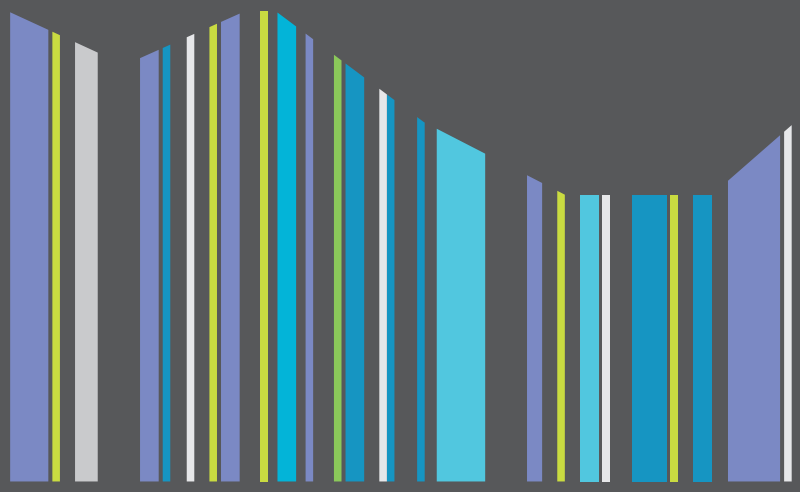

General Practice Prescribing Trends in England and Wales

Annual Review 2016

Cogora

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Contents

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Abbreviations

ACBS	Advisory Committee on Borderline Substances
AED	Antiepileptic drug
BMJ	British Medical Journal
BNF	British National Formulary
BTS	British Thoracic Society
CI	Confidence interval
CCG	Clinical Commissioning Groups
COPD	Chronic Obstructive Pulmonary Disease
DPP	Dipeptidyl peptidase
GBD	Global Burden of Disease
GLP	Glucagon-like peptide
MHRA	Medicines and Healthcare Products Regulatory Agency
NHS	National Health Service
NHSCC	NHS Clinical Commissioners
NIC	Net Ingredient Cost
NICE	National Institute for Health and Care Excellence
SIGN	Scottish Intercollegiate Guidelines network
VNS	Vagus Nerve Stimulation
WHO	World Health Organisation

Executive Summary

This review, the third in our series of annual reviews of English and Welsh prescribing trends, provides an overview of primary care prescribing in England and Wales in the calendar year 2016. The review revealed that, despite a 2.0% rise in the total number of items prescribed in 2016 compared with 2015 (1.17bn items versus 1.14bn items) the total net ingredient cost associated with primary care prescriptions was largely unchanged (-0.6%; £9.53 billion versus £9.58 billion). Similar to previous years, the therapy areas associated with the highest NIC spend were diabetes drugs, respiratory corticosteroids, analgesics, anti-epileptics and oral nutrition products, in descending order. Interestingly, while there was an increase in the total NIC associated with prescriptions for diabetes drugs (+5.2%) and anti-epileptics (+6.8%) compared with 2015, the NIC associated with prescriptions for the other top-five therapy areas was found to have decreased.

For the third year in a row we identified Seretide® as the top-performing branded pharmaceutical in terms of total NIC associated with its prescriptions (£155.52m). However, the brand experienced a decrease in total NIC compared with the previous year. In terms of numerical and percentage increase in total number of units prescribed, the top-branded pharmaceuticals were the anti-epileptic Lyrica® and the diabetes drug Performa®, respectively.*

The total NIC associated with anti-diabetic prescriptions in 2016 was £1.0bn, representing a 5.2% increase compared with the previous year. Similar to last year, the highest NIC associated with anti-diabetics was found in Clinical Commissioning Groups (CCGs) categorised as deprived urban areas with more young people and ethnic diversity, particularly black and Asian (39% of their total NIC compared to 34% of total NIC in the median CCG). As was the case in 2015 and the two years prior to that, the best-performing anti-diabetic product, in terms of total associated NIC spend, was NovoNordisk's NovoRapid® (£81.56m in 2016). Interestingly, Sanofi-Aventis' long-acting insulin Lantus® achieved second place (£75.16m in 2016) despite the launch of a biosimilar competitor (Absaglar®) in 2015. It is noteworthy that all top-five-performing brands for anti-diabetic drugs, in terms of total NIC associated with their prescriptions, were insulins with no DPP-4 or GLP-1 drugs included in the list.

While respiratory corticosteroids were identified as the drug group with the second highest spend, the number of units prescribed appears to have plateaued relative to earlier years (-1.2% compared with 2015). The analysis also revealed an 8.5% decrease in the number of units prescribed generically, which corresponds with official guidelines stating that generic prescribing of inhalers should be avoided – due to the risk of patients being unfamiliar with devices and using an incorrect inhalation technique. Clenil Modulite®, while being the respiratory corticosteroid associated with the highest total NIC in 2016, only saw a 0.4% increase in units prescribed compared with 2015. Conversely, Fostair®, also in the top-five-performing brands in terms of total NIC, experienced a dramatic 50.9% increase in the NIC associated with its prescriptions compared with 2015.

Analgesics was one of three therapy areas in the top-five list that experienced a decrease in total NIC associated with its prescriptions when comparing 2016 with 2015 (-5.5%). This is despite the total quantities prescribed being largely unchanged since the previous year (-0.1%). Approximately one-third (34.6%) of analgesics prescriptions were for opioids, known to have addictive properties. There was an overall increase in prescriptions for strong opioids (+7.9%) while prescriptions for weak opioids remained largely unchanged (-0.6%) since 2015. Morphine was the single most-prescribed opioid (819.5m units), with prescriptions for the drug increasing by 8.6% compared with 2015. In terms of branded analgesics, the highest total NIC was associated with the strong opioid BuTrans®.

*The performance of Lyrica® may well partly be as a result of the previous NHS guidelines which stated that only Lyrica® be prescribed for neuropathic pain.

With a total NIC spend of £572.0 million in 2016, antiepileptics saw the largest margin of increase (6.35%) for the top-five therapy areas compared with 2015 (£535.7m). The Medicines and Healthcare products Regulatory Agency (MHRA) divides anti-epileptic drugs into three categories, with generic prescribing being discouraged for products in category 1 due to concerns for patient wellbeing if switching them to a new brand. The analysis showed that half of Category 1 drugs (49.3%) were prescribed by brand, rather than active ingredient. This represents a slight increase in branded prescribing for this category relative to 2015 (48%).

Oral nutrition, the last of our top-five therapy areas, is a market that is likely to undergo large changes in the coming years, with recent NHS announcements suggesting resources allocated for these products may soon decrease. The 2016 data show a slight decrease in total NIC associated with these (-2.8%) relative to 2015. Most prescriptions (77.8%) were for enteral nutrition products, prescriptions for which had increased relative to 2015 (+9.9%). Three of the top-five branded products were Nutricia brands but the top-performing individual brand was Neocate®, indicated for infants in their first year with an allergy to cow milk (£28.52m). This brand experienced a 13.4% increase in NIC associated with its prescriptions relative to 2015.

Methodology

Source

NHS Digital and NHS Wales record and publish data on prescribing activity in all general practices in England and Wales, respectively. We analysed this data using Cogora's proprietary, in-house Rx software to identify trends in prescription volumes and associated net ingredient cost (NIC), of general practice prescriptions issued between 1 January 2016 and 31 December 2016, as well as 1 January 2015 and 1 January 2015.

Definitions

The volume of prescribed and dispensed drugs was calculated by measuring the quantity of a specific drug, or type of drugs, that was dispensed within the defined period. The quantity was defined as the number of tablets or capsules or, if the formulation is in a liquid or solid form, the millilitres or number of grams.

The cost of pharmaceutical prescriptions was calculated using two separate measurements: the total NIC and the NIC per registered patient. The total NIC means the total NIC associated with prescriptions for any given drug, or type of drugs, within the defined period. The NIC per registered patient refers to the total NIC divided by the number of registered patients in the regions included in the analysis. As such, the NIC per registered patient measurement takes into account any differences in the size of the patient pool of different regions, whereas the total NIC measurement does not.

To compare prescribing activity across therapy areas, Cogora segmented prescription volume and NIC data according to the British National Formulary (BNF) section that individual prescriptions fell into, and by the chemical name of prescribed pharmaceuticals.

Analysis

The NIC per registered patient was calculated by dividing prescribing activity data with patient registration numbers published by NHS (NHS Digital 2016; Statistics and Research Wales 2017). The patient registration data used reflected the total number of patients registered in general practices in England on 1 January 2016 and in Wales on 30 September 2016.

When calculating the NIC per registered patient for England, Cogora used data showing the number of registered patients in each Clinical Commissioning Group (CCG) rather than the number of registered patients in each general practice. This is because NHS Digital suppresses data for general practices with fewer than 100 patients in order to prevent identification of individual patients. Therefore CCG-level data on the number of registered patients were considered more valid.

During analysis, Cogora grouped prescribing data into geographical regions or, for England, into CCG clusters reflecting the sociodemographic characteristics of their patient pool, in line with a grouping previously used by NHS England (NHS England, 2016). When segmenting English data according to geography, Cogora excluded prescription data that the NHS Digital had attributed to a local authority or regional cluster. These prescription data accounted for only 0.4% of total NIC.

Cogora identified the top-performing branded pharmaceuticals in the calendar year of 2016 by determining the branded pharmaceuticals that had the highest total NIC in 2016, the greatest increase in total NIC comparing the calendar years of 2015 and 2016 and, finally, the highest percentage increase in total NIC when comparing the calendar years of 2015 and 2016. When calculating the two latter categories, Cogora only included branded pharmaceuticals prescribed from 1 January 2016 to 31 December 2016, that were associated with a total NIC of £1 million or higher in 2016.

Introduction

Prescription medicine is one of several direct costs that contribute to the total burden different diseases place on the NHS. This cost may be measured using NHS prescribing data which can be used to track changes in clinical practice and offers the basis for forecasting costs to the NHS of managing different diseases (Curtis and Goldacre, 2018). This review, as previous reports in Cogora's series of the annual reviews of primary care prescribing trends, offers an analysis of the prescribing trends in English and Welsh general practices, with this specific report focusing on the calendar year 2016.

Key therapy areas

The five therapy areas with the highest spend in 2016, measured as total NIC associated with their prescriptions, were, in descending order, diabetes, respiratory corticosteroids, analgesics, antiepileptics and oral nutrition. The total NIC attributed to primary care prescriptions for these five areas was £3.3bn, which constituted approximately one-third (35.1%) of total NIC spend on prescriptions when including all therapy areas. Interestingly, in 2015 the same five areas were identified to be responsible for the highest NIC spend, and in exactly the same order (Figure 1).

Figure 1. Therapy areas with the highest total NIC in 2014, 2015 and 2016

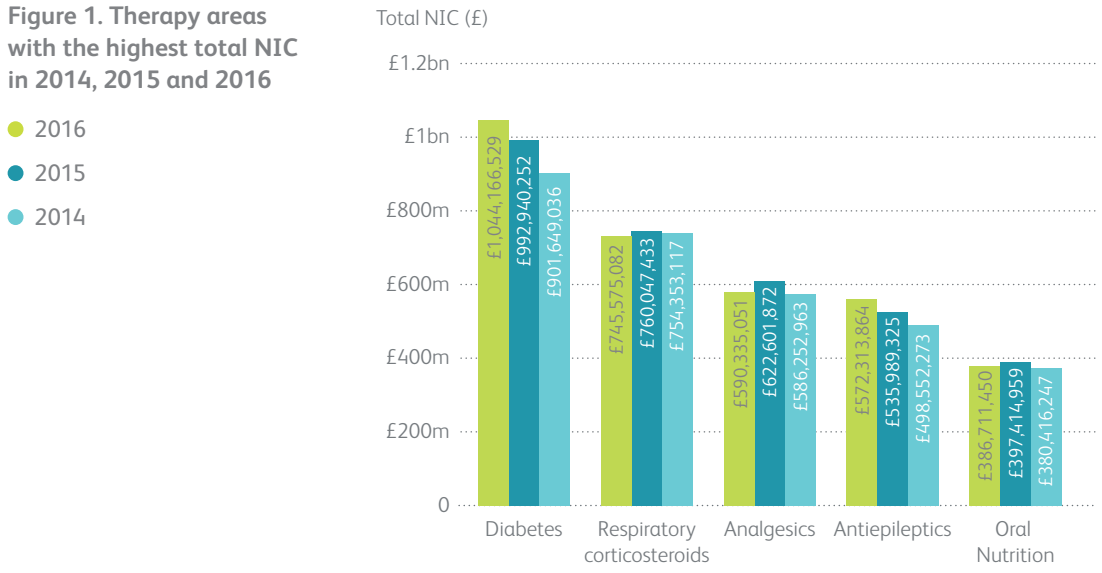
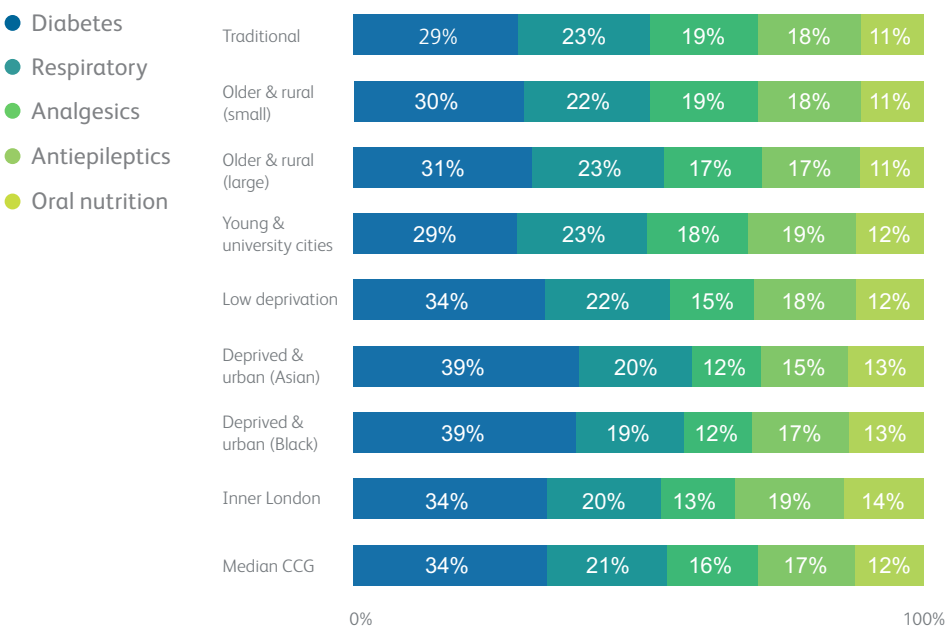


Table 1: Change in total NIC associated with prescriptions for each of the top 5 therapy areas between 2014 and 2015, and between 2015 and 2016.

Therapy area	Change in total, NIC 2015–2016 (%)	Change in total, NIC 2014–2015 (%)
Antiepileptics	6.78%	7.51%
Diabetes	5.16%	10.12%
Respiratory corticosteroids	-1.90%	0.75%
Oral nutrition	-2.69%	4.47%
Analgesics	-5.18%	6.20%

Figure 2: Proportion of total NIC spent on prescriptions for the top 5 therapy areas in CCGs with different sociodemographic characteristics



Traditional: traditional communities with deprived areas and poorer health

Older & rural (small): smaller CCGs with older populations and more rural areas

Older & rural (large): larger CCGs with older populations and more rural areas

Young & university cities: areas with younger adults and university cities

Low deprivation: areas with lower deprivation and better health

Deprived & urban (Asian): deprived urban areas with younger people and ethnic diversity, particularly Asian

Deprived and urban (Black): deprived urban areas with younger people and ethnic diversity, particularly Black

Inner London: Mixed community in inner London

Median CCG: median CCG shown for comparison

The total NIC when including all top five therapy areas prescriptions was largely the same as in 2015 (0.9% increase), in contrast to the 6% increase in their NIC spend between 2014 and 2015. However, there were differences in how spending on different therapy areas changed. Three of the therapy areas (respiratory corticosteroids, oral nutrition and analgesics) had a 1.9% – 5.2% decrease in their NIC spend while, conversely, there was an increase in the total NIC spend associated with prescriptions for anti-epileptics (+6.8%) and diabetes drugs (+5.2%) (Table 1).

Analysing NIC spend in Clinical Commissioning Groups (CCGs) with different sociodemographic and geographical profiles further revealed interesting trends (Figure 2). There was above-average spending on diabetes drugs in deprived urban areas with more young people and ethnic diversity, particularly Asian and black minorities. In both these types of CCGs, spending on diabetes drugs accounted for 39% of total spend, compared with 34% in the median CCG. This was an increase from last year when such regions spent 37% of their total NIC on diabetes drugs, and the median spend on diabetes drugs was 32%. This level of spending on anti-diabetic prescriptions in areas with ethnic diversity aligns with reported ethnic variations in the risk of disease. In the UK, people of South Asian and African or Afro-Caribbean descent are believed to be twice as likely to develop type 2 diabetes than people of European descent (Diabetes UK, 2012).

As was the case in 2015, there were also variations in total NIC associated with analgesics. Similar to 2015, total NIC spend was much higher than average in traditional communities with deprived areas and poorer health, as well as in smaller CCGs with older populations and more rural areas (both spent 19% of their total NIC on analgesics) than it was in deprived and urban CCGs with younger people and ethnic minorities, particularly Asian and black (each spending 12% of their total NIC spend). This is likely driven, in part, by differences in the median age and a higher proportion of older patients in the former types of CCGs.

Regional variance

In 2016, the total NIC associated with all prescriptions issued in all English and Welsh general practices was £9.5bn, a fall of 0.6% compared to the total NIC observed in 2015. North of England was shown to have the highest spend on prescriptions with a total NIC of £2.9bn, corresponding to 30% of overall NIC in England and Wales, despite the same region only housing 26% of all registered patients (Figure 3). The Midland and East had the second highest NIC (£2.7bn) despite having the largest share of total patients (28.7%). Meanwhile, Wales had the lowest share of both total NIC and patients (6.1% of total NIC and 5.2% of total patients).

Figure 3. Regional distribution of total NIC and total number of registered patients

- North
- Midlands and East
- South
- London
- Wales

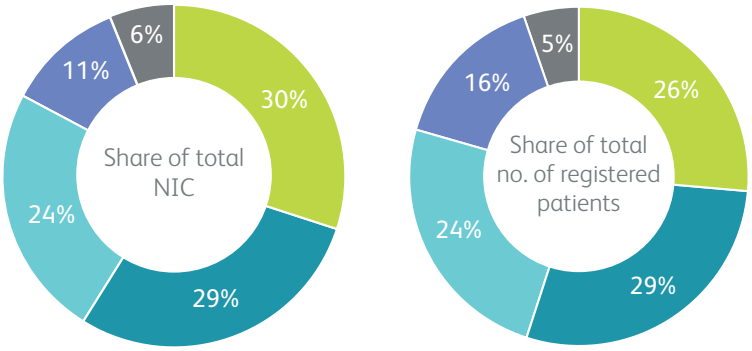
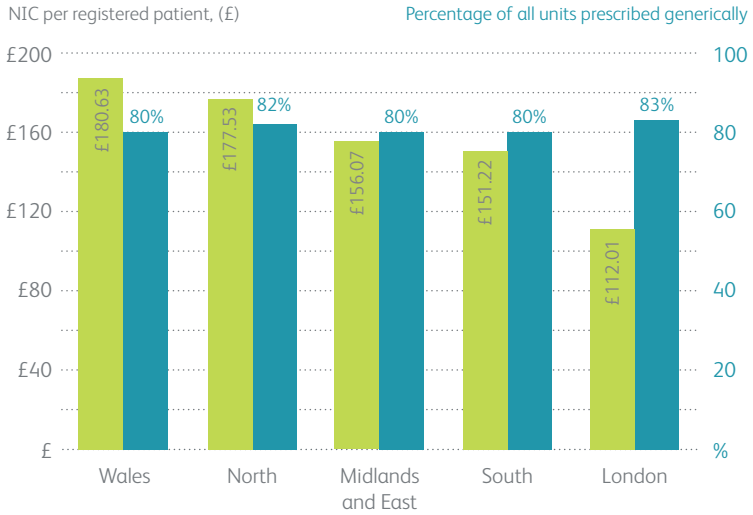


Figure 4. NIC per registered patient and percentage of units that were prescribed generically

- NIC per registered patient
- Percentage of prescriptions made by active ingredients



Spending patterns across the different regions, in terms of the NIC per registered patient, were compared. This revealed that, as was the case in 2015 and 2014, the highest NIC per registered patient in 2016 was seen in Wales (£180.63), whereas London had the lowest NIC per registered patient (£110.01) (Figure 2). In addition to the difference in disease burdens, this may in part be driven by the regions' differing levels of willingness to prescribe generically (Figure 4). In 2016, London had the highest level of generic prescribing (82.5%), while Wales had the joint lowest level of generic prescribing (79.6% of all prescriptions). Both these regions nevertheless showed a decrease from the figures observed in 2015 when the NIC per registered patient was £186.79 for Wales and £113.8 for London.

Top performing branded pharmaceuticals in 2016

Branded pharmaceuticals with greatest share of total NIC

The total NIC associated with prescriptions for branded pharmaceuticals was used to identify the top performing brands in 2016. All top ten branded pharmaceuticals also featured in the top ten list for 2015, with no new entries. The respiratory corticosteroid Seretide® was, for the third year in row, the leading branded pharmaceutical with a total NIC of £155.5m. However, in continuation of the trend first captured in our 2015 review, Seretide® experienced a decrease in its total NIC compared with the year prior. After decreasing by 8.0% in 2015 relative to 2014, it decreased by 5.4% in 2016 from 2015.

Table 2. Top 10 branded pharmaceuticals with the largest share of total NIC in 2016 and their percentage change in NIC relative to 2015

No. (change in rank) since 2015)	Top products	Product details	Total NIC 2016	Change from 2015 (%)
1 (=)	Seretide®	Respiratory corticosteroid	£155,518,979	-5.4%
2 (=)	Symbicort®	Respiratory corticosteroid	£111,153,679	5.5%
3 (+2)	Lyrica®*	Antiepileptic	£93,136,136	49.0%
4 (+3)	Fostair®	Respiratory corticosteroid	£81,590,714	50.9%
5 (-2)	NovoRapid®	Diabetes drug	£81,557,400	3.8%
6 (-2)	Lantus®	Diabetes drug	£75,164,355	1.6%
7 (-1)	NovoMix®	Diabetes drug	£52,539,175	-3.7%
8 (=)	Clenil Modulite®	Respiratory corticosteroid	£49,985,045	-0.5%
9 (=)	Levemir®	Diabetes drug	£42,534,289	-0.4%
10 (=)	Aviva®	Diabetes drug	£39,991,290	-4.5%

**Based on its BNF code, Lyrica® has been classed as an antiepileptic in this report. However, it is noted that it is also indicated for neuropathic pain and generalised anxiety disorder and that the increase in total NIC may be specifically due to increased named prescribing for neuropathic pain*

Branded pharmaceuticals with greatest numerical increase in total NIC

Our analysis also entailed the identification of the branded pharmaceuticals with the highest numerical increase in total NIC in 2016 relative to 2015. For the second year running, Lyrica® experienced the largest numerical increase in NIC. NIC for Lyrica increased by £30.6m after increasing by £61.5m in 2015. The dramatic increase in 2015 was, in part, related to a High Court ruling made in February 2015, according to which all prescriptions of pregabalin (active ingredient) for neuropathic pain must be made under the branded name Lyrica®. It is likely that this effect carried over and contributed to Lyrica's® growth in 2016.

Table 3. Branded pharmaceuticals with the largest numerical increase in total NIC when comparing 2015 and 2016

Product	Product details	Change in total NIC, 2015-2016	Total NIC, 2016
Lyrica®*	Antiepileptic	£30,616,714	£93,136,136
Fostair®	Respiratory corticosteroid	£27,523,656	£81,590,714
Sirdupla®	Respiratory corticosteroid	£22,389,737	£25,227,619
DuoResp Spiromax®	Respiratory corticosteroid	£19,928,822	£26,844,098
Symbicort®	Respiratory corticosteroid	£5,760,483	£111,153,679
Alzain®	Antiepileptic	£5,547,364	£5,922,501
Fostair NEXThaler®	Respiratory corticosteroid	£5,153,343	£7,230,135
Flutiform®	Respiratory corticosteroid	£4,921,397	£19,258,285
Incruse Ellipta®	Bronchodilator	£4,201,642	£5,582,747
Rewisca®	Antiepilpetic	£3,695,348	£3,986,784

**Based on its BNF code, Lyrica® has been classed as an antiepileptic in this report. However, it is noted that it is also indicated for neuropathic pain and generalised anxiety disorder and that the increase in total NIC may be specifically due to increased named prescribing for neuropathic pain*

As was the case in 2015, the top ten branded products with the largest numerical increase were dominated by respiratory corticosteroids – Fostair®, Sirdupla®, DuoResp Spiromax®. Symbicort®, Fostair NEXThaler® and Flutiform®. Of these, Fostair recorded the largest increase, which was also the case in 2015.

Branded pharmaceuticals with greatest percentage increase in total NIC

Further analysis was carried out to identify the top performing branded pharmaceuticals in terms of the percentage increase in total NIC between 2015 and 2016. The top two performers were drugs used in diabetes (Performa® and Toujeo®). Four of the ten drugs in the list were indicated for diabetes, making this the most prominent therapy area in the ranking table (Table 4).

Table 4. Branded pharmaceuticals with the largest percentage increase in total NIC when comparing 2015 and 2016

Product	Product details	% change in NIC	Total NIC, 2016
Performa®	Diabetes drug	3145%	£1,481,008
Toujeo®	Diabetes drug	1730%	£2,191,835
Alzain®	Antiepileptic	1479%	£5,922,501
Trulicity®	Diabetes drug	1449%	£1,822,514
Rewisca®	Antiepileptic	1268%	£3,986,784
Sirdupla®	Respiratory corticosteroid	789%	£25,227,619
Duaklir Genuair®	Bronchodilator	513%	£1,889,030
Agrippal®	Vaccines And Antisera	427%	£2,721,865
Ultibro Breezhaler®	Bronchodilator	419%	£1,194,000
Contour TS®	Diabetes drug	378%	£1,569,543

Diabetes

Introduction

Diabetes presents a serious public health challenge in the UK (Langran and Bataveljic, 2017). It is a chronic disease characterised by high blood glucose (hyperglycaemia) and insulin resistance or deficiency (BMJ, 2017) and is generally categorised into two main types, based on aetiology (Zaccardi and Yates, 2016):

- Type 1 diabetes or insulin-dependent diabetes mellitus, in which the body is unable to produce insulin.
- Type 2 diabetes or non-insulin-dependent diabetes mellitus, in which the body produces insulin but there is an impairment in its ability to respond sufficiently to the insulin.

Type 2 diabetes is the most common form of diabetes, affecting approximately 5–10% of the UK population, with prevalence expected keep rising (McCombie, Taylor and Sattar, 2017). This is driven by a number of factors, including poor lifestyle, with some analyses suggesting that by the year 2034 one in three people in England will suffer from obesity, a major predisposing factor for type 2 diabetes (Diabetes UK, 2016b).

Managing diabetes is not restricted to drug therapy; it also entails patient education, lifestyle changes (exercise, dietary modifications etc.) and monitoring of blood pressure and blood glucose (NICE, 2017a). According to NICE guidelines, metformin is the recommended first-line single-drug therapy for type 2 diabetes. If metformin is contraindicated, then any one of the following three classes of drugs can be used as first-line single-drug therapy: dipeptidyl peptidase-4 inhibitor, sulfonylurea or pioglitazone. In situations where the single-drug therapy has not had the desired effect, an intensified treatment regime involving a combination of metformin with any of the three drug classes mentioned above is initiated. Treatment for type 1 diabetes differs in the type of drug therapy employed, with insulin-based therapy being the only recommended drug-therapy option (NICE, 2017a). Conversely, treatment with insulin-based therapy is only recommended in type 2 diabetes if the aforementioned initial and intensified drug treatments have not had the desired effect (NICE, 2017a).

Prescription trends

There was a 3.6% increase in the total quantity of anti-diabetic drugs prescribed in 2016 relative to 2015. This was likely driven by a reported 4% increase in the UK prevalence of diabetes, with 3,590,501 people living with the disease in November 2016 (Diabetes UK, 2016a) compared with 3,453,034 in 2015 (Diabetes UK, 2015).

The analysis also revealed an increase in the total NIC associated with English and Welsh general practice prescriptions for diabetes treatment. This amounted to £1.0bn in 2016, compared with £992.9m in 2015 (Cogora, 2016), representing a 5.2% increase. This is a continuation of the trend seen in 2015 when there was a 10.0% rise compared with the year 2014 (a rise from £902 million in 2014 to £992.9 million in 2015; Cogora, 2016), which highlights the growing burden of diabetes on the UK healthcare system.

Figure 5. Regional distribution of total NIC for diabetes prescriptions

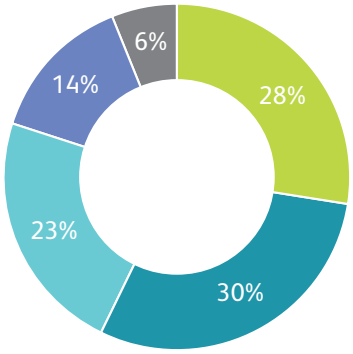
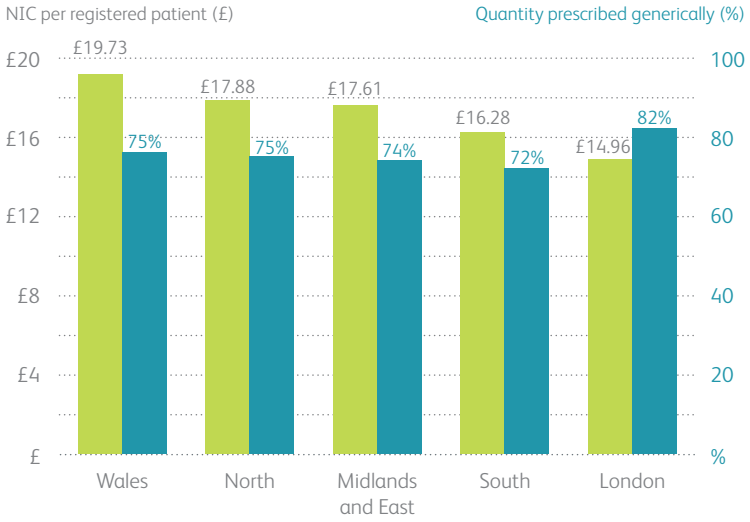


Figure 6. NIC per registered patient for diabetes drugs and percentage of all units prescribed generically



This year-on-year increase in total NIC expenditure is in consonance with broader health expenditure estimations made elsewhere. These predict that by 2035/2036, the cost of diabetes management (including the cost of diagnosis, lifestyle interventions, ongoing treatment and management, and complications) to the NHS may be as high as £20bn. This is estimated to make up a staggering 17% of the total UK health expenditure for that year (Hex et al, 2012).

Similar to 2015, the largest proportion of NIC spend associated with diabetes in 2016 was observed in The Midlands and East England (29.6% of total NIC) while North England was reported to have the lowest proportion (27.7% of the total NIC) (see figure 5). As shown in Figure 6, the highest NIC spend per registered patient was observed in Wales (£19.73), which was also the region with the highest NIC spend per patient in 2015 (£19.08) (Cogora, 2016). Our review further showed that in 2016, London had both the highest level of generic prescribing (82%) and the lowest NIC per registered patient (£14.96). The latter was nonetheless still higher than the corresponding figures observed for 2015 (£14.42) (Cogora, 2016).

CCG Type

Available data suggest that the risk of developing diabetes is influenced by sociodemographic factors, including ethnicity and increasing age, (Gonzalez-Zacarias and Arias-Morales, 2016; GBD 2016 Disease and Injury Incidence and Prevalence Collaborators, 2017). Our review shows this is reflected in NIC spend linked to diabetes prescriptions. CCGs categorised by the NHS as deprived urban areas with younger people and ethnic diversity, particularly black and Asian, spent 39% of of the overall NIC on diabetic prescriptions. This is 10 percentage points more than CCGs categorised as traditional communities with deprived areas and poorer health (29% of overall NIC) and 5 percentage points higher than the median CCG. This suggests that, perhaps unsurprisingly, the impact of socioeconomic factors on the NIC is exacerbated by other diabetes-related risk factors such as race.

Brand trends

The top two performing products were shown to be NovoNordisk's insulin NovoRapid® and Sanofi- Aventis' long-acting insulin Lantus®. Interestingly, unlike US trends for diabetes drugs (Helfand, 2017), no DPP-4 or GLP-1 drugs featured in the top five performers' list.

Prescriptions for NovoRapid® amounted to a total NIC of £81.6m in 2016 compared with £78.6m in 2015 (Cogora, 2016), representing a 4% increase in NIC. As a result, NovoRapid® has now been the top performing branded diabetes product for the fourth year in a row.

Despite Lantus® losing its patent, and the biosimilar competitor Absaglar launching in 2015 with a 15% lower list price (NICE, 2015), Lantus® still managed to protect its market share with a NIC of £75.2m in 2016. This is likely due to several factors, including a lack of automatic substitution for biosimilars and guidance asking clinicians not to switch patients responding well to Lantus (Trent Medicines Information Centre, 2015; Hooker, 2015))

A separate analysis was conducted to identify the top branded products in terms of the highest quantities prescribed. This analysis revealed that all the leading diabetes products were reagent strips, with Aviva® having the highest prescribed quantity (126.0m strips) in 2016. This is a 5% decrease in quantity prescribed compared with 2015 (132.9m strips) (Cogora, 2016). The second highest ranked product with 82.8m strips prescribed in 2016 was GlucoRx®. In 2016, GlucoRx® overtook OneTouch®, which was second most prescribed product last year but sales of which decreased from a total of 66.6m units in 2015 to 61.3m in 2016 (Cogora, 2016).

Figure 7. Branded diabetes drugs / monitoring tools with the highest total NIC

- 2016
- 2015
- 2014

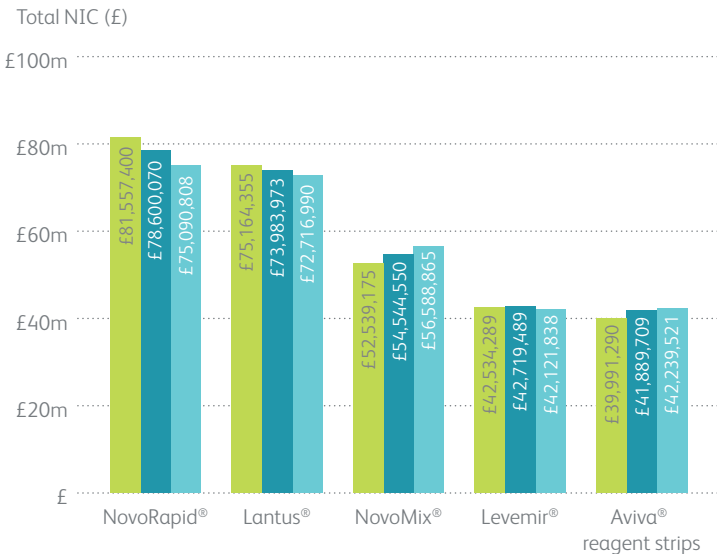
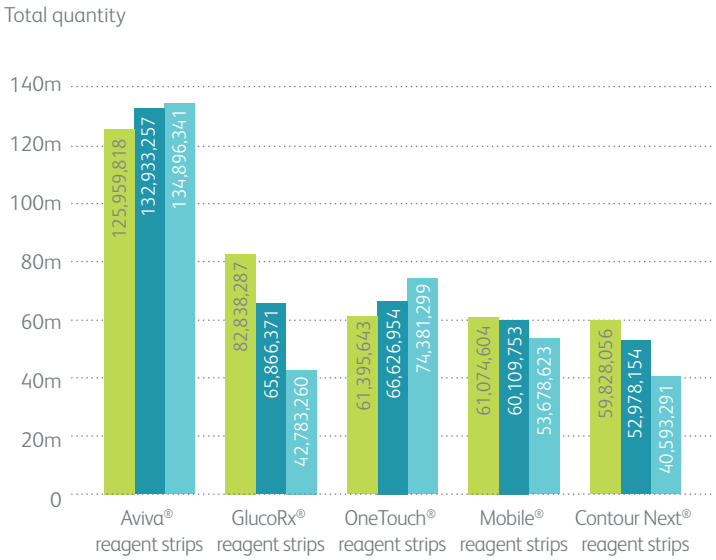


Figure 8. Branded diabetes drugs / monitoring tools with the highest quantities prescribed

- 2016
- 2015
- 2014



Respiratory corticosteroids

Introduction

Corticosteroids are anti-inflammatory drugs that can be inhaled or systemically administered and have a long history of use across multiple disease areas (NICE, 2018; Caparrelli, 2015). They can be used to treat respiratory diseases such as chronic obstructive pulmonary disease (COPD) where inhaled corticosteroids, in combination with long-acting β2 agonists, have been shown to reduce exacerbations and improve quality of life (Finney et al, 2014). This combination therapy is also the recommended treatment for asthma in adults and children over the age of five, according to the British Thoracic Society (BTS) and the Scottish Intercollegiate Guidelines network (SIGN) guideline (SIGN, 2016).

The use of corticosteroids in the treatment of asthma and COPD is of particular interest given the high prevalence of these respiratory diseases. In 2013, more than 12% of the UK population were diagnosed with asthma, which is more than all other lung diseases put together (British Lung Foundation 2018). Asthma presents a large burden for the healthcare system and leads to approximately 75,000 emergency department admissions and approximately 1,200 deaths in the UK every year (Asthma UK, 2016).

The figures for COPD are similarly unfavourable. Comprising emphysema, chronic bronchitis and alpha-1-antitrypsin deficiency, the disease is considered the second most diagnosed lung disease after asthma, with more than one million people diagnosed in the UK in 2016 (Snell et al, 2016). Based on register data from 7,613 general practices in England, the NHS reported the prevalence for asthma and COPD in England to be approximately 5.9% and 1.9%, respectively, in 2015/2016 (NHS Digital, 2016). There is, however, some uncertainty regarding the accuracy of available prevalence data on asthma and COPD (British Lung Foundation, 2018; Mukherjee et al. 2016). A recent review of 27 datasets from national health surveys, NHS records and national administrative data collected between 2010 and 2012 suggests the life-time prevalence of clinician-diagnosed asthma in the UK may be much higher, at 15.6% (95% CI, 14.3-16.9) (Mukherjee et al, 2016).

Respiratory corticosteroids have accounted for the second highest primary care spend on prescriptions, in terms of total NIC, in England and Wales since our first Prescribing Trends report (Cogora, 2016). The large economic burden placed on the NHS by respiratory diseases is further demonstrated by the estimated £3 billion bill for total healthcare resource use and costs associated with asthma and COPD management (Lewis et al, 2016).

Macro trends

In 2016, a total of 29.0m units of respiratory corticosteroids were prescribed in English and Welsh general practices, which corresponded to a total NIC of £745.31m. Although considerable, this number suggests the quantities prescribed and the associated NIC are plateauing or slightly decreasing compared with 2015 (-1.2% units prescribed and -1.9% NIC).

A geographical breakdown of the prescribing data showed that, as was the case in 2015, the North of England had both the highest number of units prescribed (8.7m units) and the highest total NIC spent (31.6% of the total NIC spend on respiratory corticosteroids, corresponding to £235.18m). There was a slight increase in the quantities prescribed in the North of England when comparing 2016 and 2015 (8.6m in 2015, corresponding to a 1.4% decrease) but not as much as the increase in total NIC spend on corticosteroids in this region in the same period (£240.92 in 2015, corresponding to a 2.4% increase) (Cogora, 2016).

Similarly to 2015, Wales was identified as the region with the lowest total NIC spend on respiratory corticosteroids (£51.89m) and lowest quantity of respiratory corticosteroids units prescribed (1.9m). However, Wales still spent more than other regions when comparing NIC spend per registered patient (£16.23), which may be partly driven by lower generic prescribing there than in other regions (Figure 10).

Figure 9. Regional distribution of total NIC for respiratory corticosteroid prescriptions

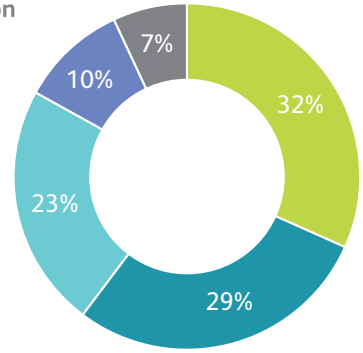
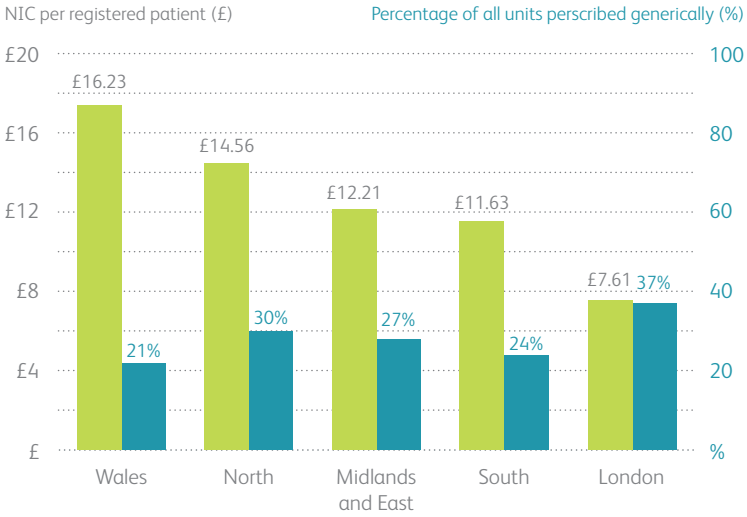


Figure 10. NIC per registered patient for respiratory corticosteroid prescriptions and percentage of all units prescribed generically



The new BTS and SIGN guidelines for management of asthma reiterate that generic prescribing of inhalers should be avoided due to the of risk of patients applying an incorrect technique when given an unfamiliar device (SIGN 2016). Our findings suggest prescribing behaviour and patterns in 2016 have been in accord with these guidelines. Compared to 2015, 2016 data showed a 12.1% decrease in total NIC associated with generic prescribing and a 8.5% drop in the quantity of units prescribed generically. Our review found that, of the 29.0m units of respiratory corticosteroids prescribed in English and Welsh general practices, 27.7% (8.0m) were for generic products, while the corresponding NIC spend on these generic products was £227.93m (30.6% of the total NIC spend on respiratory corticosteroids).

Further analysis revealed London as the region with the highest proportion of the total NIC on generic products (45.1%), while Wales had the lowest (21.9%).

Brand trends

The best-performing brands of respiratory corticosteroids were identified by analysing the total quantity prescribed and the NIC spend associated with these prescriptions. Clenil Modulite®, Seretide 100®, Symbicort®, Fostair® and Qvar® were identified as the top-five performing brands in terms of quantity of prescriptions (Figure 12). Of these, Fostair® recorded the highest percentage increase (50.9%) in quantity prescribed when comparing 2016 (2.8m) with 2015 (1.8m). Meanwhile, Clenil Modulite®, although the most prescribed product in 2016, saw only a 0.4% increase in quantity prescribed, compared with 2015 (5.9m in 2015 and 6.0m in 2016). While not a considerable growth, this, as well as the 0.5% drop in Clenil Modulite® prescribed between 2015 and 2014, (Cogora, 2016) suggest that the quantity of Clenil Modulite® use is approaching a plateau . In contrast, there was a decrease in quantity of units prescribed in 2016 relative to 2015 for both Seretide 100® (-4.0%) and Qvar® (-6.3%).

Four of the top-five performers in terms of NIC spend were the same as the above-mentioned products, albeit in a different order. The top-five performing products listed in order of total NIC spend were Seretide 100®, Symbicort®, Fostair®, Clenil Modulite® and DuoResp Spiromax® (Figure 11). Excluding DuoResp Spiromax®, the products with the greatest growth between 2015 and 2016 were Fostair®, which increased by 50.9% (£81.59m in 2016 compared with £54.07m in 2015), and Symbicort®, which increased by 5.2% (£111.15m in 2016 compared with £105.39m in 2015). DuoResp Spiromax® meanwhile was found to have increased by a remarkable 288.2% (£26.84m in 2016 compared with £6.92m in 2015), however, this large percentage increase was likely due to it only being launched in 2014 (Teva, 2016). Conversely, similar to 2013/2014 and 2014/2015 trends, there was a decrease in NIC spend for Seretide®, which decreased by 5.7% between 2015 and 2016 (from £164.35m to (£155.52m), demonstrating its continued loss of market share.

Figure 11. Branded respiratory corticosteroids with the highest total NIC

- 2016
- 2015
- 2014

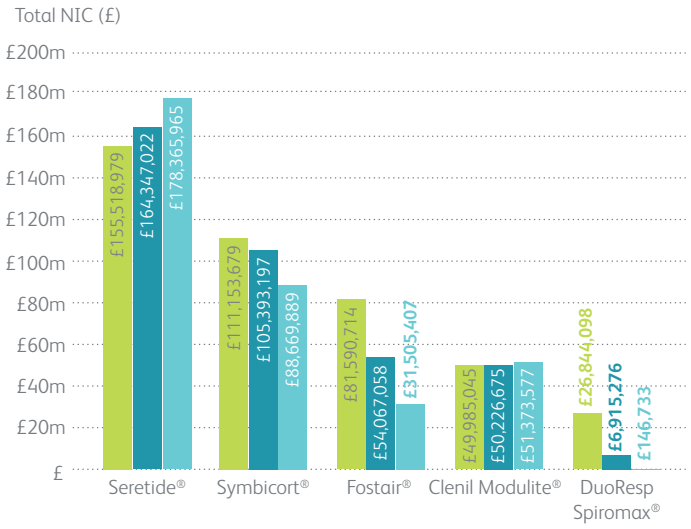
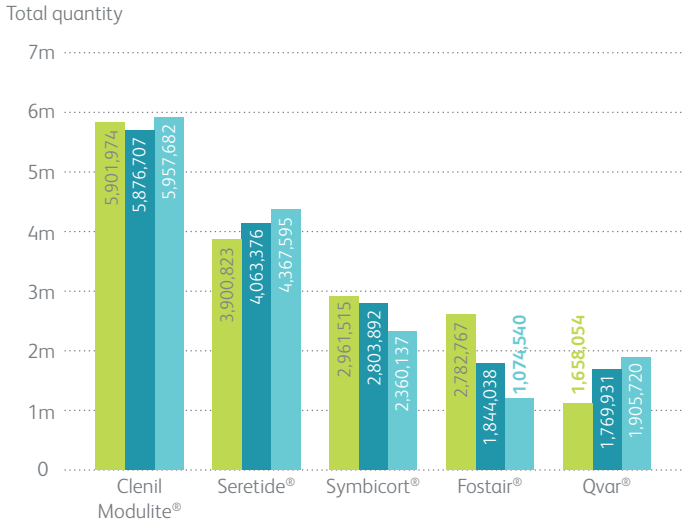


Figure 12. Branded respiratory corticosteroids with the highest quantities prescribed

- 2016
- 2015
- 2014



Analgesics

Introduction

The management of pain, an unpleasant physical sensation that can significantly reduce quality of life (European Medicines Agency, 2016), is particularly challenging due to the different ways in which individuals respond to available treatment options, as well as uncertainty regarding the long-term efficacy of analgesics in chronic cases (British Medical Association, 2017). The BNF sorts analgesics into four subcategories (British National Formulary, 2017):

(1) Non-opioid analgesics and compound analgesic preparations
(2) Opioid analgesics
(3) Drugs for neuropathic pain, and
(4) Anti-migraine drugs.

The BNF generally recommends non-opioid drugs, such as paracetamol and aspirin, for the treatment of musculoskeletal conditions, and opioid analgesics, such as codeine phosphate or dihydrocodeine tartrate, for the treatment of moderate to severe pain. However, it is worth to note that these analgesics have other approved uses that may transcend the above general BNF recommendation (Joint Formulary Committee, 2017).

Considering their addictive nature, current clinical guidelines attempt to restrict prescriptions for opioid analgesics, with paracetamol and ibuprofen often the preferred first-line therapy for mild to moderate pain in adults and children (NICE, 2015). NICE has published clinical knowledge summaries of general analgesia (NICE, 2015) and the use of strong opioids for treating acute pain in palliative cancer care (NICE, 2016). These guidelines have been influenced by the stepwise approach outlined in the World Health Organization (WHO) pain ladder, a framework first published in 1986 to assist physicians in managing cancer pain (NICE, 2016). This pain ladder recommends that, for mild to moderate pain, treatment should commence with a non-opioid (aspirin and paracetamol), before progressing to a weak opioid (codeine). For moderate to severe pain a strong opioid (morphine) can be used (Grisell, 2010; WHO, 2017). The original WHO pain ladder has been modified since its first publication and it no longer recommends the use of weak opioids for the pharmacological management of persisting pain in children (WHO, 2012). Furthermore, while the ladder remains a valid tool for the management of cancer pain, additional modifications have been suggested to account for the development of new opioids and the treatment of different pain types (Grisell, 2010).

While NICE largely follows the WHO pain ladder, there are exceptions. For example, it recommends using morphine as a first-line treatment of pain in adults with advanced and progressive diseases (NICE, 2016). Furthermore, in cases of neuropathic pain, NICE advises offering patients a choice of amitriptyline, duloxetine, gabapentin or pregabalin, all of which have non-analgesic indications (NICE, 2017). However, this does not apply to the treatment of trigeminal neuralgia, where carbamazepine is recommended as the initial treatment. Non-opioid analgesics, including aspirin, paracetamol and non-steroidal anti-inflammatory drugs (NSAIDs), are recommended for the acute treatment of tension-type headache (NICE, 2016), and migraines, where these non-opioids should be used in combination with the anti-migraine compound, triptan (NICE, 2017).

Prescription trends

Spending on analgesics

The total quantity of analgesics prescribed by primary care in England and Wales in 2016 was largely unchanged compared to 2015 (8.04m units in 2015 and 8.03m units in 2016, representing a 0.1% decrease (Cogora, 2016)). However, when compared with 2015, there was a 5.2% decrease in the total NIC which fell from £622.6 in 2015 to £588.9 in 2016 (Cogora, 2016). Similarly, there was an observed decrease in spend per patient across all regions, with the greatest decrease (-£0.89) being observed in Wales and the smallest (-£0.32) in London.

Figure 13. Regional distribution of total NIC for analgesic prescriptions

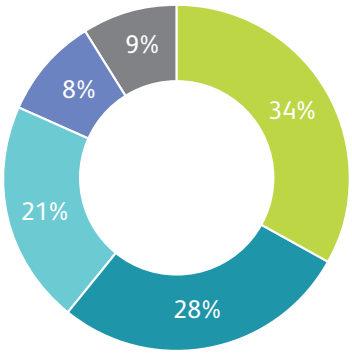
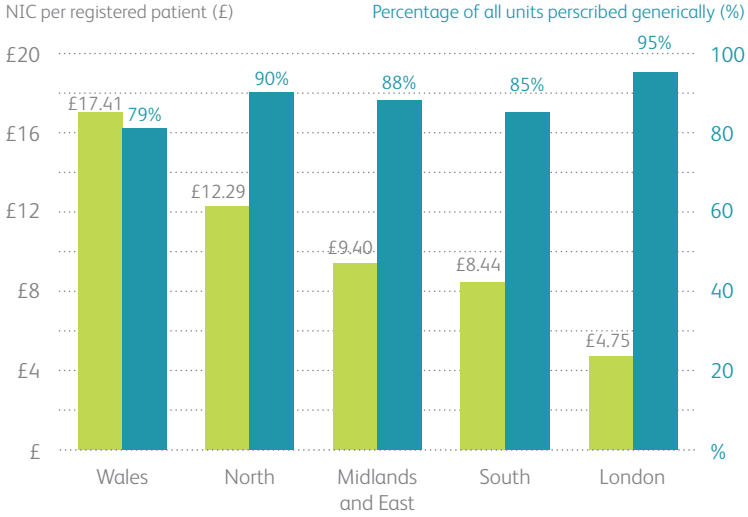


Figure 14. NIC per registered patient for analgesics prescriptions and percentage of all units prescribed generically



Almost nine-tenths (88%) of all analgesic units in 2016 were prescribed by their active ingredient rather than brand name. This is equivalent to 75% (£441.6) of the total NIC spent on analgesics in 2016. A similar trend was also observed in 2015 and 2014, where 89% and 90% of all analgesic prescriptions were issued for an active ingredient rather than a specific product brand, accounting for 79% and 78% of associated total NIC respectively (Cogora, 2015; Cogora, 2016).

The North of England was, for the third year running (Cogora, 2015; Cogora, 2016), responsible for the greatest proportion (33.7%) of the total spend on analgesic prescriptions in England and Wales, as measured by the total NIC associated with analgesic prescriptions. London, on the other hand, remained the region with the lowest proportion of the total NIC associated with analgesic prescriptions (7.7%).

However, this was not the case when expenditure on analgesics was measured in terms of the total NIC per registered patient on analgesic prescriptions. This alternative measure of expenditure showed spending on analgesic prescriptions to be higher (£17.41 per patient) compared with the North of England (£12.29 per patient).

Prescription trends based on analgesic types

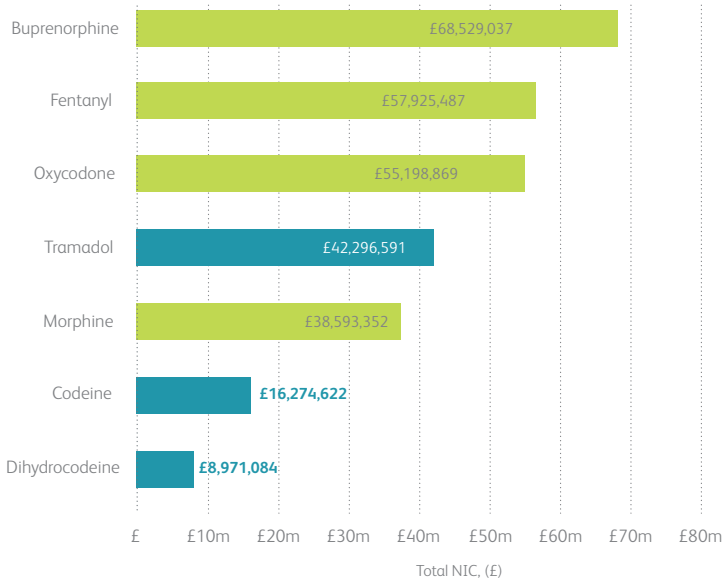
A comparison of all four BNF subcategories for analgesics revealed interesting variations. While most analgesics prescriptions were for non-opioid analgesics and compound analgesics (68.9%), these only accounted for approximately one-third (36.4%) of the total associated NIC in 2016. Conversely, opioid analgesics accounted for approximately half (52.4%) the total NIC associated with analgesic prescriptions, despite being prescribed in just under one-third (29.5%) of cases. Prescriptions for anti-migraine and neuropathic pain drugs remained relatively low in 2016, accounting for just 1.4% and 0.2% of all analgesic prescriptions respectively.

There was an overall increase in prescriptions for strong opioids (+7.9% between 2015 to 2016) and a decrease in prescriptions for weak opioids prescriptions (-0.6%). This represents a continuation of a trend first observed in our review of 2014 prescribing data (Cogora, 2015) and in our most recent report focusing on 2015 data (Cogora, 2016).

As a result, only just over half (56.7%) of all opioid prescriptions issued by English and Welsh general practices in 2016 were for weak opioids, which include tramadol, codeine and dihydrocodeine. The most prescribed single opioid in 2016 was the strong opioid morphine. Prescriptions for morphine totalled 819.5munits, which corresponded to approximately one-third (34.6%) of all opioid prescriptions. This represented a large increase (8.6%) from 2015 when 754.5m units morphine were prescribed (Cogora, 2016). This increase caused prescriptions for morphine to overtake those of the weak opioid tramadol, which had been the single most prescribed opioid in 2015 (Cogora, 2016).

Figure 15. Total NIC for opioid analgesic prescriptions by opioid type*

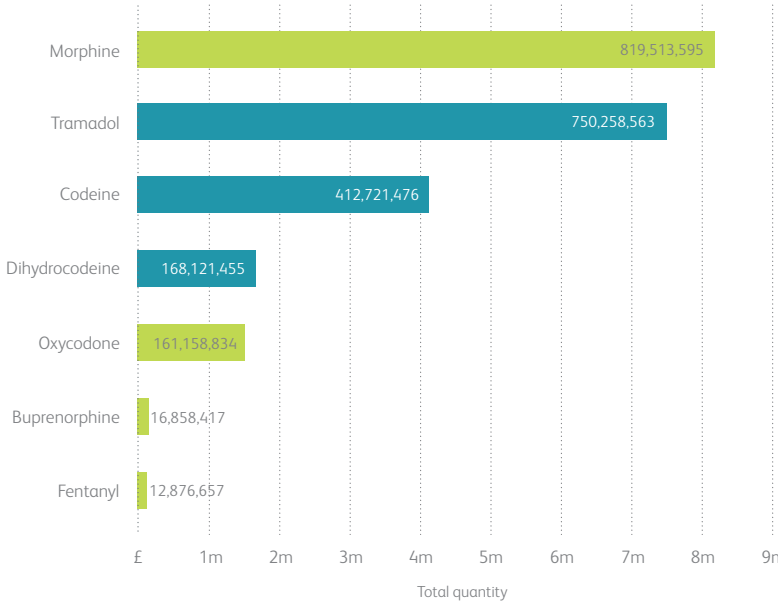
- Strong opioid
- Weak opioid



** Only opioids that accounted for more than 2% of the total NIC associated with opioid analgesics are shown*

Figure 16. Total quantity prescribed by opioid type

- Strong opioid
- Weak opioid



** Only opioids that accounted for more than 1% of the total quantity associated with opioid analgesics are shown.*

Brand analysis

To identify the top-performing products (Figure 17), we measured the total NIC associated with prescriptions for branded analgesics in 2016. As was the case in 2015, the product for which there was the highest NIC spend in 2016 was the strong opioid BuTrans®; its total NIC spend of £15.7m representing a 2.6% increase from 2015 figures (£15.3m). The analysis of total NIC associated with general practice prescriptions also highlighted the strong opioid Longtec® as a brand to watch, with its total NIC increasing by an astonishing 34.6%.

Meanwhile, the weak opioid Zapain® was the branded analgesic for which the highest number of units were prescribed (310.5m units in 2015 and 383.7m units in 2016, representing a 23.6% increase). This represents a continuing positive trend for the brand, which also saw a 22.1% increase in prescriptions between 2014 and 2015 (Cogora, 2016).

Figure 17. Branded analgesics with the highest total NIC

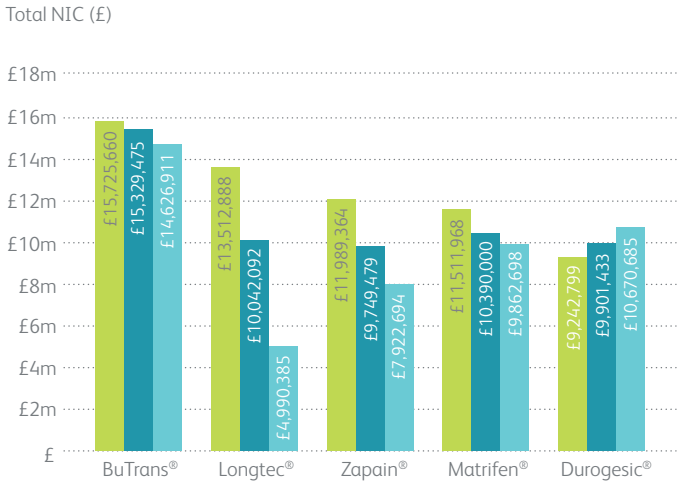
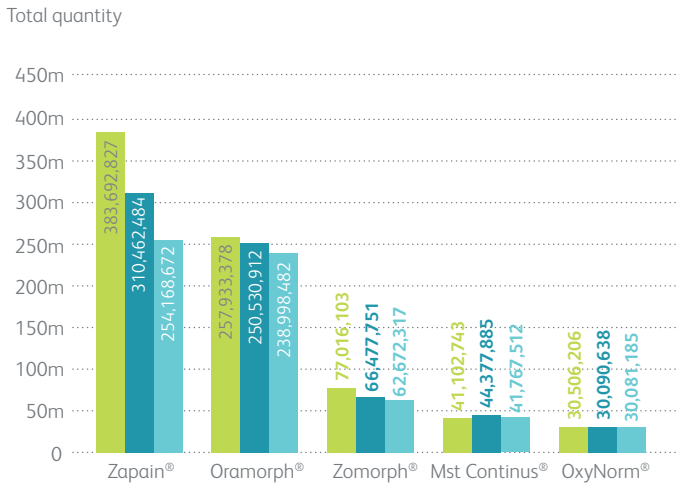


Figure 18. Branded analgesics with the highest quantities prescribed



Antiepileptics

Introduction

According to the World Health Organisation, as of 2018, approximately 50 million people worldwide have epilepsy (WHO, 2018). In the UK, it has previously been estimated that the yearly incidence of the disease is in the region of 50 per 100,000, while annual prevalence estimation is reported to be 5–10 cases per 1,000 (NICE, 2016). This chronic neurological disorder is characterised by a recurrence of seizures resulting from the synchronous and abnormal discharge of cortical neurones in the brain (Brown, 2016). Needless to say, epilepsy can have significant detrimental effects (both clinical and social), particularly when it is not properly controlled. Potential complications include physical trauma, psychosocial problems and in some cases sudden unexpected death (Brown, 2016). NICE estimates that the annual direct and indirect cost to the health service of managing epilepsy could be as much as £2 billion (NICE, 2016). These figures demonstrate the economic burden that epilepsy represents for the health service, with the overall societal burden likely being much higher as the cited number does not take into account other societal costs such as lost work productivity.

Research demonstrates that epilepsy can be adequately controlled in most cases through long-term treatment with anti-epileptic drugs (AEDs) (Getnet and Bekana , 2016; Epilepsy Society 2015). However, such positive prognosis is frequently undermined, not by a lack of treatment options but by poor treatment adherence – reported elsewhere to be as high as 36.4% in the UK (Chapman, Chater and Smithson, 2013). Therapy options besides pharmacological interventions include surgery, the ketogenic diet and Vagus nerve stimulation (VNS) therapy (NICE 2016; Epilepsy Society 2015).

NICE guidelines recommend that initial treatment of patients with epilepsy should be monotherapy, using a single AED (NICE, 2016). Combination therapy is only recommended when attempts at monotherapy with AEDs fails to result in seizure freedom. It is important to add that the decision to initiate treatment with AEDs, as well as which AEDs are selected, is dependent on certain factors including seizure type, co-medication, co-morbidity, the patient's lifestyle and tolerability (Brown, 2016; NICE, 2016).

Prescription trends

Macro trends

The total NIC for AEDs prescribed in English and Welsh general practices in 2016 was £572.0m. This represents a 6.8% increase from 2015 when the total NIC associated with such prescriptions amounted to £535.7m (Cogora, 2016). Similarly, the quantity of tablets prescribed rose from 2.1bn units in 2015 to 2.3bn units in 2016, representing an increase of 7.0%.

Overall, approximately three-quarters (77.6%) of all AEDs prescribed in 2016 were for generic products, a small drop from the 2015 figures for generic prescribing of AEDs (78.1%) (Cogora, 2016). This generic prescribing accounted for over two-thirds (68.3%) of the total NIC, a decrease from both the 2015 (73.9%) and 2014 figures (85.0%) (Cogora, 2016). These results are consistent with global research, which suggests most epilepsy patients prefer the older AEDs. This is despite a reported similarity in efficacy for both newer and older generation AEDs (Egunsola and Sammons, 2017). It is important to note that, apart from seizure freedom, a patient's preference for one particular AED over the other is influenced by an interplay of several factors, including risk of adverse events (Holmes and Jacoby, 2017), type of epilepsy and the availability of monitoring (Egunsola and Sammons, 2017).

Figure 19. Regional distribution of total NIC for antiepileptic prescriptions

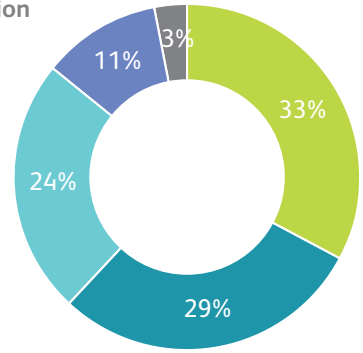
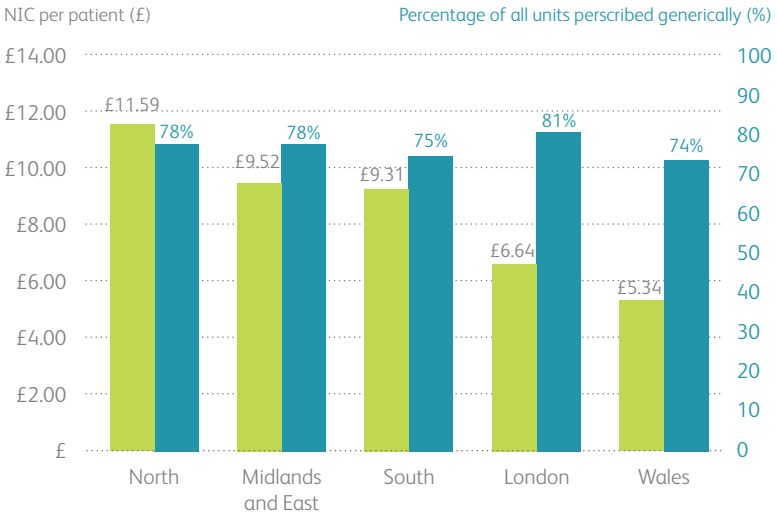


Figure 20. NIC per registered patient for antiepileptic prescriptions and percentage of all units prescribed generically



Regional trends

As part of this review we ranked different regions based on (1) the proportion of the total NIC spent on AEDs and (2) the NIC per registered patient in the region (Figure 19). Similar to 2015, the North of England ranked highest for both these measures (32.7% of total NIC and £11.6 per registered patient), while Wales ranked lowest (3.0% of total NIC and £5.34 per registered patient) (Cogora, 2016). Both these regions also witnessed an increase in the NIC per registered patient relative to the previous year (from £10.94 and £5.01 in 2015, to £11.59 and £5.34 in 2016) (Cogora, 2016).

Furthermore, Wales had the lowest proportion of generic prescriptions in 2016 compared with the other regions (73.8% of all prescriptions) (Figure 20). London was the region with the highest level of generic prescriptions (80.7% of all prescriptions) and was shown to have the second lowest NIC per registered patient at £6.64.

Trends in branded prescribing

We also compared prescribing patterns for drugs falling into MHRA categories 1, 2 and 3 (Table 5). These categories are distinguished thus (MHRA 2013):

- For Category 1 drugs, the MHRA recommends that prescriptions should be maintained on the particular product that was prescribed first. This is regardless of whether or not this is an originator drug or a branded generic.
- For Category 2 drugs, generic prescriptions may be utilized and is based on the clinician's judgement.
- For Category 3 drugs, generic prescriptions are the recommended drug therapy options except in cases where this is contraindicated – for instance patient anxiety or a risk of dosing error if different preparations are taken.

Our review found that half of Category 1 drugs (50.7%) were generically prescribed in 2016 (Figure 21). This represents a slight increase in branded prescribing of Category 1 AEDs relative to 2015 (48%) (Cogora, 2016) and is a continuation of a trend observed in last year's report, which showed a 2% increase in branded prescribing for Category 1 drugs between 2014 and 2015 (Cogora, 2016).

Table 5. Antiepileptic drugs by MHRA category

Category 1	Category 2	Category 3
Carbamazepine	Clobazam	Ethosuximide
Phenobarbital	Clonazepam	Gabapentin
Phenytoin	Eslicarbazepine	Lacosamide
Primidone	Lamotrigine	Levetiracetam
	Oxcarbazepine	Pregabalin
	Perampanel	Tiagabine
	Retigabine	Vigabatrin
	Rufinamide	
	Topiramate	
	Valporate	
	Zonisamide	

As expected, and in line with MHRA guidance, branded prescribing was less common for Category 2 and Category 3 AEDs (32.9% and 10.3% of all prescribed drugs, for Category 2 and Category 3 AEDs respectively). However, we observed a slight increase (+2.3%) in branded prescribing for Category 3 AEDs relative to 2015.

Further analysis was conducted to identify the five branded AEDs with the highest total NIC and quantity prescribed in 2016. In terms of total NIC, the top-five products were, in descending order, Lyrica®, Epilim®, Keppra®, Lamictal® and Tegretol® (Figure 22). However, it is noted that the use of Lyrica® for the treatment of other conditions, including neuropathic pain and generalised anxiety disorder may have contributed to its high total NIC in 2016 (NICE, 2018). Although these same five products were also found to be the top-five in terms of quantity prescribed, they ranked in a different order there with Epilim® being the most prescribed product followed by Tegretol®, Lyrica®, Keppra® and Lamictal® (Figure 23). These are the same five products that were identified as the top-ranking products in 2015, both in terms of total NIC and quantities prescribed (Cogora, 2016), demonstrating their strong hold on the market.

Lyrica® showed the highest NIC increase compared with the other four products mentioned above. Total NIC associated with Lyrica® prescriptions increased from £62.5m to £93,136,136 – this represents a dramatic 49% increase. This increase is likely, in part, due to previous NHS England guidance stipulating that only Lyrica® be prescribed for neuropathic pain (NHS England 2015). Therefore, future analyses may wish to investigate the effect of new NHS guidance that direct general practitioners to switch back to prescribing generic pregabalin for the treatment of neuropathic pain (Matthews-King, 2017), on the overall prescribing for Lyrica®. In terms of quantity prescribed, Epilim® ranked highest (202.1m units prescribed) but remained second to Lyrica® in terms of total NIC.

Figure 21. Percentage of units in MHRA treatment Categories 1, 2 and 3 that were prescribed by brand and generically

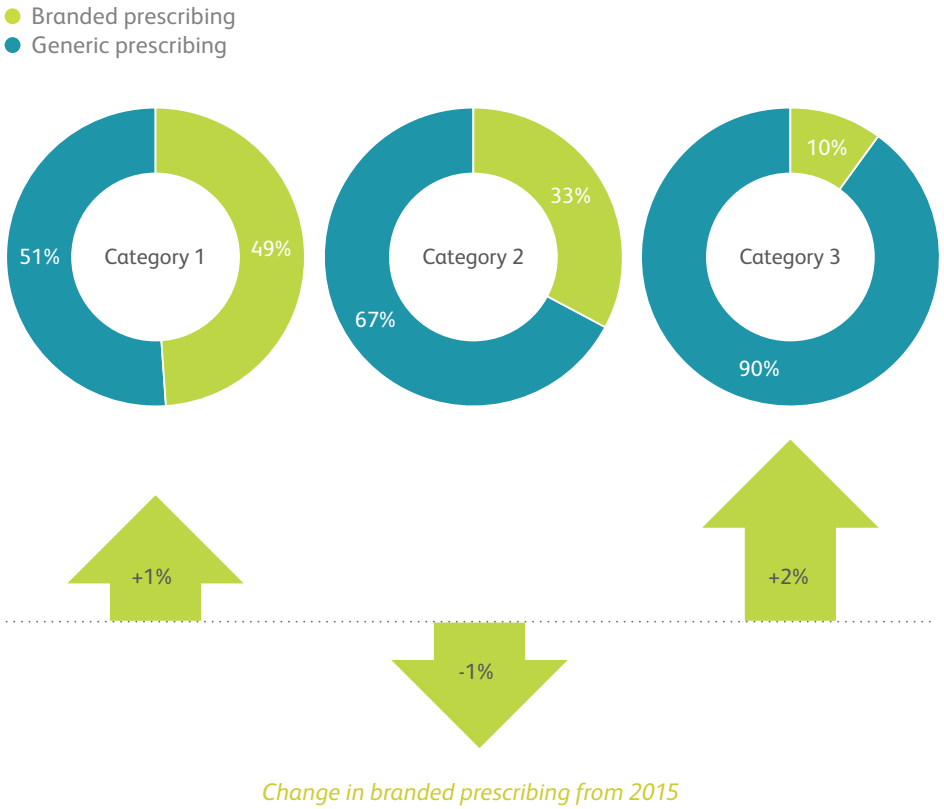


Figure 22. Branded antiepileptics with the highest total NIC

- 2016
- 2015
- 2014

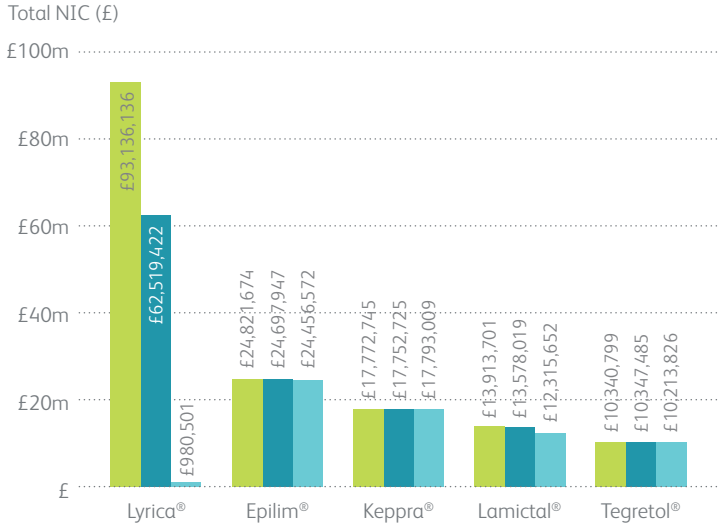
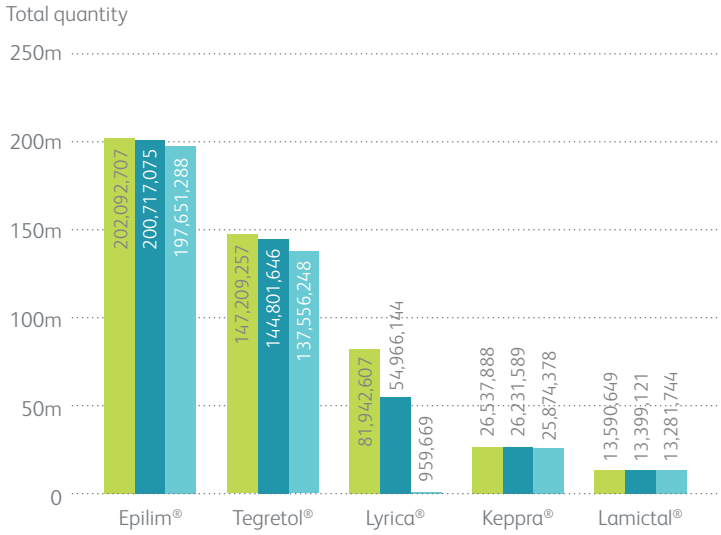


Figure 23. Branded antiepileptics with the highest quantities prescribed

- 2016
- 2015
- 2014



Oral Nutrition

Introduction

Special diets comprise artificial nutrient formulations, food replacements for children who cannot tolerate or metabolise certain ingredients and modified foods where a particular constituent, such as gluten, has been removed. Foods approved by the Advisory Committee on Borderline Substances (ACBS) are regarded as drugs for particular conditions and may be prescribed within the NHS (Joint Formulary Committee, 2017b). The BNF section dedicated to oral nutrition contains subsections for nutrition in special diets and enteral nutrition.

There have historically been doubts about how prevalent food intolerance is in the UK due to a lack of available data and a reliance on studies based on reported symptoms (Food Standards Agency, 2001), which research suggests yield a much higher prevalence rate than those based on clinical diagnoses alone (Dean, 2006; Hadley, 2006). A 2012 survey on the global patterns and prevalence of food allergy reported the clinically proven prevalence of food allergy (based on oral food challenges) among preschool children in the UK to be 4% (Prescott, 2013). While there is an absence of high-quality prevalence studies on food allergies, healthcare utilisation data highlights the burden of these allergies on the healthcare system, with the Health and Social Care Information Centre reporting a 6.4% increase in hospital admissions for food allergies in England in 2014 compared with the figures observed in the previous year (NICE, 2015).

Due to budget constraints, and in spite of the aforementioned burden, the resources allocated to prescriptions for special diets may soon decrease. In 2015, the NHSCC released a list of ten products available over the counter that were considered to be “low priority” to the NHS and that, if no longer reimbursed and provided on a prescription basis, could free up money to be reallocated to “high priority areas” such as mental health and primary care (NHSCC, 2017). As a result, prescriptions for two product groups including some gluten free foods are currently under review by NHS England and funding for these may be withdrawn to save money for the overall NHS (NHS England, 2017; NHSCC, 2017).

Prescription trends

Although the number of prescriptions for oral nutrition increased between 2015 and 2016, there was a 2.8% decrease in total NIC associated with these prescriptions in 2016 (£386.71m) compared with 2015 (£398.41m). Segmenting the data by region revealed that the highest spend, defined as total NIC associated with oral nutrition prescriptions, occurred in the North of England (30.7% of total NIC associated with oral nutrition). As in 2015, the North was closely followed by the Midlands and East, where 30.2% of total NIC associated with oral nutrition products occurred. Conversely, the lowest spend was seen in Wales (6.1% of total NIC associated with oral nutrition products), despite Wales having the highest NIC per registered patient at £7.38. London had the lowest NIC per registered patient (£5.20), similar to 2015 (£5.32).

Figure 24. Regional distribution of total NIC for oral nutrition prescriptions

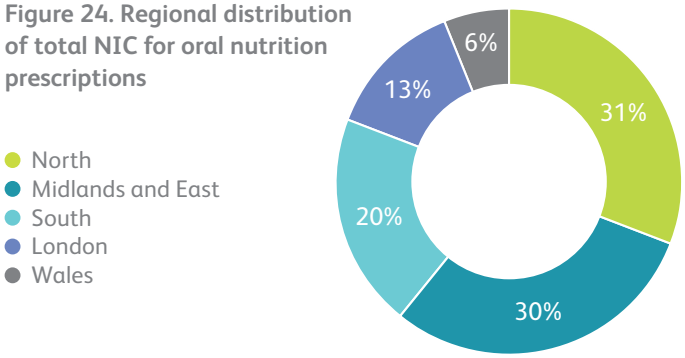
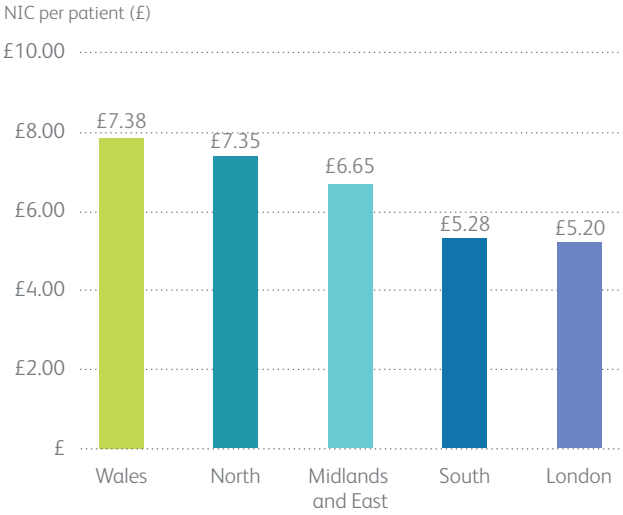


Figure 25. NIC per registered patient for oral nutrition prescriptions



Product category trends

Further analysis segmenting prescriptions by product type showed that the highest number of units prescribed, as well as the highest NIC associated with oral nutrition prescriptions, was associated with enteral nutrition products (77.8% of all units and 66.2% of total NIC). This product type also had a higher increase in the quantity of units prescribed compared with 2015 (9.9%) than other product types. Nonetheless, in spite of increased prescribing, the total NIC associated with prescriptions for these products actually decreased (-4.2%) between 2015 and 2016. Conversely, Other Food for Special Diet, which had shown the largest increase in number of units prescribed between 2014 and 2015 (Cogora, 2016), showed an increase of only 3.9% in total NIC associated with their prescriptions relative to 2015.

Figure 26. Total NIC for prescriptions for different types of oral nutrition products

- 2016
- 2015
- 2014

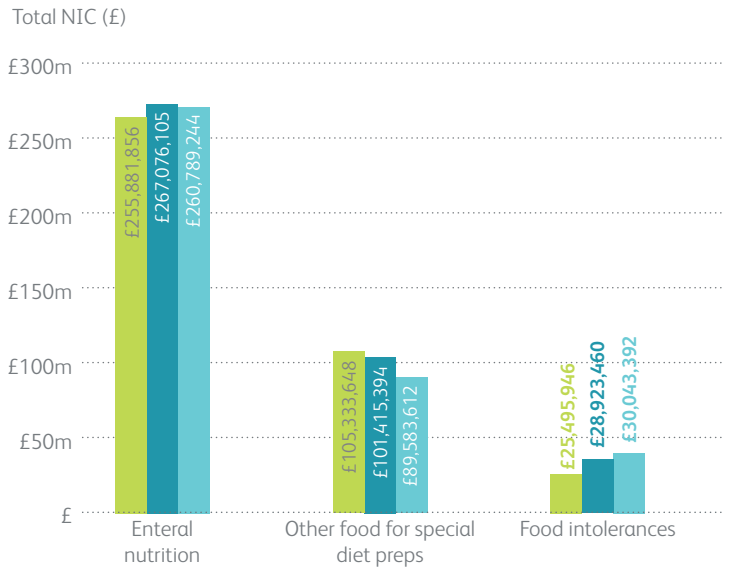
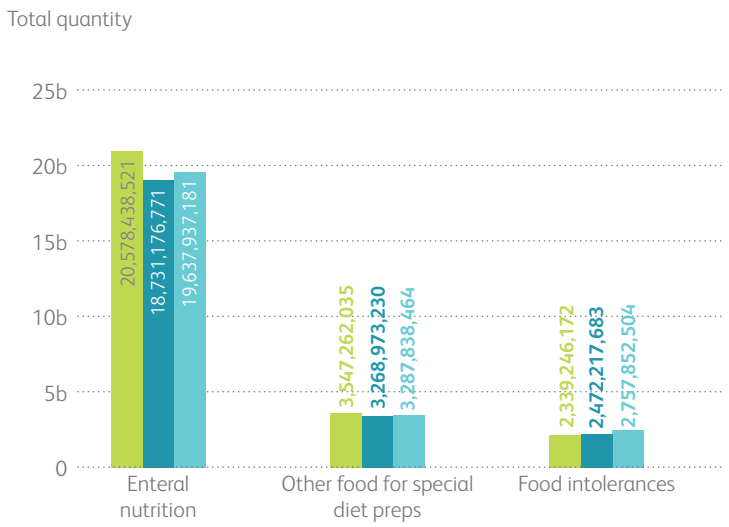


Figure 27. Quantities prescribed for different types of oral nutrition products

- 2016
- 2015
- 2014



As in 2015, Neocate LCP®, which is indicated for infants in their first year who have an allergy to cow milk, ranked first when comparing products on the total NIC associated with their prescriptions (£28.52m). This high total NIC represented a 13.4% increase from 2015. This follows an already strong track record with the same product experiencing a 23% rise in total NIC associated with its prescriptions between 2014 and 2015 (Cogora, 2016).

Similar to 2015, Nutricia products maintained their dominance of the market with their Fortisip® Compact®, Fortisip Bottle® and Fortijuce® products taking the second, third and fifth place, respectively, when ranking oral nutrition products in terms of the NIC spend attributable to their prescriptions. While the top-five-performing products were the same as in 2015 there was a change in how they ranked relative to each other. Fortisip compact, which was ranked fourth in 2015, moved up two places to second whereas Fortisip Bottle, dropped one place to third. An analysis of the brands in terms of the quantity of prescriptions revealed that Ensure Plus Milkshake-Style drink maintained its no 1 ranking with 2.3 billion units prescribed in 2016. However, despite the large quantities prescribed this was a decrease (-6.4%) compared with its 2015 performance. Considering the product had also experienced a 7% decrease in units prescribed between 2014 and 2015, this suggest the product is slowly losing its dominance over the market.

Figure 28. Branded oral nutrition products with the highest total NIC

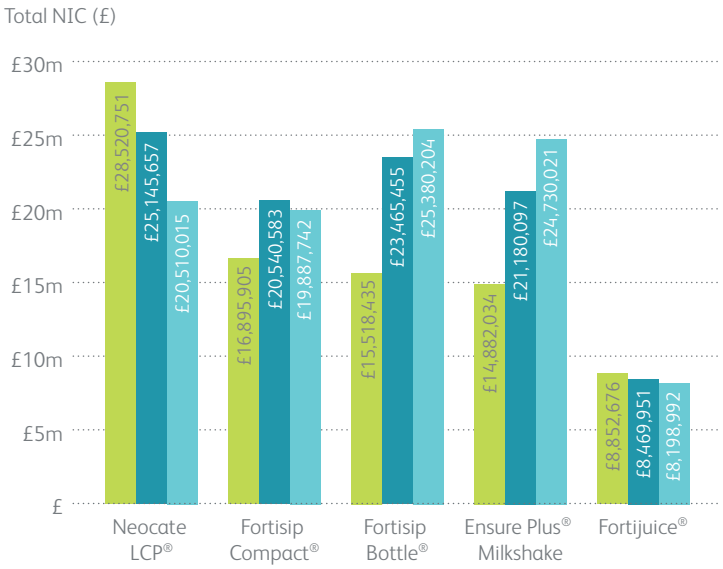
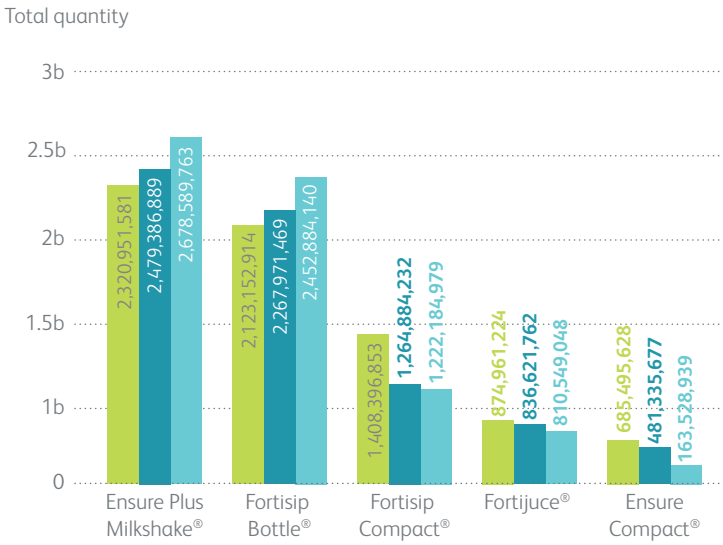


Figure 29. Branded oral nutrition products with the highest quantities prescribed



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Appendix

Grouping of products into different therapy areas was done based on the BNF section they fell into. Data were thereafter further segmented according to BNF paragraph and subparagraph, which provide information on the drug class a product belongs to. An overview of the BNF sections, paragraphs and subparagraphs that products included in the report's data analysis fell into are provided in the tables below. The tables also show the specific products (by chemical name) that were included in the analysis.

Table 6. Products included in the BNF Diabetes section (section 0601)

Paragraph	Subparagraph	Chemical
Insulin	Short-Acting Insulins	Insulin Aspart, Acid Insulin Injection, Insulin Lispro, Soluble Insulin (Neutral Insulin), Insulin Glulisine, Insulin Human Inhaled, Insulin Human
	Intermediate And Long-Acting Insulins	Biphasic Insulin Injection, Biphasic Isophane Insulin, Biphasic Insulin Lispro, Insulin Zinc Suspension, Insulin Zinc Suspension (Amorphous), Insulin Zinc Suspension (Crystalline), Isophane Insulin, Protamine Zinc Insulin, Insulin Glargine, Biphasic Insulin Aspart, Insulin Detemir, Insulin Degludec, Other Intermed&Long-Acting Insulin Preps
Antidiabetic Drugs	Sulfonylureas	Glimepiride, Acetohexamide, Chlorpropamide, Glibenclamide, Glibornuride, Gliclazide, Glipizide, Gliquidone, Glymidine, Tolazamide, Tolbutamide
	Biguanides	Metformin Hydrochloride, Phenformin Hydrochloride
	Other Antidiabetic Drugs	Vildagliptin, Liraglutide, Saxagliptin, Metformin Hydrochloride/Sitagliptin, Linagliptin, Linagliptin/Metformin, Dapagliflozin, Saxagliptin/Metformin, Lixisenatide, Alogliptin/Metformin, Alogliptin, Dapagliflozin/Metformin, Canagliflozin, Empagliflozin, Acarbose, Pioglitazone Hydrochloride, Guar Gum, Miglitol, Repaglinide, Rosiglitazone, Troglitazone, Nateglinide, Metformin Hydrochloride/Rosiglitazone, Metformin, ydrochloride/Pioglitazone, Sitagliptin, Exenatide, Metformin Hydrochloride/Vildagliptin
Treatment Of Hypoglycaemia	Treatment Of Hypoglycaemia	Diazoxide, Glucagon, Glucose
Diabetic Nephropathy & Neuropathy	Diabetic Nephropathy & Neuropathy	Tolrestat
Diabetic Diagnostic & Monitoring Agents	Diabetic Diagnostic & Monitoring Agents	Glucose Blood Testing Reagents, Urine Testing Reagents, Ketone Blood Testing Reagents, Other Screen-ing & Monitoring Agent Preps

Table 7. Products included in the BNF Respiratory Corticosteroids section (section 0302)

Paragraph	Subparagraph	Chemical
Corticosteroids (Respiratory)	Short-Acting Insulins	Beclometasone Dipropionate, Betamethasone Valerate, Budesonide, Fluticasone Propionate (Inh), Mometasone Furoate, Triamcinolone Acetonide, Ciclesonide

Table 8. Products included in the BNF Analgesics section (section 0407)

Paragraph	Subparagraph	Chemical
Non-Opioid Analgesics And Compound Prep	Non-Opioid Analgesics And Compound Prep	Aspirin & Caffeine, Paracetamol & Phenylephrine HCl, Isometheptene Mucate, Paracetamol & Ibuprofen, Aspirin & Papaveretum, Aspirin, Dipyrone Sodium, Co-Codamol (Codeine Phos/Paracetamol), Paracetamol, Phenazone, Phenol, Co-Codaprin (Codeine Phos/Aspirin), Co-Dydramol (Dihydrocodeine/Paracet), Nefopam Hydrochloride, Co-Proxamol (Dextroprop HCl/Paracet), Aspirin,Phenacetin & Codeine(Codeine Co), Aspirin & Paracetamol, Aspirin,Paracetamol & Codeine, Paracetamol & Caffeine, Paracetamol & Codeine Phosphate, Aspirin Combined Preparations, Paracetamol Combined Preparations, Aloxiprin, Other Non-Opioid Analgesic Preps, Lysine Aspirin, Co-Methiamol (Methionine/Paracetamol)
Opioid Analgesics	Opioid Analgesics	Butorphanol Tartrate, Papaveretum, Phenoperidine Hydrochloride, Oxycodone Hydrochloride, Diamorphine Hydrochloride (Top), Oxycodone HCl/Naloxone HCl, Tapentadol Hydrochloride, Fentanyl, Buprenorphine, Codeine Phosphate, Dextromoramide Tartrate, Dextropropoxyphene, Dihydrocodeine Tartrate, Dipipanone Hydrochloride, Levorphanol Tartrate, Diamorphine Hydrochloride (Systemic), Meptazinol Hydrochloride, Methadone Hydrochloride, Morphine, Morphine Hydrochloride, Morphine Sulfate, Pentazocine Hydrochloride, Pentazocine Lactate, Pethidine Hydrochloride, Powdered Opium, Phenazocine Hydrobromide, Nalbuphine Hydrochloride, Oxycodone, Morphine Anhydrous, Morphine Tartrate & Cyclizine Tartrate, Tramadol Hydrochloride, Hydromorphone Hydrochloride
Neuropathic Pain	Neuropathic Pain	Gabapentin (Neuropathic Pain)

Table 8 cont. Products included in the BNF Analgesics section (section 0407)

Paragraph	Subparagraph	Chemical
Antimigraine Drugs	Treatment Of Acute Migraine	Eletriptan, Frovatriptan, Analgesics with Anti-Emetics, Almotriptan, Dihydroergotamine Mesilate, Ergotamine Tartrate, Naratriptan Hydrochloride, Rizatriptan, Sumatriptan Succinate, Tolfenamic Acid, Zolmitriptan, Other Treatment of Acute Migraine Preps
	Prophylaxis Of Migraine	Semisodium Valproate, Clonidine Hydrochloride, Methysergide, Pizotifen Malate, Other Prophylaxis of Migraine Preps

Table 9. Products included in the BNF Antiepileptics section (section 0408)

Paragraph	Subparagraph	Chemical
Control Of Epilepsy	Control Of Epilepsy	Felbamate, Tiagabine, Zonisamide, Pregabalin, Rufinamide, Stiripentol, Lacosamide, Eslicarbazepine Acetate, Retigabine, Perampanel, Levetiracetam, Beclamide, Carbamazepine, Oxcarbazepine, Clonazepam, Gabapentin, Lamotrigine, Ethosuximide, Mesuximide, Methylphenobarbital, Pheneturide, Phenobarbital, Phenobarbital Sod, Phenytoin Sodium, Mephenytoin, Phenobarbital & Phenytoin, Phensuximide, Primidone, Trimethadione, Sodium Valproate, Vigabatrin, Sultiame, Phenytoin, Valproic Acid, Barbexaclone, Topiramate, Clobazam
Drugs Used In Status Epilepticus	Drugs Used In Status Epilepticus	Clonazepam, Paraldehyde, Phenytoin Sodium, Fosphenytoin Sodium, Midazolam Maleate, Midazolam Hydrochloride

Table 10. Products included in the BNF Oral Nutrition section (section 0904)

Paragraph	Subparagraph	Chemical
Foods For Special Diets	Foods For Special Diets	Gluten Free/Wheat Free Mixes, Gluten Free/Wheat Free Cooking Aids, Gluten Free/Wheat Free Cereals, Gluten Free/Wheat Free Cakes/Pastries, Gluten Free/Low Protein Cereals, Gluten Free/Low Protein Sweet/Savoury, Gluten Free/Wheat Free Meals, Gluten Free/Wheat Free/Low Protein Pasta, Gluten Free/Wheat Free/ Low Protein Bisc,Gluten Free/Wheat Free/Low Protein Mixes/F /W/F /L/P Cooking Aids, Low Protein Meals, Low Protein Desserts, Low Protein Miscellaneous, Low Protein Cereals, Low Protein Pasta, Low Protein Cooking Aids, Low Protein Cakes, Low Protein Snacks, Gluten Free/Wheat Free Snacks, Wheat Free Cakes/ Pastries, Gluten Free/Wheat Free Biscuits, Anhydrous Glucose, B-Galactosidase, Maize (Corn),Gluten Free/Low Protein Mixes, Gluten Free/Low Protein Bread, Fructose, Gluten Free Bread, Gluten Free Biscuits, Gluten Free Grains/Flours, Glucose, Gluten Free Cakes/Pastries, Gluten Free Cooking Aids, Gluten Free Cereals, Sunflower, Gluten Free Pasta, Diabetic, Gluten Free/ Wheat Free Sweet/Savoury, Gluten Free/Low Protein Pasta, Gluten Free/Wheat Free Bread, Gluten Free/Low Protein Grains/ Flours, Low Protein Biscuits, Low Protein Bread, Low Sodium Bread, Gluten Free/Low Protein Biscuits, Other Food For Special Diet Preps, Low Protein Mixes, Low Protein Grains/Flours, Gluten Free Mixes, Gluten Free/Low Protein Cakes/Pastries, Gluten Free/ Low Protein Cooking Aids, Gluten Free/Low Protein Meals, Gluten Free/Wheat Free Grains/Flours, Gluten Free/Wheat Free Pasta, Maltodextrin
Enteral Nutrition	Enteral Nutrition	Enteral Nutrition
Gluten Free/Wheat Free Mixes, Gluten Free/Wheat Free Cooking Aids, Gluten Free/Wheat Free Cereals, Gluten Free/Wheat Free Cakes/Pastries, Gluten Free/Wheat Free Meals, Gluten Free/Wheat Free Snacks, Wheat Free Cakes/Pastries, Gluten Free/Wheat Free Biscuits, Gluten Free Bread, Gluten Free Biscuits, Gluten Free Grains/ Flours, Gluten Free Cakes/Pastries, Gluten Free Cooking Aids, Gluten Free Cereals, Gluten Free/Wheat Free Sweet/Savoury, Gluten Free/ Wheat Free Bread, Gluten Free/Wheat Free Grains/Flours, Gluten Free/Wheat Free Pasta, Gluten Free Mixes, Gluten Free Pasta, Low Protein Mixes, Low Protein Grains/Flours, Low Protein Biscuits, Low Protein Bread, Low Protein Meals, Low Protein Desserts, Low Protein Miscellaneous, Low Protein Cereals, Low Protein Pasta, Low Protein Cooking Aids, Low Protein Cakes, Low Protein Snacks, Gluten Free/ Low Protein Mixes, Gluten Free/Low Protein Bread, Gluten Free/Low Protein Biscuits, Gluten Free/Low Protein Cakes/Pastries, Gluten Free/Low Protein Cooking Aids, Gluten Free/Low Protein Meals, Gluten Free/Low Protein Pasta, Gluten Free/Low Protein Grains/ Flours, G/F /W/F /L/P Cooking Aids, Gluten Free/Low Protein Cereals, Gluten Free/Low Protein Sweet/Savoury, Gluten Free/Wheat Free/ Low Protein Pasta, Gluten Free/Wheat Free/Low Protein Bisc, Gluten Free/Wheat Free/Low Protein Mixes	Anhydrous Glucose, B-Galactosidase, Maize (Corn), Fructose, Glucose, Sunflower, Diabetic, Low Sodium Bread, Maltodextrin, Other Food For Special Diet Preps (listed as such in prescription data)	Anhydrous Glucose, B-Galactosidase, Maize (Corn), Fructose, Glucose, Sunflower, Diabetic, Low Sodium Bread, Maltodextrin, Other Food For Special Diet Preps (listed as such in prescription data)

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