Improving asthma care through implementation of the SENTINEL programme: findings from the pilot site

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Shareable abstract (@ERSpublications)
SENTINEL implementation in the pilot PCN provides real-world evidence demonstrating that a guideline including a SABA-free, MART strategy offers a feasible approach to improving ICS uptake and reducing SABA overuse, leading to fewer asthma exacerbations https://bit.ly/3BcpjXR

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Abstract

Aim: Short-acting β_2-agonist (SABA) overuse adversely impacts asthma-related outcomes and the environment. The SABA rEductioN Through ImplemeNting Hull asthma guidELines (SENTINEL) programme aims to reduce SABA overuse through supported implementation of an adult asthma guideline, which advocates for a SABA-free maintenance and reliever therapy (MART)-preferred treatment where appropriate, across six primary care networks (PCNs) in the UK. We present findings on patient/disease characteristics, asthma prescribing patterns and exacerbation rates from the pilot PCN.

Methods: Patients (aged ⩾18 years, prescribed at least one inhaled therapy) and their prescribed asthma treatments were characterised using National Health Service data. Asthma treatments and exacerbations were analysed for three periods: 24–12 months pre-, 12 months pre- and 12 months post-SENTINEL implementation (November 2020–January 2021).

Results: Of the 2571 registered asthma patients, 33.6% (n=864) underwent an asthma review, of whom 44.7% (n=386) were transitioned to MART. Fewer patients were prescribed three or more SABA canisters per year post-implementation in the overall asthma population (45.4% and 46.2% during 24–12 months and 12 months pre-implementation, respectively, and 23.9% 12 months post-implementation), and in the two subgroups: 1) those who had an asthma review (74.5% and 83.6% during 24–12 months and 12 months pre-implementation, respectively, and 26.5% post-implementation); and 2) those transitioned to MART following a review (76.4% and 86.5% during 24–12 months and 12 months pre-implementation, respectively, and 16.3% post-implementation). A higher proportion of patients were exacerbation-free post-implementation in the overall asthma population and in the two subgroups. At least 71.5% of patients transitioned to MART were still prescribed MART 12 months post-implementation, of whom ⩾86.7% were SABA-free.

Conclusion: SENTINEL implementation led to reduced SABA prescribing, increased inhaled corticosteroid uptake and fewer asthma exacerbations. MART was considered appropriate for ∼50% of reviewed patients, with improved prescribing patterns sustained post-implementation.

Introduction

In the UK, ∼5.4 million people were receiving treatment for asthma in 2018 [1], with >77 000 patients experiencing an exacerbation necessitating hospitalisation (2016/2017) [2]. A growing number of patients in the UK are prescribed multiple courses of oral corticosteroids (OCS) [3], increasing the risk of OCS-associated adverse events [4]. Although asthma prevalence has plateaued since the late 1990s, mortality rates remain high in the UK [5], increasing by >33% in the past decade [6].

To control symptoms and reduce exacerbation risk, asthma guidelines recommend a stepwise treatment approach [4, 7], with inhaled corticosteroids (ICS) being the cornerstone of asthma management [4]. Since 2019, the Global Initiative for Asthma (GINA) no longer recommends short-acting β_2-agonist (SABA)-only treatment without concomitant ICS for patients aged ⩾12 years [8]. This reflects both the proven efficacy of ICS-containing controller therapy and mounting evidence that exposure to SABA alone is associated with an increased risk of exacerbations, hospitalisation and mortality [9–11]. Instead, GINA now recommends ICS-formoterol as the preferred reliever for patients with asthma [4], representing a paradigm shift in asthma management and recognising the association of SABA overuse with exacerbations [9, 10] and deaths [12]. Results from the SABA use IN Asthma (SABINA) I study conducted in 574 913 patients with asthma in the UK revealed that 38% were prescribed three or more SABA canisters per year (considered overuse), which was associated with a significant increase in exacerbations and healthcare utilisation, regardless of disease severity [9].

SABA overuse also adversely impacts the environment, with uncontrolled asthma associated with three-fold higher greenhouse gas emissions than controlled asthma, >60% of which is attributable to SABAs [13]. Indeed, SABA use and associated greenhouse gas emissions have been reported to be approximately three-fold higher in the UK than other countries in Europe (Italy, Spain, Germany and France) [14]. Therefore, to reduce SABA overuse and associated carbon emissions, it is essential that clinical practices are aligned with current evidence-based recommendations and tailored to patient needs, with the aim of improving asthma outcomes and alleviating the burden of poorly controlled disease.

The use of ICS-formoterol as maintenance and reliever therapy (MART) [4] provides an effective treatment option for GINA step 3–5-treated patients with asthma [15, 16]. In clinical trials, MART-treated patients achieved a similar level of asthma control, but reduced rates of exacerbations and annual OCS use compared with those receiving fixed-dose ICS/long-acting β-agonist (LABA) regimens with SABA reliever [17–19]. Additionally, MART has the potential to minimise SABA prescribing and related greenhouse gas emissions [20]; however, real-world evidence related to the feasibility and impact of MART-focused asthma guideline implementation is currently lacking.

SABA rEductioN Through ImplemeNting Hull asthma guidELines (SENTINEL) was designed as part of a quality improvement programme to improve asthma outcomes, decrease SABA overuse and reduce the environmental impact of asthma and its treatment through the supported implementation of a local adult asthma guideline including the appropriate use of a SABA-free MART-preferred strategy [21–23]. The SENTINEL programme is ongoing and is being implemented in standard practice across six primary care networks (PCNs) in Hull and East Yorkshire in the UK. Here, we present data on patient and disease characteristics, asthma medication prescriptions and exacerbation rates from the pilot PCN.

Methods

SENTINEL programme design

SENTINEL is an ongoing, collaborative, multifaceted programme that includes five key pillars that were developed through co-design and deployed in participating PCNs (supplementary figure S1) [23]. The programme is being implemented sequentially across six PCNs in Hull and East Yorkshire in the UK (supplementary figure S2). Patients with asthma were prioritised for review by healthcare practitioners based on SABA overuse (three or more canisters) during the prior 12 months, with those prescribed six or more canisters reviewed first. Full details have been published previously [23] and are described further in the supplementary material. Further information related to asthma reviews is available from the SENTINEL Plus website (https://sentinelplus.info/).

Pilot site analysis and data source

The SENTINEL programme was implemented in the pilot PCN between November 2020 and January 2021. Routinely collected National Health Service (NHS) primary care data from the pilot PCN were extracted retrospectively from electronic health records and analysed. Data between November 2018 and January 2022 were analysed for three time periods: between 24 and 12 months pre-implementation (November 2018–October 2019 inclusive), 12 months pre-implementation (November 2019–October 2020 inclusive) and 12 months post-implementation (February 2021–January 2022 inclusive).

Patient population

Patients aged ⩾18 years, with a validated asthma diagnosis in their primary care record, at least one prescription for inhaled asthma medication (SABA, ICS, ICS/LABA, other) in the baseline period (24-month pre-implementation period) and who had been registered for ⩾12 months at a practice in the pilot PCN prior to the end of the implementation period (January 2021) were included in the overall

analysis. Outcomes were reported for all included patients (overall asthma population) and two pre-specified subgroups: 1) patients who received an asthma review during the 3-month implementation period (asthma review subgroup); and 2) patients who received a review and were transitioned to MART during the 3-month implementation period (MART subgroup).

Variables and analysis outcomes

Analysis outcomes included assessment of prescribed medications and asthma exacerbations (defined as short-burst OCS prescriptions at a dose and duration consistent with local practice for asthma exacerbation management, *i.e.* 30–40 mg prednisolone daily for 3–14 days) for the time periods. Prescribed medications included SABA, short-burst OCS and ICS-containing medications (including monotherapy, fixed-dose combinations and MART). The outcome measures, together with the SABA:ICS ratio, were presented visually as interrupted time series (pre-implementation, implementation and post-implementation period). MART was defined as a prescription for an ICS/LABA combination inhaler with a UK or European Union marketing authorisation for maintenance and as-needed use, accompanied by prescribing instructions indicating the approved use. This criterion was assessed by an appropriately qualified respiratory physician on a patient-by-patient basis from prescription records. In the MART subgroup, the proportion of patients who continued to receive MART prescriptions was assessed at 3, 6, 9 and 12 months post-implementation.

An additional exploratory analysis was conducted to assess SABA prescribing in the overall population who did not receive any prescriptions for ICS-containing medications.

Statistical analysis

Descriptive analyses were used to characterise patients according to baseline demographics and clinical characteristics. Continuous variables were summarised as mean±SD and/or median (interquartile range), as appropriate. Categorical variables were summarised by providing frequency and proportions. No formal statistical testing was performed; therefore, any reported changes are numerical in nature. All statistical analyses were performed using SPSS version 27 and R language version 3.6.3.

Results

Patient population

Of the 2571 registered patients with asthma (mean age 54.3 years), 33.6% (n=864) underwent a targeted asthma review during the 3-month implementation period, of whom 44.7% (n=386) transitioned to MART (figure 1). Data on sociodemographic and disease characteristics are presented in table 1.

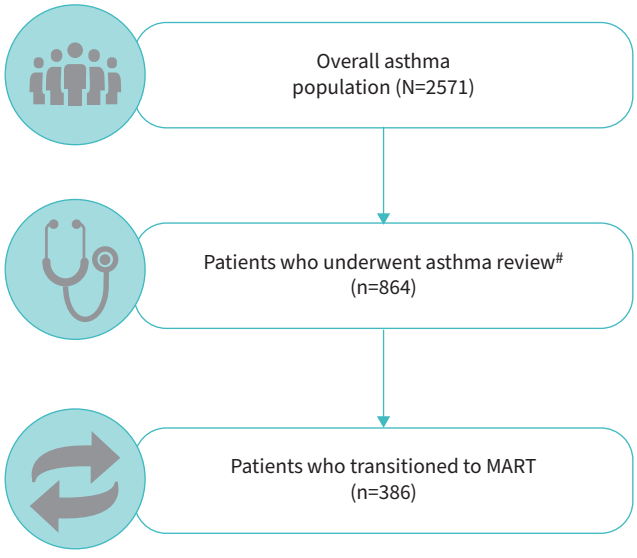

FIGURE 1 Patient disposition during the SABA rEductioN Through ImplemeNting Hull asthma guidELines (SENTINEL) programme. #: targeted asthma reviews based on short-acting β_2-agonist (SABA) overuse during the prior 12 months. An additional 74 reviewed patients who had been prescribed maintenance and reliever therapy (MART) pre-implementation remained on this regimen post-implementation, meaning that 460 (53.2%) reviewed patients were prescribed MART post-implementation.

TABLE 1 Sociodemographics and disease characteristics of patients during the SABA rEductioN Through ImplemeNting Hull asthma guidELines (SENTINEL) programme

	Overall population	Patients prioritised for asthma review during implementation	Patients transitioned to MART during implementation
Patients	2571	864	386
Age (years)	54.3±18.5	56.4±17.2	55.4±17.1
Sex			
Female	1526 (59.4)	538 (62.3)	244 (63.2)
Male	1045 (40.6)	326 (37.7)	142 (36.8)
BMI ($kg \cdot m^{-2}$)[#]	29.4±6.5	30.7±6.8	30.6±6.8
Missing data	90	26	15
Total	2481	838	371
Smoking status			
Current smoker	312 (12.1)	109 (12.6)	62 (16.1)
Ex-smoker	831 (32.3)	334 (38.7)	149 (38.6)
Nonsmoker	1409 (54.8)	417 (48.3)	173 (44.8)
Missing data	19	4	2
Total	2552	860	384
Comorbidity			
Cardiovascular disease[¶]	1028 (40.0)	392 (45.4)	172 (44.6)
Diabetes	288 (11.2)	117 (13.5)	52 (13.5)
Obesity	249 (9.7)	109 (12.6)	54 (14.0)
Frailty	249 (9.7)	77 (8.9)	30 (7.8)
Chronic kidney disease	109 (4.2)	37 (4.3)	15 (3.9)
Osteoporosis	59 (2.3)	20 (2.3)	9 (2.3)

Data are presented as n, mean±SD or n (%). SABA: short-acting β_2-agonist; MART: maintenance and reliever therapy; BMI: body mass index. [#]: patients with BMI >50 $kg \cdot m^{-2}$ or <10 $kg \cdot m^{-2}$ were considered outliers and excluded; [¶]: cardiovascular disease includes stroke, coronary heart disease, hypertension, atrial fibrillation and heart failure.

Prescription patterns for asthma medications pre- and post-implementation

The mean number of asthma medication prescriptions in the pre- and post-implementation periods is summarised in supplementary table S1.

SABA prescribing

Compared with the pre-implementation periods, a reduction in SABA prescribing was observed post-implementation in the overall asthma population and both subgroups. In the overall population, three or more SABA canisters per year were prescribed to 45.4% of patients during 24–12 months pre-implementation, 46.2% during 12 months pre-implementation and 23.9% during 12 months post-implementation (figure 2a). Additionally, 28.7% and 30.3% of patients were prescribed six or more SABA canisters per year over 24–12 and 12 months pre-implementation, with 13.0% prescribed six or more SABA canisters per year during the 12 months post-implementation. Similar SABA prescribing patterns were observed among the asthma review and MART subgroups (figures 2b and c). Within the MART subgroup, the proportion of patients with zero SABA prescriptions (SABA-free) was 14.8% and 8.3% during 24–12- and 12-month pre-implementation periods, respectively, and 71.2% during the post-implementation period.

ICS prescribing

A comparable proportion of patients in the overall asthma population were prescribed ICS-containing medications pre- and post-implementation (figure 3a–c), with a sustained decrease in the SABA:ICS prescription ratio post-implementation (figures 4a, 5a and 6a). Compared with 24–12 and 12 months pre-implementation, the proportion of patients prescribed ICS-containing medications post-implementation increased in both the asthma review subgroup (from 81.7% and 80.7%, respectively, to 84.4%) and the MART subgroup (from 83.9% and 81.9%, respectively, to 97.7%). In the overall asthma population, 996 (38.7%) patients were not prescribed an ICS-containing medication 12 months post-implementation; of these, 68.4% did not receive any SABA prescriptions, while 11.6% and 5.0% were prescribed three or more and six or more SABA canisters per year, respectively, during the same period (supplementary figure S3). Additionally, 15.6% (n=135) and 2.3% (n=9) of patients in the asthma review and MART subgroups, respectively, were not prescribed an ICS-containing medication. Data on monthly mean prescriptions of asthma medications are shown in figures 4b and c, 5b and c and 6b and c.

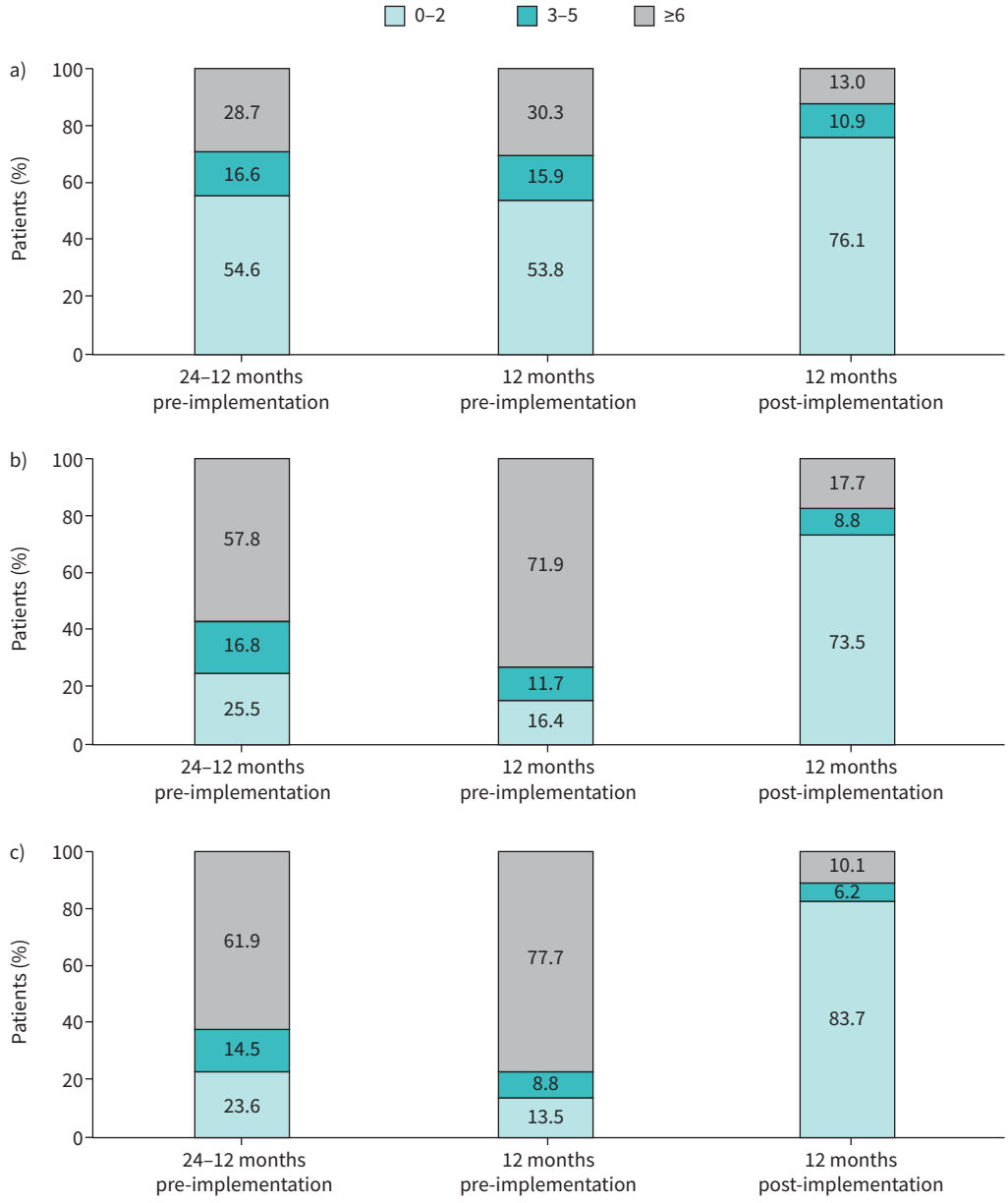

FIGURE 2 Proportion of patients receiving two or fewer, three to five, and six or more short-acting β_2-agonist (SABA) canister prescriptions at 24–12 and 12 months pre-implementation and 12 months post-implementation in a) the overall asthma population (N=2571), b) those who underwent an asthma review (n=864) and c) those who transitioned to maintenance and reliever therapy (n=386) during the SABA rEductioN Through ImplemeNting Hull asthma guidELines (SENTINEL) programme. Percentages may not sum to 100% due to rounding.

MART prescribing

An increase in MART prescribing was observed post-SENTINEL implementation. In the overall asthma population, at least one MART prescription was prescribed to 2.5% and 4.7% of patients during 24–12 and 12 months pre-implementation, respectively, and 25.2% of patients post-implementation. In the asthma review subgroup, one or more MART prescription was prescribed to 2.9% and 6.3% of patients over the 24–12 and 12 months pre-implementation, respectively, and 53.2% of patients post-implementation. Within the MART subgroup, 7.5% of patients who were transitioned to MART during the implementation period were no longer prescribed MART post-implementation. During any given 3-month period post-implementation, ⩾71.5% of patients in the MART subgroup continued to receive MART prescriptions (supplementary table S2), with most of these patients remaining SABA-free (86.7–88.5%) (supplementary figure S4).

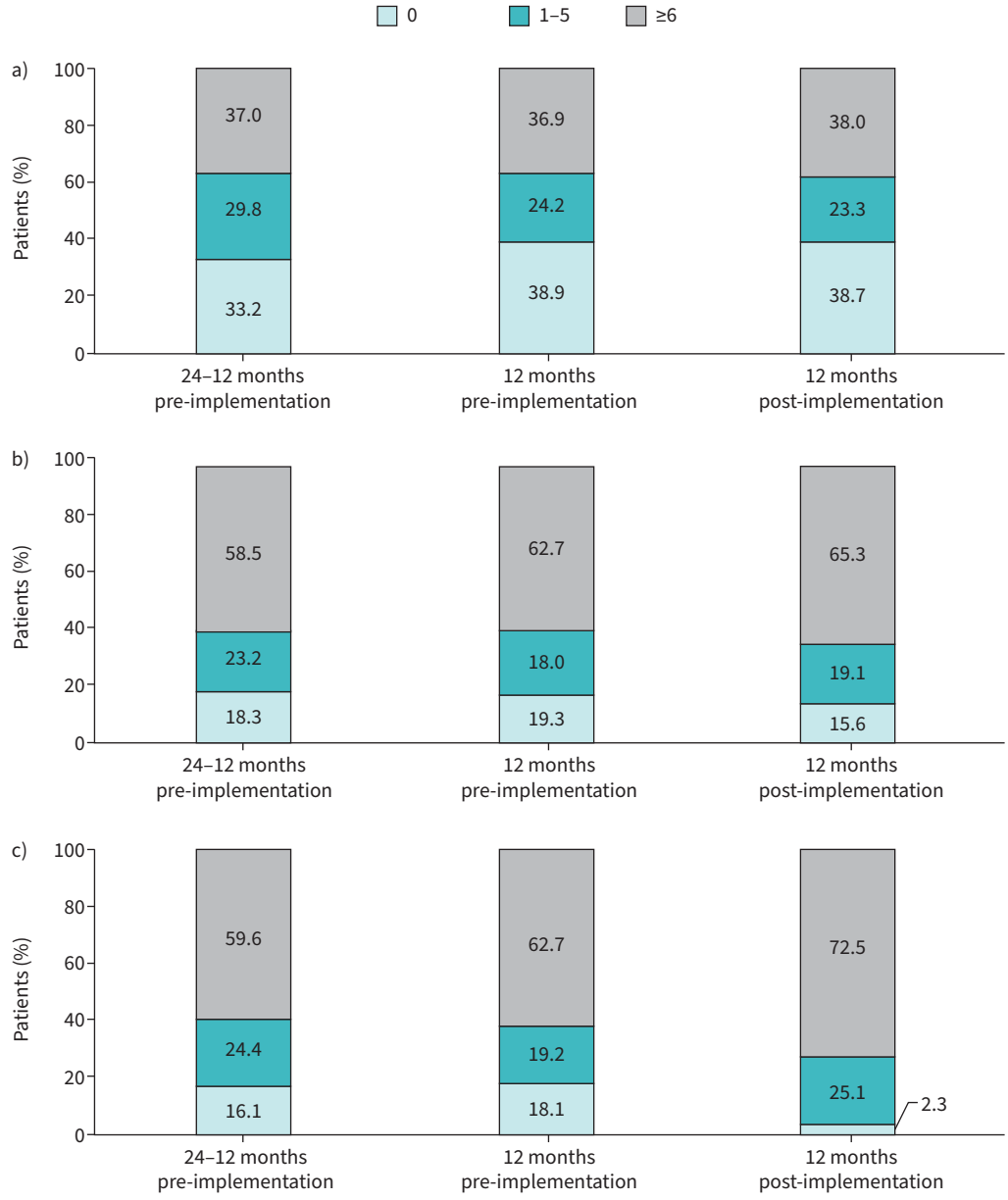

FIGURE 3 Proportion of patients receiving zero, one to five, and six or more inhaled corticosteroid-containing medication prescriptions at 24–12 and 12 months pre-implementation and 12 months post-implementation in a) the overall asthma population (N=2571), b) those who underwent asthma review (n=864) and c) those who switched to maintenance and reliever therapy (n=386) during the SABA rEductioN Through ImplemeNting Hull asthma guidELines (SENTINEL) programme. SABA: short-acting β_2-agonist. Percentages may not sum to 100% due to rounding.

Asthma exacerbations

The mean±SD number of exacerbations experienced by patients in the overall asthma population were 0.28 ±0.97 and 0.22±0.69 per patient during 12 months pre- and post-implementation (supplementary table S3), respectively; this represented an 8.1% decrease in the proportion of patients experiencing one or more exacerbation (figure 7). In the asthma review subgroup, the mean numbers of exacerbations were 0.48 ±0.97 and 0.32±0.82 per patient during 12 months pre- and post-implementation, respectively; this corresponded to a decrease of 29.8% in the proportion of patients experiencing one or more exacerbation. During the same period, the mean numbers of exacerbations in the MART subgroup were 0.44±0.93 and 0.35±0.99 per patient, respectively; this corresponded to a decrease of 19.6% in the proportion of patients experiencing one or more exacerbation.

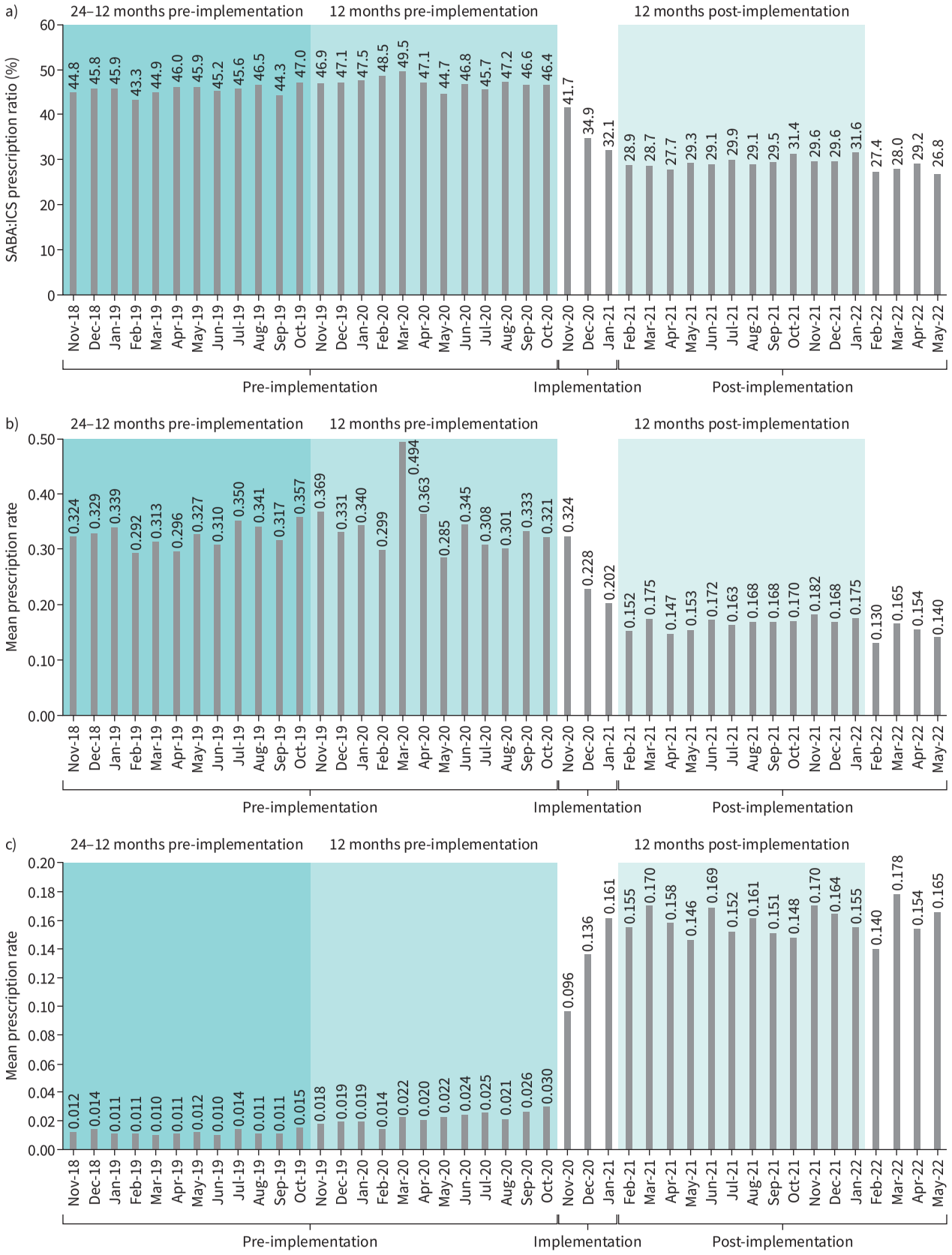

FIGURE 4 Prescribing patterns based on a) short-acting β_2-agonist (SABA):inhaled corticosteroid (ICS) prescription ratio (%), and monthly mean prescriptions per patient from November 2018 to May 2022 for asthma medications in the overall asthma population (n=2571) for b) SABA inhalers and c) maintenance and reliever therapy during the SABA rEductioN Through ImplemeNting Hull asthma guidELines (SENTINEL) programme.

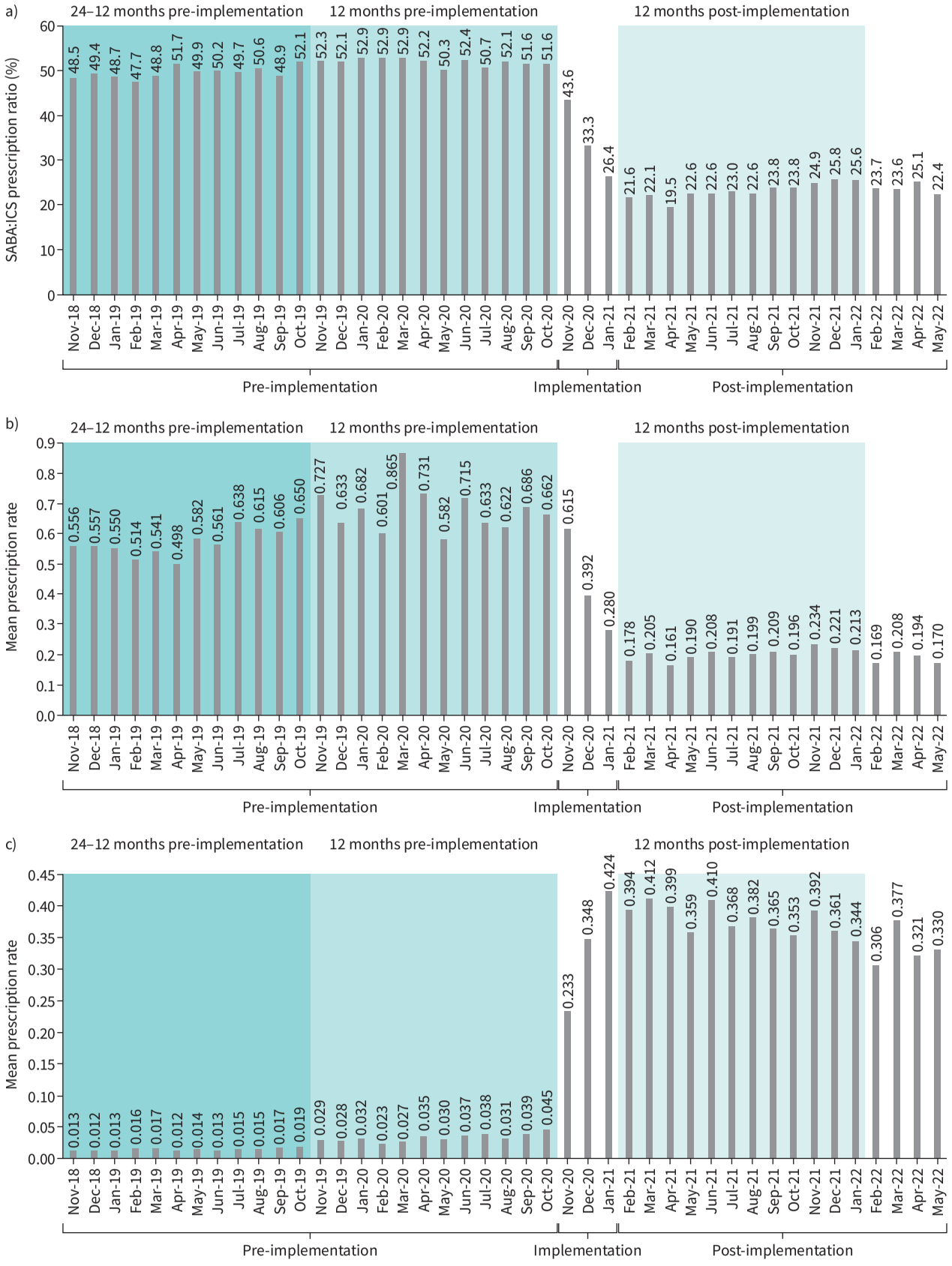

FIGURE 5 Prescribing patterns based on a) short-acting β_2-agonist (SABA):inhaled corticosteroid (ICS) prescription ratio (%), and monthly mean prescriptions per patient from November 2018 to May 2022 for asthma medications among those who underwent targeted review (n=864) for b) SABA inhalers and c) maintenance and reliever therapy during the SABA rEductioN Through ImplemeNting Hull asthma guidELines (SENTINEL) programme.

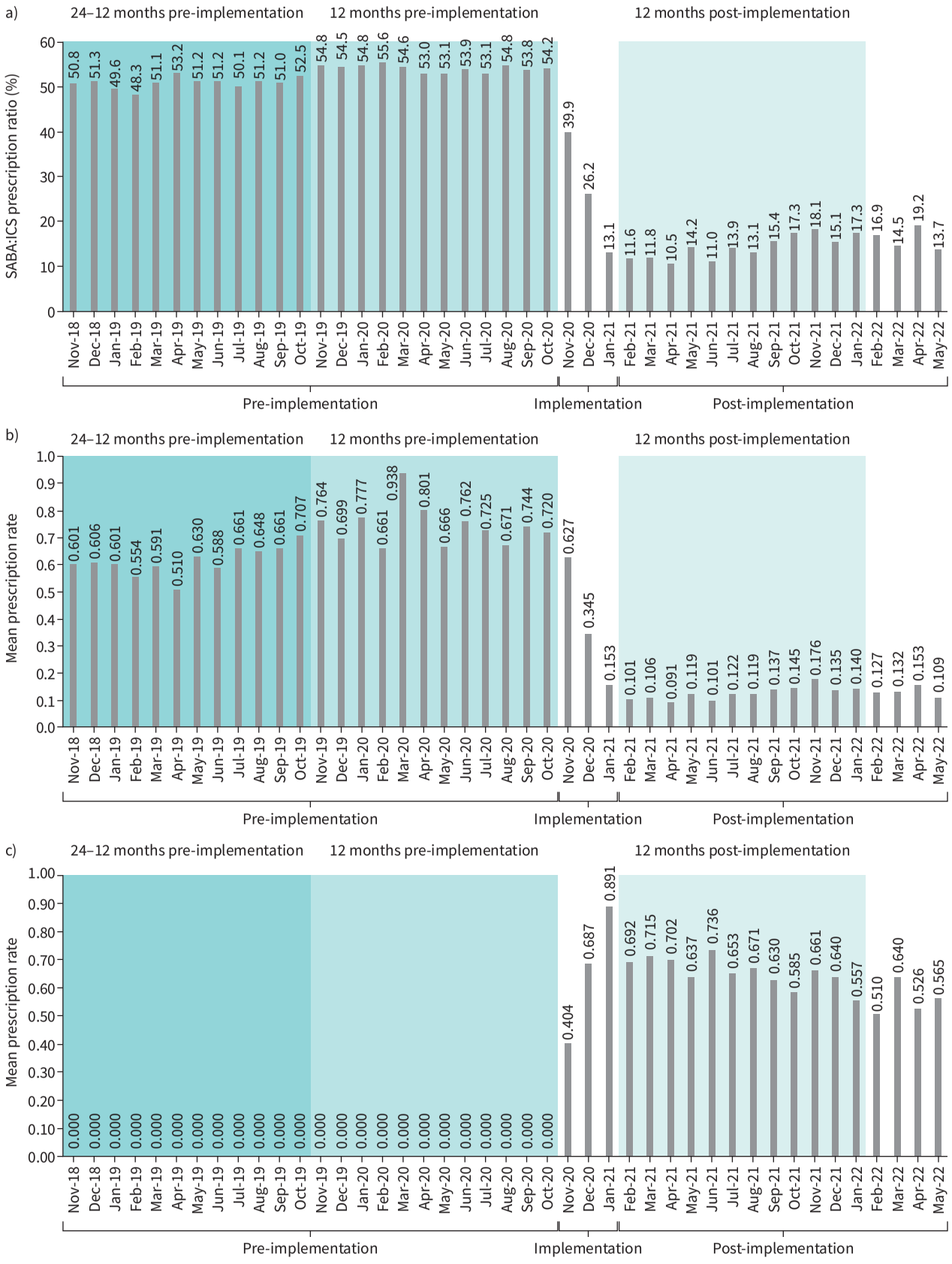

FIGURE 6 Prescribing patterns based on a) short-acting β_2-agonist (SABA):inhaled corticosteroid (ICS) prescription ratio (%), and monthly mean prescriptions per patient from November 2018 to May 2022 for asthma medications among those who transitioned to maintenance and reliever therapy (MART) (n=386) for b) SABA inhalers and c) MART during the SABA rEductioN Through ImplemeNting Hull asthma guidELines (SENTINEL) programme.

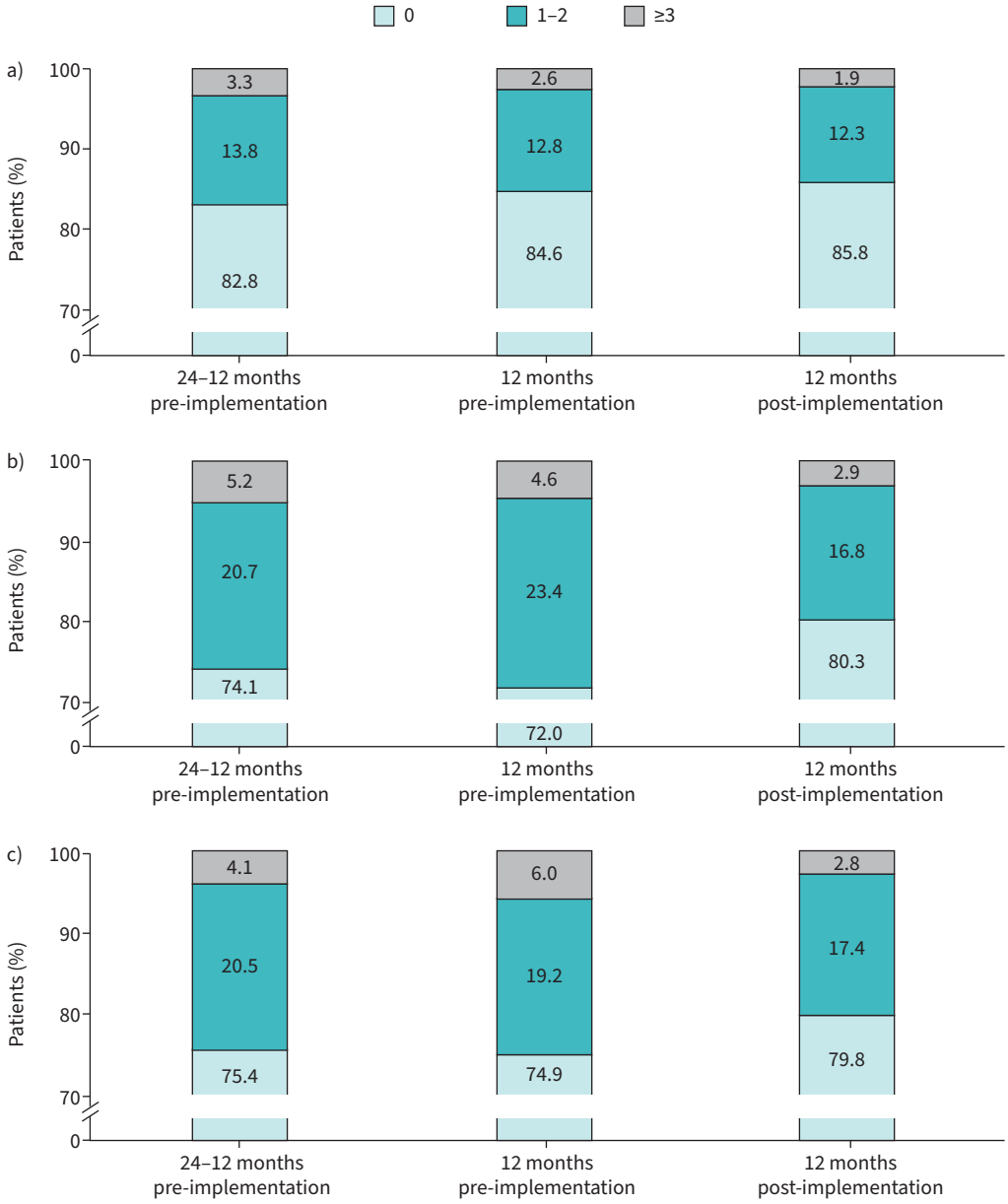

FIGURE 7 Proportion of patients experiencing zero, one or two, and three or more asthma exacerbations at 24–12 and 12 months pre-implementation and 12 months post-implementation in a) the overall asthma population (N=2571), b) patients who underwent asthma review (n=864) and c) patients who transitioned to maintenance and reliever therapy (n=386) during the SABA rEductioN Through ImplemeNting Hull asthma guidELines (SENTINEL) programme. SABA: short-acting β_2-agonist. Percentages may not sum to 100% due to rounding.

The proportion of patients experiencing frequent (three or more) exacerbations during the 12 months pre-implementation was higher in the MART subgroup (6.0%, n=23) than in the overall population (2.6%, n=67) and the asthma review subgroup (4.6%, n=40). The greatest reduction in the proportion of patients experiencing three or more exacerbations post-implementation occurred in the MART subgroup, decreasing from 6.0% to 2.8%, which corresponded to a 52.2% decline compared with the 12 months pre-implementation.

Compared with the pre-implementation period, the proportion of patients with no exacerbations increased post-implementation, particularly in the asthma review subgroup (74.1% and 72.0% during 24–12 and 12 months pre-implementation, respectively, and 80.3% 12 months post-implementation) and the MART subgroup (75.4% and 74.9% during 24–12 and 12 months pre-implementation, respectively, and 79.8%

12 months post-implementation). Data on monthly mean short-burst OCS prescriptions are shown in supplementary figure S5.

Discussion

Findings from >2500 registered patients with asthma from the SENTINEL pilot PCN provide the first real-world evidence demonstrating the feasibility of supported implementation of an adult asthma guideline advocating for a SABA-free MART-preferred strategy in a UK clinical setting. In the pilot PCN, almost half of all patients with asthma were overusing SABA (prescribed three or more SABA canisters per year), placing them at risk of poor asthma-related outcomes [9–11]. A SABA-free, MART-preferred strategy was considered appropriate for and accepted by 44.7% of patients reviewed during the SENTINEL programme and improved real-world prescribing practices, reducing SABA overuse and increasing ICS prescribing. Changes in prescribing practice were accompanied by a reduction in asthma exacerbations in the year following SENTINEL implementation.

The sustained improvement in SABA and ICS prescribing observed post-implementation in a population with levels of SABA overuse that were higher than that observed in SABINA I [9] underscores the potential of the SENTINEL programme to change clinical practice when scaled to a wider asthma population. The underlying drivers of SABA overuse are often complex and multifactorial, which can be influenced by factors related to patients, clinicians and healthcare systems [24, 25]. To better understand the reasons behind SABA overuse in the UK primary care setting, the SENTINEL programme was developed through co-design to explore the barriers to MART-preferred guideline adoption and identify ways to overcome these [23]. Findings from our PCN demonstrated that the five components of the SENTINEL programme are feasible to implement, capable of achieving sustained changes in prescribing practice and, importantly, associated with improved outcomes for patients with asthma.

SABA prescribing in the pilot PCN was in the 98th percentile (*i.e.* one of the highest) in the UK pre-implementation, and reduced to below the national average (41st percentile) in <4 months post-implementation [26, 27]. This coincided with increased MART prescribing, with the proportion of patients in receipt of MART increasing more than five-fold from 2.5% and 4.7% during pre-implementation to 25.2% post-implementation in the overall asthma population.

The low MART prescribing observed pre-implementation highlights a disconnect between current evidence-based recommendations [4] and their subsequent integration into routine clinical practice. The improvement in guideline-concordant prescribing was achieved within a relatively short time frame and sustained for the 12 months post-implementation. Among patients who were transitioned to MART, ⩾71.5% of patients were still receiving one or more MART prescriptions 12 months post-implementation, reflecting continued use of the regimen, with most patients (⩾86.7%) remaining SABA-free during any 3-month period. In addition, compared with the overall population, where patients received a mean of 4.6 ICS-containing medications during pre-implementation, those in the MART subgroup received a mean of 7.88 ICS-containing MART prescriptions in the 12 months post-implementation. These findings suggest that implementing a MART-preferred treatment strategy can increase adequate ICS coverage required across an asthma population while providing the reassurance that patients use MART appropriately, *i.e.* with no evidence of ICS overuse.

Although SENTINEL implementation was accompanied by an increase in ICS prescribing, the proportion of patients in the overall asthma population without any prescriptions for ICS-containing medications remained high (38.7%), suggesting overdiagnosis and/or undertreatment of asthma. In addition, 68.4% of these patients were not prescribed any SABAs, indicating that they were unlikely to have active/symptomatic asthma. Of concern, 11.6% of patients without ICS-containing medication during the post-implementation period were prescribed three or more SABA canisters per year and 5.0% were prescribed six or more canisters per year, reflecting a cohort of symptomatic patients at risk of poor outcomes. Such findings are clearly concerning, as the UK National Review of Asthma Deaths report identified SABA overprescription and insufficient provision of ICS-containing medications as preventable causes of asthma deaths [28]. The proportion of patients transitioned to MART during the implementation period who received no prescriptions for ICS-containing medications during post-implementation was smaller (2.3%); this suggests that few patients discontinue MART once initiated, indicating that it is an effective strategy for ensuring that patients receive an ICS-containing inhaler as supported by GINA [4].

The observed improvements in clinical practice align with the goals of the NHS to reduce SABA prescribing [29] and minimise the environmental impact of inhalers [30]. In 2020, the NHS set an ambitious goal of reaching an 80% reduction in its carbon footprint by 2036–2039, including that from

inhalers [30]. To support PCNs in improving asthma-related prescribing and outcomes, the NHS introduced prescribing incentives with the aim of ensuring that by 2024/25, 90% of patients with asthma will be prescribed ICS-containing medications, with a maximum of 10% prescribed six or more SABA canisters per year [29]. Although attainment of these targets across the UK will require a significant change in clinical and prescribing practices, given the high degree of SABA overuse, our findings suggest that the SENTINEL programme has the potential to support PCNs to achieve these targets. Future analysis of the full SENTINEL programme will evaluate this further.

Importantly, SENTINEL implementation was accompanied by a reduction in asthma exacerbations. As expected, given the high SABA overuse in the PCN, a large proportion of patients had experienced one or more exacerbation in the 12 months pre-implementation (15.4%). Post-implementation, the proportion of patients experiencing one or more exacerbation decreased across the overall asthma population and both subgroups, with the greatest reduction observed in the asthma review subgroup (29.8% reduction compared with 12 months pre-implementation).

Data for the SENTINEL pilot PCN have been reported descriptively for the pre- and post-implementation periods. However, given the potential for factors other than the intervention to impact results and the possibility of regression to the mean [31], we analysed data for 2 years pre-implementation to elicit any pre-existing trends. While the coronavirus disease 2019 pandemic and associated public health measures did appear to impact prescribing patterns in the pre-implementation period (UK lockdown began 5 months into the 12-month pre-implementation period [32]), and the overall asthma population had a lower exacerbation rate during this time compared with the preceding year, asthma exacerbations decreased further following SENTINEL implementation when pandemic-related public health measures had relaxed considerably. While these factors may preclude assessment of the true impact of the SENTINEL project on patient outcomes, our findings demonstrate a reduction in asthma exacerbations post-implementation. The final evaluation of the SENTINEL programme will be undertaken after all six participating PCNs have completed the 12-month follow-up and will provide definitive data on the impact of supported guideline implementation on patient outcomes, including asthma exacerbations and greenhouse gas emissions.

There are additional limitations to this study. Prescription data may not reflect actual medication use and the rates of treatment adherence were unknown. Results from this pilot PCN were descriptive in nature, with no formal statistical analyses performed. Due to the design of SENTINEL, the mean duration of patient follow-up was variable, which was not accounted for in this analysis and could therefore have potentially led to bias. Additionally, as these findings are from a single PCN, results should be interpreted with caution when generalising to the wider asthma population. Nevertheless, this is the first real-world analysis to systematically examine the impact of supported implementation of MART-focused guideline on medication prescription patterns and asthma exacerbations. The ongoing SENTINEL programme will be subject to further assessments examining the impact on asthma-related outcomes, including hospitalisations and emergency department visits, and greenhouse gas emissions. Therefore, the full SENTINEL programme evaluation will demonstrate for the first time how supported guideline implementation tailored to patient needs can impact respiratory care and the associated carbon footprint.

Conclusion

Findings from the SENTINEL programme pilot PCN demonstrate the feasibility of implementing an adult asthma guideline, advocating for a SABA-free, MART-preferred treatment strategy where appropriate in the UK primary care setting. SENTINEL implementation was accompanied by improvements in SABA prescribing patterns and a reduction in asthma exacerbations, with MART being considered appropriate for and accepted by 44.7% of the asthma population. Improvements in asthma care were achieved within a short period of time and sustained throughout the post-implementation period. The SENTINEL programme also provides valuable insights into developing quality improvement programmes that have the ability to successfully integrate evidence-based guidelines into clinical practice.

Provenance: Submitted article, peer reviewed.

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