

## Supplementary information

## Online questionnaire: selected questions

Q #	Type	Question text
A4	Radio buttons	<p><b>Please click the ONE box that best describes your health TODAY.</b></p> <p><b>Pain/discomfort</b></p> <ul style="list-style-type: none"> <li>I have no pain or discomfort</li> <li>I have slight pain or discomfort</li> <li>I have moderate pain or discomfort</li> <li>I have severe pain or discomfort</li> <li>I have extreme pain or discomfort</li> </ul>
A5	Radio buttons	<p><b>Please click the ONE box that best describes your health TODAY.</b></p> <p><b>Anxiety/depression</b></p> <ul style="list-style-type: none"> <li>I am not anxious or depressed</li> <li>I am slightly anxious or depressed</li> <li>I am moderately anxious or depressed</li> <li>I am severely anxious or depressed</li> <li>I am extremely anxious or depressed</li> </ul>
A7	Text box restricted to numerical answers	<p><b>How long ago were you diagnosed with dry eye disease?</b></p> <p>_____ months</p>
A9	Radio buttons with a text box	<p>[If answered option 1 to S10] <b>When was the last time you used the prescribed or recommended medication or procedure?</b></p> <ul style="list-style-type: none"> <li>Less than 1 week ago</li> <li>1-2 weeks ago</li> <li>2-3 weeks ago</li> <li>3-4 weeks ago</li> <li>1-2 months ago</li> <li>Other (please specify) _____</li> </ul>
A10	Radio buttons	<p><b>How would you rate your understanding of dry eye?</b></p> <ul style="list-style-type: none"> <li>I have a poor understanding</li> <li>I have a fair understanding</li> <li>I have a good understanding</li> <li>I have a very good understanding</li> <li>I have an excellent understanding</li> </ul>
A11	Radio buttons	<p><b>What is your primary source of information about dry eye?</b></p> <ul style="list-style-type: none"> <li>Doctor</li> <li>Pharmacist</li> <li>Optician</li> <li>Patient group</li> <li>Friends</li> <li>Websites, please specify _____</li> <li>Social media*, please specify _____</li> <li>Other, please specify _____</li> </ul> <p>*Social media includes Facebook, Twitter, Instagram</p>
A12	Radio buttons	<p><b>What burden does having dry eye disease have on your life?</b></p> <ul style="list-style-type: none"> <li>It has no impact</li> <li>It has a slight impact</li> <li>It has a moderate impact</li> <li>It has a severe impact</li> <li>It has an extreme impact</li> </ul>
A13	Text box	<p><b>What is the most burdensome aspect of dry eye on your life?</b></p> <p>_____</p>
A15	Checkboxes with text boxes	<p><b>Which type of medication do you use for your dry eye disease?</b></p> <ul style="list-style-type: none"> <li>Prescription medication from doctor _____</li> <li>Over the counter medication _____</li> </ul>

A16	Checkboxes with text boxes	<p><b>[If OTC to A15] Where do you get your medication?</b></p> <ul style="list-style-type: none"> <li>• Optician. Please specify which type of medication _____</li> <li>• Pharmacy / Retail store. Please specify which type of medication _____</li> <li>• Online. Please specify which type of medication _____</li> <li>• Other. Please specify. _____</li> </ul>														
A17	Check boxes	<p><b>How often do you experience dry eye symptoms?</b></p> <ul style="list-style-type: none"> <li>• Constantly.</li> <li>• Occasionally</li> <li>• Only after certain activities/ in certain environments</li> <li>• Only when wearing contact lenses</li> <li>• Seasonally</li> <li>• Other, please describe _____</li> </ul>														
A18	Checkbox with text boxes	<p><b>When are your dry eye symptoms worse? Do you have a possible explanation why the symptoms are worse then?</b></p> <ul style="list-style-type: none"> <li>• Morning</li> <li>• Afternoon</li> <li>• Evening</li> <li>• Night</li> <li>• They are the same throughout the day</li> </ul>														
A19	Textbox	<p><b>What should future treatments offer that your current treatment doesn't provide?</b></p> <p>_____</p>														
A20	Dropdown lists with a textbox	<p><b>Below is a description of a hypothetical new product for the use of treatment of dry eye. This product may or may not come to market in the future. It would be prescribed as a chronic treatment to patients with Dry Eye Disease (DED).</b></p> <table border="1"> <tr> <td><b>Target population</b></td> <td>This new product would be prescribed in adult Dry Eye patients (over 18 years of age). This product must be prescribed by _____</td> </tr> <tr> <td><b>How the treatment works</b></td> <td>A new product that would replicate a natural protein found in the eye, restoring normal tear film function and reducing tissue damage at the eye surface. The product would relieve both the underlying damage and symptoms of dry eye.</td> </tr> <tr> <td><b>Efficacy on underlying disease (signs) and symptoms*</b></td> <td>Would restore/reduce tissue damage and potentially inflammation, so that patients can have sustained relief of dry eye symptoms (eye discomfort and blurry vision) within 7-28 days and superior improvement on signs (such as tear quantity and quality, inflammation, and damage). Would reduce the need for artificial tears. Would improve patients' Quality of Life and performance on daily activities and visual tasking.</td> </tr> <tr> <td><b>Safety &amp; tolerability</b></td> <td>Minimal treatment related ocular adverse events or tolerability issues . No/minimal eye drop discomfort; no taste alteration.</td> </tr> <tr> <td><b>Administration</b></td> <td>Topical drops taken twice daily.</td> </tr> <tr> <td><b>Package</b></td> <td>Multi-dose preservative-free formulation.</td> </tr> <tr> <td><b>Storage conditions</b></td> <td>Keep refrigerated at 2-5°C.</td> </tr> </table> <p><b>Please choose the top three attributes which you perceive to have potential benefits or advantages compared to your current treatment. Please explain your choice.</b></p> <p>1. [Dropdown list: Target population, How the treatment works, Efficacy on underlying disease (signs) and symptoms, Safety and tolerability, Administration, Storage conditions, None [only for points 2 &amp; 3]]  2. [As point 1]  3. [As point 1]  Please explain your choice: _____</p>	<b>Target population</b>	This new product would be prescribed in adult Dry Eye patients (over 18 years of age). This product must be prescribed by _____	<b>How the treatment works</b>	A new product that would replicate a natural protein found in the eye, restoring normal tear film function and reducing tissue damage at the eye surface. The product would relieve both the underlying damage and symptoms of dry eye.	<b>Efficacy on underlying disease (signs) and symptoms*</b>	Would restore/reduce tissue damage and potentially inflammation, so that patients can have sustained relief of dry eye symptoms (eye discomfort and blurry vision) within 7-28 days and superior improvement on signs (such as tear quantity and quality, inflammation, and damage). Would reduce the need for artificial tears. Would improve patients' Quality of Life and performance on daily activities and visual tasking.	<b>Safety &amp; tolerability</b>	Minimal treatment related ocular adverse events or tolerability issues . No/minimal eye drop discomfort; no taste alteration.	<b>Administration</b>	Topical drops taken twice daily.	<b>Package</b>	Multi-dose preservative-free formulation.	<b>Storage conditions</b>	Keep refrigerated at 2-5°C.
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A21	Dropdown lists with a textbox	<p><b>Please choose the top three attributes that cause you concern or you see as a disadvantage compared to your current treatment. Please explain your choice.</b></p> <p>1. [Dropdown list: Target population, How the treatment works, Efficacy on underlying disease (signs) and symptoms, Safety and tolerability, Administration, Storage conditions, None [only for points 2 &amp; 3]]  2. [As point 1]  3. [As point 1]  Please explain your choice: _____</p>														

**Supplementary Table S1:** Screening criteria for Steps 1 and 2

<b>Qualitative telephone interviews (Step 1; n=12)</b>
<b><i>Inclusion criteria</i></b>
<ul style="list-style-type: none"> <li>• Formal diagnosis of dry eye disease, meibomian gland dysfunction or blepharitis</li> <li>• Approximately 2/3 female respondents and approximately 3/4 respondents aged over 40 (based on dry eye demographic)</li> <li>• Score above 39 (out of 100) on the Symptoms Bother section of the IDEEL™ (Impact of Dry Eye on Everyday Life) questionnaire (i.e. moderate or severe dry eye disease)</li> </ul>
<b>Quantitative online questionnaire (Step 2; n=160)</b>
<b><i>Inclusion criteria</i></b>
<ul style="list-style-type: none"> <li>• Formal diagnosis of dry eye disease, meibomian gland dysfunction, blepharitis or rosacea</li> <li>• Approximately 2/3 female respondents and approximately 3/4 respondents aged over 40 (based on dry eye demographic)</li> <li>• Score above 39 (out of 100) on the Symptoms Bother section of the IDEEL™ questionnaire (i.e. moderate or severe dry eye disease)</li> <li>• Examination by an ophthalmologist for their dry eye disease in the past 18 months</li> <li>• Recommendation or prescription of dry eye medication by a physician.</li> </ul>
<b><i>Exclusion criteria</i></b>
<ul style="list-style-type: none"> <li>• Sjögren's syndrome</li> <li>• Age below 20 or over 80</li> <li>• Frequent wearers of contact lenses</li> <li>• Change in systemic medication in the past 30 days</li> <li>• Patients who experienced one of the following: <ul style="list-style-type: none"> <li>○ punctal occlusion procedure in the past 30 days</li> <li>○ cataract surgery in the past 6 months</li> <li>○ laser eye surgery for refractive errors (e.g. LASIK or PRK)</li> <li>○ serious eye injury.</li> </ul> </li> </ul>

**Supplementary Table S2: Levels tested for each attribute as part of the online survey**

<b>TREATMENT SATISFACTION</b>	
<b>Treatment effectiveness on symptoms of dry eye</b>	Treatments used completely eliminate symptoms of dry eye, Treatments used relieve most symptoms of dry eye, No reduction in dry eye symptoms
<b>Treatment experience</b>	Treatment provides relief from itching and irritation, Treatment reduces sandy or gritty feeling in eye, Treatment provides moisturising or hydrating effect
<b>How quickly the treatment starts to relieve symptoms</b>	Immediately, Within 1 minute, Within 5 minutes, Within 10 minutes, Within 30 minutes, Within 1 hour, 1 hour or longer
<b>How long the treatment reduces symptoms for</b>	48 hours, 24 hours, 12 hours, 6 hours, 3 hours, 2 hours, 1 hour or less
<b>Treatment effectiveness on underlying disease (signs) of dry eye</b>	Treatment repairs eye surface damage, Treatment improves tear quality, Restoring essential components of tears, Treatment reduces eye redness and inflammation, No change in underlying disease of dry eye
<b>Time until the treatment starts helping the underlying disease and tear glands become healthy again</b>	1 week, 2 weeks, 1 month, 3 months, 6 months
<b>Side effects of treatment</b>	Blurriness upon instillation, Stinging/ burning/ discomfort upon instillation, Causes eye or eyelashes to become matted or crusty, Taste perversion, Treatment leaves residue on face, No/minimal side effects
<b>SYMPTOM BOTHER</b>	
<b>Eye discomfort</b>	Eye dryness, Itchy eyes, Pressure build up in your eyes, Eyes that feel like they've been scratched by something, Feeling like something is in your eye, Eyes that are crusty or goopy and get stuck shut in the morning, No eye discomfort
<b>Eye pain</b>	General eye pain, Burning eyes, Stinging eyes, No eye pain
<b>Eye fatigue</b>	Tired eyes, Aching or sore eyes which make you feel like you need to close your eyes even when you're not tired, Eye strain, Eye twitching, No eye fatigue
<b>Eye sensitivity</b>	Sensitivity due to light or glare, Sensitivity due to wind or re-circulated air, No eye sensitivity

<b>Eye appearance</b>	Red eyes, Excessive eye watering or discharge, Puffy swollen eyes or eyelids, Stringy mucus around the eye, Dark circles / bags around the eyes, Sunken eyes, Normal eye appearance
<b>Vision</b>	Colored spots at corners of eyes, Blurry / double vision, Diminished vision, Loss of vision, Difficulty seeing clearly at night, Perfect vision
<b>Blinking</b>	Frequent and/or rapid blinking, Difficulty blinking because of little or no moisture, Normal blinking
<b>Other health related impacts</b>	Headaches associated with dry eye symptoms, Allergy-like symptoms, No health related impacts
<b>TREATMENT ADMINISTRATION</b>	
<b>Frequency of treatment use</b>	As needed, Once a day, Twice a day, Three times a day, Four times a day, Once a week, Once a month
<b>How the medicine is applied</b>	Drops with dropping aid (patient self-administered), Drops (patient self-administered), Ointment (patient self-administered), Spray on to eyelids (closed eyes, patient self-administered), Gel (patient self-administered), Slow release conjunctival (underneath eyelid) insert daily (patient self-administered), Slow release conjunctival (underneath eyelid) insert monthly (physician administered)
<b>Packaging of the treatment</b>	Single dose pack without preservative, Multi-dose pack with preservative, Multi-dose pack without preservative
<b>How the treatment works</b>	Artificial Tears, Steroids, Anti-inflammatories, Anti-bacterials
<b>Source of medication</b>	Prescription from doctor, Non-prescription medication
<b>IMPACT ON DAILY LIFE</b>	
<b>Impact on daily activities</b>	Difficulty working on a computer, Difficulty with screen-based entertainment activities, Difficulty doing close work e.g. crossword puzzles, reading, and/or sewing, Difficulty driving, Difficulty wearing makeup near or on your eyes, Difficulty flying on an airplane, Difficulty doing exercise
<b>Impact on daily situations</b>	Difficulty being around and/or using scented products, Difficulty going somewhere where there is tobacco smoke, Difficulty going outdoors in windy conditions, Having to wear sunglasses, Difficulty being around animals, Difficulty getting a good night's sleep (due to my dry eye)
<b>Emotional impact</b>	Feeling irritable / impatient, Worry that your dry eyes would get worse, Feeling like there's nothing you can do for your dry eyes, Feeling like your eyes do not look nice / feeling older than you are, Feeling like people look at you and think you're fine when you're not, Feeling different from other people because of dry eyes, Feeling like you're always aware of your eyes, Feeling like you have to make adjustments to your life, No emotional impact

<b>Impact on work or paperwork and screen-based tasks</b>	Feeling distracted / like you can't concentrate, Having to take a break during work, Having to change the way you work, Having to change your work environment, Having to work reduced hours, Having to give up work, No impact on work
<b>Treatment inconvenience</b>	Difficulty planning when to use treatment, Feeling like you can't go anywhere without eye drops, Thickness of drops, Having to switch between treatments due to failure with previous product, Having to keep treatment refrigerated (between 2 – 5 °C), Having to keep yourself sterile during treatment administration, No treatment related inconveniences

**Supplementary Table S3:** Additional patient needs and concerns identified during the interviews

Symptom bother	Coloured dots/ edges around eyes
	Bags under eyes
Treatment effectiveness	Additional administration forms: spray, drops, injection, tablet
	Cost of treatment
	Treatment often leaves residue on face
	Treatment containing additives
	Keeping treatment refrigerated
	Size of bottle
	Putting dropper near eye / keeping self sterile during administration
	Worry about increased risk of glaucoma from using steroids
	Would like information on how long blurriness would last for
Impact on daily activities	Exercise including swimming and riding a bike
	Being able to be around animals
	Always having to wear sunglasses
Emotional impact	Burdensome
	Scared will go blind
	People often think patients are crying due to eye watering
	Nervous to leave children unattended when applying drops

	Unwanted dependence on drugs and sunglasses
Impact on work	Having to go from full time to part time work
	Having to retire
	Unable to use screens
	Feeling embarrassed.

**Supplementary Table S4:** Survey experience – representative patient quotes

<b>Positive feedback</b>
<ul style="list-style-type: none"> <li>• <i>“I’m glad you had [the survey] in large text and no fussy stuff in the background as I need a calm screen to be able to work effectively”</i></li> <li>• <i>“The structure of this survey was very good”</i></li> <li>• <i>“The survey was well done. I am so pleased that there are people out there looking for a help for dry eyes. It is just awful and I hate having it.”</i></li> </ul>
<b>Negative feedback</b>
<ul style="list-style-type: none"> <li>• <i>Questionnaire was too long. Maybe cut it down a bit especially for people with my condition who find it hard to focus.”</i></li> </ul>