North Staffordshire Clinical Commissioning Group

Stoke-On-Trent Clinical Commissioning Group

University Hospitals of North Midlands NHS Trust

Midlands Partnership NHS Foundation Trust

North Staffordshire Combined Healthcare NHS Trust

New Medicines Committee Briefing

6th February 2019

Drug:Sialanar 320 micrograms/ml Glycopyrronium (400 micrograms/ml Glycopyrronium Bromide) Oral Solution

is to be reviewed for use within:

Primary care	X
Secondary care	X

Summary

Sialanar® is licensed for symptomatic treatment of severe sialorrhoea (chronic pathological drooling) in children and adolescents aged 3 years and older with chronic neurological disorders.

Effective management of sialorrhoea improves quality of life for patients and carers, reduces risk of choking, aspiration, pneumonia and respiratory crises. Effective management of sialorrhoea also reduces risk of dehydration and facial skin maceration, and decreases the need for suctioning.

Glycopyrronium bromide is a well established treatment for sialorrhoea, however until the launch of Sialanar®, a licensed formulation has not been available in the UK.

Currently patients are prescribed formulations which are not licensed for use in hypersalivation (1mg or 2mg glycopyrronium bromide tablets, glycopyrronium bromide 200mcg/1ml injections) or an unlicensed oral solution

It is proposed that Sialanar® will be prescribed following an initial unsuccessful trial of hyoscine patches then hyosicne tablets.

Sialanar® can be prescribed on FP10 prescriptions

Formulary application

Consultants submitting application: Dr Martin Samuels (consultant paediatrician)
Clinical Director supporting application: - Dr Caroline Groves (consultant paediatrician)

Drs Samuels and Groves are supporting this application as Sialanar® allows clinicians to prescribe a licensed product formulated with a medication which is well established as a treatment for severe

sialorrhoea for paediatric patients with chronic neurological disorders. Sialanar® will also be easier to administer compared to current unlicensed options.

Administering Sialanar® instead of ampoules or tablets is easier for carers (as tablets do not need to be broken, and doses do not need to be drawn up with filtered needles from ampoules) and will also result in less drug wastage.

Background

Glycopyrronium bromide is well-established in the United Kingdom for the treatment of sialorrhoea (chronic pathological drooling) in children with neurological disorders. Apart from Sialanar®, the only available formulations In the UK are not licensed to treat hypersalivation.

The overall prevalence of significant sialorrhoea in children is estimated at up to 0.6%. Sialorrhoea is much more common in neurologically impaired children including those with cerebral palsy (CP). It is estimated prevalence of sialorrhoea in neurologically impaired children ranges from 10% to 40% but may be even higher in some subgroups, especially those with quadriplegic CP.

Uncontrolled sialorrhoea can have negative consequences for health and quality of life. Persistence of drooling into school age leads to social isolation and the problem can be both practically and socially devastating in adolescence and childhood. Drooling children frequently have chronically irritated, macerated facial skin and in cold months the dampness from saliva is chilly. Dehydration can even become a recurrent problem as a consequence of chronic fluid and nutrient loss.

Books and papers become untidy or damaged in school or at work and electronic devices may malfunction. The ability of motor-impaired individuals to access new and sophisticated electronic technology that can offer them more opportunity to communicate and more independence is severely compromised by uncontrolled sialorrhoea. Inability to control drooling, in the face of peer pressure to do so, can result in substantial loss of self-esteem. Besides being unsightly, concerns related to hygiene and disagreeable odour alienate people. Speech spray from individuals with wet mouths is unpleasant and coughing or sneezing can cause embarrassment.

Effective management of sialorrhoea in patients with severe neurodisability also reduces risk of aspiration and pneumonia, choking and acute respiratory crises. Reducing excessive excretions also reduces frequency of suctioning, hence improving quality of life for patients and carers.

Current formulary status

Glycopyrronium is not included in the North Staffordshire Joint Formulary for sialorrhoea or hypersalivation in children or adolescents.

Glycopyrronium is not included in the South Staffordshire Joint Formulary for use in sialorrhoea or hypersalivation in children or adolescents

Sialanar® is included in the Birmingham, Sandwell, Solihull and environs APC Formulary for use in sialorrhoea and hypersalivation in children and adults, if initiation and stabilisation is by a specialist.

Sialanar® is included in the Derbyshire Joint Formulary. Glycopyrronium (Sialanar) is the preferred product for hypersalivation in children with chronic neurological conditions (licenced for children and adolescents aged 3 years and over). For short term intermittent use, but may be continued for long term use after assessment from the specialist.

Sialanar® is not included in the Wolverhampton Formulary for hypersalivation in children or adolescents.

Therapeutic class and mode of action

Glycopyrronium is a quaternary ammonium antimuscarinic with peripheral effects similar to those of atropine.

Antimuscarinics are competitive inhibitors of the actions of acetylcholine at the muscarinic receptors of autonomic effector sites innervated by parasympathetic (cholinergic postganglionic) nerves. They also inhibit the action of acetylcholine where smooth muscle lacks cholinergic innervation.

Salivation is primarily mediated by parasympathetic innervation of the salivary glands. Glycopyrronium competitively inhibits cholinergic muscarinic receptors in salivary glands and other peripheral tissues, thus indirectly reducing the rate of salivation. Glycopyrronium has little effect on cholinergic stimuli at nicotinic acetylcholine receptors, on structures innervated by postganglionic cholinergic neurons, and on smooth muscles that respond to acetylcholine but have no cholinergic innervation.

Glycopyrronium bromide, administered via the intravenous, intramuscular, and oral routes, has been shown to reduce salivary secretions in healthy adult volunteers and surgical patients.

Benefits of using glycopyrronium instead of other antimuscarinics include its long duration of action and it is less likely to cause CNS side effects compared to hyoscine or cardiac adverse effects. As an antisecretory agent, by injection, it is 2 to 5 times more potent than hyoscine hydrobromide. Therefore it may be considered when hyoscine has failed, although efficacy would appear to be similar in clinical practice.

Licensed indications

Symptomatic treatment of severe sialorrhoea (chronic pathological drooling) in children and adolescents aged 3 years and older with chronic neurological disorders.

Dosage and administration

The dosing schedule for glycopyrronium is based on the weight of the child, starting with approximately 12.8 micrograms/kg per dose (equivalent to 16 micrograms/kg per dose glycopyrronium bromide), three times per day and increasing every 7 days, as per the table below. Dose titration should be continued until efficacy is balanced with undesirable effects and amended up or down as appropriate, to a maximum individual dose of 64 micrograms/kg body weight glycopyrronium or 6 ml (1.9 mg glycopyrronium, equivalent to 2.4 mg glycopyrronium bromide) three times a day, whichever is less. Dose titrations should be conducted in discussion with the carer to assess both efficacy and undesirable effects until an acceptable maintenance dose is achieved.

Dosing table for children and adolescents with normal renal function (dosed tds).

Weight	Dose Level 1	Dose Level 2	Dose Level 3	Dose Level 4	Dose Level 5
Kg	**(~12.8µg/kg glycopyrronium)** [1]	**(~25.6µg/kg glycopyrronium)** [1]	**(~38.4µg/kg glycopyronnium)** [1]	**(~51.2µg/kg glycopyronnium)** [1]	**(~64µg/kg = glycopyronnium)** [1]
	= 16mcg/kg glycopyrronium bromide	= 32mcg/kg glycopyrronium bromide	= 48mcg/kg glycopyrronium bromide	= 64mcg/kg glycopyrronium bromide	= 80mcg/kg glycopyrronium bromide
	ml	**ml**	**ml**	**ml**	**ml**
13-17	0.6	1.2	1.8	2.4	3
18-22	0.8	1.6	2.4	3.2	4
23-27	1	2	3	4	5
28-32	1.2	2.4	3.6	4.8	6
33-37	1.4	2.8	4.2	5.6	6
38-42	1.6	3.2	4.8	6	6
43-47	1.8	3.6	5.4	6	6
≥48	2	4	6	6	6

Instructions for use

Insert the syringe adaptor into the neck of the bottle. Insert the end of the oral syringe into the syringe adaptor and ensure it is secure. Turn the bottle upside down. Gently pull down the plunger to the correct level. Turn the bottle upright. Remove the oral syringe. Place the oral syringe inside the child's mouth and press the plunger slowly to gently release the medicinal product. If the child is given the medicinal product through a feeding tube, flush the tube with 10 ml of water after administration of Sialanar®.

Safety and adverse effects

Warnings and precautions

Patients with mild to moderate renal impairment (eGFR <90 - ≥30 ml/min/1.73m^2) should have doses reduced by 30% (see table below)

Dosing table for children and adolescents with mild to moderate renal impairment. (eGFR <90 - ≥30 ml/min/1.73m^2) – dosed tds

Weight	Dose Level 1	Dose Level 2	Dose Level 3	Dose Level 4	Dose Level 5
Kg	**(~8.8µg/kg glycopyronnium)** [1]	**(~17.6µg/kg glycopyronnium)** [1]	**(~27.2µg/kg glycopyronnium)** [1]	**(~36µg/kg glycopyronnium)** [1]	**(~44.8µg/kg glycopyronnium)** [1]
	= 11 mcg/kg glycopyrronium bromide	= 22mcg/kg glycopyronnium bromide	= 33mcg/kg glycopyronnium bromide	= 45mcg/kg glycopyrronium bromide	=56mcg/kg glycopyrronium bromide
	ml	**ml**	**ml**	**ml**	**ml**
13-17	0.4	0.8	1.2	1.7	2.1
18-22	0.6	1.1	1.7	2.2	2.8
23-27	0.7	1.4	2.1	2.8	3.5
28-32	0.8	1.7	2.5	3.4	4.2
33-37	1	2	2.9	3.9	4.2
38-42	1.1	2.2	3.4	4.2	4.2
43-47	1.2	2.5	3.8	4.2	4.2
≥48	2	2.8	4.2	4.2	4.2

Undesirable effects may be minimised by using the lowest effective dose necessary to control symptoms.

Contraindications

Contraindications are similar to that for current unlicensed preparations (eg Cuvposa® 1mg/5ml oral solution) and other glycopyrronium preparations

- Hypersensitivity to the active substance or to any of the excipients
- Pregnancy and breast-feeding.
- Glaucoma.
- Urinary retention.
- Severe renal impairment (eGFR <30 ml/min/1.73m2), including those with end-stage renal disease requiring dialysis.
- History of intestinal obstruction, ulcerative colitis, paralytic ileus, pyloric stenosis and myasthenia gravis.
- Concomitant treatment with
    - potassium chloride solid oral dose

(Glycopyrronium may potentiate the risk of upper gastrointestinal injury associated with oral solid formulations of potassium chloride due to increased gastrointestinal transit time creating a high localized concentration of potassium ions. An association with upper GI bleeding and small bowel ulceration, stenosis, perforation, and obstruction has been observed)

    - anticholinergics

Drug Interactions

No interaction studies have been performed for Sialanar®.

Interaction and "caution with concomittent prescribing" profile is as per all glycopyrronium preparations

Concomitant use of the following medicinal products should be considered with caution:

- Antispasmodics: glycopyrronium may antagonize the pharmacologic effects of gastrointestinal prokinetic active substances such as domperidone and metoclopramide.

- Topiramate: glycopyrronium may potentiate the effects of oligohidrosis and hyperthermia associated with the use of topiramate, particularly in pediatric patients;

- Sedating antihistamines: may have additive anticholinergic effects. A reduction in anticholinergic and/or antihistamine dosage may be necessary;

- Neuroleptics/antipsychotics: the effects of active substances such as phenothiazines, clozapine and haloperidol may be potentiated. A reduction in anticholinergic and/or neuroleptic/antipsychotic dose may be necessary;

- Skeletal muscle relaxants: Use of anticholinergics after administration of botulinum toxin may potentiate systemic anticholinergic effects;

- Tricyclic antidepressants and MAOIs: may have additive anticholinergic effects. A reduction in anticholinergic and/or tricyclic antidepressants and MAOIs dosage may be necessary.

- Opioids: active substances such as pethidine and codeine may result in additive central nervous system and gastrointestinal adverse effects, and increase the risk of severe constipation or paralytic ileus and CNS depression. If concomitant use cannot be avoided, patients should be monitored for potentially excessive or prolonged CNS depression and constipation;

- Corticosteroids: Steroid-induced glaucoma may develop with topical, inhaled, oral or intravenous, steroid administration. Concomitant use may result in increased intraocular pressure via an open- or a closed-angle mechanism;

Medicinal products with anticholinergic properties (e.g. antihistamines, antidepressants) may cause cumulative parasympatholytic effects including dry mouth, urinary retention, constipation and confusion, and an increased risk of anticholinergic intoxication syndrome.

Presentation

Sialanar® consists of glycopyrronium 320mcg/ml (equivalent to 400mcg glycopyrronium bromide per ml). It is packaged in an amber coloured glass bottle with a high density polyethylene tamper evident child resistant closure with expanded low density polyethylene liner. The bottle contains 250 ml of oral solution.

Pack size of one bottle, one 8 ml low density polyethylene oral syringe (0.1 ml graduations) and one syringe adaptor.

List of excipients: Sodium benzoate (E211), raspberry flavouring (containing propylene glycol E1520), sucralose (E955), citric acid (E330), purified water

Sialanar® expires 2 months after first opening.

Patent Status

Date of first authorisation/renewal of the authorisation: 15th September 2016

Guidance and Evidence Summary

NICE Guidance	**Y**

Hypersalivation: oral glycopyrronium bromide (Evidence summary [ESUOM15] .Published date: July 2013)

There is moderate evidence that oral glycopyrronium bromide (tablets and solution or suspension) reduces hypersalivation (sialorrhoea) or drooling in children and young people with a neurological condition.

There is no evidence of its long-term efficacy or safety in treating hypersalivation

Two double-blind, placebo-controlled, randomised controlled trials (RCTs) were identified that examined the efficacy and safety of oral glycopyrronium bromide for treating hypersalivation in children and young people with a neurological condition (Mier et al. 2000 and Zeller et al. 2012) All of the identified trials were small, with fewer than 40 participants in each trial, and were short term (8 weeks or less).

The 2 RCTs in children and young people with a neurological condition (predominantly cerebral palsy) showed that oral glycopyrronium bromide significantly improved drooling after 8 weeks of treatment. The dosage of glycopyrronium bromide was titrated and dependent on weight in these trials, up to a maximum of 3 mg per dose given 3 times daily. In 1 of the trials (Mier et al. 2000), the mean parent- or carer-reported drooling score was significantly improved from severe drooling to no drooling or mild drooling with glycopyrronium bromide; drooling remained severe with placebo. In the other trial (Zeller et al. 2012a), there was a significant clinical improvement in drooling from baseline to 8 weeks in 73.7% of children and young people receiving glycopyrronium bromide compared with 17.6% receiving placebo.

Scottish Medicines Consortium (SMC)	**Y**

Sialanar® was approved by the SMC on 10th July 2017.

The SMC stated that the availability of glycopyrronium (Sialanar®) provides a licensed alternative to an existing generic preparation used outside the terms of its marketing authorisation, at a small additional cost.

All Wales Medicines Strategy Group (AWMSG)	Y

Excluded by AWMSG in October 2016

Sialanar® met the AWMSG exclusion criteria in place for medications which fall outside the role and remit of AWMSG and where progression to formal appraisal is unlikely. In these circumstances health boards may consider whether individual products are appropriate for local formulary inclusion.

Regional Drug and Therapeutic Centre (RDTC)	Y

The request for glycopyrronium bromide 2mg/5ml (Sialanar®) was approved for the treatment of severe sialorrhoea in children and adolescents with chronic neurological disorders in October 2017

Midlands Therapeutics Review and Advisory Committee (MTRAC)	N

Efficacy

Although oral absorption is poor, most of the published evidence of efficacy is for administration by the oral route, particularly in children and young adults with neurodevelopmental disabilities, where it has been used with some success in relatively small studies. Parenteral use, mainly by subcutaneous injections or infusion, has also been described for reducing excessive secretions, including saliva, in palliative care.

Mier et. al studied 39 children with neurodevelopmental conditions and severe sialorrhea. Ages at enrollment ranged from 4 years 4 months to 19 years, with a mean age of 10 years 9 months. After an initial physical evaluation and a 1-week baseline medication-free observation period, each child was assigned randomly to either the drug or placebo treatment arm, each of which was 8 weeks long. At the end of the first arm, there was a 1-week washout period and a second week-long observation period, followed by the reciprocal arm, also 8 weeks in length. Drooling was scored on a scale that ranged from 1 (never drools) to 9 (clothing, hands, and objects frequently become wet). Drooling was assessed by the carer 2 hours post dose. Carers were also questioned each week by telephone regarding the presence of any adverse reactions.

Table 1. Drooling Score Used in Glycopyrrolate Study

Score	Description
1	Dry, never drools
2	Mild; only the lips are wet occasionally
3	Mild; only the lips are wet, but frequently
4	Moderate; wet on the lips and chin occasionally
5	Moderate; wet on the lips and chin frequently
6	Severe; drools to the extent that clothing becomes damp occasionally
7	Severe; drools to the extent that clothing becomes damp frequently
8	Profuse; clothing, hands, and objects become wet occasionally
9	Profuse; clothing, hands, and objects become wet frequently

There were 2 dosing schedules depending on weight. Children weighing less than 30 kg began at 0.6 mg, increasing weekly to 1.2 mg, 1.8 mg, and 2.4 mg. Children weighing more than 30 kg began by taking 1.2 mg, increasing weekly to 1.8 mg, 2.4 mg, and 3.0 mg. Medication was given in the morning, early afternoon, and evening. Four children were given these same doses twice (rather than 3 times) daily in the morning and early afternoon, at parental request. No specific recommendations were given with regard to timing of medication and food.

27 children (69%) completed the study. Of the 12 children who did not complete the study, 8 dropped out because of adverse effects to medication, 1 of these while receiving placebo. Four children were dropped because of failure to comply with the protocol or because it was inconvenient for their families to continue.

All 27 children who completed the study demonstrated improvement in drooling. The mean baseline drooling score improved with glycopyrrolate from 7.52 to a maximum mean score of 1.85. A mean score of 1.85 corresponds to a description between "dry, never drools" and "mild drooling; only the lips are wet occasionally." With placebo, the baseline score improved slightly from 7.44 to 6.33. Mean drooling score on glycopyrrolate (1.85) compared with placebo (6.33) is statistically different, with P<.001. Only 2 of the children failed to improve their drooling score by at least 4 points, and only 3 were left with a score of 4 (wet on lips and chin occasionally) or worse.

Drooling scores improved with increasing dose in a linear manner. The mean score for children finishing the study was 6.0 on their first dose level, 4.5 on the second dose level, 3.6 on the third dose level, 2.6 on the fourth dose level, and 2.3 after 4 weeks at their highest dose. Using an improvement-in-drooling score of 4 points or greater as a standard for significant clinical improvement, 12%, 38%, 54%, and 81% of study participants met this standard on the first, second, third, and fourth dosing levels, respectively

The children were maintained at their highest tolerated dose for 4 weeks to determine if drug effects changed during that period; the drooling score improved in 9 children, decreased in 9, and remained the same in 9.

Six (22%) of the 27 children who completed the study achieved their best drooling score while receiving doses lower than their fourth dosing level. Four of these 6 reached their best score 1 dosing level below their highest tolerated level. One child reached the best drooling score 2 dosing levels below the highest tolerated level, and another child reached the best score on the first dosing level.

Of the caretakers who responded, 15 (65%) of 23 reported that their child exhibited less drooling odor while receiving glycopyrrolate compared with the placebo, and 21 (87%) of 24 caretakers reported improved dryness of clothing compared with placebo

Adverse effects were common, affecting 25 (69%) of 36 children taking glycopyrrolate. The most frequently noted adverse reactions included behavioral changes (9 children), constipation (7), excessive dryness of the mouth or secretions (7), and urinary retention (5). One child with a history of seizures exhibited worsening symptoms while receiving glycopyrrolate, although the child did finish the study. Adverse effects were most frequently reported as the dose was increased. Five (26%) of 19 children reported at least 1 adverse effect at the third dosing level, and 21 (81%) of 26 reported at least 1 adverse effect at the fourth (highest) dosing level. This dramatic increase in the number of children with at least 1 adverse effect occurred between dosing levels corresponding to 0.08 mg/kg per dose (third level) and 0.11 mg/kg per dose (fourth level).

The study concluded all children tolerating glycopyrrolate will demonstrate marked improvement in drooling at individual doses of about 0.1 mg/kg per dose. Individual doses of glycopyrrolate greater than 2.4 mg for children weighing less than 30 kg, and 3.0 mg for children weighing more than 30 kg, were not studied for safety but are not usually necessary.

Zeller et. al investigated the efficacy of glycopyrronium oral solution (1mg/5ml) in 36 patients aged 3-16 years old with neurologic conditions associated with problem drooling.The trial was randomised and placebo controlled. Data from this trial were used to demonstrate efficacy for Sialanar. Patients were randomised to receive matching placebo or glycopyrronium 20 microgram/kg three times a day titrated over 4 weeks to a maximum dose of 100 microgram/kg or 1.5 - 3mg per dose (based on weight) three times a day, whichever was less, and remained on that dose for a further 4 weeks. Doses were administered at least one hour before or two hours after meals, since high-fat foods reduce the oral bioavailability of glycopyrrolate oral solution administered shortly after a meal. The mean daily dose of glycopyrronium was 150 microgram/kg. At week 8, 14 of 19 patients (73.7%) in the glycopyrronium group and 3 of 17 (17.6%) in the placebo group showed at least a 3-point improvement in the modified Teacher's Drooling Scale (mTDS) score (p=0.0011). The most common adverse reactions were dry mouth, vomiting, nasal congestion and constipation. One patient in each treatment group withdrew from the study due to adverse effects

Zeller, Davidson et al. also conducted a 24-week open-label study investigated the safety and efficacy of glycopyrronium 1mg/5ml oral solution in 137 patients aged 3-18 years with cerebral

palsy, mental retardation, or any other neurologic impairment or condition with chronic drooling After a washout, screening period and 2-day baseline period, patients received 20 microgram/kg glycopyrronium three times daily, titrated by 20 microgram/kg every 5-7 days for 4 weeks to an optimal dose or a maximum dose of 100 microgram/kg (maximum dose 3mg three times a day). The mean daily glycopyrronium dose was 150 microgram/kg. The most commonly reported adverse effects included constipation, vomiting, diarrhoea and pyrexia and four serious treatment-related adverse events were observed (nystagmus, oesophageal candidiasis, dehydration and gastrointestinal motility disorder). Of the 34 patients who did not complete the study, 14 withdrew due to adverse effects. At 24 weeks, 52.3% (95% confidence interval 43.7 to 60.9) of patients had an at least three-point decrease in mTDS from baseline and were classified as responders. 15% of patients no longer drooled

There are also 4 case reports involving use of oral glycopyrronium (tablets, oral solution) or injection vial nebuliser to manage sialorrhoea in adults. All case studies report that the patients had improvement in symptoms whilst using glycopyrronium. The 3 case reports involving oral glycopyrronium record that the patients had no apparent ill effects whilst on treatment. Reported treatment duration ranged from 9 weeks to 6 months. 1 case report states that profuse drooling occurred when treatment with glycopyrronium tablets was withdrawn, but was unable to rule out if this was coincidental. The 1 case report involving nebulised glycopyrronium states that there was an improvement in drooling and treatment was tolerated for 2 months (treatment was discontinued due to rash around mouth).

No efficacy data exist to compare different formulations of glycopyrronium or to compare its efficacy to other antimuscarinics used for treatment of hypersalivation.

Data is also lacking for long-term efficacy and safety.

Cost Analysis

It is estimated 30 patients per annum would be prescribed Sialanar®

Current practice is

1. Use glycopyrronium bromide injection orally/PEG at dose of 40-100mcg/kg glycopyrronium bromide per dose (maximum dose = 2mg per dose). This involves using syringes to draw up the dose, for administration sublingually or via PEG. The injections and syringes then have to be discarded in a yellow waste bin. This is off-license. Approximately 12.5% of expenditure is due to unlicensed use of injections
2. Use unlicensed 1mg glycopyronnium bromide tablets. Approximately 63% of expenditure is due to tablets
3. Use unlicensed glycopyronnium bromide oral solutions of varying strengths. Approximately 24.5% of expenditure is due to oral solutions
    - Across the 6 CCGs, 1mg/5ml, 500mcg/5ml, 5mg/5ml and 400mcg/ml strengths were issued.
    - In secondary care, only 1mg/5ml strength was issued to paediatrics

Total paediatric expenditure for glycopyrronium bromide across the 6 CCGs from October 2017 to September 2018 was £258,865.55. This includes 11 bottles of Sialanar®, which was issued at an average price of £297 excl. VAT

Over a 12 month period (April 2017-March 2018) expenditure for glycopyrronium bromide secondary care outpatient pharmacies for paediatric patients was £1938.78 indicating that majority of expenditure is currently within primary care. It is difficult to determine whether inpatient use of glycopyrronium bromide (£1096.72 over same period) was due to use for other indications,

Projected spend will thus be based on primary care expenditure alone and the assumption that Sialanar® prescriptions for all 30 patients will be issued in primary care.

Predicted expenditure for health economy

Proposed drug expenditure cost per annum per patient if Sialanar® prescribed in primary care:

Average purchase price of Sialanar® in primary care (400mcg/ml – 250ml bottle – expires 2 months after opening) = £[redacted] excl. VAT

This equates to £[redacted] per 400mcg/ml

If patients are using Sialanar® regularly on a daily basis, one bottle will last 14-28 days.

Weight	**Maximum dose (nb can be administered up to tds)**	Maximum daily dose	Daily cost per patient in primary care	Cost per patient pa in primary care
Kg	**(~64µg/kg = glycopyronnium)** [1]			
	= 80mcg/kg glycopyrronium bromide			
	ml	**ml**		
13-17	3	9	[redacted]	[redacted]
18-22	4	12	[redacted]	[redacted]
23-27	5	15	[redacted]	[redacted]
28-32	6*	18	[redacted]	[redacted]
33-37	6	18	[redacted]	[redacted]
38-42	6	18	[redacted]	[redacted]
43-47	6	18	[redacted]	[redacted]
≥48	6	18	[redacted]	[redacted]

It is difficult to determine how many patients are within each dose band, and thus the cost per patient.

Assuming each patient incurs a maximum cost of £7818.30 per annum if prescribed Sialanar®, it is presumed that annual expenditure for 30 patients would be £234,549.

It is therefore predicted that introducing Sialanar® to the NSJF will result in a minimum cost saving of £24316.55, but this is likely to be greater.

References

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