vs 12.5(23.7) vs 13.6(26.5) NS Strength of Odor 52.8(24.1) vs 52.7(24.5) vs 37.4(23.9) p<0.0001(chi-square test) Strength of taste 37.0 (23.3) vs 40.4(27.2 vs 31.8(20.8) NS Dry/Moist 46.9(28.5) vs 46.8(29.1) vs 45.8(29.7) NS after 2 minutes Aftertaste 35.2%yes vs 34% yes vs 30.7% yes NS Strength of aftertaste 39.6 (24.4) vs 37.9(25.2) vs 34.3(24.2) NS Irritation 17.1(23.8) vs 19.6(24.7) vs 17.3(25.0) NS Medicine ran down throat 21.6(26.5) vs 19.5(24.6) vs 19.8(25.2) NS	Adverse events reported were reported spontaneously by the patients or observed by the investigated/interviewer and were recorded on the case report form after each nasal spray administration	None reported

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Total withdrawals; withdrawals due to adverse events	Comments
Bunnag 2003 Asia (fair)	3/NR	Study was designed to evaluate medication preference, sensory perceptions and compliance

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions (total daily dose)	Run-in/Washout Period
Mandl 1997 Europe, Latin America and Canada (Fair)	RCT, double-blind (double dummy), parallel, multicenter	Aged ≥ 12 years; ≥ 2 year history of moderate-severe PAR warranting chronic use of intranasal corticoids for symptom control; active disease at both screening and baseline; positive skin test to ≥ 1 perennial allergen of continuous exposure within last two years; wheals induced by skin prick or intradermal injection must have been ≥ 3 mm or ≥ 7 mm, respectively, larger than diluent control; at least moderate (score of 2 on a 4-point scale of 0 to 3, none to severe) rhinorrhea and/or congestion, and a total nasal symptoms score (sum of scores for rhinorrhea, congestion, sneezing, and nasal itching) of at least 5 at screening and for at least 4 of the 7 days just prior to baseline	mometasone QD (200 µg) fluticasone QD (200 µg) placebo x 12 weeks	None

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Allowed other medications/ interventions	Method of Outcome Assessment and Timing of Assessment	Age Gender (% female) Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Mandl 1997 Europe, Latin America and Canada (Fair)	loratadine 10 mg as rescue medication	Severity (4-point scale; 0=none to 3=severe) of individual nasal (sneezing, rhinorrhea, nasal itch, congestion) and non-nasal ocular itch/burning, tearing/watering, redness, and ear/palate itch) symptoms (patient diary assessments) Total nasal symptom score Total symptom score Overall response to therapy (1=excellent to 5=treatment failure)	33.0 years 54.7% Race NR	Duration of perennial rhinitis (years): 12.7 Mean baseline total nasal symptom score: 7 With seasonal allergic rhinitis (% patients): 37.5%	NR/NR/548	76 (14%) withdrawn/15 (2% lost to follow-up/459 (number of patients per treatment group NR)

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Results	Method of adverse effects assessment	Adverse Effects Reported
Mandl 1997 Europe, Latin America and Canada (Fair)	Total nasal symptom score reduction rated by patient/physician (mean percent estimated from figure): 61%/64% vs 55%/55%, NS Mean number of symptom-free days: 10 vs 11, NS Overall condition reduction (physician-rated mean percent reduction): 55% vs 45%, p=0.04 Individual nasal symptom reductions for discharge, congestion, sneezing, itch: no differences for any symptom for any time period	Adverse events were solicited at each treatment visit and the date, time of onset, and duration were recorded; severity of each adverse event was defined as mild, moderate, or severe; investigator assigned each adverse event as unrelated, possibly, probably, or definitely related to study drug	Any adverse event: 60 (33%) vs 70 (38%) Epistaxis/blood in nasal discharge: 30 (17%) vs 32 (17%) Headache: 11 (6%0 vs 17 (9%) Pharyngitis: 10 (6%) vs 17 (9%) Rhinitis: 5 (3%) vs 7 (4%) Nasal burning: 5 (3%) vs 5 (3%) Infection, viral: 5 (3%) vs 1 (1%) Nasal irritation: 4 (2%) vs 5 (3%) Sneezing: 4 (2%) vs 1 (1%) Rhinitis (aggravated): 3 (2%) vs 1 (1%) Somnolence: 3 (2%) vs 2 (1%) Lacrimation: 3 (2%) vs 0 Coughing: 2 (1%) vs 4 (2%) Rhinorrhea; 1 (1%) vs 4 (2%) Dizziness: 0 vs 2 (1%) Rash: 0 vs 2 (1%)

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Total withdrawals; withdrawals due to adverse events	Comments
Mandl 1997 Europe, Latin America and Canada (Fair)	Withdrawals due to adverse events: 1% vs 2%, NS Total withdrawals: 16 (9%) vs 22 (12%)	

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions (total daily dose)	Run-in/Washout Period
Sahay 1980 UK (Fair)	RCT, open, parallel, single center	Patients suffering from perennial allergic rhinitis, with or without seasonal allergic rhinitis	flunisolide BID (200 µg) beclomethasone QID (400 µg) x 4 weeks	None

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Allowed other medications/ interventions	Method of Outcome Assessment and Timing of Assessment	Age Gender (% female) Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Sahay 1980 UK (Fair)	Steroid inhalers for asthma were allowed if stable and remained so during study	Sneezing, stuffiness, runny nose, nose blowing, post-nasal drip and epistaxis were all recorded as none (0), mild (1), moderate (2) or severe (3); assessed upon admission and after end of 4 weeks; patients were asked whether symptoms interfered with routine life or sleep; patients assessed the control of their symptoms as total, good, minor, none, or worse	37 years 48% Race NR	Perennial rhinitis with seasonal exacerbation: 76.7% Mean duration of symptoms (years): 12.4 Asthma (% patients): 58.3%	NR/NR/60	6.7% withdrawn/5% lost to follow-up/analyzed unclear

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Results	Method of adverse effects assessment	Adverse Effects Reported
Sahay 1980 UK (Fair)	Mean change in admission (all NS) Sneezing: –1.44 vs –1.57 Stuffiness; –1.74 vs 1.62 Runny nose: -1.33 vs 1.48 Nose blowing: –1.70 vs –1.72 Post-nasal drip: –0.74 vs –0.68 Epistaxis: –0.15 vs –0.07 Significant change in incidence of interference by symptoms with routine life or sleep: both groups showed change Total control of symptoms (# patients) as rated by doctor/patient: 8/9 vs 9/12	Side-effects were elicited by an indirect question such as 'How is the treatment suiting you?' and if present were classified as possibly or probably related to the test spray	Any side effect: 10 (33.3%) vs 8 (26.7%) Individual side effects probably- or possibly-drug related: Nasal irritation: 3(10%) vs 1 (3.3%) Nasal dryness: 2 (6.7%) vs 3 (10%) Sore throat: 2 (6.7%) vs 1 (3.3%) Hoarseness: 1 (3.3%) vs 1 (3.3%) Nose bleed: 0 vs 3 (10%) Headache: 4 (13.3%) vs 2 (3.3%) Dizziness: 1 (3.3%) vs 1 (3.3%) Nausea: 1 (3.3%) vs 0 Tiredness: 1 (3.3%) vs 0 Confusion: 1 (3.3%) vs 0 Stomatitis: 1 (3.3%) vs 0

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Total withdrawals; withdrawals due to adverse events	Comments
Sahay 1980 UK (Fair)	Withdrawal due to AE: 0 vs 0 Overall withdrawals: 1 (3.3%) vs 3 (10%)	

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions (total daily dose)	Run-in/Washout Period
Adamopoulos 1995 Greece (fair)	Open, randomized, crossover	Patients aged 15-65 years, with symptomatic perennial rhinitis, symptoms duration at least 1 year, suffering from at least 2 symptoms (blocked nose, runny nose, itchy nose, and sneezing) Exclusion: pregnant or lactating women, active or quiescent tuberculosis or an untreated fungal, viral or bacterial respiratory infection, patients with other diseases and conditions which might interfere with the study evaluation or those who required other therapy which would interfere with the study during evaluation	budesonide aqueous 200mcg twice daily vs beclomethasone aqueous 100mcg once daily 6 weeks	None/None
Lebowitz 1993 USA (fair)	Open, randomized	Patients with allergic or vasomotor rhinitis Exclusion: nasal pathology other than rhinitis, patients using antihistamines and/or oral or topical decongestants	triamcinolone 220mcg/d vs. beclomethasone 336mcg/d 8 weeks	None/None

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Allowed other medications/ interventions	Method of Outcome Assessment and Timing of Assessment	Age Gender (% female) Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Adamopoulos 1995 Greece (fair)	NR/NR	Primary outcome: daily nasal and eye symptoms (as rated on 4-point scale) secondary outcome: daily eyedrops used, patient assessment, patient period preference	28.9 years 45% Female NR	70% moderate symptoms 25% severe symptoms 5% mild symptoms	NR/NR/40	2/1/37 analyzed
Lebowitz 1993 USA (fair)	None/None	Nasal airflow and total nasal resistance, total symptom score (scale 0-16, comprised of 4 individual symptoms: nasal obstruction, nasal discharge, sneezing, nasal itching) All measurements at initial visit and at 8 weeks	Male: 39 years vs. 43 years Female: 33 years vs. 41 years 60% female	NR	NR/NR/40	10/0/30

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Results	Method of adverse effects assessment	Adverse Effects Reported
Adamopoulos 1995 Greece (fair)	Total Nasal Symptom Score: 2.13 vs. 2.75, p=0.001 blocked nose: 0.84 vs. 1.07, p=0.004 runny nose: 0.60 vs. 0.87, p=0.0005 itchy nose: 0.28 vs. 0.29, p=0.7 sneezing: 0.41 vs. 0.52, p=0.08 runny eyes: 0.20 vs. 0.23, p=0.3 sore eyes: 0.13 vs. 0.19, p=0.047	Patient self-report	dry nose: 5% vs. 55 epistaxis: 5% vs. 0% gastral discomfort: 0 vs. 3%
Lebowitz 1993 USA (fair)	Mean nasal air flow change: +29% vs. +26% Mean nasal resistance change: -23% vs. -25% Symptom score percent decrease: 54% vs. 58%	NR	NR

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Total withdrawals; withdrawals due to adverse events	Comments
Adamopoulos 1995 Greece (fair)	3;0	
Lebowitz 1993 USA (fair)	10;0	

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions (total daily dose)	Run-in/Washout Period
Al-Mohaimeid 1993 Saudi Arabia (Fair)	RCT, open, parallel, single center	Age range 18-70 years with symptoms of perennial rhinitis for at least 12 months; presence of at least two nasal symptoms on entry to the study (blocked nose, runny nose, itchy nose, and/or sneezing bouts)	budesonide BID (400 µg) beclomethasone BID (400 µg) x 3 weeks	None
Tai 2003 Taiwan (Fair)	RCT, blinding NR, parallel, single center	Aged 16 to 60; history of moderate-severe perennial rhinitis for at least the previous 6 months; allergen-specific IgE examination verified by MAST CLA, positive response was defined as allergen-specific IgE greater than 0.35 KU/L; during at least half of the run-in period of 1 week, patients must have 2 or more symptoms of nasal blockage, rhinorrhea, sneezing, nasal itching, or postnasal drip of at least moderate severity	fluticasone QD (200 µg) budesonide QD (400 µg) x 8 weeks	None

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Allowed other medications/ interventions	Method of Outcome Assessment and Timing of Assessment	Age Gender (% female) Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Al-Mohaimeid 1993 Saudi Arabia (Fair)	NR	Mean daily score of nasal symptoms (blocked nose, runny nose, itchy nose, sneezing) and ocular symptoms (runny eyes, sore eyes) were score on a 4-point scale (0=no symptoms; 3=severe) (patient diary assessments) Patient global evaluation as ineffective, slightly effective, noticeably effective, very effective or total effective (symptom-free)	30 years 27.5% 90% arabic	Severity of rhinitis: Moderate: 55% Severe: 10.8% Rhinitis duration: < 1 year: 4.2% 1-5 years: 68.3% > 5 years: 26.7%	NR/NR/120	3 (2.5%) withdrawn/0 lost to follow-up/120 analyzed (budesonide n=58; beclomethasone n=62)
Tai 2003 Taiwan (Fair)	loratadine as rescue medication	Primary efficacy parameter: mean nasal symptom score over the treatment period of 8 weeks; total nasal symptom score is the sum of 6 individual symptom scores; daily total score ranged from 0 (best) to 18 (worst) Documentation of nasal symptoms on diary card (nasal blockage, sneezing, nasal itching, rhinorrhea, eye itching) based on a 4-point scale from 0 to 3 Clinic visits at weeks 2, 4, 6 and 8	40.9 years 62.5% Race NR	History of nasal allergy (years): 14.2	NR/NR/24	0 withdrawn/0 lost to follow-up/24 analyzed

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Results	Method of adverse effects assessment	Adverse Effects Reported
Al-Mohaimeid 1993 Saudi Arabia (Fair)	Mean daily symptom scores at weeks 1/2/3 (*statistically significant) Blocked nose: 1.13/1.02/0.88 vs 1.36/1.10/1.09, NS Runny nose: 0.84*/0.83/0.62 vs 1.12/0.86/0.84 Itchy nose: 0.89/0.67/0.53 vs 1.08/0.88/0.77; NS Sneezing; 0.93/0.61/0.48* vs 1.07/0.81/0.73 Runny eyes: 0.29/0.18/0.12 vs 0.43/0.31/0.30 Sore eyes: 0.32/0.26/0.24 vs 0.35/0.23/0.27, NS Totally symptom-free (% patients): 35% vs 26%, NS % patients that found treatment to be totally effective: 10.4% vs 5.6%, NS	Patients were asked whether they had experienced other symptoms or unusual occurrences since their last visit	Any adverse event: 3 (5.2%) vs 10 (16.1%)
Tai 2003 Taiwan (Fair)	Reduction in total nasal symptom scores (points/% change): 7.77/86% vs 8.01/87.1%, NS Endpoint total nasal symptom scores: 1.23 vs 1.79, NS Mean number of pills of rescue medication: 8.3 vs 11.4, NS	An open-ended area was designed on the nasal symptom diary card for patient to report any adverse event they experience	NR

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Total withdrawals; withdrawals due to adverse events	Comments
Al-Mohaimeid 1993 Saudi Arabia (Fair)	Withdrawals due to adverse events: 1 (1.7%) vs 0 Overall withdrawals: 3 (5.2%) vs 0	
Tai 2003 Taiwan (Fair)	No withdrawals	

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions (total daily dose)	Run-in/Washout Period
van As 1993 US (Fair)	RCT, double-blind, parallel, multicenter	Adults and adolescents (at least 12 years of age) with moderate to severe symptoms of perennial allergic rhinitis; positive skin test reaction (≥ 2+) to ≥ perennial allergen; historical evidence of perennial allergic rhinitis; documented nasal eosinophilia; a total symptom score for obstruction plus rhinorrhea of ≥ 100 of 200 possible points on 4 of the preceding 7 days before screening and on 8 of the 14 days during the single-blind placebo run-in period before randomization	fluticasone BID (100 µg) flutacasone QD (200 µg) beclomethasone BID (168 µg) x 6 months	14-day single-blind placebo period

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Allowed other medications/ interventions	Method of Outcome Assessment and Timing of Assessment	Age Gender (% female) Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
van As 1993 US (Fair)	chlorpheniramine maleate 4 mg as rescue medication	Severity of nasal symptoms (obstruction, rhinorrhea, sneezing, and itching) was scored by clinicians at clinic visits after 1, 2, 4, 6, 8, 10, 12, 16, 20 and 24 weeks and by patients at the end of each day on 100-point numerical scale (0=no symptoms; 100=severe symptoms); patients also rated nasal obstruction on awakening; overall effectiveness of treatment assessed by clinicians at end of study on 8-point scale (significant to significantly worse)	36.3 years 51.3% Race NR	Duration of rhinitis (% patients): < 1 year: 0.2% 1-5 years: 15.7% 6-10 years: 15.2% 11-20 years: 26.6% > 20 years: 11.8% Unknown: 2.1%	NR/NR/466	106 (22.7%) withdrawn/lost to follow-up NR/number analyzed NR

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Results	Method of adverse effects assessment	Adverse Effects Reported
van As 1993 US (Fair)	Magnitude of improvement at 24 weeks (data NR): ≥ 45% in treatment groups Clinician-rated individual nasal symptom scores for obstruction, rhinorrhea, sneezing, and itching: similar improvements across treatment groups (data NR) Clinician-rated overall assessment: no differences (data NR) Use of rescue medications: no differences (data NR)	NR	Any event: 45 (38%) vs 36 (31%) vs 37 (32%) Sore throat: 2 (2%) vs 2 (2%) vs 2 (2%) Blood in nasal mucus; 11 (9%) vs 5 (4%) vs 11 (9%) Nasal irritation: 0 vs 2 (2%) vs 0 Nasal dryness: 3 (3%) vs 2 (2%) vs 0 Nasal soreness: 3 (3%) vs 0 vs 1 (1%) Nasal burning: 1 (1%) vs 4 (3%) vs 3 (3%) Epistaxis: 17 (14%) vs 18 (15%) vs 10 (9%) Headache: 4 (4%) vs 2 (2%) vs 6 (5%)

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Total withdrawals; withdrawals due to adverse events	Comments
van As 1993 US (Fair)	Total withdrawals: 27 (23%) vs 16 (14%) vs 31 (27%), p-value NR Withdrawals due to adverse events: 6 (5%) vs 4 (3%) vs 10 (9%), NS	

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions (total daily dose)	Run-in/Washout Period
Bende 2002 Sweden, Spain, Hungary, and Portugal (Fair)	RCT, blinding NR, parallel, multicenter	Adults > 18 years of age and had ≥ 2-year history of perennial allergic rhinitis attributable to house-dust mite, dog, or cat allergens, or molds; allergy verified by a positive skin prick test of radioallergosorbent test within 2 years before the study, or by a positive skin prick test on enrollment; patients who were allergic only to dog or cat had to be exposed to the allergens during the study period to be eligible for inclusion; morning or evening NIS of ≥ 3 on 4 days (not necessarily consecutive), and a symptom score for blocked nose of ≥ 1 on 4 days during the last day of the run-in period	budesonide QD (256 µg) budesonide QD (128 µg) mometasone QD (200 µg) placebo x 4 weeks	2-week run-in period during which they recorded symptom scores for blocked nose, runny nose, and the worst of itchy nose or sneezing each morning and evening on a 4-point scale (0=no symptoms; 3=severe)

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Allowed other medications/ interventions	Method of Outcome Assessment and Timing of Assessment	Age Gender (% female) Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Bende 2002 Sweden, Spain, Hungary, and Portugal (Fair)	loratadine 10 mg as rescue medication	Primary efficacy: Nasal Index Score (sum of individual symptom scores: blocked nose, runny nose, itchy nose or sneezing) Secondary: Individual symptom scores; onset of action; number of rescue medication tablets taken; patients' overall evaluation of treatment efficacy Patients evaluated the ability of the study medication to control their nasal symptoms at weeks 2 and 4 on a 5-point scale (0=no control to 4=total control)	31.0 years 57.7% Race NR	Weight (kg)=69.6 Height (cm)=169.7 Years with rhinitis=10.1 Smokers=17.2%	NR/563/438	37 (8.4%) withdrawn/lost to follow-up NR/413 analyzed (budesonide 256 n=99; budesonide 128 n=107; mometasone n=103; placebo n=104)

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Results	Method of adverse effects assessment	Adverse Effects Reported
Bende 2002 Sweden, Spain, Hungary, and Portugal (Fair)	NIS (adjusted mean change in morning/evening): -1.45/-1.59 vs -1.41/-1.50 vs -1.26/-1.44, NS % patients experiencing no symptom control: 5.9% vs 10.1% vs 7.6%, NS Weekly consumption of rescue medication: 1.18 vs 1.31 vs 1.23, NS Onset of action stat. significant improvements in NIS compared with placebo after 4h: p=0.046 vs. p=0.010 vs. p=0.014	Information about adverse events was requested at the end of the run-in period and after 2 and 4 weeks of treatment; the dates of onset and recovery, maximum intensity, action taken, and, if applicable, final outcome of each event were recorded	Headache: 11% vs 11% vs 9% Respiratory infection: 5% vs 3% vs 7% Epistaxis: 9% vs 6% vs 6% Viral infection: 7% vs 1% vs 3% Pharyngitis: 1% vs 1% vs 3%

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Total withdrawals; withdrawals due to adverse events	Comments
Bende 2002 Sweden, Spain, Hungary, and Portugal (Fair)	Total withdrawals: 13 (12.1%) vs 6 (5.4%) vs 5 (4.7%) Withdrawals: 5 (4.7%) vs 1 (0.9%) vs 2 (1.9%)	

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions (total daily dose)	Run-in/Washout Period
Bunnag 1984 Thailand (Fair)	Non-randomized controlled trial, open, crossover, single center	Perennial allergic rhinitis	flunisolide BID (200 µg) beclomethasone QID (400 µg) x 4 weeks	None

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Allowed other medications/ interventions	Method of Outcome Assessment and Timing of Assessment	Age Gender (% female) Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Bunnag 1984 Thailand (Fair)	chlorpheniramine maleate 4 mg or a combination of tripolidine HCl 2.5 mg and pseudoephedrine HCl 60 mg as rescue medication	Itching, sneezing, stuffiness and running nose, each rated on a 4-point scale (0=none, 1=slight, 2=moderate, 3=severe); assessed on admission and at end of each test medication period by blinded physicians	28.5 years 66.7% Race NR	Duration of symptoms: 7.3 years Concomitant bronchial asthma (% patients): 4 (8.3%)	NR/NR/48	3 (6.2%) withdrawn/0 lost to follow-up/45 evaluated

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Results	Method of adverse effects assessment	Adverse Effects Reported
Bunnag 1984 Thailand (Fair)	Mean change in total symptom score (all p<0.0005): Periods I and II combined: -2.91 vs -4.96 Period I only (before crossover): -3.33 vs -5.40 Period II only: -2.76 vs -3.75 Drugs rated 'very effective' by: Patients: 9 (20%) vs 11 (24.4%), NS Physicians: 4 (8.9%) vs 6 (13.3%), NS	NR	Any side effects considered to be probably drug-related: 9 (20%) vs 3 (6.6%) Burning sensation: 9 (20%) vs 1 (2.2%), p= 0.0081 (2-sided Fisher's exact test calculated using StatsDirect) Nasal irritation: 2.2% vs 0, NS Nasal obstruction: 0 vs 2.2%, NS Throat dryness: 0 vs 2.2%, NS Headache: 2.2% vs 2.2%, NS Dizziness: 0 vs 2.2%, NS Insomnia+nightmare: 0 vs 2.2%, NS Rash: 2.2% vs 0, NS

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Total withdrawals; withdrawals due to adverse events	Comments
Bunnag 1984 Thailand (Fair)	Withdrawals due to adverse events: 1 (2.2%) vs 0, NS Overall withdrawals: NR by treatment group	

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions (total daily dose)	Run-in/Washout Period
Haye 1993 UK (Fair)	RCT, double-blind, parallel, multicenter	Aged ≥ 16; ≥ 2-year history of perennial rhinitis (≥ 1 symptom at time of entry: nasal blockage, nasal discharge, nasal itching, sneezing); experienced symptoms throughout the year; symptoms severe enough to warrant treatment	fluticasone BID (200 µg) beclomethasone BID (200 µg) for up to one year	2-week single-blind placebo run-in; no washout

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Allowed other medications/ interventions	Method of Outcome Assessment and Timing of Assessment	Age Gender (% female) Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Haye 1993 UK (Fair)	terfenadine 60 mg tablets as rescue medication	Patients asked to classify their symptoms of sneezing, nasal itching, nasal discharge, nasal blockage and eye watering/irritation according to a score of 0-3 (0=none; 3=severe) Treatment response assessed after 4 weeks, then at 12 weekly intervals	37.6 years 56.6% female Race NR	Weight (kg)=67.6 Height (cm)=168.8	NR/NR/251	72 (28.7%) withdrawn/lost to follow-up NR/242 analyzed (fluticasone n=159 vs beclomethasone n=83)

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Results	Method of adverse effects assessment	Adverse Effects Reported
Haye 1993 UK (Fair)	Overall symptom grades (% patients with severity of none/mild/moderate-severe: data NR only p-value/% patients with severity of none estimated from graph) Nasal discharge: p=0.002/none=67% vs 48% Nasal blockage: p=0.002/none=48% vs 51%, Eye watering/irritation: p=0.048/none=75% vs 69% Sneezing: p=0.114/none=63% vs 55% Nasal itching: p=0.052/none=75% vs 62%	Adverse events were both spontaneously by the patient at any stage during the study and those invoked by the investigator at each clinic visit Serious adverse events defined as: (1) all deaths; (2) life-threatening events; (3) events which were disabling or incapacitating; (4) events which required prolonged hospitalization; (5) clinical or laboratory events which led to withdrawal of the drug; (6) any congenital abnormality or cancer or drug overdose	Serious adverse events (% patients): 4% vs 4% Overall adverse events (% patients): 55% vs 58% Upper respiratory tract infections: 17% vs 17%, NS Epistaxis: 14% vs 5%, p=0.0285 (2-sided Fisher's exact test performed using StatsDirect) Headache: 8% vs 4%, NS

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Total withdrawals; withdrawals due to adverse events	Comments
Haye 1993 UK (Fair)	Overall withdrawals: 43 (27%) vs 20 (24%), NS Withdrawals due to adverse events NR	

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions (total daily dose)	Run-in/Washout Period
Day 1998 Canada/Spain (Fair)	RCT, double-blind for budesonide and placebo and investigator-blinded for fluticasone, parallel, multicenter	Patients aged 18 years and older with a least a 1-year history of allergic perennial rhinitis were considered for entry into the study; diagnosis verified by a positive skin prick test response to 1 or more perennial allergens performed within 1 year of the start of the study; exhibit ≥ 2 of 3 symptoms of rhinitis (blocked nose, runny nose, or sneezing) with severity rated ≥ 1 on a 0-3 symptom severity scale during ≥ 8 of the 8- to 14-day baseline period	budesonide QD (256 µg) fluticasone QD (200 µg) x 6 weeks	None

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Allowed other medications/ interventions	Method of Outcome Assessment and Timing of Assessment	Age Gender (% female) Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Day 1998 Canada/Spain (Fair)	loratadine 10 mg as rescue medication	Primary efficacy variables: mean scores of 3 individual and combined nasal symptoms (blocked nose, runny nose, and sneezing) as rated by the patients using the 4-point scale (0=no symptoms, 3=severe) Other variables: Onset of action assess by comparison of change from baseline in combined nasal symptoms score for each active treatment with that of placebo for the first 4 consecutive scoring intervals (i.e., within 12, 36, 60 and 84 hours) Patient's overall evaluation of efficacy: patients rated the medication's overall ability to control their nasal symptoms using a 5-point scale (0=symptoms were aggravated; 4=total control)	30.8 years 54.9% female Race NR	Mean disease duration (yrs): 11.4	NR/NR/314	Withdrawn=NR/lost to follow-up NR/analyzed: efficacy=273 (n=111, n=109, n=53) Safety=303 (sample sizes for different groups NR)

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Results	Method of adverse effects assessment	Adverse Effects Reported
Day 1998 Canada/Spain (Fair)	Reduction in combined nasal symptom scores: -2.11 vs -1.65, p=0.31 Reductions in individual symptoms: Nasal blockage: -0.75 vs -0.5, p=0.009 Runny nose: -0.73 vs -0.59, NS Sneezing: -0.66 vs -0.55, NS Eye symptoms: NS for either treatment vs placebo Onset of action (# hours before significant step-score reduction): 36 vs 60, pairwise comparison NR Patients' overall evaluation of treatment efficacy (% patients who reported substantial/total control): 3 weeks: 70.1% vs 61.0%, NS 6 weeks: 67.5% vs 65.3%, NS Reduction in rescue medication use: -0.74 vs -0.74, NS	At randomization and after 3 and 6 weeks of treatment, patients were asked whether they had experienced any adverse events; investigator rated severity (mild, moderate, severe)	Overall adverse events (% pts): 46% vs 37% Bloody nasal discharge: 22 (18%) vs 8 (7%), NS Respiratory infection: 12 (10%) vs 8 (7%), NS Headache: 11 (9%) vs 12 (10%), NS Pharyngitis: 5 (4%) vs 3 (2%), NS

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Total withdrawals; withdrawals due to adverse events	Comments
Day 1998 Canada/Spain (Fair)	Overall withdrawals: 4 (3.6%) vs 3 (2.7%), NS Withdrawals due to adverse events: 2 (1.8%) vs 2 (1.8%), NS	Supported by Astra Draco, (makers of BUD)

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions (total daily dose)	Run-in/Washout Period
Meltzer 1990 US (Fair)	RCT, double-blind, parallel, multicenter	Aged 14 to 65 years with a history of symptoms of perennial allergic rhinitis for ≥ 2 years that required medication most of the time; a positive skin test to a perennial allergen, such as house dust mite or mold, within the previous 2 years was required; during the baseline period for 1 week before the study, patients' nasal symptoms had to be severe enough to require the chlorpheniramine for ≥ 4 of 8 days	flunisolide ***original*** formulation BID (200 µg) flunisolide ***new*** formulation BID (200 µg) x 4 weeks In the new formulation, propylene glycol was decreased from 20% to 5%, polyethylene glycol was increased from 15% to 20% and 2.5% polysorbate was introduced	None
Poor quality studies				
Naclerio 2003 US (Poor)	RCT Blinding: Investigator blinded but unclear if patients blinded Setting: Unclear	Subjects over age 18 years, with rhinitis symptoms on the majority of days of each year and a positive skin test to dust mites	budesonide 128 ug/day (1) mometasone 200 ug/day (2) x 2 weeks	None

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Allowed other medications/ interventions	Method of Outcome Assessment and Timing of Assessment	Age Gender (% female) Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Meltzer 1990 US (Fair)	chlorpheniramine 4 mg as rescue medication	Patients scored symptoms (runny nose/sniffing, stuffy nose, sneezing/itchy nose, postnasal drip/snorting) on a scale of 0=absent to 4=very severe; patients were evaluated in the office at 2 and 4 weeks Global evaluation by patient and investigator summarizing the efficacy and acceptability of the sprays, rated using a VAS scale of 1=totally ineffective or unacceptable to 100=totally effective or acceptable	33.7 years 64.2% female Race NR	NR	NR/NR/220	NR/NR/analyzed: efficacy=210 (original n=98; new n=103); safety=215
Poor quality studies						
Naclerio 2003 US (Poor)	NR	Rhinitis Quality of Life Questionnaire at baseline and after 2 weeks	budesonide vs mometasone (sample sizes NR; overall mean calculations not possible) Age: 25.9 vs 25.4 % male: 40 vs 60 % white: 90 vs 60	Skin test (wheal mm): 9.6 vs 9.7 RQLQ Overall score (estimated from figure): 1.7 vs 2.4	NR/NR/22	3/0/NR

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Results	Method of adverse effects assessment	Adverse Effects Reported
Meltzer 1990 US (Fair)	Total symptom score reduction (estimated from figure): -2.8 vs -2.4, NS Median time to measurable symptom relief (days): 4 vs 4, NS Mean reductions in individual symptom scores (estimated from figure): Sniffing: -0.9 vs -0.6, NS Sneezing: -0.8 vs -0.7, NS Stuffiness: -0.7 vs -0.8, NS Postnasal drainage: -0.5 vs -0.7, NS Decrease in mean number of chlorpheniramine 4-mg tablets/day: -0.6 vs -0.5, NS Acceptability of nasal burning/stinging: 52 vs 87, p<0.001 Overall effectiveness (% improvement on VAS scale): 70% vs 75%, NS	Patients reported adverse events	Additional adverse experiences included: blood in mucus, sore throat, nasal dryness, and post-nasal drainage (rates NR)
Poor quality studies			

Naclerio 2003
US
(Poor)
	RQLQ mean change (estimated from figure): -0.7 vs -1.4, NS	NR	Total # patients (stratification by group NR):
			Headache=6
			Increased postnasal drip=2
			Blood-tinged nasal secretions=1
			Menstrual cramps=1
			Pharyngitis=1
			Muscle soreness=2

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Total withdrawals; withdrawals due to adverse events	Comments
Meltzer 1990 US (Fair)	Withdrawals due to adverse events: 2 patients in each group (denominators NR) Overall withdrawals NR	
Poor quality studies		
Naclerio 2003 US (Poor)	Total: 2 AE withdrawals: 0	

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions (total daily dose)	Run-in/Washout Period
Grubbe 1996 US (Poor)	RCT, single-blind, multicenter, parallel-groups	Male and female patients 12 to 70 years of age with a diagnosis of perennial allergic rhinitis for at least the preceding 2 years; diagnosis verified by positive skin test to perennial allergens such as molds and dust mites; total nasal symptom score ≥ 24 on 4 of 5 of the baseline period	budesonide 128 ug/day (1) mometasone 200 ug/day (2) x 2 weeks	No run-in/5-day washout
McAllen 1980 UK (Poor)	Randomized, double-blind, crossover	Aged 16 to 60; suffering from moderate to severe perennial rhinitis with or withour seasonal exacerbations	triamcinolone 220 ug/d QD (2) beclomethasone dipropionate aqueous spray 336 ug/d BID (2) x 4 weeks	NR/NR

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Allowed other medications/ interventions	Method of Outcome Assessment and Timing of Assessment	Age Gender (% female) Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Grubbe 1996 US (Poor)	None	Primary outcome: Change from baseline in Total Nasal Symptom Score Secondary: Change scores for each nasal symptom; Global evaluation of treatment effectiveness rated by physicians using a 5-point scale (0=no relief, 1=slight relief, 2=moderate relief, 3=marked relief, 4=complete relief) at 2 and 4 weeks; onset of action in first 7 days	32.3 yrs 47.9% male 86.9% white 8.0% black 2.2% hispanic 1.9 oriental 0.9% asian, mideastern, or arabic	Years of allergic rhinitis: 17.8 Total Nasal Score: 8.9	NR/NR/313	32 (10.2%)/3 (0.9%)/unclear for efficacy; 313 for AE's (triamcinolone n=154, beclomethasone n=159)
McAllen 1980 UK (Poor)	NR/NR	Patient report	19.0yrs / 58.0yrs 16 male 18 female	100% patients with mod-severe symptoms Seasonal exacerbations: 7 positive reaction to skin tests for allergens: 22	NR/NR/34	3/1/30 analyzed

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Results	Method of adverse effects assessment	Adverse Effects Reported
Grubbe 1996 US (Poor)	Improvement in total nasal symptom score (% change): 47% vs 46%, NS Physician's ratings of moderate-complete relief of rhinitis symptoms (% patients): 77% vs 74%, NS	Patient rating of daily questionnaire using 5-point scale (0=not bothersome, 4=extremely bothersome): 1. Some of the medicine ran down my throat 2. Some of the medicine ran out of my nose 3. The medicine tasted bad, left a bad taste 4. It made me sneeze 5. It made my throat sore 6. It made my nose sting and/or burn 7. It made my nose bleed 8. It dried the inside of my nostrils 9. There was blood in my nasal mucus when I blew my nose 10. It made my nose feel stuffed up	% patients Overall AE (% pts): 36% vs 47%, p-value NR Medication running down throat: 54% vs 16%; p=0.001 Medication running out of the nose: 33% vs 6%; p=0.001 Increased rhinitis: 6% vs 12% Headache: 6% vs 7%
McAllen 1980 UK (Poor)	Patient report of control of symptoms at 4 weeks:` Worse: F: NR vs B: NR None: F: 5 vs B:2 Minor: F: 7 vs B: 8 Good: F: 7 vs B: 20 Complete: F: 4 vs B: 3	Patient self-report	Reasons to discontinuation: flunisolide: 1 mild, persistent nose bleeds beclomethsane dipropionate: 1 feeling tiredness and apathy

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Total withdrawals; withdrawals due to adverse events	Comments
Grubbe 1996 US (Poor)	Withdrawal due to AE: 3% vs 6%; p-value NR Overall withdrawals: 5.8% vs 14.5%, p-value NR	
McAllen 1980 UK (Poor)	4;2	

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions (total daily dose)	Run-in/Washout Period
Svendsen 1989 Denmark (Poor)	Randomized, double-blind, crossover	Patients with active rhinitis defined as having two or more symptoms. Exclusion: immunotherapy within 6 months before study, structural abnomalities in the nose, pregnancy, receiving treatment for other diseases not included in study	nebulized aqueous flunisolide, 25g, twice daily vs aqueous beclomethasone dipropionate, 25g, twice daily Study duration: 8 weeks	2 weeks/NR
Scadding 1995 UK (Poor)	Randomized, double-blind, parallel Multicenter	Patients with over 12 years of mod-severe history of perennial arthritis, positive skin test for allergens	fluticasone propionate aqueous nasal spray 100g once daily vs 100g twice daily beclomethasone dipropionate aqueous nasal sppray, 200g, twice daily vs placebo Study duration: 12 weeks	2 weeks/NR
Klossek 2001 France (Poor)	Randomized, open-label, parallel Multicenter	Patients aged 18-65, with perennial allergic rhinitis vascconstrictors one month before study, corticosteroids or astemizole 3 months before study, of at least one year. Exclusion: positive skin test, positive assay for specific IgE	triamcinolone acetonide aqueous intranasal spray, 200g/daily Study duration: 6 months	NR/NR

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Allowed other medications/ interventions	Method of Outcome Assessment and Timing of Assessment	Age Gender (% female) Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Svendsen 1989 Denmark (Poor)	Beta-agonists, theophyllamines or inhaled steroids allowed for asthma patients	Peak expiratory flow measured by low-range peak-flow meter, posterior rhinomanometry performed between treatments	NR	Patients with bronchial asthma: 15	NR/NR/23	NR/NR/NR
Scadding 1995 UK (Poor)	terfenadine, 60mg tablets as rescue medication	Patient daily diary, weekly clinic visits	Mean age: 34.8 years 46.5% Male Ethnicity: Caucasian: 96.2% vs Asian: 1%; Oriental: 1%; Black: 1%	Skin prick test: positive: FPod: 46% FB bd: 47% BDP: 53% placebo: 51% Skin prick test: negative: FPod: 54% FB bd: 53% BDP: 47% placebo: 49%	622/516/371	NR/NR/NR
Klossek 2001 France (Poor)	NR/NR	Nasal mucosal thickness, macroscopic appearance, mucocillary function assessed as clinical visits	Mean age: 27 years Male: 60% Ethnicity NR	Mean duration of PAR: TAA: 11.7 BDP: 8.5 cetririzine: 11.2	NR/92/82	0/0/82

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Results	Method of adverse effects assessment	Adverse Effects Reported
Svendsen 1989 Denmark (Poor)	Difference at of symptoms at 8 weeks from baseline: Posterior rhinomanometry (degrees): B: -41 vs F: -7 Nasal peak flow (morning): B: -12 vs F: -13 Nasal peak flow (evening): B: -33 vs F: -5	Patient self-report	Increasing pattern in nasal peak flow during the first treatment period, for both drugs: p<0.05
Scadding 1995 UK (Poor)	Symptom relief at 12 weeks: Sneezing: FPod: 19% vs vs FPbd: 25% vs placebo: 7% Rhinohoea: FPod: 19% vs FPbd: 15% vs placebo: 3% Overall symptoms: FPod: 13% vs FPbd: 14% vs placebo: 4% Nasal blockage: FPbd: 16% vs placebo: 7%; p=0.015	Patient self-report	Increasing pattern in nasal peak flow during the first treatment period, for both drugs: p<0.05
Klossek 2001 France (Poor)	Mean change of nasal mucosa thickness: TAA: 9.5 microns BDP: 6.0 microns cetirizine: 7.7 microns	NR	NR

Evidence Table 5. Head-to-head trials in patients with PAR

Author Year Country Trial Name (Quality Score)	Total withdrawals; withdrawals due to adverse events	Comments
Svendsen 1989 Denmark (Poor)	NR;NR	
Scadding 1995 UK (Poor)	NR;NR	
Klossek 2001 France (Poor)	NR;NR	

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

	Internal Validity				
Author, Year Country	**Randomization adequate?**	**Allocation concealment adequate?**	**Groups similar at baseline?**	**Eligibility criteria specified?**	**Outcome assessors masked?**
Naclerio 2003 US	NR	NR	No, budesonide group had better RQLQ Emotional domain score (p=0.04) and a trend toward more white patients (p=0.052)	Yes	Unclear
Shah 2003	Yes	Single-blind, yes	Yes, some differences in gender and ethnicity	Yes	Yes

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Eligibility criteria specified?	Outcome assessors masked?
Bunnag 2003	Method not reported	Yes	NR	Yes	Yes
Stokes 2004	Method not reported	Yes	NR, only population characteristics of "study groups"reported	Yes	Yes

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Eligibility criteria specified?	Outcome assessors masked?
Bachert 2002	Method not reported	Yes	NR	Yes	Yes

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Eligibility criteria specified?	Outcome assessors masked?
Grubbe 1996	No; sequential	NR	No, beclomethasone group had more males (54% vs 42%) and a lower mean baseline severity score	Yes	Yes

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Eligibility criteria specified?	Outcome assessors masked?
Drouin 1996	Yes	NR	Yes	Yes	Yes

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Eligibility criteria specified?	Outcome assessors masked?
Mandl 1997	Yes	NR	Yes	Yes	Yes

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Eligibility criteria specified?	Outcome assessors masked?
Sahay 1980	Unclear; "using a code"	NR	Yes	Yes	n/a-open
McAllen 1980	NR; unclear if randomization used	NR; unclear if randomization used	NR	Yes	Unclear; assessments were conducted using patient self-report (unblinded) and physicians' ratings ("Patients were asked to not reveal details of the physical characteristics of the medication to the physician.")

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Eligibility criteria specified?	Outcome assessors masked?
Svendsen 1989	NR	NR	NR	Yes	Yes
Scadding 1995	NR	NR	NR; only provided baseline characteristics of "efficacy population", which excluded 28% of patients randomized	Yes	Yes
Al-Mohaimeid 1993	NR	NR	Yes	Yes	Single-blind; unclear who was blinded

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Eligibility criteria specified?	Outcome assessors masked?
Tai 2003	NR	NR	Yes for gender, age, allergy history; no other variables reported	Yes	Blinding NR; QD vs BID treatment
van As 1993	NR	NR	Yes	Yes	Yes
Bende 2002	Yes	NR	Yes	Yes	Blinding NR

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Eligibility criteria specified?	Outcome assessors masked?
Bunnag 1984	NR	NR	NR; crossover study	No	Yes; the treatment given to each patient was accomplished on weekly basis by one of the technicians; the physicians who evaluated the results did not know the kind of treatment the patients were being given
Haye 1993	NR	NR	Yes	Yes	Yes

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Eligibility criteria specified?	Outcome assessors masked?
Day 1998	Yes	NR	Yes	Yes	Yes
Klossek 2001	NR	NR	Unknown; baseline characteristics for 22 (23.9%) of 92 patients randomized were NR	Yes	n/a-open

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Eligibility criteria specified?	Outcome assessors masked?
Meltzer 1990	NR	NR	Yes	Yes	Yes

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Patient masked?	Reporting of attrition, crossovers, adherence, and contamination	Loss to follow-up: differential/high	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating
Naclerio 2003 US	Unclear	Y/N/N/N	None	Unclear	No	Poor
Shah 2003	No	Yes, Yes, Yes, No	No	Yes	No	Fair

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Patient masked?	Reporting of attrition, crossovers, adherence, and contamination	Loss to follow-up: differential/high	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating
Bunnag 2003	Yes	Yes, Yes, Yes, No	No	No	No	Fair
Stokes 2004	Yes	No, Yes, No, No	No	Not clear	NR	Fair-poor

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Patient masked?	Reporting of attrition, crossovers, adherence, and contamination	Loss to follow-up: differential/high	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating
Bachert 2002	Yes	No, Yes, No, No	No	Yes	No	Fair

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Patient masked?	Reporting of attrition, crossovers, adherence, and contamination	Loss to follow-up: differential/high	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating
Grubbe 1996	No	Y/N/N/N	No/No	Unclear	No	Poor

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Patient masked?	Reporting of attrition, crossovers, adherence, and contamination	Loss to follow-up: differential/high	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating
Drouin 1996	Yes	Y/N/N/N	No/No	No; efficacy analysis excluded 40 (9.4%)	No	Fair

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Patient masked?	Reporting of attrition, crossovers, adherence, and contamination	Loss to follow-up: differential/high	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating
Mandl 1997	Yes	Y/N/N/N	No/No	No; efficacy analysis excluded 89 (16.2%)	No	Fair

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Patient masked?	Reporting of attrition, crossovers, adherence, and contamination	Loss to follow-up: differential/high	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating
Sahay 1980	n/a-open	Y/N/N/N	No/No	Unclear; number of patients analyzed NR	No	Fair
McAllen 1980	n/a-open	N/N/N/N	NR	No; excluded 1 patient (3%)	No	Poor

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Patient masked?	Reporting of attrition, crossovers, adherence, and contamination	Loss to follow-up: differential/high	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating
Svendsen 1989	Yes	N/N/N/N	NR	Unclear; number of patients analyzed NR	Unclear	Poor
Scadding 1995	Yes	Y/N/N/N	No; NR by group	No; excluded 145 patients (28%)	No	Poor
Al-Mohaimeid 1993	Single-blind; unclear who was blinded	Y/N/N/N	No, No	Yes	No	Fair

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Patient masked?	Reporting of attrition, crossovers, adherence, and contamination	Loss to follow-up: differential/high	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating
Tai 2003	Blinding NR; QD vs BID treatment	Y/N/N/N	None	Yes	No	Fair
van As 1993	Yes	Y/N/N/N	No, unclear (protocol violations and loss to follow-up patients were group together)	Unclear; number of patients analyzed for efficacy NR	No	Fair
Bende 2002	Blinding NR	Y/N/N/N	NR	No; excluded 24 (5.5%)	No	Fair

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Patient masked?	Reporting of attrition, crossovers, adherence, and contamination	Loss to follow-up: differential/high	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating
Bunnag 1984	No	Y/N/N/N	NR	No, excluded 3 patients (6%)	No	Fair
Haye 1993	Yes	Y/N/N/N	Reasons for withdrawal NR	Unclear; reported that only patients who adhered closely to the protocol were included in the efficacy analysis, but number of patients NR	Unclear; reasons for early discontinuation NR	Fair

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Patient masked?	Reporting of attrition, crossovers, adherence, and contamination	Loss to follow-up: differential/high	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating
Day 1998	Yes for budesonide; no for fluticasone	Y/N/N/N	Unclear; reasons for withdrawal NR	No; excluded 41(13.1%)	No	Fair
Klossek 2001	n/a-open	NR	NR	Variable; no for some outcomes and yes for others	NR	Poor

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Patient masked?	Reporting of attrition, crossovers, adherence, and contamination	Loss to follow-up: differential/high	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating
Meltzer 1990	Yes	Y/N/N/N	None	No; excluded 14 patients (6.5%)	None	Fair

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

	External Validity					
Author, Year Country	**Number screened /eligible/ enrolled**	**Exclusion criteria**	**Run-in/Washout**	**Class naïve patients only**	**Control group standard of care**	**Funding**
Naclerio 2003 US	NR/NR/22	Confounding medical problems or required daily medication except for birth control pills or inhalers to control asthma	None	No	Yes	Astra Zeneca
Shah 2003	NR/NR/n=181 in Study I and n=190 in Study II	Pregnancy, nursing, or not using accepted method of birth control presence of nasal candidiasis, rhinitis medicamentosa, atrophic rhinitis, acute of chronic rhinitis and nasal obstructions or abnormalities significant disease history or unstable medical condition use of topical nasal corticosteroid treatment within 2 wks before study, history of hypersensitivity or intolerance to corticosteroids, use of medications that could mask symptoms of rhinitis immediately after study treatment day, use of an experimental drug within 30 days preceding study initiation, previous use of study medications	Washout before study begin with small cup of water, crackers and swatch of wool. Washout period: 1 hr. between medications in Study I and 2 hrs. between medications in Study II	Yes	N/A	Supported by financial grant from AstraZeneca LP

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Number screened /eligible/ enrolled	Exclusion criteria	Run-in/Washout	Class naïve patients only	Control group standard of care	Funding
Bunnag 2003	NR/NR/n=364	Use of intranasal medications in the 48h preceding the first assessment, oral or systemic corticosteroids in the 2 wks.preceding the first assessment, or depot corticosteroids in the 2 wks.preceding the first assessment, topical decongestants, topical antihistamines and topical cromoglycates prior to the study	Washout before study begin with small cup of water and crackers. Washout period: 30 min. between medications	No	N/A	Aventis Pharma, makers of Nasacort (Triamcinolone)
Stokes 2004	NR/NR/215	Use of following medications w/i time period of randomization: intranasal corticosteroids w/i 1 wk oral or systemic corticosteroids w/i 2 wks, an investigational drug w/l 30d depot corticosteroids w/l 8 wks, patients with oral or nasal candidiasis, herpes, acute or chronic sinusitis, severe impairment of nasal breathing, a history of hypersensitivity to corticosteroids or any of the study drugs, or clinically relevant deviations from normal in the general physical examination were also excluded or pregnant or lactating women	Washout before study begin with small cup of water and crackers. Washout period: 30 min. between medications	No	N/A	Aventis Pharma, makers of Nasacort (Triamcinolone)

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Number screened /eligible/ enrolled	Exclusion criteria	Run-in/Washout	Class naïve patients only	Control group standard of care	Funding
Bachert 2002	NR/NR/109	Received intranasal corticosteroids within 1 week of randomization, systemic or topical antihistamines, chromones or leukotriene modifiers within 48h of randomization, an investigational drug within 30d of randomization or depot corticosteroids within 8 weeks of randomization, presence of nasal candidiasis, herpes lesions, acute or chronic sinusitis, severe impairment of nasal breathing, clinically relevant deviations from normal in the general physical examination and pregnant or lactating women	Washout before each treatment administration with chewing unsalted crackers, mouth rinsing with water, sniffing swatch of wool cloth. Washout period: 30 min. between medications	No	Yes	Aventis Pharma, makers of Nasacort (Triamcinolone)

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Number screened /eligible/ enrolled	Exclusion criteria	Run-in/Washout	Class naïve patients only	Control group standard of care	Funding
Grubbe 1996	NR/NR/313	Women that were pregnant, lactating, or of childbearing potential who were not practicing an approved method of birth control; systemic use of a short-acting steroid, a nasal corticosteroid, or nasal cromolyn sodium within 42 days preceding the study baseline period; use of a long-acting steroid within 3 months of the baseline period; use of topical vasoconstrictors more than 3 times/week over the preceding 3 months; initiation of immunotherapy within 1 month of the start of the study; use of medication for another indication that might cause, suppress, or exacerbate the symptoms of allergic rhinitis; a history of habitual abuse of nasal decongestants; hypersensitivity or nonresponse to topoical steroids; sinusitis or an derlying nasal deformity resulting in fixed occlusion of a nostril; rhinitis medicamentosa; significant concomitant illness that would interfere with evaluation of the efficacy and safety of the study medication; evidence of fungal infection in the nose, mouth, or throat; and participation in another investigational study within 30 days of the study screening date	No run-in/5 day washout	No	Yes	NR

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Number screened /eligible/ enrolled	Exclusion criteria	Run-in/Washout	Class naïve patients only	Control group standard of care	Funding
Drouin 1996	NR/NR/427	Patients expected to have clinically significant exacerbation of symptoms due to seasonal aeroallergens by history and skin testing; females pregnant, breast feeding, premenarchal, or not using birth control; required us of inhaled or systemic corticosteroids; upper respiratory tract or sinus infection requiring antibiotic therapy within the previous 2 weeks, dependency upon decongestants; history or evidence of posterior subcapsular cataracts; any significant disorder that could interfere with the study or require treatment that could interfere with the study; use of nasal or ocular corticoids within 2 weeks; inhaled, oral, or intravenous corticoids within 1 month; intramuscular or intra-articular corticoids within 3 months; high potency topical corticoids within one month of initiation of the study	None	No	Yes	Schering-Plough Research Institute

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Number screened /eligible/ enrolled	Exclusion criteria	Run-in/Washout	Class naïve patients only	Control group standard of care	Funding
Mandl 1997	NR/NR/548	Patients expected to have clinically significant exacerbation of symptoms due to seasonal aeroallergens by history and skin testing; females pregnant, breast feeding, premenarchal, or not using birth control; required us of inhaled or systemic corticosteroids; upper respiratory tract or sinus infection requiring antibiotic therapy within the previous 2 weeks, dependency upon decongestants; history or evidence of posterior subcapsular cataracts; any significant disorder that could interfere with the study or require treatment that could interfere with the study; use of nasal or ocular corticoids within 2 weeks; inhaled, oral, or intravenous corticoids within 1 month; intramuscular or intra-articular corticoids within 3 months; high potency topical corticoids within one month of initiation of the study	None	No	Yes	Schering-Plough Research Institute

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Number screened /eligible/ enrolled	Exclusion criteria	Run-in/Washout	Class naïve patients only	Control group standard of care	Funding
Sahay 1980	NR/NR/60	Pregnancy, respiratory infections requiring antibiotic therapy and nasal obstruction due to nasal polypi; antihistamines use for reasons other than perennial rhinitis; use of test drugs or sodium cromoglycate within 1 month of the start of the trial; use of oral corticosteroids within 3 months of the start of the trial	None	No	Yes	Beclomethasone supplied by Allen and Hansburys Limited; flunisolide supplied by Synetx Pharmaceuticals Limited, Maidenhead
McAllen 1980	NR/NR/34	Pregnancy, illnesses in which systemic corticosteroids are contraindicated ; nasal obstruction due to polyps; antihistamine use for reasons other than perennial rhinitis; intranasal steroid or sodium cromoglycate use within the month before admission into the trial; oral steroids within three months of starting the trial	None	No	Yes	Beclomethasone supplied by Allen and Hansburys Limited; flunisolide supplied by Synetx Pharmaceuticals Limited, Maidenhead

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Number screened /eligible/ enrolled	Exclusion criteria	Run-in/Washout	Class naïve patients only	Control group standard of care	Funding
Svendsen 1989	NR/NR/23	Immunotherapy within 6 months; nasal or systemic corticosteroids within the last 6 weeks; antihistamines; structural abnormalities in the nose; pregnant women; patients receiving medication for treatment of diseases other than bronchial asthma	2-week run-in period during which the patients abstained from all intranasal treatment and practiced completion of the daily record card	No	Yes	NR
Scadding 1995	NR/622/516	NR	2-week run-in period for assessment of symptoms	No	Yes	Glaxo Group Research Ltd supplied all medication
Al-Mohaimeid 1993	NR/NR/120	Use of oral corticosteroids within the previous 2 months; hyposensitization within the previous 12 months; bacterial, viral or fungal airway infection; severe asthma; planned or actual pregnancy	None	No	Yes	NR

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Number screened /eligible/ enrolled	Exclusion criteria	Run-in/Washout	Class naïve patients only	Control group standard of care	Funding
Tai 2003	NR/NR/24	Intranasal sodium cromolyn or nedocromil sodium within 6 weeks of initiation of the study; immunotherapy during previous 12 months; nasal surgery during the past 6 weeks; obstructing nasal polyps or significant deviation of the nasal septum; had an infection of the paranasal sinuses or upper or lower respiratory tract in the previous 3 weeks	None	No	Yes	NR
van As 1993	NR/539/466	Oral, inhaled, or intranasal steroids within 1 month or intranasal sodium cromolyn within 2 weeks of initiation of the study	14-day placebo run-in to identify placebo-responders	No	Yes	Glaxo Research Institute
Bende 2002	NR/563/438	History of hypersensitivity to glucocorticoids or antihistamines, asthma requiring systemic or inhaled glucocorticosteroid treatment at doses of > 1,000 ug/day, nasal disorders causing obstruction, or medical conditions or therapies that could interfere with the evaluation of efficacy or safety; use of appropriate contraception	2-week run-in to record symptom scores	No	Yes	Astra Draco AB

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Number screened /eligible/ enrolled	Exclusion criteria	Run-in/Washout	Class naïve patients only	Control group standard of care	Funding
Bunnag 1984	NR/NR/48	NR	None	No	Yes	Syntex Division, Berli Jucker Co. Ltd supplied the relevant materials
Haye 1993	NR/NR/251	Serious or unstable concurrent disease, infection of the paranasal sinuses, upper or lower respiratory tract infections, structural abnormalities (such as large polyps) or had undergone nasal surgery less than six weeks prior to the study; concurrent medication such as oral or inhaled corticosteroids, astemizole, intranasal sodium cromoglycate or intranasal sympathomimetic therapy; pregnant or lactating females	2-week placebo run-in; no washout	No	Yes	NR; 2nd author affiliated with Glaxo Group Research Ltd.

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Number screened /eligible/ enrolled	Exclusion criteria	Run-in/Washout	Class naïve patients only	Control group standard of care	Funding
Day 1998	NR/NR/314	Systemic or topical intranasal corticosteroid treatment within 2 months before enrollment; required high doses (≥ 1000 ug/day) of inhaled topical steroids for asthma, or if they had other nasal abnormalities possible interfering with efficacy assessments; medications other than the supplied rescue antihistamine possibly interfering with the evaluation of the symptoms of allergic rhinitis; pregnant and nursing women; failure to use effective contraception when applicable; changes in immunotherapy maintenance dose	None	No	Yes	Astra Draco AB
Klossek 2001	NR/NR/90	Positive skin prick test to pollen and a positive assay for specific IgE, with or without clinical exacerbation during the pollen season; obstructive specific deviation of the nasal septum, nasal polyps, or any other severe concomitant disorders; laboratory abnormalities; known hypersensitivity to test drugs; antihistamines or sodium cromoglycate in the 7 days prior to the inclusion visit; oral or nasal corticosteroids and/or vasoconstrictors in the month prior to the inclusion visit; or corticosteroids or astemizole in the 3 months prior to the inclusion visit; smoking; pregnant women; women likely to become pregnant	None	No	Yes	Aventis

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Number screened /eligible/ enrolled	Exclusion criteria	Run-in/Washout	Class naïve patients only	Control group standard of care	Funding
Meltzer 1990	NR/NR/220	NR	No run-in/2-week washout of all previous medications for allergic rhinitis	No	Yes	Syntex Laboratories

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Relevance
Naclerio 2003 US	Yes
Shah 2003	Yes

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Relevance
Bunnag 2003	Yes
Stokes 2004	Yes

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Relevance
Bachert 2002	Yes

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Relevance
Grubbe 1996	Yes

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Relevance
Drouin 1996	Yes

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Relevance
Mandl 1997	Yes

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Relevance
Sahay 1980	Yes
McAllen 1980	Yes

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Relevance
Svendsen 1989	Yes
Scadding 1995	Yes
Al-Mohaimeid 1993	Yes

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Relevance
Tai 2003	Yes
van As 1993	Yes
Bende 2002	Yes

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Relevance
Bunnag 1984	Yes
Haye 1993	Yes

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Relevance
Day 1998	Yes
Klossek 2001	Yes

Evidence Table 6. Quality assessment of head-to-head trials in patients with PAR

Author, Year Country	Relevance
Meltzer 1990	Yes

Evidence Table 7. Placebo-controlled trials in children with PAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period
Day 1990	Randomized, double-blind, parallel, placebo-controlled	Patients aged 6 years and older, with perennial rhinitis for at least 2 years, currently receiving no treatment for rhinitis Exclusion: Pregnancy, tuberculosis, respiratory infection, additional disease, or asthma requiring treatment with corticosteroids	Intranasal budesonide, 200 mean grams twice daily vs placebo Study period: 4 weeks	2 weeks/NR

Evidence Table 7. Placebo-controlled trials in children with PAR

Author Year Country Trial Name (Quality Score)	Allowed other medications/ interventions	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled
Day 1990	terfenadine, up to two doses 60mg daily	Nasal symptoms scored on daily diary cards	28.6 years 47.4% Male Ethnicity NR	Mean duration of perennial rhinitis: 10.2 years	NR/NR/107

Evidence Table 7. Placebo-controlled trials in children with PAR

Author Year Country Trial Name (Quality Score)	Number withdrawn/ lost to fu/analyzed	Outcomes	Method of adverse effects assessment
Day 1990	NR/NR/51	Mean change in symptom scores from baseline to 4 weeks; p-value= B vs placebo: Blocked nose: Allergic rhinitis: B: -0.56 vs placebo: 0.14 Non-allergic rhinitis: B: -0.43 vs placebo: -0.06 Itchy nose: Allergic rhinitis: B: -0.19 vs placebo: -0.16 Non-allergic rhinitis: B: -0.21 vs placebo: 0.01 Runny nose: Allergic rhinitis: B: -0.54 vs placebo: -0.18 Non-allergic rhinitis: B: -0.38 vs placebo: -0.21 Sneezing: Allergic rhinitis: B: -0.35 vs placebo: -0.30 Non-allergic rhinitis: B: -0.44 vs placebo: -0.04 Combined symptoms: Allergic rhinitis: B: -1.62 vs placebo: -0.49 Non-allergic rhinitis: B: -1.46 vs placebo: -0.32	Laboratory tests, patient self-report of adverse events

Evidence Table 7. Placebo-controlled trials in children with PAR

Author Year Country Trial Name (Quality Score)	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events	Comments
Day 1990	Nosebleed: Children: B: 0 vs placebo: 1 Adults: B: 4 vs placebo: 1 Sneezing after spray: Children: B: 3 vs placebo: 2 Adults: B: 1 vs placebo: 1 Nasal irritation: Children: B: 5 vs placebo: 2 Adults: B: 4 vs placebo: 3 Nose dryness: Children: B: 1 vs placebo: 2 Adults: B: 1 vs placebo: 1 Coughing: Children: B: 1 vs placebo: 3 Adults: B: 4 v placebo: 0 Headache: Children: B: 7 vs placebo: 8 Adults: B: 8 vs placebo: 5	NR/NR	

Evidence Table 7. Placebo-controlled trials in children with PAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period
Fokkens 2002	Randomized, double-blind, placebo-controlled, parallel, multicenter	Children aged 6-16 years with perennial allergic rhinitis for at least 1 year, need for treatment of nasal symptoms, moderate to severe symptom score for blocked nose and at least a mild score for runny nose or sneezing on 4 of 7 days of run-in period	budesonide aqueous nasal spray, 128mcg once daily vs placebo Study period: 6 weeks	NR/NR
Hill 1978	Randomized, double-blind, cross-over, placebo-controlled single-center	Children aged 7-17 years, chronic mouth-breathers with gross hypertropy of nasal mucosa and excessive rhinorrhea, failing to respond to antihistamines and adrengic drugs	Intranasal beclomethasone dipropionate, 300 mg/day vs placebo Study period: NR	NR/NR

Evidence Table 7. Placebo-controlled trials in children with PAR

Author Year Country Trial Name (Quality Score)	Allowed other medications/ interventions	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled
Fokkens 2002	None/NR	Symptoms scores taken daily on dairy cards, evaluation of efficacy questionnaire administered at 1 and 6 weeks, quality of life questionnaires administered twice during study period, use of rescue medication recorded, measurement of nasal eosinophils	10.6 years 68.8% Male Ethnicity NR	Mean Height: 147 cm Mean Weight: 41 kg	NR/NR/202
Hill 1978	No drugs used for rhinitis allowed during study period	Daily symptom diary results recorded at clinic visits	7-17 years 50% Female Ethnicity NR	Associated recurrent asthma: 12/22 Evidence of marked systemic allergy to house dust mite and/or rye grass	NR/NR/22

Evidence Table 7. Placebo-controlled trials in children with PAR

Author Year Country Trial Name (Quality Score)	Number withdrawn/ lost to fu/analyzed	Outcomes	Method of adverse effects assessment
Fokkens 2002	0/0/202	Change from baseline in nasal symptoms scores and PNIF at 6 weeks: Morning: combined nasal symptom score: B: -1.57 vs placebo: -0.67 blocked nose: B: -0.67 vs placebo: -0.25 runny nose: B: -0.41 vs placebo: -0.12 sneezing: B: -0.45 vs placebo: -0.21	Open questionning at clinic visits
Hill 1978	0/0/22	Number of children with response: Nasal symptoms: Improved score: 19 Unchanged score: 0 Worse score: 3 Nasal signs: Improved score: 15 Unchanged score: 7 Worse score: 0 Eye symptoms: Improved score: 13 Unchanged score: 4 Worse score: 5	Patient daily symptom diary

Evidence Table 7. Placebo-controlled trials in children with PAR

Author Year Country Trial Name (Quality Score)	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events	Comments
Fokkens 2002	No of adverse events reported: B: 75 vs placebo: 73 Most frequent adverse events: pharyngitis: B: 9 vs placebo: 7 respiratory infection: B: 7 vs placebo: 7 viral infection: B; & vs placebo: 6 coughing: B: 7 vs placebo: 4 blood-tinged secretion/nose bleeds: B: 4 vs placebo: 6	0;0	
Hill 1978	None reported	0;0	

Evidence Table 7. Placebo-controlled trials in children with PAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period
Nayak 1998	Double-blind, placebo-controlled multicenter	Children aged 6-12 years with allergic rhinitis, males and premenarcheal females Exclusion: clinically relelvant deviation from normal medical or lab parameters, intolerance to corticosteroid therapy, any medical condition capable of altering pharmokineti	triaminolone acetonide aqueous nasal spray 220g once daily vs 440g once daily Study period: 6 weeks	NR/NR
Neuman 1978	Double-blind, crossover	Children aged 9-18 years, with perennial allergic rhinitis and daily symptoms of sneezing, rhinorrhoea and nasal obstruction for at least 5 years	beclomethasone dipropionate 50g inhaled in each nostril, 4 times daily Study period: 6 weeks	NR/NR

Evidence Table 7. Placebo-controlled trials in children with PAR

Author Year Country Trial Name (Quality Score)	Allowed other medications/ interventions	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled
Nayak 1998	NR/NR	Adrenocortical function assessed from plasma cortisol levels before treatment, and 30 and 60 minutes after treatment, samples for pharmacokinetic evaluation taken before treatment at 30, 60, 90 minutes, and at 6 hours after treatment, daily diary cards	9.5 years Gender NR Caucasian: 84%	NR	NR/NR/80
Neuman 1978	NR	Daily diary cards, weekly clinical visits for physical and assessment of nose and throat secretions	13.8 years 46.6 Male Ethnicity NR	Family history of atophy: 24/30 Clinical hypersensitivity to food/drugs: 7/30 Maxilliary sinusitis: 12/30	NR/NR/30

Evidence Table 7. Placebo-controlled trials in children with PAR

Author Year Country Trial Name (Quality Score)	Number withdrawn/ lost to fu/analyzed	Outcomes	Method of adverse effects assessment
Nayak 1998	1/0/79	Mean differences in plasma cortisol levels between baseline at week 6: 0 hrs: TAA 220g: -1.40 TAA 440g: -0.19 Placebo: 0.67 30 min: TAA 220g: 0.04 TAA 440g: 0.29 Placebo: -0.19 60 min: TAA 220g: -0.57 TAA 440g: 0.56 Placebo: -0.94	Patient report
Neuman 1978	NR/NR/NR	Mean daily nasal symptom scores: Week 1: BD: 1.5 vs placebo: 2.75 Week 2: BD: 0.5 vs placebo: 3.0 Week 3: BD: 0.5 vs placebo: 3.0 Week 4: BD: 1.0 vs placebo: 2.5 Week 5: BD: 0.75 vs placebo: 2.75 Week 6: BD: 0.25 vs placebo: 3.0	Patient outcome, self-report

Evidence Table 7. Placebo-controlled trials in children with PAR

Author Year Country Trial Name (Quality Score)	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events	Comments
Nayak 1998	Percentage of patients reporting adverse events: TAA 220g/d: 54% TAA 440g/d: 42% Placebo: 35%	0;0	
Neuman 1978	None Reported	NR;NR	

Evidence Table 7. Placebo-controlled trials in children with PAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period
Ngamphaiboon 1997 Thailand	Randomized double-blind, single dose, placebo-controlled, parallel multicenter	Children aged 5-11 years with r	fluticasone propionate 100mcg vs placebo Study period: 4 weeks, with 2 weeks additional followup	NR/ 2 week washout between treatments
Sarsfield 1979	Randomized, double-blind, crossover study	Children with perennial arthritis	Nasal flunisolide vs placebo Study period: 2 months Then 17 patients responding well with flucisolide continued treatment for additional 6 month, open period	NR/NR

Evidence Table 7. Placebo-controlled trials in children with PAR

Author Year Country Trial Name (Quality Score)	Allowed other medications/ interventions	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled
Ngamphaiboon 1997 Thailand	clemastine tablets (1mg) or syrup (0.5mg/5 mL) used when symptoms deemed intolerable of rhinitus during treatment periods	Assessments taken ever 2 weeks, variables: nasal and symptoms scored by investigator, overall physical examination at first and final days of treatment periods, nasal and ocular symptoms scored by patient on daily diary cards, clemastine use, blood sample	9.01 years 14.6% Female 11.8% Oriental 38.2% Asian	Mean height, cm: placebo: 131.92, fluticasone: 129.87 Mean weight, kg: placebo: 31.13 , fluticasone: 27.39	NR/127/106
Sarsfield 1979	Sodium cromoglycate inhalations (n=1) beclomethasone dipropionate pulmonary aerosol (n=4) corticosteroid creams (n=3)	Patients completed weekly diary cards, monthly clinical assessments and end-of-trials preferences	12 years 77.7% Male Ethnicity NR	Mean duration of rhinitis: 7 years Family history of disease: 67% One or more allergic problems: 70%	NR/NR/27

Evidence Table 7. Placebo-controlled trials in children with PAR

Author Year Country Trial Name (Quality Score)	Number withdrawn/ lost to fu/analyzed	Outcomes	Method of adverse effects assessment
Ngamphaiboon 1997 Thailand	0/0/106	Mean total symptom scores: At 2 weeks: fluticasone propionate: 4.4 (p < 0.01) vs placebo: 6.09 At 4 weeks: fluticasone propionate: 3.96 (p < 0.01) vs placebo: 5.39	Inquiry of patient by nvestigator at each assessment
Sarsfield 1979	1/0/26	Mean changes in scores from baseline: First 4 weeks of flunisolide vs Second 4 weeks of placebo: Sneezing: F: -1.57 vs placebo: -0.64 Stuffiness: F: -1.36 vs placebo: -0.64 Runny nose: F: +0.71 vs placebo: +0.57 Nose-blowing: F: +1.14 vs placebo	Patient outcome, self-report

Evidence Table 7. Placebo-controlled trials in children with PAR

Author Year Country Trial Name (Quality Score)	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events	Comments
Ngamphaiboon 1997 Thailand	None reported	0; 0	
Sarsfield 1979	Most common adverse events reported: transient nasal stinging After 6 month open-period, measurements of 0900 blood cortisol concentrations found no effect.	1;1	

Evidence Table 7. Placebo-controlled trials in children with PAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period
Shore 1976	Randomized, double-blind, placebo-controlled, cross-over single-center	Children aged 4-12 years, with perennial allergic rhinitis for over 1 year, failure to respond to sodium cromoglycate insufflation and hyposensitization, pretreatment observation at study clinic for at least 6 months, symptomatic at screening, radiological studies excluding abnormalities causing obstruction, inadequate previous response to treatment	Intranasal beclomethasone vs placebo Study period: 4 months	NR/ 3 week washout between treatments
Storms 1991	Randomized, double-blind, placebo-controlled, parallel Multi-center	Patients aged 12-65 years, with perennial allergic rhinitis for at least 2 years, poor response to antihistamines and/or decongestants or immunotherapy, postive skin prick test for at least allergin Exclusion: pregnancy or lactation, use of nasal cromolyn	triamcinolone acetonide nasal spray, 110g vs 220g vs 440g once daily vs placebo Study period: 12 weeks	NR/NR

Evidence Table 7. Placebo-controlled trials in children with PAR

Author Year Country Trial Name (Quality Score)	Allowed other medications/ interventions	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled
Shore 1976	Patients allowed to continue usual antihistamine decongestant therapy	Daily symptom diary results recorded at clinic visits	8 years 78.2% Male Ethnicity NR	Allergy to grass extract: 36% Allergy to animal danders: 12% Asthma: 78% Eczema: 21% Ocular allergy: 19%	NR/NR/46
Storms 1991	Oral backup medication permitted	Nasal stiffiness, discharge, sneezing, itching and nasal index	25 years 67% Male White: 89.8%, Black: 6.5%, Other: 3.6%	NR	NR/NR/305

Evidence Table 7. Placebo-controlled trials in children with PAR

Author Year Country Trial Name (Quality Score)	Number withdrawn/ lost to fu/analyzed	Outcomes	Method of adverse effects assessment
Shore 1976	2/0/44	Results record cards of beclometasone: Success: 38 (86%) Failure: 6	Patient daily symptom diary
Storms 1991	0/0/305	Mean Changes from Baseline in Symptoms Scores: Week 6: Nasal Stuffiness: 110mcg: -0.8 vs 220mcg: -1.1 vs 440mcg: -1.25 vs placebo: -0.7 Nasal Discharge: 110mcg: -0.9 vs 220mcg: -1.25 vs 440mcg: -1.2 vs placebo: -0.7 Sneezing:110mcg: -1.0 vs 220mcg: -1.	Patient outcome, self-report

Evidence Table 7. Placebo-controlled trials in children with PAR

Author Year Country Trial Name (Quality Score)	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events	Comments
Shore 1976	None reported	2;0	
Storms 1991	Adverse events reported: Headache: T200: 16% vs T400: 18% vs T800: 21% vs placebo: 18% Upper respiratory infection: T200: 4% vs T400: 5% vs T800: 7% vs placebo: 13% Epistaxis: T200: 3% vs T400: 3% vs T800: 4% vs placebo: 9% Throat discomfort: T200: 1%	0;0	

Evidence Table 7. Placebo-controlled trials in children with PAR

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period
Todd 1983	Randomized, double-blind, cross-over	Children with perennial rhinitis	fluisolide nasal spray 50g three times daily, vs placebo Study period: 8 weeks	NR/NR

Evidence Table 7. Placebo-controlled trials in children with PAR

Author Year Country Trial Name (Quality Score)	Allowed other medications/ interventions	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled
Todd 1983	NR	Clinical assessments taken at baseline, 4 weeks and 8 weeks, assessing severity of symptoms scores	8.3 years 60.9% Male Ethnicity NR	Positive reaction to at least 1 common allergin: 53% Positive reaction to house-dust mite allergy: 90% family history: 64%	NR/NR/NR

Evidence Table 7. Placebo-controlled trials in children with PAR

Author Year Country Trial Name (Quality Score)	Number withdrawn/ lost to fu/analyzed	Outcomes	Method of adverse effects assessment
Todd 1983	NR/NR/64	Changes in symptomatolgy from baseline to 8 weeks- p-value of difference between treatment and placebo: Sneezing: p=0.025 Stuffiness: p= 0.032 Runny nose: p= 0.239 Nose-blowing: p= 0.330 Post-nasal drip: p= 0.169 Epistaxis: p= 0.195	Indirect questionning at clinic visits

Evidence Table 7. Placebo-controlled trials in children with PAR

Author Year Country Trial Name (Quality Score)	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events	Comments
Todd 1983	Nasal irritation: F: 12 vs placebo: 10 Eyes running: F: 3 vs placebo: 1 Nose bleed: F: 1 vs placebo: 1 Itch: F: 2 vs placebo: 0 Nausea: F: 1 vs placebo: 0 Headache: F: 2 vs pacebo: 2 Sleepy: F: 0 vs placebo: 1 Rash: F: 0 vs placebo: 1	NR/NR	

Evidence Table 8. Quality assessment of placebo-controlled trials in children with PAR

	Internal Validity								
Author, Year Country	**Randomization adequate?**	**Allocation concealment adequate?**	**Groups similar at baseline?**	**Eligibility criteria specified?**	**Outcome assessors masked?**	**Care provider masked?**	**Patient masked?**	**Reporting of attrition, crossovers, adherence, and contamination**	**Loss to follow-up: differential/high**
Day 1990	Method not reported	NR	Yes	Yes	Yes	Yes	Yes	No, No, Yes, No	No
Fokkens 2002	Method not reported	NR	Some	Yes	Yes	Yes	Yes	No, No, No, No	No
Hill 1978	Method not reported	NR	NR	Yes	Yes	Yes	Yes	No, Yes, No, No	No

Evidence Table 8. Quality assessment of placebo-controlled trials in children with PAR

External Validity

Author, Year Country	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating	Number screened/eligible/enrolled	Exclusion criteria	Run-in/Washout	Class naïve patients only
Day 1990	Yes	No	Fair	NR/NR/107 adults and children	Pregnancy, tuberculosis, respiratory infection, additional nasal disease or asthma requiring treatment with corticosteroids	2-week baseline period where patients recorded symptoms and received only terfenadine (60mg up to two tablets per day	No
Fokkens 2002	Yes	No	Fair	NR/NR/202	Polllen allergy in season, upper respiratory infection within 2wks before screening, rhinitis medicamentosa or structural abnormalities symptomatice enough to cause significant nasal obstruction, unstable asthma, immunotherapy not on constant maintenance dose, any other significant diseases, systemic corticosteroid therapy within 2 months, extensive application of topical cutaneous steroids, topical nasal steroids within one month before screening, other medication possibly interfering: antihistamines within 3 days, cromoglycate within 2 wks, astemizole within 1 month before screening	1-week baseline period in which efficacy variables were measured twice daily	No
Hill 1978	Yes	No	Fair	NR/NR/22	None reported	No	No

Evidence Table 8. Quality assessment of placebo-controlled trials in children with PAR

Author, Year Country	Control group standard of care	Funding	Relevance
Day 1990	N/A	One author is from AB Draco, Lund, Sweden	Yes
Fokkens 2002	N/A	Financial support from AstraZeneca R&D, Lund Sweden	Yes
Hill 1978	N/A	NR	Yes

Evidence Table 8. Quality assessment of placebo-controlled trials in children with PAR

	Internal Validity								
Author, Year Country	**Randomization adequate?**	**Allocation concealment adequate?**	**Groups similar at baseline?**	**Eligibility criteria specified?**	**Outcome assessors masked?**	**Care provider masked?**	**Patient masked?**	**Reporting of attrition, crossovers, adherence, and contamination**	**Loss to follow-up: differential/high**
Nayak 1998 USA	NR	yes	yes	yes	yes	NR	yes	yes, no, yes, no	no
Neuman 1978 Israel	NR	NR	NR	yes	yes	NR	yes	yes, yes, no, no	no

Evidence Table 8. Quality assessment of placebo-controlled trials in children with PAR

External Validity

Author, Year Country	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating	Number screened/eligible/enrolled	Exclusion criteria	Run-in/Washout	Class naïve patients only
Nayak 1998 USA	yes	no	fair	NR/NR/80	Any clinically relevant deviation from normal medical or laboratory parameters, an intolerance to corticosteroid therapy, any medical condition capable of althering the pharmacokintics of the drup, acute infetiors sinusitis, underlying nasal pathology resulting in occlusion of a nostril, visible evidence of fungal infectionn of the nose, throat, or mouth, or an initial morning plasma cortisol level outside the range of 5 to 20 mcg/dl. Also patients treated with systemic corticosteroids within 90d, oral corticosteroids for more than 10d within the past year, or if they participated in any investigational drug study within 60d or any previous study with triamcinolone aquesous nasal spray.	no	no
Neuman 1978 Israel	not clear	no	poor	NR/NR/30	NR	no	no

Evidence Table 8. Quality assessment of placebo-controlled trials in children with PAR

Author, Year Country	Control group standard of care	Funding	Relevance
Nayak 1998 USA	yes	Supported in part by Rhone-Poulenc rore Pharaceuticals, Inc.	yes
Neuman 1978 Israel	yes	NR	yes

Evidence Table 8. Quality assessment of placebo-controlled trials in children with PAR

	Internal Validity								
Author, Year Country	**Randomization adequate?**	**Allocation concealment adequate?**	**Groups similar at baseline?**	**Eligibility criteria specified?**	**Outcome assessors masked?**	**Care provider masked?**	**Patient masked?**	**Reporting of attrition, crossovers, adherence, and contamination**	**Loss to follow-up: differential/high**
Ngamphaiboon 1997	Method not reported	NR	Yes	Yes	Yes	NR	Yes	No, No, Yes, No	No
Sarsfield 1979 UK	NR	NR	NR	NR	yes	NR	yes	Yes, yes, no, no	no
Shore 1977	Method not reported	NR	NR	Yes	Yes	Yes	Yes	Yes, Yes, No, No	No

Evidence Table 8. Quality assessment of placebo-controlled trials in children with PAR

External Validity

Author, Year Country	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating	Number screened/eligible/enrolled	Exclusion criteria	Run-in/Washout	Class naïve patients only
Ngamphaiboon 1997	Yes	No	Fair	NR/NR/106	Physical obstruction in the nose, concurrent diseases that would affect their ability to participate safely and fully in the study, hypersensitivity to any corticosteroid, use of any steroid, sodium cromoglycate or nedocromil sodium 2 weeks before enrollment, oral astemizole 6 weeks before the study, hyposensitization treatment during the previous 12 months, or concurrent infection of paranasal sinuses or upper or lower respiratory tract.	No	No
Sarsfield 1979 UK	yes	no	fair to poor	NR/NR/27	NR	Not reported	no
Shore 1977	Yes	No	Fair	NR/NR/46	None reported	1-week washout between cross-over	No

Evidence Table 8. Quality assessment of placebo-controlled trials in children with PAR

Author, Year Country	Control group standard of care	Funding	Relevance
Ngamphaiboon 1997	N/A	Financial support from Glaxo Thailand	Yes
Sarsfield 1979	yes	NR	yes
UK Shore 1977	N/A	NR	Yes

Evidence Table 8. Quality assessment of placebo-controlled trials in children with PAR

Author, Year Country	*Internal Validity* Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Eligibility criteria specified?	Outcome assessors masked?	Care provider masked?	Patient masked?	Reporting of attrition, crossovers, adherence, and contamination	Loss to follow-up: differential/high
Storms 1996	Method not reported	NR	no	yes	yes	yes	yes	yes, no, no, no	no
Todd 1983	Method not reported	NR	NR	yes	yes	yes	yes	No, yes, no, no	no

Evidence Table 8. Quality assessment of placebo-controlled trials in children with PAR

External Validity

Author, Year Country	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating	Number screened/eligible/enrolled	Exclusion criteria	Run-in/Washout	Class naïve patients only
Storms 1996	yes	no	fair	NR/NR/137	Any clinical deviation from normal medical or lab parameters, nasal candiasis, acute sinusitis, or a history of hypersensitivity to corticosteroids Any of the following conditions: treatment with nasal, inhaled or systemic corticosteroids within 42 days prior to the study, nasal cromolyn sodium within 14d, medication that might produce or relieve symptoms of allergic rhinitis, or an investigational drug within 90d, initiation of immunotherapy within 30d or participation in any previous Triamcinolone trials.	no	no
Todd 1983	no	No	fair	NR/NR/64	None reported	No	No

Evidence Table 8. Quality assessment of placebo-controlled trials in children with PAR

Author, Year Country	Control group standard of care	Funding	Relevance
Storms 1996	N/A	funded by Rhone-Poulenc Rorer Pharmaceuticals	yes
Todd 1983	N/A	Materials supplied by Syntex Pharmaceuticals Ltd.	yes

Evidence Table 8. Quality assessment of placebo-controlled trials in children with PAR

	Internal Validity								
Author, Year Country	**Randomization adequate?**	**Allocation concealment adequate?**	**Groups similar at baseline?**	**Eligibility criteria specified?**	**Outcome assessors masked?**	**Care provider masked?**	**Patient masked?**	**Reporting of attrition, crossovers, adherence, and contamination**	**Loss to follow-up: differential/high**
Welch 1991	Method not reported	NR	yes	yes	yes	yes	yes	no, no, no, no	no

Evidence Table 8. Quality assessment of placebo-controlled trials in children with PAR

External Validity

Author, Year Country	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating	Number screened/eligible/enrolled	Exclusion criteria	Run-in/Washout	Class naïve patients only
Welch 1991	no	NR	fair	NR/NR/210	Use of oral or parenteral corticosteroids within 60d prior to study, or long-acting depot steroids within 6 months, use of nasal corticosteroids or nasal cromolyn within 30d of the study, any evidence of infection, sinusitis, otitis media, nasal polyps or any fixed anatomical abnormality and lack of stabilization with immunotherapy	Baseline period of 6-10d, no rhinitis medication was allowed during the last 5d	no

Evidence Table 8. Quality assessment of placebo-controlled trials in children with PAR

Author, Year Country	Control group standard of care	Funding	Relevance
Welch 1991	N/A	Supported by a grant from Rhone-Poulenc Rorer Pharmaceuticals	yes

Evidence Table 9. Trials in patients with non-allergic rhinitis

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period	Allowed other medications/ interventions
Lundblad 2001	Randomized, double-blind, placebo-controlled Multi-center	Patients aged 18-82 years with perennial non-allergic rhinitis, unspecific rhinitis symptoms Exclusion: Positive skin prick tests, intolerance to aspirin or non-steroidal anti-inflammatory drugs, structural abnormalilties, nasal polyps	mometasone furoate nasal spray, 200mcg once daily vs placebo Study duration: 11 weeks	NR/NR	Prohibited: topical nasal, ocular or oral decongestants,nasal saline, short and long-acting anti-histamines, nasal atropine or ipratropium bromide, ketotifen, azelastine and intransal or ocular corticosteroids for 1-2 weeks, investigational drugs
Webb 2002	3 randomized, placebo-controlled, double-blind, parallel trials Multi-center	Patients aged >11 years, with perennial rhinitis with or without eosinophilia, negative skin tests to all allergins relevant to geographic region	intranasal fluticasone propionate, 200g daily vs 400g daily vs placebo Study period: 4 weeks	NR/NR	NR

Evidence Table 9. Trials in patients with non-allergic rhinitis

Author Year Country Trial Name (Quality Score)	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled	Number withdrawn/ lost to fu/analyzed
Lundblad 2001	Patient daily diary of symptoms	NR	NR	NR/NR/329	NR/NR/NR
Webb 2002	Nasal cosinophild evaluated with 5-point scale, total nasal symptom score (TNSS), patient ratings of symptoms, taken at clinic visits at 2 and 4 weeks	42 years 37% Male 94% Caucasian	Duration of rhinitis: placebo vs F200 vs F400: 1-4 years: 26% vs 23% vs 26% 5-9 years: 20% vs 27% vs 22% 10-14 years: 19% vs 17% vs 19% >15 years: 35% vs 32% vs 33%	NR/NR/983	<2%/NR/95%

Evidence Table 9. Trials in patients with non-allergic rhinitis

Author Year Country Trial Name (Quality Score)	Outcomes	Method of adverse effects assessment	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events
Lundblad 2001	Improvement rates: Patient report PP: MFNS: 69/119 (58%) vs placebo: 62/132 (47%) ITT group: MFNS: 93/167 (56%) vs placebo: 80/162 (49%) Improvement rates: Investigator report PP: MFNS: 74/119 (62%) vs placebo: 61/132 (46%) ITT group: 100/167 (60%) v	Patient self-report	Adverse events reported: Upper respiratory infection: MFNS: 27.2% vs placebo: 30.2% Headache: MFNS: 27.2% vs placebo: 27.2% Epistaxis: MFNS: 12.4% vs placebo: 5.6% Sore throat: MFNS: 11.2% vs placebo: 8%	NR;NR
Webb 2002	Improvement in TNSS both F200g and 400g, each week vs placebo: p<0.002	Patient outcome, self-report	Epistaxis: F200g: 1 vs F400g: 2	0;5%

Evidence Table 10. Quality assessment of trials in patients with non-allergic rhinitis

	Internal Validity											
Author, Year Country	**Randomization adequate?**	**Allocation concealment adequate?**	**Groups similar at baseline?**	**Eligibility criteria specified?**	**Outcome assessors masked?**	**Care provider masked?**	**Patient masked?**	**Reporting of attrition, crossovers, adherence, and contamination**	**Loss to follow-up: differential /high**	**Intention-to-treat (ITT) analysis**	**Post-randomization exclusions**	**Quality Rating**
Lundblad 2001 Sweden, Norway, Finland, Denmark	NR	NR	NR	yes	yes	NR	yes	Yes, No, N	not clear	yes	no	fair
Webb 2002 USA	NR	NR	yes	yes	yes	NR	yes	yes, no, no, no	no	yes	no	fair

Evidence Table 10. Quality assessment of trials in patients with non-allergic rhinitis

		External Validity					
Author, Year Country	**Number screened/eligible/enrolled**	**Exclusion criteria**	**Run-in/Washout**	**Class naïve patients only**	**Control group standard of care**	**Funding**	**Relevance**
Lundblad 2001 Sweden, Norway, Finland, Denmark	NR/NR/329	Aspirin into	2-week scr	no	yes	NR	yes
Webb 2002 USA	NR/NR/983	use of other rhinitis medication	7-day screening period	no	yes	supported in part by SmithKline Beecham Corporation soing business as GlaxoSmithKline	yes

Evidence Table 11. Observational studies

Author, year Country	Data Source	Prospective Retrospective Unclear	Exposure Period	Mean duration of follow-up	Interventions Mean dose
Derby, 2000 UK	UK-based General Practice Research Database	Retrospective	1991-1996	Estimated from graph, person years of follow up by age and treatment cohort Intranasal: <20y: 21,000 20-39y: 31,500 40-59y: 27,000 60+y: 10,500 Unexposed: <20y: 25,000 20-39y: 34,000 40-59y: 30,000 60+y: 11,500	Exposure to intranasal corticosteroids only (beclomethasone, fluticasone, budesonide) or oral corticosteroids only or not exposed to any corticosteroids
Koepke, 1997 USA	Open-label continuation of 4-week RCT	Prospective	12 months, specific dates not reported	94.2% completed 3 months 83.6% completed 6 months 62% completed 12 months	220mcg triamcinolone aqueous/day with an option to reduce to 110mcg triamcinolone/day if symptoms were controlled

Evidence Table 11. Observational studies

Author, year Country	Population	Age Gender Ethnicity	Exposed Eligible Selected	Withdrawn Lost to fu Analyzed
Derby, 2000 UK	Less than 70 years old in 1993 without a history of asthma or chronic obstructive pulmonary disease (except for oral steroids cohort) **total study population:** 286,078 **intranasal corticosteroid users:** 88,301, about 70% used beclomethasone only **oral corticosteroid users:** 98,901, 41% had no previous evidence of either asthma or COPD **unexposed cohort:** 98,876	**Intranasal corticosteroid users:** mean age NR, 25% aged 50 or older 56% female ethnicity NR **unexposed cohort:** mean age NR, 25% aged 50 or older 51% female ethnicity NR **oral corticosteroid users:** mean age NR, 50% aged 50 or older 56% female ethnicity NR	NR, NR, n=286,078	N/A
Koepke, 1997 USA	Adolescent and adult patients with at least 2 year history of perennial allergic rhinitis	Mean age: 31 years (range, 11-59 years) 37% female and 64% male 98% white	NR, 178, n=172	34/5/172

Evidence Table 11. Observational studies

Author, year Country	Effectiveness outcomes
Derby, 2000 UK	N/A
Koepke, 1997 USA	Mean changes in visual analog scale scores from the start of double-blind treatment Mean Improvement in symptoms compared to the double-blind baseline mean (estimated from figure), all p<0.0001 1 month: 2.8 2 months: 3.4 3-5 months: 3.5 6-7 months: 3.65 8-9 months: 3.3 10-11 months: 3.7 12-13 months: 4.1

Evidence Table 11. Observational studies

Author, year Country	Safety Outcomes	Comments
Derby, 2000 UK	**Number of cases of cataract** Intranasal corticosteroid users: 217 in 208,753 person-years Beclomethasone only: 140 in 140,831 person-years Unexposed cohort: 213 in 206,560 person-years Oral corticosteroid users: 629 in 289,371 person-years Subjects without asthma: 274 in 91,064 person-years **Incidence rate/1000 person-years (95% CI)** Intranasal corticosteroid users: 1.0 (0.9-1.2) Beclomethasone only: 0.9 (0.7-1.0) Unexposed cohort: 1.0 (0.9-1.1) Oral corticosteroid users: 2.2 (2.0-2.3) Subjects without asthma: 3.0 (2.7-3.4) **Relative Risk of cataract (95% CI)** Intranasal corticosteroid users: 1.0 (0.8-1.2) Beclomethasone only: 1.0 (0.8-1.2) Unexposed cohort: reference Oral corticosteroid users: 2.1 (1.8-2.5) Subjects without asthma: 2.9 (2.4-3.5)	Funded by GlaxoWellcome Inc.
Koepke, 1997 USA	Withdrawals due to AE: 8 (5%) Withdrawals due to treatment-related AE: 4 (2.5%) **Overall AE:** 133 (77.3%) Headache: 38 (22.1%) Epistaxis: 31 (18%) Pharyngitis: 55 (32.0%) Rhinitis: 49 (28.5%) Cough: 14 (8.1%) Sinusitis: 27 (15.7%) **AE due to topical effects:** Nasal irritation 4 (2.3%), nasosinus congestion 2 (1.2%), Throat discomfort and dry mucous membranes 0%, sneezing 1 (0.6%), and epistaxis 22 (12.8%)	Funded in part by Rhone-Poulenc Rorer Pharmaceuticals, Inc.

Evidence Table 11. Observational studies

Author, year Country	Data Source	Prospective Retrospective Unclear	Exposure Period	Mean duration of follow-up	Interventions Mean dose
Derby, 2000 UK	UK-based General Practice Research Database	Retrospective	1991-1996	Estimated from graph, person years of follow up by age and treatment cohort Intranasal: <20y: 21,000 20-39y: 31,500 40-59y: 27,000 60+y: 10,500 Unexposed: <20y: 25,000 20-39y: 34,000 40-59y: 30,000 60+y: 11,500	Exposure to intranasal corticosteroids only (beclomethasone, fluticasone, budesonide) or oral corticosteroids only or not exposed to any corticosteroids
Koepke, 1997 USA	Open-label continuation of 4-week RCT	Prospective	12 months, specific dates not reported	94.2% completed 3 months 83.6% completed 6 months 62% completed 12 months	220mcg triamcinolone aqueous/day with an option to reduce to 110mcg triamcinolone/day if symptoms were controlled
Mansfield, 2002 USA	Pediatric clinical records	Retrospective	12 months to 91 months, specific dates not reported	36 months	beclomethasone aqueous 168mcg twice daily with occasional dosing of 168mcg once daily

Evidence Table 11. Observational studies

Author, year Country	Population	Age Gender Ethnicity	Exposed Eligible Selected	Withdrawn Lost to fu Analyzed
Derby, 2000 UK	Less than 70 years old in 1993 without a history of asthma or chronic obstructive pulmonary disease (except for oral steroids cohort) **total study population:** 286,078 **intranasal corticosteroid users:** 88,301, about 70% used beclomethasone only **oral corticosteroid users:** 98,901, 41% had no previous evidence of either asthma or COPD **unexposed cohort:** 98,876	**Intranasal corticosteroid users:** mean age NR, 25% aged 50 or older 56% female ethnicity NR **unexposed cohort:** mean age NR, 25% aged 50 or older 51% female ethnicity NR **oral corticosteroid users:** mean age NR, 50% aged 50 or older 56% female ethnicity NR	NR, NR, n=286,078	N/A
Koepke, 1997 USA	Adolescent and adult patients with at least 2 year history of perennial allergic rhinitis	Mean age: 31 years (range, 11-59 years) 37% female and 64% male 98% white	NR, 178, n=172	34/5/172
Mansfield, 2002 USA	Children with perennial allergic rhinitis with seasonal exacerbations children with concomitant asthma or allergic dermatitis and those who had used systemic or topical steroids were excluded	Mean age: 70 months (range, 24-117months) 20 girls (33.3%) and 40 boys (67.7%) 75% Mexican-American	NR, NR, n=60	N/A

Evidence Table 11. Observational studies

Author, year Country	Effectiveness outcomes
Derby, 2000 UK	N/A
Koepke, 1997 USA	Mean changes in visual analog scale scores from the start of double-blind treatment Mean Improvement in symptoms compared to the double-blind baseline mean (estimated from figure), all p<0.0001 1 month: 2.8 2 months: 3.4 3-5 months: 3.5 6-7 months: 3.65 8-9 months: 3.3 10-11 months: 3.7 12-13 months: 4.1
Mansfield, 2002 USA	NR

Evidence Table 11. Observational studies

Author, year Country	Safety Outcomes	Comments
Derby, 2000 UK	**Number of cases of cataract** Intranasal corticosteroid users: 217 in 208,753 person-years Beclomethasone only: 140 in 140,831 person-years Unexposed cohort: 213 in 206,560 person-years Oral corticosteroid users: 629 in 289,371 person-years Subjects without asthma: 274 in 91,064 person-years **Incidence rate/1000 person-years (95% CI)** Intranasal corticosteroid users: 1.0 (0.9-1.2) Beclomethasone only: 0.9 (0.7-1.0) Unexposed cohort: 1.0 (0.9-1.1) Oral corticosteroid users: 2.2 (2.0-2.3) Subjects without asthma: 3.0 (2.7-3.4) **Relative Risk of cataract (95% CI)** Intranasal corticosteroid users: 1.0 (0.8-1.2) Beclomethasone only: 1.0 (0.8-1.2) Unexposed cohort: reference Oral corticosteroid users: 2.1 (1.8-2.5) Subjects without asthma: 2.9 (2.4-3.5)	Funded by GlaxoWellcome Inc.
Koepke, 1997 USA	Withdrawals due to AE: 8 (5%) Withdrawals due to treatment-related AE: 4 (2.5%) **Overall AE:** 133 (77.3%) Headache: 38 (22.1%) Epistaxis: 31 (18%) Pharyngitis: 55 (32.0%) Rhinitis: 49 (28.5%) Cough: 14 (8.1%) Sinusitis: 27 (15.7%) **AE due to topical effects:** Nasal irritation 4 (2.3%), nasosinus congestion 2 (1.2%), Throat discomfort and dry mucous membranes 0%, sneezing 1 (0.6%), and epistaxis 22 (12.8%)	Funded in part by Rhone-Poulenc Rorer Pharmaceuticals, Inc.
Mansfield, 2002 USA	Growth measured by stadiometry Measured mean height at entry: 149.9cm Measured mean height at 12 months: 154.8cm Mean difference in the comparison between the observed and expected heights: at entry +3.8cm and at 12 months +3.6cm	Funding sources NR

Evidence Table 11. Observational studies

Author, year Country	Data Source	Prospective Retrospective Unclear	Exposure Period	Mean duration of follow-up	Interventions Mean dose
Derby, 2000 UK	UK-based General Practice Research Database	Retrospective	1991-1996	Estimated from graph, person years of follow up by age and treatment cohort Intranasal: <20y: 21,000 20-39y: 31,500 40-59y: 27,000 60+y: 10,500 Unexposed: <20y: 25,000 20-39y: 34,000 40-59y: 30,000 60+y: 11,500	Exposure to intranasal corticosteroids only (beclomethasone, fluticasone, budesonide) or oral corticosteroids only or not exposed to any corticosteroids
Koepke, 1997 USA	Open-label continuation of 4-week RCT	Prospective	12 months, specific dates not reported	94.2% completed 3 months 83.6% completed 6 months 62% completed 12 months	220mcg triamcinolone aqueous/day with an option to reduce to 110mcg triamcinolone/day if symptoms were controlled
Mansfield, 2002 USA	Pediatric clinical records	Retrospective	12 months to 91 months, specific dates not reported	36 months	beclomethasone aqueous 168mcg twice daily with occasional dosing of 168mcg once daily

Evidence Table 11. Observational studies

Author, year Country	Population	Age Gender Ethnicity	Exposed Eligible Selected	Withdrawn Lost to fu Analyzed
Derby, 2000 UK	Less than 70 years old in 1993 without a history of asthma or chronic obstructive pulmonary disease (except for oral steroids cohort) **total study population:** 286,078 **intranasal corticosteroid users:** 88,301, about 70% used beclomethasone only **oral corticosteroid users:** 98,901, 41% had no previous evidence of either asthma or COPD **unexposed cohort:** 98,876	**Intranasal corticosteroid users:** mean age NR, 25% aged 50 or older 56% female ethnicity NR **unexposed cohort:** mean age NR, 25% aged 50 or older 51% female ethnicity NR **oral corticosteroid users:** mean age NR, 50% aged 50 or older 56% female ethnicity NR	NR, NR, n=286,078	N/A
Koepke, 1997 USA	Adolescent and adult patients with at least 2 year history of perennial allergic rhinitis	Mean age: 31 years (range, 11-59 years) 37% female and 64% male 98% white	NR, 178, n=172	34/5/172
Mansfield, 2002 USA	Children with perennial allergic rhinitis with seasonal exacerbations children with concomitant asthma or allergic dermatitis and those who had used systemic or topical steroids were excluded	Mean age: 70 months (range, 24-117months) 20 girls (33.3%) and 40 boys (67.7%) 75% Mexican-American	NR, NR, n=60	N/A

Evidence Table 11. Observational studies

Author, year Country	Effectiveness outcomes
Derby, 2000 UK	N/A
Koepke, 1997 USA	Mean changes in visual analog scale scores from the start of double-blind treatment Mean Improvement in symptoms compared to the double-blind baseline mean (estimated from figure), all p<0.0001 1 month: 2.8 2 months: 3.4 3-5 months: 3.5 6-7 months: 3.65 8-9 months: 3.3 10-11 months: 3.7 12-13 months: 4.1
Mansfield, 2002 USA	NR

Evidence Table 11. Observational studies

Author, year Country	Safety Outcomes	Comments
Derby, 2000 UK	**Number of cases of cataract** Intranasal corticosteroid users: 217 in 208,753 person-years Beclomethasone only: 140 in 140,831 person-years Unexposed cohort: 213 in 206,560 person-years Oral corticosteroid users: 629 in 289,371 person-years Subjects without asthma: 274 in 91,064 person-years **Incidence rate/1000 person-years (95% CI)** Intranasal corticosteroid users: 1.0 (0.9-1.2) Beclomethasone only: 0.9 (0.7-1.0) Unexposed cohort: 1.0 (0.9-1.1) Oral corticosteroid users: 2.2 (2.0-2.3) Subjects without asthma: 3.0 (2.7-3.4) **Relative Risk of cataract (95% CI)** Intranasal corticosteroid users: 1.0 (0.8-1.2) Beclomethasone only: 1.0 (0.8-1.2) Unexposed cohort: reference Oral corticosteroid users: 2.1 (1.8-2.5) Subjects without asthma: 2.9 (2.4-3.5)	Funded by GlaxoWellcome Inc.
Koepke, 1997 USA	Withdrawals due to AE: 8 (5%) Withdrawals due to treatment-related AE: 4 (2.5%) **Overall AE:** 133 (77.3%) Headache: 38 (22.1%) Epistaxis: 31 (18%) Pharyngitis: 55 (32.0%) Rhinitis: 49 (28.5%) Cough: 14 (8.1%) Sinusitis: 27 (15.7%) **AE due to topical effects:** Nasal irritation 4 (2.3%), nasosinus congestion 2 (1.2%), Throat discomfort and dry mucous membranes 0%, sneezing 1 (0.6%), and epistaxis 22 (12.8%)	Funded in part by Rhone-Poulenc Rorer Pharmaceuticals, Inc.
Mansfield, 2002 USA	Growth measured by stadiometry Measured mean height at entry: 149.9cm Measured mean height at 12 months: 154.8cm Mean difference in the comparison between the observed and expected heights: at entry +3.8cm and at 12 months +3.6cm	Funding sources NR

Evidence Table 12. Quality assessment of observational studies

Author, year	Non-biased selection?	Low overall loss to follow-up?	Outcomes pre-specified and defined?	Ascertainment techniques adequately described?	Non-biased and accurate ascertainment methods?
Derby, 2000	yes	N/A	yes	yes	yes
Moller, 2003	Not clear	yes	yes	yes	not clear
Mansfield, 2002	Not clear	N/A	yes	yes	not clear
Koepke, 1997	yes	no	yes	yes	not clear

Evidence Table 12. Quality assessment of observational studies

Author, year	Statistical analysis of potential confounders?	Adequate duration of follow-up?	Adequate sample size?	Overall quality assessment
Derby, 2000	yes	N/A	yes	fair-retrospective study
Moller, 2003	partially	yes	yes	fair
Mansfield, 2002	yes	N/A	yes	fair-retrospective study
Koepke, 1997	not clear	yes	yes	fair

Evidence Table 13. Placebo-controlled trials of harms outcomes

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period
Schenkel 2000	Randomized, double-blind, placebo-controlled multicenter	Children with perennial allergic arthritis no greater than stage 1 on the Tanner Classification of Sexual Maturity, height between 5th-95th percentile Exclusion criteria: asthma requiring chronic use of inhaled corticosteroids for asthma for >2 months, history/presence of abnormal growth or malnutrition, history of multiple drug allergies, allergy to corticosteroids, posterior subcapsular cataracts or nasal structural abnormailites, upper respiriatory infection, sinus infection within 1 week before study	mometasone furoate aqueous nasal spray (MFNS), 100 mean grams once daily vs placebo Study period: 12 months	NR/NR
Skoner 2000	Randomized, double-blind, twice daily dose, placebo-controlled, parallel	Prepuertal children, aged 6-9 years with perennial allergic rhinitis, baseline heights between 5th-95th percentile, skeletal age within 2 years of chronological age	intranasal beclomethasone dipropionate 168mcg vs placebo Study period: 1 year	NR/NR

Evidence Table 13. Placebo-controlled trials of harms outcomes

Author Year Country Trial Name (Quality Score)	Allowed other medications/ interventions	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled
Schenkel 2000	Treatment with immunotherapy if patient on a stable schedule for at least 1 month before screening, 1-2 courses oral prenisone lasting no > 7 days, oral corticosteroids, low-potency dermatologic corticosteroids, nonsteroidal allergy preparations	Cosyntropin stimulation testing performed in half of centers at 6 and 12 months, vital signs taken at each visit, clinical lab determinations taken at baseline, week 26 and endpoint, height measured at 4, 8, 12, 26, 39 and 52 weeks	6.3 years 67.3% Male Ethnicity NR	Asthma: MFNS: 32.6% vs placebo: 26.5% Comorbid SAR: MFNS: 79.5% vs placebo: 73.4% Mean body weight: MFNS: 54.5 vs placebo: 55.2 Mean height: MFNS: 120.2cm vs placebo: 120.9cm	NR/NR/98
Skoner 2000	NR/NR	Height measured with stadiometer at 1,2, 4,6, 8, 10 and 12 months	NR	NR	NR/NR/100

Evidence Table 13. Placebo-controlled trials of harms outcomes

Author Year Country Trial Name (Quality Score)	Number withdrawn/ lost to fu/analyzed	Outcomes	Method of adverse effects assessment
Schenkel 2000	14/16/82	Mean Increase in Height after 12 months of treatment: Age 3-5y: MFNS: 7.65 cm vs placebo: 7.26 cm Age 6-9y: MFNS: 6.67 cm vs placebo: 6.0cm Female: MFNS: 6.73cm vs placebo: 6.25 cm Male: 7.07cm vs placebo: 6.39cm	Patient self-report
Skoner 2000	NR/NR/80	Mean standing height at 1 year: BDP: 5.0cm vs placebo: 5.9 cm	NR

Evidence Table 13. Placebo-controlled trials of harms outcomes

Author Year Country Trial Name (Quality Score)	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events	Comments
Schenkel 2000	Number of patients reporting adverse events Epistaxis: MFNS 12% vs placebo: 8% Nasal irritation: MFNS: 8% vs placebo: 6% Headache: MFNS: 0 vs placebo: 2% Pharyngitis: MFNS: 0 vs placebo: 2% Rhinitis: MFNS: 0 vs placebo: 2% Sneezing: MFNS: 0 vs placebo: 0	Withdrawals (16) : MFNS: 7 vs placebo 9: Withdrawal due to adverse event (2): MFNS: 1 vs placebo: 1	
Skoner 2000	No unusual adverse events observed	NR; NR	

Evidence Table 13. Placebo-controlled trials of harms outcomes

Author Year Country Trial Name (Quality Score)	Study Design Setting	Eligibility criteria	Interventions	Run-in/Washout Period
Allen, 2002	Randomized, double-blind, placebo-controlled	Children with perennial arthritis found from positive skin test, nasal symptoms at least once daily in past year, normal current growth within 5-95 percentile, normal height growth reflected in at least two height measurements, Tanner Sexual maturity rating of 1 for all classifications. Exclusion: conditions that could require concomitant corticosteroid therapy, use of inhaled, intransal, oral, optical or injectable corticosteroids, or >1% subcutaneous hydrocortisone with 1 month of study, evidence of malnutrition	fluticasone propionate aqueous nasal spray, 200mcg daily vs placebo Study period: 1 year	NR/NR
Holm 1998	Randomized, double-blind, placebo-controlled, parallel Single-center	Patients with perennial allergic rhinitis for at least 1 year. Exclusion: serious/unstable disease,infection of upper/lower respiratory tract, structural abnormalities, nasal surgery >6 months before study, concurrent use of oral/inhaled steroids, intrana	intranasal fluticasone propionate aqueous, 100mcg twice daily vs placebo Study period: 1 year	4 weeks/NR

Evidence Table 13. Placebo-controlled trials of harms outcomes

Author Year Country Trial Name (Quality Score)	Allowed other medications/ interventions	Method of Outcome Assessment and Timing of Assessment	Age Gender Ethnicity	Other population characteristics	Number screened/ eligible/ enrolled
Allen, 2002	NR	Growth, measured by stadiometry every 30 days at clinical visit	6 years 34% Female White: 80%, Black: 11%, Asian: 2%, Hispanic: 4.5%, Other: 2%	NR	NR/NR/150
Holm 1998	terfenadine tablets, 60mg as rescue medication	12 clinic visits conducted between 4-6 weeks, nasal blockage, nasal discharge, sneezing, nasal itching, eye irritation assessed by daily diary cards completed for 10 days before clinic visits and investigator at clinical visits	28 years 66.6% Male Ethnicity NR	NR	NR/NR/42

Evidence Table 13. Placebo-controlled trials of harms outcomes

Author Year Country Trial Name (Quality Score)	Number withdrawn/ lost to fu/analyzed	Outcomes	Method of adverse effects assessment
Allen, 2002	40/12/110	Mean Height Measurements: vs baseline With at least 3 months of treatment data: F: 119.0cm vs placebo: 119.0cm At one year of treatment: F: 125.5cm vs placebo: 125.4cm	Patient outcome, self-report
Holm 1998	NR/NR/29	Percentage of patients with symptoms: Baseline vs 1 year: FPANS Mucosal swelling: 23% vs 11% Evidence of crusting: 8% vs 14% Evidence of bleeding: 0% vs 5% Nasal polyps: 0% vs 0% Baseline vs 1 year: placebo Mucosal swelling: 62% vs 37% Evidence of	Patient outcome, self-report

Evidence Table 13. Placebo-controlled trials of harms outcomes

Author Year Country Trial Name (Quality Score)	Adverse Effects Reported	Total withdrawals; withdrawals due to adverse events	Comments
Allen, 2002	Report of Adverse Events: Any event: F: 12% vs placebo: 12% Epistaxis: F: 9% vs placebo: 8% Nasal irritation: F: 3% vs placebo: 0% Headache: F: 1% s placebo: 1% Gastric upset: F: 0% vs placebo: 1% Nasal burning: F: 0% vs placebo: 1% Nasal soreness: F: 1% vs placebo: 0% Vestibulitis of nose: F: 0% vs placebo: 1%	40;9	
Holm 1998	No major adverse events reported Minor adverse events reported: Total: FPANS: (13)62% vs placebo (12)57% FPANS: Headache: 5 Bronchitis: 3 Epistaxis: 3 Upper respiratory tract infection: 3 Mental depression: 1	NR; 1	

Evidence Table 14. Quality assessment of placebo-controlled trials of harms outcomes

Author, Year Country	*Internal Validity* Randomization adequate?	Allocation concealment adequate?	Groups similar at baseline?	Eligibility criteria specified?	Outcome assessors masked?	Care provider masked?	Patient masked?	Reporting of attrition, crossovers, adherence, and contamination	Loss to follow-up: differential/high
Allen 2002 USA	NR	NR	yes	yes	yes	NR	yes	yes, no, no, no	yes
Holm 1998 Netherlands	NR	NR	NR	yes	yes	NR	yes	yes, no, no, no	yes
Skoner 2000	Method not reported	NR	no, mean age and mean height in beclomethasone group was significantly greater	yes	yes	yes	yes	Yes, No, No, No	No

Evidence Table 14. Quality assessment of placebo-controlled trials of harms outcomes

External Validity

Author, Year Country	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating	Number screened/eligible/enrolled	Exclusion criteria	Run-in/Washout	Class naïve patients only
Allen 2002 USA	yes	no	fair	NR/NR/150	conditions that might affect growth or require concomitant corticosteroid therapy (except for asthma controlled by as-needed Beta-agonists administered on no more than two days weekly), use of inhaled, intranasal, oral, optical, or injectable corticosteroids or >1% cutaneous hydrocortisone within one month of the first prestudy stadiometry measurements and evidence of malnutrition.	4-day screening period	no
Holm 1998 Netherlands	Not clear	no	fair	NR/NR/42	serious or unstable disease, infection of the uppre and lower respiratory tract, structural abnormalities or intranasal sympaticomimetic therapy, pregnant or lactating women.	4-week placebo run-in	no
Skoner 2000	yes	no	fair	NR/NR/100	Patients taking medications known to affect growth during the study	Washout periods for medications known to affect growth were established, but not reported in abstract	no

Evidence Table 14. Quality assessment of placebo-controlled trials of harms outcomes

Author, Year Country	Control group standard of care	Funding	Relevance
Allen 2002 USA	yes	GlaxoSmithKline supported study	yes
Holm 1998 Netherlands	yes	financial support from Glaxo VB, The Netherlands	yes
Skoner 2000	N/A	NR	yes

Evidence Table 14. Quality assessment of placebo-controlled trials of harms outcomes

	Internal Validity								
Author, Year Country	**Randomization adequate?**	**Allocation concealment adequate?**	**Groups similar at baseline?**	**Eligibility criteria specified?**	**Outcome assessors masked?**	**Care provider masked?**	**Patient masked?**	**Reporting of attrition, crossovers, adherence, and contamination**	**Loss to follow-up: differential/high**
Schenkel 2000 Abstract	Method not reported	NR	yes	yes	yes	yes	yes	No, no, yes, no	no

Evidence Table 14. Quality assessment of placebo-controlled trials of harms outcomes

External Validity

Author, Year Country	Intention-to-treat (ITT) analysis	Post-randomization exclusions	Quality Rating	Number screened/eligible/enrolled	Exclusion criteria	Run-in/Washout	Class naïve patients only
Schenkel 2000 Abstract	yes	no	fair	NR/NR/98	None reported in abstract	Washout periods for medications known to affect growth were established based on estimated period of effect and these medications were prohibited during the study, but not reported in abstract. Short courses os either oral prednisone lasting no longer than 7d or low-potencytopical dermatological corticosteroids lasting no longer than 10d were permitted if necessary	no

Evidence Table 14. Quality assessment of placebo-controlled trials of harms outcomes

Author, Year Country	Control group standard of care	Funding	Relevance
Schenkel 2000 Abstract	N/A	NR	yes