Systematic literature review of asthma biologic self-administration enhanced by a patient perspective

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Background: Several biologics for the treatment of severe asthma are available as self-administration devices.
Objective: We performed a systematic literature review to understand the use, benefits, and challenges of these self-administration devices.
Methods: Electronic databases and conference proceedings were searched using terms for asthma, biologic treatment, and at-home/self-administration (GSK study 213094). Publications were scanned for relevance using prespecified Population, Intervention, Comparison, Outcomes, Study Design (PICOS) criteria. Data on efficacy, safety, patient experience, and economic outcomes were extracted; study quality was assessed. A firsthand patient perspective was obtained.
Results: Thirty-five of 504 records met the inclusion criteria. Across four phase 3 studies, ≥95% of biologic self-administrations were successful on the basis of predefined criteria. At-home self-administration was preferred over in-clinic administration by 43-96% of patients across 5 studies. Most patients (≥89%) in two phase 3 studies reported completing self-administration easily without repeated reference to instructions; high proportions of patients (≥98%) were confident in their ability to self-administer their biologic, and ≥96% rated it as extremely, very or moderately easy to self-administer. Across 16 studies reporting efficacy data, there was evidence of reduced blood eosinophil counts and improved asthma control with biologic self-administration, with improved health-related quality of life shown across 6 studies. Economic outcomes data were limited. From a patient perspective, autonomy is the major benefit of self-administration.
Conclusion: Although more evidence is needed, this systematic literature review provides consistent evidence of high injection success rates and, supported by a patient perspective, preference for self-administration of biologics among patients with severe asthma. (J Allergy Clin Immunol Global 2024;3:100334.)

Key words: *Asthma, autoinjector, benefits, challenges, health-related quality of life, patient perspective, prefilled syringe, self-administration*

Severe asthma affects approximately 5-10% of the asthma population and accounts for a relatively large proportion of asthma health care resource expenditure.[1] Over the past decade, several new add-on biologic therapies for severe asthma have been developed[2-8] and are associated with reduced exacerbation risk, improved asthma control, enhanced health-related quality of life (HRQoL), and oral corticosteroid (OCS)-sparing effects.[9-23]

Six biologics are currently approved for severe asthma, generally requiring subcutaneous administration under medical supervision every 2 to 8 weeks.[3-8] Benralizumab, dupilumab, mepolizumab, omalizumab, and tezepelumab are available as a prefilled syringe (PFS) for at-home administration; benralizumab, dupilumab, mepolizumab, and tezepelumab are available in an autoinjector (AI) device that patients can use at home.[2-4,6-8] Supporting patients in administering their medication using these devices outside of a clinical setting has been successful in other chronic diseases.[24-29] At-home administration has been shown to improve HRQoL and lead to cost and time savings compared with hospital-based administration.[24,30,31]

The objective of this systematic literature review (SLR) was to identify all relevant published literature regarding at-home biologic administration among patients with severe asthma and understand its uses, benefits, and challenges. A firsthand patient perspective was also obtained to provide further context and insight on the results.

METHODS

Search strategy and study selection

An SLR (GSK study 213094) was conducted to identify peer-reviewed publications relating to at-home severe asthma biologic administration and is reported here in accordance with Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). Searches were conducted on January 7, 2021, and December 1, 2022, in electronic databases (Embase, MEDLINE [In-Process], and Cochrane Library) using search terms for

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Received for publication February 15, 2024; revised June 5, 2024; accepted for publication June 17, 2024.
Available online August 28, 2024.
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2772-8293

https://doi.org/10.1016/j.jacig.2024.100334

Abbreviations used

ACQ-6: Asthma Control Questionnaire 6
ACT: Asthma Control Test
AE: Adverse event
AI: Autoinjector
AQLQ: Asthma Quality of Life Questionnaire
FEV_1: Forced expiratory volume in 1 second
HRQoL: Health-related quality of life
OCS: Oral corticosteroid
PFS: Prefilled syringe
PICOS: Population, Intervention, Comparison, Outcomes, Study Design
PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses
SAE: Serious AE
SLR: Systematic literature review

asthma, biologic treatment, and self-administration (see Table E1 in the Online Repository available at www.jaci-global.org). Proceedings from selected respiratory/health economics conferences (available in the Online Repository) from 2018 to 2022 were searched electronically (if indexed in Embase) or searched by hand (if not Embase indexed). If evidence gaps in the severe asthma literature were identified (available in the Online Repository), targeted searches for evidence concerning self-injected biologic treatment for other indications were performed using MEDLINE, Google Scholar, conference proceedings, and patient organization websites.

References retrieved from electronic publication searches were downloaded and imported into an Endnote database; duplicates were removed. Reference screening software (DistillerSR, Ottawa, Ontario, Canada) was then used for title/abstract screening and full-text selection. Inclusion of articles was based on the criteria for relevant Population, Intervention, Comparison, Outcomes, Study Design (PICOS; Table I). Abstracts/titles followed by full text were reviewed independently by 2 reviewers, with discrepancies resolved by a third reviewer. Searches of conference proceedings were performed by a single reviewer and checked by a second reviewer. Eligible conference abstracts were included only if data were not duplicated (see the Online Repository).

Data extraction and analysis

For included articles, key study information, patient characteristics, and study outcomes (Table I) were extracted by one reviewer and tabulated. A second reviewer independently checked all data. Quality assessment was performed for included peer-reviewed publications (not conference abstracts) using the Centre for Reviews and Dissemination checklist for assessing risk of bias in nonrandomized trials or the Drummond checklist for health economic evaluations.

RESULTS

Literature search results and study characteristics

Of 528 records identified, 24 were duplicates and 504 were screened by title/abstract. Of these, 384 publications were excluded, leaving 120 to be screened. Four additional records were identified through citation searching. Of 124 eligible publications, 89 were excluded, leaving 35 for inclusion (Fig 1). Fig 2 provides an overview of the included studies. Study designs and characteristics are shown in Table E2 in the Online Repository available at www.jaci-global.org, and quality assessment is described in the Online Repository as well.

Use of injectable device

Adherence. Adherence was generally reported to be high (see Table E3 in the Online Repository available at www.jaci-global.org). In 2 omalizumab PFS studies, treatment adherence was ≥92%.[32,33] High adherence (proportion not consistently specified) to home-based biologic administration was also reported in 4 mixed biologic studies.[34-37]

Successful self-administration. High proportions of patients reported successful biologic administration (Table E3). Successful administration using an AI was reported at each time point for ≥97% of patients in the phase 3 nonrandomized GRECO study (benralizumab) and ≥95% of patients in a phase 3 single-arm mepolizumab study.[38-41] Successful mepolizumab administration over weeks 0, 4, and 8 was higher in patients with access to an instruction pictogram showing key injection techniques than in patients with no access to the pictogram (95% vs 89%).[38,39] Biologic administration using a PFS was successful in ≥98% of patients in the nonrandomized phase 3 GREGALE study (benralizumab) and 100% of patients in the phase 3 mepolizumab PFS study.[42-44]

Self-administration failures. Self-administration failures were uncommon (≤3% for benralizumab in GRECO and GREGALE;[40,41,44] 0 for benralizumab in AUTO BENRA;[45] 0 in the mepolizumab PFS studies).[42,43,46] In the mepolizumab AI study, ≤3% and ≤5% of patients with and without access to the instruction pictogram, respectively, had self-administration failures.[38,39] One study assessing self-administration of mepolizumab or omalizumab showed a failure rate of 3%.[47] Where reported, most failures were ascribed to user error (Table E3).

Patient perception of self-administration

Patient preference. Preference for at-home biologic administration was ≥43% in all studies (see Table E4 in the Online Repository available at www.jaci-global.org). In the mepolizumab PFS study, 96% of patients preferred at-home administration to in-clinic administration by a health care professional.[42,43,48] Most patients in this study (84%) were 18 to 64 years of age.[42] In the mepolizumab AI study, 43% and 44% of patients with and without access to the instruction pictogram, respectively, preferred self-administration over administration by a health care professional.[38] Patients liked the convenience and ease of use of the AI and the retractability of the PFS needle.[48]

In a multicenter, questionnaire-based study, 45% of patients approved of potentially self-administering omalizumab.[30] With reslizumab, ≥60% of patients reported that at-home administration by a trained respiratory nurse was superior to hospital administration, with perception of safety improving over longer periods of at-home treatment.[49,50] In a multiple biologic study, 79% of patients preferred at-home administration,[51] while several patients in a second study indicated a preference for a clinical setting over home-based biologic administration by a nurse.[35] Another multiple biologic study reported that 97% of patients would

TABLE I. PICOS study selection criteria

Domain	Inclusion	Exclusion
Population	● Patients with asthma treated with biologics, including children and (young) adults	● Patients with asthma not treated with biologics
Interventions	● Licensed biologics, injected by patient and/or at home ○ Benralizumab ○ Dupilumab ○ Mepolizumab ○ Omalizumab ○ Reslizumab ● Other biologics, if relevant	● Inhaled or oral asthma drugs
Comparators	● Licensed biologics, injected by patient and/or at home ● Licensed biologics, regardless of location or person injecting ● No comparator	● Inhaled or oral asthma drugs
Outcomes	● Clinical outcomes ○ Clinical measures (FEV_1, FVC, blood eosinophil count) ○ Asthma symptoms/incidence of asthma exacerbation ○ Correct use ○ Adherence and compliance ○ Proportion with successful self-administration of biologic ○ Total number of AI administrations that failed ○ Reduction in OCS use ○ Safety: AE, SAE, systemic reactions, injection site reaction, self-reported pain, incidence of immunogenicity ○ Other as reported* ● Humanistic burden ○ Patient preferences ○ Patient treatment experience ○ Patient confidence in using the AI ○ Injection fear ○ Quality of life (AQLQ, ACQ, ACT, EQ-5D, SGRQ, SF-36) ○ Other as reported* ● Economic outputs ○ Total costs (sum of direct and indirect costs) ○ Direct costs • Doctor/hospital office • Nurse fees • Biologic Administration fees ○ Indirect costs • Work loss due to medical appointments • Opportunity loss due to medical appointments • Travel time and distance to appointments by medical setting (primary care physician, clinic, etc.) ○ Resource use • Physician visits • Specialist visits • Hospitalizations and length of stay • Emergency department visits ○ Others as reported*	● Outcomes not related to (comparative evidence) self-administration of injectables
Study design	● All relevant (except exclusions)	● Nonrelevant narrative reviews, notes, commentaries, editorials, SLRs

EQ-5D, Euro-QoL-5D; *FVC,* forced vital capacity; *SF-36,* short form 36; *SGRQ,* St George's Respiratory Questionnaire.
*Item listed under clinical, humanistic, and economic outcomes is not restrictive. Outcomes not listed but relevant for these broad topics can also be reasons to include publications.

recommend biologic self-administration to other patients with severe asthma.[52]

Treatment experience. Treatment experience was predominantly positive (Table E4). In AUTO BENRA, patient and physician satisfaction with AI and PFS home-based benralizumab administration was high.[45] In the mepolizumab PFS and AI studies, ≥96% of patients considered mepolizumab moderately, very, or extremely easy to self-administer.[38,42] Most patients completed each injection step with the PFS/AI easily (≥95%), without repeated reference to administration instructions (≥89%).[38,42] In a pooled analysis of the 2 mepolizumab studies, 98% of patients were satisfied/very satisfied with at-home device use.[48] Patients reported that the AI was easy to use/convenient (96%) and that the PFS was easy to use (71%).[48] With reslizumab,

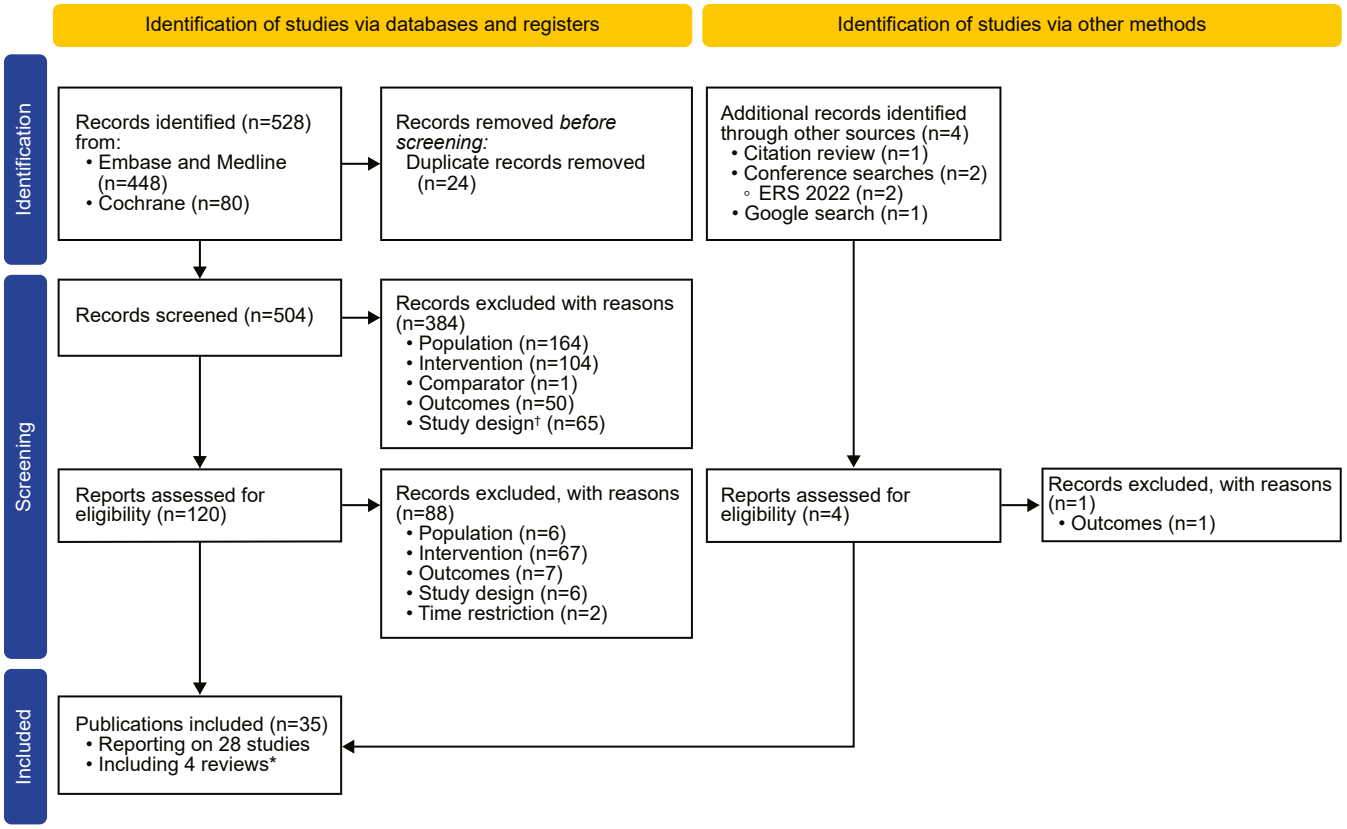

FIG 1. PRISMA diagram for study inclusion and exclusion. *Reviews were not extracted. †Studies excluded due to study design were nonrelevant narrative reviews, notes, commentaries, editorials, duplicates, and so on.

most patients felt safe during at-home administration by a trained nurse, and all said that at-home administration felt as safe as or safer than hospital administration 8 months after at-home initiation.[49,50] In a multiple biologic study, 77% of patients found their biologic self-injections extremely or very easy to complete, and 99% thought that at-home administration was extremely, very, moderately, or a little safe.[52] Frequently mentioned advantages of home administration included flexibility and time saved; disadvantages included lack of contact with clinical staff and concerns about adverse reactions occurring at home.[35]

Confidence in correct use. High proportions of patients reported confidence in biologic self-administration (Table E4). The AUTO BENRA study reported high patient/caregiver confidence in correct home-based benralizumab administration using an AI or PFS.[45] By study end, 98% of patients were moderately, very, or extremely confident in their ability to self-administer mepolizumab at home using the PFS,[42] as were ≥98% of patients in the mepolizumab AI study.[38] In the pooled analysis of mepolizumab studies, 100% of patients were satisfied/very satisfied with the device training they received.[48] Additionally, ≥96% of patients reported that receiving mepolizumab at home was extremely, very, or moderately convenient.[48] Patients self-administering mepolizumab using a PFS reported high levels of confidence in carrying out injections.[46] In the questionnaire-based omalizumab study, potential concerns related to self-injections were injection mistakes (44%), missed administrations (10%), omalizumab half-life (8%), and adverse events (AEs; 26%).[30] In 2 multiple biologic studies, patients reported feeling confident in at-home administration after receiving guided practice at the hospital.[35,47]

Injection fear. Fear of biologic self-administration was uncommon (Table E4). In the mepolizumab PFS study, 75% of patients reported little or no fear about at-home biologic self-administration.[42,43] In the mepolizumab AI study, little or no fear about self-administration was reported by 75% of patients with access to the instruction pictogram and 91% of those without.[38] In the mepolizumab PFS study, the visual analog scale score for anxiety was low.[46] In a multiple biologic study, 99% of patients were not anxious regarding biologic self-administration.[52]

Efficacy outcomes

Lung function. Lung function outcomes were inconsistent across studies (see Table E5 in the Online Repository available at www.jaci-global.org).[33,45,47,53,54] Mean forced expiratory volume in 1 second (FEV_1) improved significantly from baseline after ≥6 months of benralizumab home administration in the AUTO BENRA study, as did mean forced vital capacity.[45] In a nonrandomized comparator-arm study, patients whose switch to at-home mepolizumab self-administration was unplanned saw a slight improvement in mean peak expiratory flow rate after the switch.[53] In contrast, small reductions in peak expiratory flow rate were seen in those whose self-administration was planned. There was no significant difference in peak expiratory flow rate between the 2 groups.[53] In a retrospective observational study assessing omalizumab self-administration with a PFS, 40% of

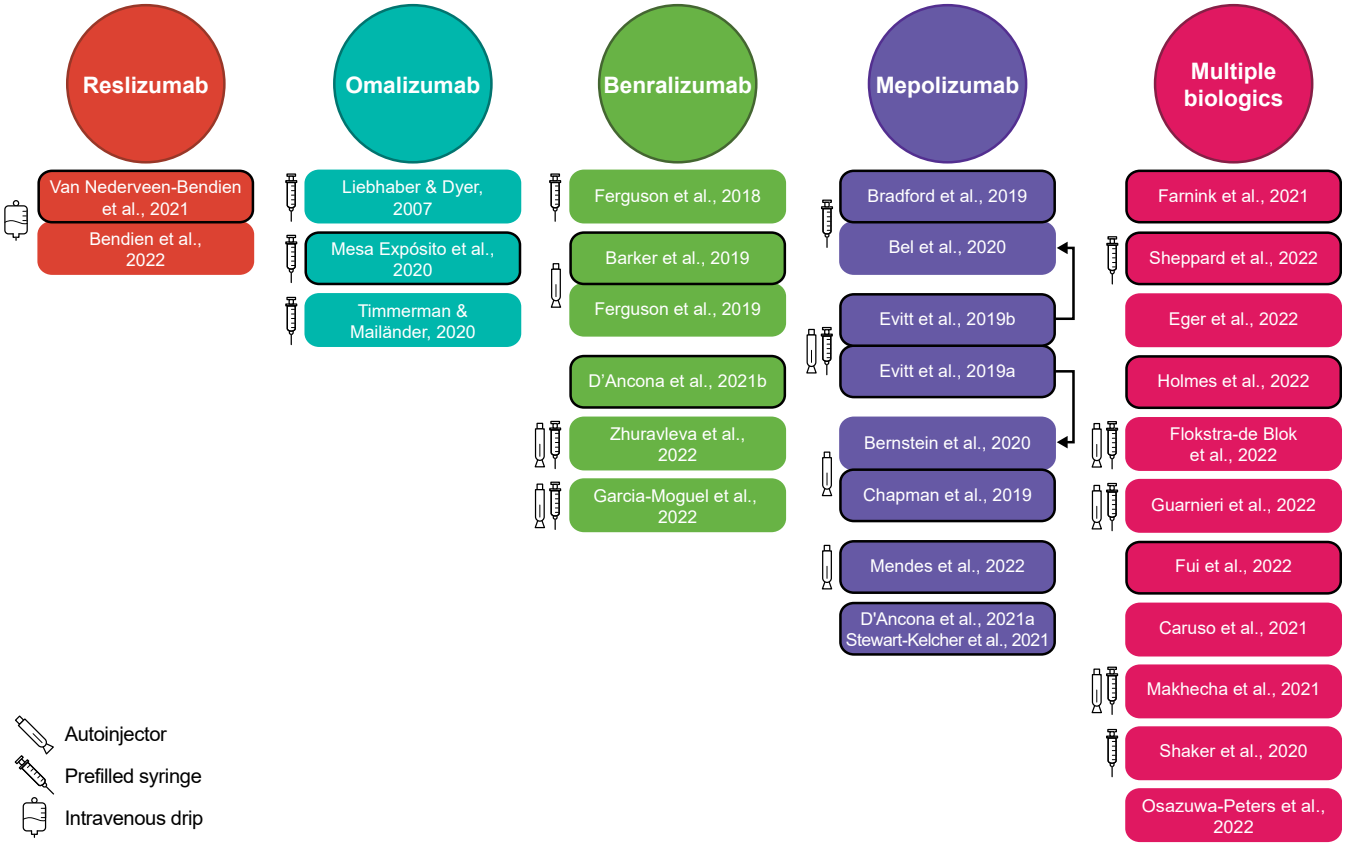

FIG 2. Studies included in SLR. Associated publications are mapped adjacent to each other. Conference abstracts are *highlighted with black frame. Connecting arrow* between studies indicates same data are used. No publications including tezepelumab were identified during searches; tezepelumab was approved in the United States in December 2021.[8]

patients saw improved FEV_1.[33] In 2 multiple biologic studies, there were no significant differences in FEV_1 after 3 to 12 months of at-home biologic administration.[47,54]

Blood eosinophil count. Consistent reductions in blood eosinophil counts were seen across studies (Table E5). Reduced blood eosinophil counts were seen after 20 weeks of benralizumab treatment in GRECO and during the AUTO BENRA study.[41,45] Similarly, blood eosinophil count reductions from baseline were seen after 12 weeks of self-administration in the 2 mepolizumab studies.[38,42] In a multiple biologic study, there was a reduction in blood eosinophil counts 1 year after patients transferred to self-administration.[54]

Asthma control. In general, patients administering biologics at home saw improvement or no worsening of asthma control (Table E5). Improved asthma control, assessed by Asthma Control Questionnaire 6 (ACQ-6) score, was seen in 3 benralizumab studies, 1 mepolizumab study, and 2 multiple biologic studies.[41,44,51,53-56] ACQ-6 scores remained unchanged after reslizumab at-home administration in one study.[49] Improvement in Asthma Control Test (ACT) scores was seen in one benralizumab study.[45] However, there was no difference in mean ACT scores after 3 months of mepolizumab at-home administration in a further study.[46] Additionally, undefined clinical improvement was reported in 100% of patients self-administering omalizumab in an observational study.[32] Finally, improved ACT scores were seen in 2 multiple biologics studies, and in a further study, patients tended to strongly disagree with the statement that switching to at-home administration induced worsening of asthma symptoms.[36,47,57]

Exacerbations while receiving treatment. Exacerbations while receiving treatment occurred in 16% of patients receiving PFS-administered benralizumab in GREGALE, 13-14% of patients receiving PFS- or AI-administered mepolizumab in two phase 3 studies, and 18% of patients receiving PFS-administered omalizumab in another study (Table E5).[33,38,41,42,44] In the AUTO BENRA study, the rate of exacerbations per year fell by 63%.[45]

OCS use. Receipt of OCS while receiving at-home biologics generally decreased across studies (Table E5). During the AUTO BENRA study, 58.3% of patients experienced complete OCS withdrawal, and the mean OCS dose fell for those who continued to receive treatment.[45] Similarly, in the omalizumab study of Liebhaber and Dyer,[32] 5 OCS-dependent patients were able to step down therapy to inhaled corticosteroids only. In one multiple biologic study, OCS was not required throughout the study, and in another, median OCS dose was reduced from 9.5 mg per day at biologic initiation to 0 mg per day by the study's end.[47,54]

Safety outcomes

AEs occurred in 61-66% of patients receiving benralizumab across GRECO and GREGALE[41,44] and 30-35% of patients

receiving mepolizumab in the two phase 3 mepolizumab studies (see Table E6 in the Online Repository available at www.jaci-global.org).[38,42] Serious AEs (SAEs) occurred in 1-6% of patients receiving benralizumab in GRECO and GREGALE[41,44] and 3-5% of patients receiving mepolizumab.[38,42] No omalizumab or reslizumab studies reported AEs or SAEs. Treatment-related systemic reactions occurred in 6-11% of patients across GRECO and GREGALE and included fatigue, headache, and nausea.[41,44] One patient in a phase 3 mepolizumab study reported a systemic reaction.[38] Injection-site reactions occurred in 4-7% of patients across GRECO and GREGALE[41,44] and 2-3% of patients across the two phase 3 mepolizumab studies.[38,42] In one multiple biologic study, small bruises at the injection site occurred in 34% of patients.[52] Pain was reported as an AE in 1-2% of patients across GRECO and GREGALE.[41,44] In the two phase 3 mepolizumab studies that included self-reported pain as a specific study outcome, pain decreased over time and was considered acceptable by ≥91% of patients across all time points.[38,42] The incidence of anti-drug antibodies was low (≤11%) across all four phase 3 studies, and there were no cases of neutralizing antibodies.[38,41,42,44]

HRQoL, resource use, and cost

Improvements in HRQoL were consistently seen with at-home biologic administration. In the AUTO BENRA study, a significant improvement from baseline in mini Asthma Quality of Life Questionnaire (AQLQ) scores was shown after ≥6 months of home-based benralizumab administration.[45] In another study, mean AQLQ score improved from 5.70 at the last hospital administration of mepolizumab to 5.85 after 3 months of at-home administration with a PFS.[46] Improvements in AQLQ score were also reported with at-home reslizumab administration.[49,50] A nonsignificant improvement in mini AQLQ was seen with 3 months of at-home administration in a multiple biologic study.[51] A further 2 multiple biologic studies also showed HRQoL improvements after 3 months of home administration, one in Severe Asthma Questionnaire scores in adults and one in mini pediatric AQLQ scores in children.[36,47]

At-home biologic administration was generally found to be cost-effective. A cost-effectiveness model analysis found that small reductions in medication-related anaphylaxis fatalities in the clinic were offset by greater administration-related costs and increased risk of road traffic accident fatalities.[58] As such, at-home administration of mepolizumab or omalizumab was considered to be cost-effective for many patients. A cost minimization and budget impact analysis found that direct medical costs associated with outpatient benralizumab treatment were lower than hospital administration costs from a Russian health care system perspective.[59]

Resource use during home-based administration was generally found to be lower than with in-clinic administration. In one study, time away from work per year was reported to be between 1 and 10 days for 22% of patients, 11 and 20 days for 23% of patients and >20 days for 8% of patients.[30] Personal expenses associated with in-clinic omalizumab administration were also found to be substantial; €11-20 per administration for 28% of patients, €20-50 for 13% of patients, and more than €50 for 3% of patients.[30] Time saved from not visiting the hospital was a frequently mentioned advantage of home-based administration.[35] In several studies, no or low numbers of patients required hospitalization, physician/specialist visits, or emergency department visits during ≥3 months of at-home biologic administration.[45,47,49] Additionally, one study found that biologic self-administration increased medication adherence and consequently reduced intensive care unit access.[34]

Targeted literature searches outside of severe asthma

Evidence for successful use and good adherence was found in patients with rheumatoid arthritis, multiple sclerosis, systemic lupus erythematosus, and psoriasis (see the Online Repository).

DISCUSSION

This SLR, which to our knowledge is the first to cover self-administration across multiple severe asthma biologics, identified 35 articles collectively assessing the clinical, humanistic, and economic outcomes of biologic self-administration for the treatment of severe asthma. Quality assessment found that results were reported appropriately in all studies; economic evaluation studies performed well for study design, data collection, and analysis/interpretation of results. These articles consistently reported positive patient experiences with biologic self-administration and support consideration of at-home administration where appropriate to reduce the substantial treatment burden associated with severe asthma. Recent reviews focusing on individual biologics support these findings.[60-62] From the perspective of a patient interviewed in parallel with this SLR, the major benefits of biologic self-administration include time gains, more control over day-to-day life, and autonomy/flexibility. The cost benefit of home administration compared with in-clinic administration was also highlighted, given that there are no travel/parking costs or lost workdays. Lost workdays, due to patients' own appointments or accompanying minors to appointments, can have a negative impact on patients'/parents' careers in the long term. Furthermore, traveling to the clinic may disrupt caring responsibilities. For younger patients, at-home administration means less time missed from school or college, and fewer workdays lost for parents. These benefits are similar to the responses obtained in the German survey by Timmermann and Mailander.[30] During the coronavirus disease 2019 pandemic, support with self-administration was reported to wane; however, this is expected to increase with the end of the pandemic. Moreover, home administration during the pandemic enabled patients to remain in isolation while still receiving their asthma medication. These benefits may be relevant during flu season. Patient concerns included the potential that patients in some health care settings, such as the United Kingdom, may have to pay prescription costs when administering their medication at home. Additionally, there was concern that long-term adherence to at-home administration may wane over time, a factor not necessarily accounted for in this SLR. Nevertheless, the patient emphasized the importance of the autonomy gained by at-home administration, given the enormity of the humanistic burden associated with severe asthma.

The SLR found that overall adherence with self-administration was high and most administrations were successful with either an AI (≥95%) or PFS (≥98%). In line with the patient perspective, most patients reported a preference for at-home self-administration over in-clinic administration, noting the convenience and

ease of use of the PFS and AI devices. A high proportion of patients also reported that they would recommend self-administration to other patients with severe asthma. Self-administration was considered moderately, very, or extremely easy by most patients. Confidence in correct device use was high; low numbers of patients reported fear or anxiety. Interestingly, the studies showed a difference between patient opinion before and after at-home self-administration, suggesting a more favorable opinion of self-administration once patients have experienced the process. However, this notion requires further research to confirm, eliminating any selection biases between the different trials. The incidence of injection pain was low, reported as acceptable, and decreased after each injection. This trend for a decrease in pain with increasing experience with self-injections has also been reported in studies of biologics used in other therapy areas, such as adalimumab[63] and belimumab.[64] The most common concerns included making injection mistakes and missing an injection. In line with data from randomized controlled trials and real-world studies, there was some evidence of reduced blood eosinophil counts, improved asthma control, and improved HRQoL with biologic administration. The economic impact of self- and/or at-home biologic administration is not clearly demonstrated within the asthma population. Findings from the targeted literature search in other diseases supported the benefits of at-home administration for patients. Overall, these findings echo those of other recent publications, which similarly suggest that the benefits of self-administering biologics usually outweigh the risks, and could help cement adherence and satisfaction to biologic treatments.[65,66] However, these works warn that a one-size-fits-all approach should not be adopted in all patients with severe asthma; for example, patients with uncontrolled asthma, neurologic disorders, history of nonadherence to prescriptions, or language barriers may not be suitable for self-administraton.[65,66] Menzella et al[65] also stressed that cooperation between the prescribing specialist, primary care provider, and pharmacist is crucial to fully prepare patients for self-administration by identifying the right drug, keeping track of ongoing maintenance treatment, and providing in-depth education on the drug along with detailed training on injecting.

This review had some limitations. Only journal articles and conference proceedings were included; additional relevant information may be published in gray literature or on patient organization or advocacy websites. However, to mitigate this limitation, we included the perspective of a patient with severe asthma. Additionally, tezepelumab was not licensed at the time of the original search and was therefore not included as a named intervention in the PICOS criteria. Next, our quality assessment found that many of the included studies had a relatively low sample size; only 8 studies included more than 100 patients. Nonetheless, the review summarizes the currently available evidence on outcomes after at-home administration of biologic treatment for asthma. It provides important information on the gaps that exist in the literature that need to be addressed to fully characterize the benefits and challenges of self-administration. First, although the efficacy and safety profile of biologics is assumed to be similar regardless of who administers the drug and where it is administered, the SLR did not identify any studies specifically designed to measure treatment adherence among patients self-administering their asthma biologic treatment. Data on long-term adherence to at-home severe asthma medication would be of particular use, given patient concerns that adherence may wane over time. While 2 relevant economic evaluations were identified, further in-depth data on resource use and costs associated with self- and/or at-home administration of asthma biologics are needed to fully understand how at-home administration can save health care provider and patient time. There is a need for data on the patient subgroups most likely to succeed with self-administration of asthma biologics to inform initiation of at-home injections in individual patients. Finally, the geographical reach of the included studies was small, with most conducted in Europe or North America; similar studies in Asia Pacific, the Middle East, Africa, and South America are necessary.

In conclusion, this comprehensive SLR indicates a need for more evidence on aspects of at-home biologic administration, including treatment adherence and cost impact, many of which are particularly important to patients with severe asthma, who have substantial disease burden. Nonetheless, the available literature provides consistent evidence of high rates of injection success and, in many patients receiving benralizumab, dupilumab, mepolizumab, omalizumab, or reslizumab, a preference for self-administration that is based on the time savings, convenience, and autonomy of administering medication at home.

DISCLOSURE STATEMENT

Funded by GSK (study 213094).

Disclosure of potential conflict of interest: S. Boccaletti at the time of the study was a GSK employee. R. Alfonso-Cristancho and W. Ahmed are employees of GSK and hold stocks and shares. A. Eze, L. Badgujar, N. Halfpenny, and D. Heldt are employees of OPEN Health which received payment from GSK to conduct this study. P. Auti and C. Alleman at the time of the study were employees of OPEN Health who received funding from GSK to conduct this study. L. Sergison declares no relevant conflicts of interest.

We thank Raj Kumar Mothe, OPEN Health, for contributions to data analysis and interpretation. Editorial support (in the form of writing assistance, including preparing the report under the direction and guidance of authors, collating and incorporating authors' comments for each draft, assembling tables and figures, and providing grammatical editing and referencing) was provided by Laura Murch, PhD, and Robert Bloxham, PhD, at Avalere Health, and was funded by GSK.

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