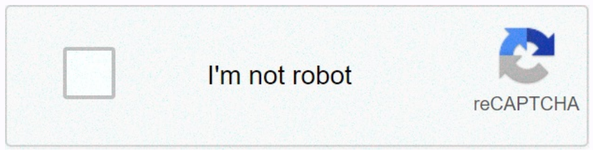

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David B Prix,1–3 Pete K Smith,4 Richard John Harvey,5,6 A Simon Carney,7 Vicky Criticism,8 Sinthia Z Bosnic-Antivich,8, Louise Christian,10 Derek Painner,3 Victoria Carter,2,3 Alice MS Durieux2 1Centre of Academic Primary Care, University of Aberdeen, Aberdeen, UK; 2Observational and Pragmatic Research Institute, Singapore, Singapore; 3Optimum Patient Care, Cambridge, UK; 4Clinical Medicine, Griffith University, Southport, QLD, Australia; 5Rhinology and Skull Base, applied Medical Research Center, University of New South Wales, Sydney, NSW, Australia; 6Faculty of Medicine and Health Sciences, Macquarie University, Sydney, NSW, Australia; 7Deatman of Otolaryngology – Head and Neck Surgery, Flinders University, Adelaide, SA, Australia; 8Woolcock Institute of Medical Research, University of Sydney, NSW, Australia; 9Central Sydney Area Health Services, Sydney, NSW, Australia; 10NostraData, Kew, VIC, Australia Background: The purpose of the study was to explore rhinitis therapy purchases in different Australian regions for patients with and without additional respiratory diseases, using both the doctor's prescription and over-the-counter (OTC) medication. Patients and methods: It was a brief historical study of pharmacy-related claims that included prescription or OTC therapy hirnitis, and or without asthma/COPD therapy, from January 2013 to December 2014. Result: Overall, prescription and OTC hinitis treatments were purchased in 909 pharmacies over a calendar year; the majority were single-therapy purchases for rinitis only patients. More multiple-therapy purchased for hihinitis and asthma/COPD patients (4.4%) than for hihinitis only patients (4.0%), with a larger purchase proportion of VIC, SA and TAS (4.7% of hinitis only patients with 4.5% of hinitis and asthma/COPD patients) than in other areas. Dual oral antihistamine therapy (OAH) and intranasal corticosteroid (ins) were very often purchased multiple-therapy, with higher purchase rates for hihinitis and asthma/COPD patients (2.6%) than for hihinitis only patients (1.6%). The therapy that most often purchased single therapy was OAH (70.1% of patients only rhinitis and 57.3% of hinitis and asthma/COPD patients). First line ins therapy was more likely to be purchased for hinitis and asthma/COPD patients (15.3% by prescription and 11.7% OTC) than for rifinitis only patients (5.0% by prescription and 9.2% OTC); However, geographic differences in the proportion of therapy purchased OTC noted, with a lower proportion of OTC OAH and INS purchases in Queensland and the Northern Territory for patients with and without respiratory commodity disorders. Conclusion: FIRST-line therapy purchases ins are more likely for patients with commas respiratory disorders if they received prescriptions and information/advice from their general practice. The results study indicated a need for patient/educational information at point-of-sale in OTC OAHs to empower patients to evaluate nasal symptoms and receive treatment support from pharmacists. High availability of ins of pharmacies as well as guidelines from current guidelines and instruction to correct intranasal techniques can also lead to greater absorption of ins. Keywords: asthma, chronic obstructive airways disease, intranasal corticosteroids, medication, oral antihistamines, over-the-counter, pharmacy Introduction Rhinitis is chronic respiratory condition defined by one or more of the nasal symptoms: nasal congestion, rhinorrhea, sneezing and/or itching.1 rhinitis is often categor into allergic rhinitis (AR) and non-allergic rhinitis (NAR), with recent data suggesting that as many as 50–70% of patients suffer from mixed form known as mixed rhinitis.2 Both AR and NAR are independent risk factors for new-onset asthma.1,3–5 Symptoms of rhinitis can also present in COPD.6 Nasal symptoms can be triggered by exposure to aeroallergens in sensitized individuals with AR , while changes in temperature and humidity can induce symptoms in those with NAR.5 AR is the most common type of rhinitis,7 affecting 19% of the Austrian population,8 and different prevalence rates across Australian regions due to significant geographic variables in climatic and allergic conditions AR asosye ak yon varyete komodite tankou konjonktivit, rhinosinusit ak medya otis kom byen ke opresyon, ki se konsidere kom yo dwe yon pati nan avyon an inifye.3,5,10 Nan Ostrali, omwen 30% nan pasyan ki gen li te ye AR tou gen opresyon ak opresyon anpil kom 80% nan pasyan opresyon gen coexisting AR.11 Untreated oswa po mal jere AR ka poze yon pwoblem sante enpotan akoz prevalans li yo ak enpak negatif sou bon jan kalite pasyan 'nan lavi, sa ki lakoz domi, deranjman ki lakoz fatig lajounen epi ki afekte pwoditvite travay ak pefomans lekol la.12–14 Repekisyon AR pov yo kapab egziste tou. ale nan opresyon koeksistan, kote li ka vin pi mal kontwol opresyon ak ogmante risk pou yo egzakerbasyon.3,15 Konsa, li se fondamantal ke nan pasyan opresyon , coexisting AR is detected and treated with first-line AR therapy, given that over 60% of Australian adults with uncontrolled asthma have moderate-severe AR that is underreported and undertreated.16 It is also important that AR patients allergic to rye grass pollens, with or without a history of asthma, are made aware of the increased risk in certain weather conditions during the pollen season of thunderstorm asthma which can trigger severe asthma exacerbations leading to death and the use of preventative measures.17 AR management strategies encompass patient education, allergen minimization, pharmacotherapy and the addition of allergen-specific immunotherapy in severe cases of AR.3–5,18 Intranasal corticosteroids (INSs) are recommended as first-line therapy for moderate-severe and/or persistent AR and NAR in patients with or without lower airways disease. They are considered the most effective monotherapy for AR in both adults and children.3–5,18 INSs are effective in improving all symptoms of AR including ocular symptoms19 and are more effective than oral antihistamines (OAHs) and oral leukotriene receptor antagonists (LTRAs).20,21 Second-generation OAHs are recommended for mild intermittent AR.22 Combination intranasal therapy containing a corticosteroid and an antihistamine in a single device has been shown to deliver added efficacy greater than that attained by INS monotherapy, and for some patients the clinical benefit is significant.23 While there is insufficient clinical evidence available to support the combined use of OAH and INS therapy,3,4 with most published evidence confirming no benefits gained by adding other AR treatments to INS therapy,24 high failure rates of INS monotherapy have been reported , sa ki lakoz souvan ko-preskripsyon nan plizye tretman.25 AR se youn nan kondisyon ki pi souzestime rapote pa dokte ak pasyan.26 Jesyon li se souvan suboptimal ak souvan konplike pa reta dyagnostik ak tretman ki apwopriye paske nan tantativ pa pasyan yo medikaman nan pwop tet ou-medikal ak yon paket domen sou-kontwa an Drugs available to pharmacies and patients do not consult a general practice (GP).26–29 Often the treatments OTC has chosen without seeking pharmacist's counseling.26 In most regions of Australia, the much of the treatment for hihinitis are pharmacy medicine (Schedule 2), which are stored on open shelves with OTC available OTC, without prescription and without condition of pharmacist intervention. Other available prescription treatments are medicine only pharmacists (Schedule 3), stored in an area of safety away from the public and with the requirement of pharmacist intervention.30 However, in Queensland and the Northern Territory (QLD and NT), both Schedule 2 and 3 medications are stored in a secure area away from the public and are asked for pharmacists' intervention.31 In Australia, apart from reporting models and costs of one with multiple therapy- therapy purchases of pharmacies for hihinitis.32 little is known on the nature and extent of hinitis treatment purchased in different regions of Australia for patients with and without additional respiratory diseases. Moreover, the use of medications for patients with patients and without additional respiratory disorders can provide evidence for interventions regarding screening and OTC protocol medication counseling for pharmacists, scheduling of medications and prescribed policies. The study aimed to explore hihinitis purchasing therapy in different Australian regions for patients with and without additional respiratory diseases using both the doctor's prescription and OTC medicine. Patients with this method were a brief historical study of pharmacy-related claims from pharmacies that included both prescription and OTC rhinitis therapy, with or without asthma/COPD therapy, from January 2013 to December 2014. The study was registered with the European Network of Centers for Pharmacoepidemilogy and Pharmacovigilance (registration number ENCEPP / SDPP / 8507) and approved by the Anonymised Data Protocols and Transparency (ADEPT) committee (approval reference number ADEPT020215). Data source A representative demographic data of related pharmacy claims was provided by NostraData (, which included information from both the doctor's prescription and equipment for OTC. In the pharmacy estimated 5,240 across Australia in 2013, 77% were in QLD, New South Wales and Victoria.33 The NostraData data contains data from 909 pharmacies selected across Australia and given to geographic geographic protection representatives throughout the state/territory and population as a whole, as shown in Table 1. Information in this data describes the details of valid pharmacy transactions, including name(s) of product(s) purchase, prescription or OTC status, postcode of purchase and price paid. Table 1 Example features of pharmacy transactions of different regions in Australia over 24 months Note: aIndividual patients cannot follow in this data. The data shown are the number of pharmacy transactions. Pharmacy purchases of at least one prescription or OTC rinitis treatment with or without additional asthma therapy/COPD during 2013 and 2014 have been evaluated in the pharmacy claims data. Prescriptions or OTC treatment hirnitis have been used as a proxy for rinitis, and asthma/COPD treatments are used as a proxy for respiratory commodity disorders. Therapeutic classes of hinitis treatment include OAH; inS; intranasal antihistamine and corticosteroid combination; spray nasal nonstewoyal (NS); LTRA; eye drops (ED) for conjunction allergic reactions; oral corticosteroid and inject corticosteroid. Table 2 shows a list of drugs included in each medicinal class, the most representative in terms of prescription and OTC purchases with which OTC (Schedule 2) and pharmacist only medications (Schedule 3), and who require prescriptions by a doctor (Schedule 4). LTRAs, mouths and inject corticosteroids were included as rinitis therapy only if bought without additional asthma treatment/COPD. Therapeutic classes of asthma/COPD treatment include short-agitated β2 agonists, inhaled corticosteroyids, agonys β2 agonies, cotractic combinations and long-term β2 agonys, short-current antagonist instruments, long-acting antagonist music, chromone and theoretical. Table 2 Lists of drugs included in each medicinal grade Note: aSchedule 2, available on-the-meet in all Australian regions except Queensland and the Northern Territory where they are stored in a secure area and conditions of pharmacists intervention. bSchedule 3, pharmacists only stored medicine in an area that is safe with the requirement of pharmacist intervention. cSchedule 4, prescription drugs. Studying the results of medicines related to medications was analyzed for patients with and without asthma/COPD therapy in each geographic region of Australia: Counting in therapy (i.e., the frequency of single and multiple therapy therapy in different drug therapy classes purchased in the same transaction). Drug grades of hihinitis therapy purchased as single therapy in the same transaction. Drug classes of hihinitis therapy purchased as multiple-therapy therapy in the same transaction. Prescription and OTC class therapy purchased as single therapy in the same transaction. Data analysis data was analyzed using MySQL and Microsoft Excel 2011 software (Microsoft Corporation, Redmond, WA, USA). The sample features of pharmacy transactions in Australia were summarized using descriptive statistics. Pharmacy transactions during the study period were analyzed together and reported as average numbers and rates per calendar year. Cons for differences in climate and drugs politics across Australia, the data was analyzed separately for the following geographic areas: New South Wales and Australian Capital Territories; QLD and NT; Victoria, South Australia and Tasmania (VIC, SA and CUPS); Western Australia. Counts of therapy are shown as single, multiple and total number of therapy and registered as absolute numbers and percentages. Combinations of different classes of therapy are recorded as absolute numbers and percentages. Numbers in OTC therapy have been talliye for every combination of therapy. Table Result 1 shows the sample features of pharmacy transactions across different Australian regions over 12 months. Of the transactions 8.334.472 pharmacies estimated, 4.247.193 (51%) therapy rinitis included, which 4.074.496 (96%) was asthma/COPD therapy with 172,697 (4%) was with asthma / COPD therapy. Count of hihinitis therapy in different drug classes in the same transaction and with without additional asthma therapy/COPD in the 4,074,496 transactions for which hihinitis only purchased therapy, 3,909,923 (96.0%) transactions that included one drug class with 164,573 (4.0%) multiple drug classes in the same transaction from pharmacies across all Australian regions. In the 172,697 transactions for which hinitis and asthma/COPD therapy buy, 165,064 (95.6%) transaction included a single drug class with 7,633 (4.4%) multiple drug classes in the same transaction from pharmacies across all Australian regions. The difference between Australian region Figure 1 shows the proportion of transactions where several class of hinitis therapy were bought for riyin only patients and people with asthma/COPD from pharmacies in each Australian region. More multiple-therapy (4.7% of hinitis only patients and 4.5% of rhinitis and asthma/COPD patients) were purchased in VIC, SA and TAS than in other areas. Figure 1 Proportion of transactions where multiple classes of therapy hihinitis buy blood asthma/COPD therapy from pharmacies in NSW and ACT(n = 1,394,209); QLD and NT(n = 856.423); VIC, SA AND CUPS(n = 1.121.144); and WA(n=702,720) and asthma therapy/COPD in NSW AND ACT(n = 64,461); QLD and NT(n = 35.803); VIC, SA AND CUPS (N = 45.186); and WA (n = 27.247). Drug therapy in hihinitis therapy purchased as single therapy and with and without additional asthma therapy/COPD in the same transaction in the 4,074,496 transaction for which former therapy only purchased therapy, 2,856,342 (70.1%) single-therapy purchase of OAH, 555.672 (13.6%) ins purchase with 415.670 (10.2%) NNS buyers in pharmacies across all Australian regions. LTRA, intranasal combination of antihistamine/corticosteroid and grade drug ED accounted for transactions that remain 2.1% for hinitis only single-therapy purchases. Of the 172.697 transactions for which rinitis Asthma Therapy/COPD Therapy Buyer, 99,027 (57.3%) single-therapy purchase of OAH, 44.501 (25.8%) ins purchase with 12.913%(7.5%) NNS buyers in pharmacies across all Australian regions. Grade drug ED with an intranasal combination of antihistamine and corticosteroid accounted for transactions that remain 5.4% for hinitis and asthma/COPD single-therapy purchase therapy. Differences between Australian region Figure 2 show proportion of transactions where OAH, INS and NS are bought as single therapy for hinitis only patients and people with asthma/COPD from pharmacies in every Australian region. More OAHs (73.5% of hihinitis only patients with 60.1% of rhinitis and asthma/COPD patients) and fewer ins (11.11.1% of rhinitis and asthma/ COPD patients) with fewer ins (11.11.1% 0% of hihinitis only patients and 23.6% of rhinitis and asthma/COPD patients) are bought in QLD and NT than in other areas. Figure 2 Proportions of transactions where OAH, INS and ONT have been purchased as single therapy without asthma therapy / COPD from pharmacy in NSW and ACT(n = 1,394,209); QLD and NT(n = 856.423); VIC, SA AND CUPS(n = 1.121.144); and WA(n=702,720) and asthma therapy/COPD in NSW AND ACT(n = 64,461); QLD and NT(n = 35.803); VIC, SA AND CUPS (N = 45.186); and WA (n = 27.247). Abbreviation: OAH, oral antihistamin; ins, intranasal corticosteroid; NNS, non-steroid nasal spray; ONT, other nasal treatment topic. Drug grade hihinitis therapy purchased as multiple therapy— and with unprecedented additional asthma therapy/COPD in the same transaction in the 4,074,496 transaction for which former therapy only purchased therapy, 64,391 (1.6%) multiple therapy purchases in both OAH and INS with 9.171%(0.2%) multiple-therapy purchases of both ins and NS from pharmacies across all Australian regions. Other combinations accounted for remaining 2.2% of multiple-therapy transactions. In the 172,697 transactions for which hinitis and asthma/COPD purchase therapy, 4,449 (2.6%) Multiple therapy purchases of both OAH and INS with 560(0.3%) multiple-therapy purchases of both ins and NS from pharmacies across all Australian regions. Other combinations accounted for remaining 1.1% of multiple-therapy transactions. The difference between Australian region Figure 3 shows the proportion of transactions where treatment combinations of OAH and INS and INS and NNS were purchased for hinitis only patients with asthma/COPD from pharmacies in each region of Australia. A lower proportion of OAH dual treatments and ins (1.0% of patient rhinitis and 2.1% of former and asthma/KOPD patients) were purchased in QLD and NT than in other areas. Fig. 3 Proportions of transactions where dual OAH and intranasal corticosteid therapy and double intranasal corticosteroid and NNS were purchased without asthma/COPD therapy from pharmacies in NSW and ACT(n = 1,394,209); QLD and NT(n = 856.423); VIC, SA and (n = 1,121,144); and WA(n=702,720) and asthma therapy/COPD in NSW AND ACT(n = 64,461); QLD and NT(n = 35.803); VIC, SA AND CUPS (N = 45.186); and WA (n = 27.247). Abbreviation: OAH, oral antihistamin; ins, intranasal corticosteroid; NNS, non-steroid nasal spray. Prescription and OTC grade therapy purchased as single therapy without additional asthma therapy / COPD in the same transaction At 3,909,923 transactions for which rinitis only purchased therapy that included one drug class, 2,626,934 (67.2%) and 236.680 (6.0%) OTC's and prescription OAH purchases, respectively; 359,899 (9.2%) and 196.226 (5.0%) OTC's and prescription ins purchases, respectively; and 412.788 (10.6%) and 2.898 (0.07%) OTC's and prescription NS purchases, respectively. For rinitis only patients, therapy more salt buying OTC than by prescription, and the most frequently purchased single therapy was OAH (67.2%), followed by NS (10.6%) and ins (9.2%), all OTC. Differences between Australian region Figure 4 showed proportion of transactions for which both OTC and prescription OAH, INS and NS bought as the only therapy to hinitis only patients from pharmacies in each Australian region. Fewer OTC OAHs (55.8%), Plus Prescription OAHs (20.3%) with fewer OTC ins (6.6%) was purchased for hihinitis only patients in QLD and NT than in other areas. Figure 4 Proportions of transactions where both OTC and prescription OAHs, INSS and NSs have been purchased as single therapy without asthma therapy / COPD from pharmacy in NSW and ACT(n = 1,337,146); QLD and NT(n = 835.375); VIC, SA AND CUPS (N = 1.068.786); and WA (n = 676.398). Abbreviation: OAH, oral antihistamin; ins, intranasal corticosteroid; NNS, non-steroid nasal spray; OTC, over-the-counter. Prescriptions and OTC classes of purchased therapy as single therapy and additional asthma therapy/COPD in the same Transa of the 165,064 transactions for which rinitis only purchased therapy that included one class of drugs, 85,420 (51.7%) and 14.011 (8.5%) OTC's and prescription OAH purchases, respectively; 19,265 (11.7%) and 25.326 (15.3%) OTC's and prescription ins purchases, respectively; and 12.538 (7.6%) and 376 (0.2%) OTC's and prescription NS purchases, respectively. For rinitis and asthma/COPD patients, the most frequently purchased single OTC therapy (51.7%), followed by prescription ins (15.3%) and OTC INS (11.7). The difference between Australian region Figure 5 shows the proportion of transactions for which both OTC and prescription OAH, INS and NNS were bought as the only therapy for hinitis and asthma/COPD patients from pharmacies in each Australian region. In QLD and NT, fewer OTC OAHS and INS (39.8% and 8.5%, respectively) and more prescription OAHs (23.0%) bought for hihinitis and asthma / COPD patients than in other areas. Figure 5 in transactions where both OTC and prescription OAHs, INSS and NSS are bought as single therapy and asthma therapy/COPD from pharmacy in NSW and ACT(n = 61,428); QLD and NT(n = 34.754); VIC, SA AND CUPS(n = 43.219); and WA (n = 26.166). Abbreviation: OAH, oral antihistamin; ins, intranasal corticosteroid; NNS, non-steroid nasal spray; OTC, over-the-counter. This study's discussion provides valuable insight into the nature and measures of hinitis therapy purchases in different Australian regions for patients with and without common respiratory diseases during a calendar year. It provides valuable transaction data on single- and multiple-therapy buyers in different Australian regions, the way in which former buying therapy, behaviors are prescribed to GPs and behavioral self-medications to patients in a real-life environment. Our study revealed that the majority of transactions were single-therapy purchases for rinitis only patients. More multiple-therapy purchased for hihinitis and asthma/COPD patients (4.4%) than for hihinitis only patients (4.0%), with a larger purchase proportion of VIC, SA and TAS (4.7% of hinitis only patients with 4.5% of hinitis and asthma/COPD patients) than in other areas. Dual therapy of OAH and INS has most commonly purchased multiple-therapy, with higher purchase rates for former and asthma/KOPD patients (2.6%) than for hihinitis only patients (1.6%). OAHs were most commonly purchased single therapy (70.1% of patient rinitis and 57.3% of hihinitis and asthma/COPD patients). INS therapy was more likely to be purchased for hihinitis and asthma/COPD patients (15.3% by prescription and 11.7% OTC) than for hihinitis only patients (5.0% by prescription and 9.2% OTC); However, there were geographic differences in the proportion of therapy purchased OTC, with a lower proportion of OTC OAH and ins purchases of QLD and NT for both patients and with without common respiratory diseases. Our study reveals that patients in general purchased OTC OAHs (70.1% of hinitis only patients and 57.3% of hinitis and asthma/COPD patients) and which first-line therapy ins were more likely to be purchased for hihinitis and asthma/COPD patients (15.3% by prescription and 11.7% OTC) than for hihinitis only patients (5.0% by prescription and 9.2% OTC). Many studies have shown that the single therapy purchased OTC than by prescription, and most often OAHs are purchased,14,25,28,34–37 non-clinically effective or cost-effective.3,5,18 our results are consistent with people from a community-based study based in Australia, where the majority of AR patients who visited pharmacies to self-select the medications, most of whom were OTC OAHs, and 71% of OTC purchases of OAHs were chosen by patients without seeking pharmacist's advice.26 Therefore, we can hypothesis that if patients were and the pharmacist, the proportion of patients with comobine respiratory diseases who choose OTC first line ins would increase. Our study showed that FIRST-line therapy ins were more likely to be purchased for patients with respiratory diseases comob, which could be due to that fact that these patients are more likely to visit their GP to receive prescription and information/education, are better informed and so most likely to buy appropriate OTC treatments and less likely to change prescription medications.14,25,35 Per contrast, hihinitis only patients are more likely to self-medication with OTC medications, often self-selecting and switching medications, formulations and marks without informing or seeking medical advice, in pursuit of obtaining a treatment that they know effectively controls symptoms.14,26,36,38 given that their ins are the first line of rhinitis therapy for patients with and without respiratory diseases .3.5.5.18 ins therapy continues to smile (and OAHs too much) by patients in general. Mouse inss have already been reported in the Australian population, and the major purpose identified for not using ins included a flu for nasal spray, lack of knowledge on use ins, lack of efficiency and possible side effects.37 Discontinuation of ins therapy is also a common phenomenon among AR sufferers, and greater reason for stopping ins therapy were lack of acceptable efficiency, and greater reason for stopping INS therapy were lack of acceptable effectiveness, decline in effect over time, unpleasant side effects and anxiety about addictions.37,39 As adequate adequate maintenance ongoing ins therapy and correcting intranasal techniques are factors that can contribute to Control symptoms rinitis, appropriate patient information/education in point-of-sale OTC treatment and pharmacist support can lead to greater absorption of ins, higher patient satisfaction rates and ins therapy and ins therapy , by extension, improvements to the long-term management of rinitis in primary care. In this study, there were geographic differences in the proportion of therapy purchased OTC, with a lower proportion of OTC OAH OTC and INS purchases of QLD and NT for hihinitis patients with and without commodity respiratory diseases. In QLD and NT, OTC Schedule 2 medicines (accessible to the public in all other regions) must be stored in a secure area away from the public with the requirement of pharmacists intervening31 and are Can explain the lowest proportion of OTC and OTC ins purchases (as single and double therapy) in QLD and NT for patients with and without common respiratory diseases. Thus, information and advice about the use of medications appropriate for elders is most likely to be provided by primary care providers of QLD and NT, as fewer OTC treatments are available on open shelters for self-selection by patients, and most of the available treatment requires pharmacist intervention or by prescription. Large-scale studies showed that more multiple-therapy purchased for rinitis and asthma/COPD patients (4.4%) than for hihinitis only patients (4.0%), with a larger purchase proportion of VIC, SA and TAS (4.7% of hinitis only patients with 4.5% of hinitis and asthma/COPD patients) than in other areas. The use of multi-therapy to manage AR symptoms was well-documented by a number of studies.14,25,40,41 Nearly 15% of patients adding OTC medications to prescribed or OTC medications for symptoms that are no longer managed with current treatment.14,25 Also, many patients who are getting prescribed monotherapy at the beginning of the pollen season often return to their GP as the seasonal pollen progress, for co-prescribing several treatments or treatment changes.25 Patient adherence to the proper treatment prescribed by GP is also known to be poor.14,34,40 Without rini symptoms control ottawa gets worse control as well as increasing the number of GP,42 visits and can offer a possible explanation for higher rates of multiple-therapy purchases for rinitis and asthma/COPD patients , as short this patient is most likely to have moderate-serious ailments and persistent symptoms and be prescribed several therapies by GP.12,25,43 Compared to other Australian regions, VIC, SA AND TAS were Australia's highest buying therapy, which is unusual given ar's prevalence rates at VIC and SA are significantly higher than the rate for all Australia.9 and possibly a reflection of high exposure to common clinically related seasonal lightening such as grass including geography penal, Zebra timothy and small pollen winds distributed from trees and weeds.44 Besides, VIC has larger pollen count puck than many other regions of Australia, due to the impact of spring normally wind that carries pollen from grain north of its border.44 Double therapy at OAH and INS the most common multiple-therapy therapy purchased in this study , with higher purchase rates for hihinitis and asthma/COPD patients (2.6%) than for rhinitis only patients (1.6%), with the lack of clinical evidence supporting this practice,3,4 which can incur additional costs (including costs associated with side effects from inappropriate medication use to the patient.14,2 9,32,38 This dual-therapy regimen frequently used by patients when monotherapy fails (whether OAH or ins) has been welled by the number of studies.25,40,41 Failure of ins monother in controlling rhinitis symptoms could butter to poor intranasal device technique,37 poor adherence to long-term therapy, polysensitization,45 comorbidities,3–5,18 mixed rhinitis,1,2 misdiagnosis of rhinitis46 and severe chronic upper airways disease.12 Since dual-therapy purchase rates were were the highest for patients with comorbid respiratory disease, health care provider (HCP) educational targeted appropriate investigation and management of hinitis are required to ensure patients use recommended medications directly appropriate. Despite the fact that as many as 80% of patients with allergic asthma have AR coexisting in Australia, 11 studies we found that the majority transaction or therapy hihinitis was without additional asthma therapy/COPD. A possible explanation for this finding could be that a proportion of hinitis only transactions were for patients with undiagnosed respiratory conditions such as asthma and COPD. Since since asthma and rifinitis are considered part of a unified passage.10 it is recommended that in patients with persistent AR, HCPs should screen for asthma, and to those with asthma, screens should be screened for rihinitis.3,5,18 Other possible explanations for finding this was a proportion of hiring only transactions of people with lower breathing conditions or that most people with hihinitis and shadow respiratory diseases cannot manage their symptoms and pharmacies from pharmacies but rather immunotherapy. The strength and limitation of this force study in this study lies in the fact that it is the first large-scale Australian study that used a representative demographic data to claim pharmacies related to pharmacies, providing information on 4.247.193 rhinitis treatments for real-life patients over a calendar year. A major force in this study was the nature of its observations, allowing a deputy of real-life hire treatments purchased through the doctor's prescription and OTC supply to across Australia. This would have been difficult taken to surveys that rely on prescribed and recall patients for reporting results, which can underestimate or overestimate patients with prescribed behavior. Moreover, the study captured important information regarding prescribed and trending self-medication, as well as measures in which management hihinitis occur in the Australian community environment, as the majority of treatment options for hinitis are available without a prescription. There were several limitations of the study, including the cross-sectional design, lack of demographic features and lack of follow-up data, which may have caused multiple-therapy rates being underestimated, as individual patients may have bought additional treatment at different time points. This was reported in a longitudenal study based on longitude in the UK, so 16% of patients purchased additional therapy 5 days after the original purchase, and 16% and 18% additional therapy 4 and 8 weeks, later, respectively.36 Another limitation of the study used in prescription and OTC rhinitis purchase therapy as a proxy for a diagnosis of hihinitis as well as the use of asthma/COPD purchase therapy as a proxy for a diagnosis of the therapy or COPD. However, it is plausib that treatments that are classified as immobile therapy may have bought OTC or by prescription for another indication such as eczema or food allergies, though a study based in the UK found that more than 60% of patients who prescribed OAHs had a hihinitis diagnosis.47 Moreover, it may be plausib that EDs classified as hihinitis therapy can be purchased for conjunctivitis allergic to the absence of hihinitis, though a population-based study has found that up to 70% of patients with AR also had allergic conjunction.48 Finally, it was not possible to confirm if multiple-therapy purchases in the same transaction were all intended for the same patient , or to register purchases of senior therapy from pharmacies outside NostraData coverage. Patients conclusively in general to buy OTC OAHs, which are not clinically effective or cost-effective. Purchases of FIRST-line ins therapy are most likely for patients with commodity respiratory diseases if they received prescriptions and information/advice from their GP. The results study indicated a need for patient/educational information at point-of-sale in OTC OAHs to empower patients to evaluate nasal symptoms and receive treatment support from pharmacists. High availability of pharmacies as well as guidelines from current guidelines and instructions of correct intranasal techniques may also lead to greater absorption of ins. Recognizing the abstract paper presented at Respiratory Efficiency Group 2016 Summit, April 15–16, 2016, as a posting presentation with interim results. The abstract posting was published in Abstracts Poster of Journal of Thoracic Disease (Vol. 8, Supplement 5, July 2016) . This study was partly funded by Meda, Australia. The study was conducted by Observation and Pragmatic Research Institute Pte Ltd (OPRI) as an independent research organization; Meda had no role in the conduct or reporting of the study. Disclosements of David B Price have board members with Aerocrine, Amgen, AstraZeneca, Boehringer Ingelheim, Chiesi, Mylan, Mundipharma, Napp, Novartis, Reeneron Pharmaceutical, Sanofi Genzyme, and Teva Pharmaceutical; consultant agreements with Almirall, Amgen, AstraZeneca, Boehringer Ingelheim, Chiesi, GlaxoSmithline, Mylan, Mundipharma, Napp, Novartis, Pfizer, Teva Pharmaceutiics and Theravance; subsidy and unrestricted funds for investigator-initiated science (consisting of Observation and Pragmatic Research Institute Pte Ltd) from Aerocrine, AKL Research and Development Ltd, AstraZeneca, Boehringer Ingelheim, British Lung Foundation, Chiesi, Mylan, Mundipharma, Tablecloth, Novartis, Pfizer, Reeneron Pharmaceutical, Respiratory Efficiency Group, Sanofi Genzyme, Teva Pharmaceutical, Theravance, UK National Health and Zentiva (Sanofi Generic); payment for conference/speaking commitments from Almirall, AstraZeneca, Boehringer Ingelheim, Chiesi, Cipla, GlaxoSmithline, Kyorin, Mylan, Merck, Mundipharma, Novartis, Pfizeizer, Rejeneron Pharmaceutical, Sanofi Genzyme, Skyema and TevaMasetics; payment for manuscript preparations from Mundipharma and Teva Pharmaceutical; payment for educational materials development from Mundipharma and Novartis; payment for travel/accommodation/meeting expenses from Aerocrine, AstraZeneca, Boehringer Ingelheim, Mundipharma, Napp, Novartis and Teva Pharmaceutical; funding for enrollment of patients or completion of research from Chiesi, Novartis, Teva Pharmaceutiicals and Zentiva (Sanofi Generics); Stock/stock options from AKL Research and Development Ltd, which produces phytopharmaceutiicals; owning 74% of the Corporate Social Optimum Patient Care Ltd (Australia and UK) and 74% of Observation and Pragmatic Research Institute Pte Ltd (Singapore); and is reviewed by the Efficiency and Evaluation Mechanism Assessment Program. Pete K Smith received honoraria from AstraZeneca, GlaxoSmithline, MEDA Pharmaceutiicals and Mundipharma. Richard John Harvey is a consultant for Medtronic, NeilMed and Olympus, and has received honoraria from Seqirus with support from MEDA Pharmaceutical, Neilmed and Stallergenes. A Simon Carney is a consultant for Olympus and Smith & Nephew and has received honoraria from MEDA Pharmaceutiicals. Vicky Critios received honoraria from AstraZeneca, GlaxoSmithline and Pfizer. Sinthia Z Bosnic-Anticevich received lonoray from AstraZeneca, Boehringer Ingelheim, GlaxoSmithline, Mundipharma and TEVA Pharmaceutical for his contribution in boards / key international experts for. Victoria Carter is a staff of Observation and Pragmatic Research Institute Pte Ltd, which has

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