

# **Lipikar Baume**

## **Cost-effectiveness Analysis**

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# Background

## There is real potential for improving the cost-effectiveness and outcome of treatment for patient with atopic dermatitis



The literature reports elevated cost of AD for both payer and the patient (Adamson, 2017).








Currently it affects 15-20% of children, 4% of adults and women twice affected as men (Richard, 2018). The prevalence increased.

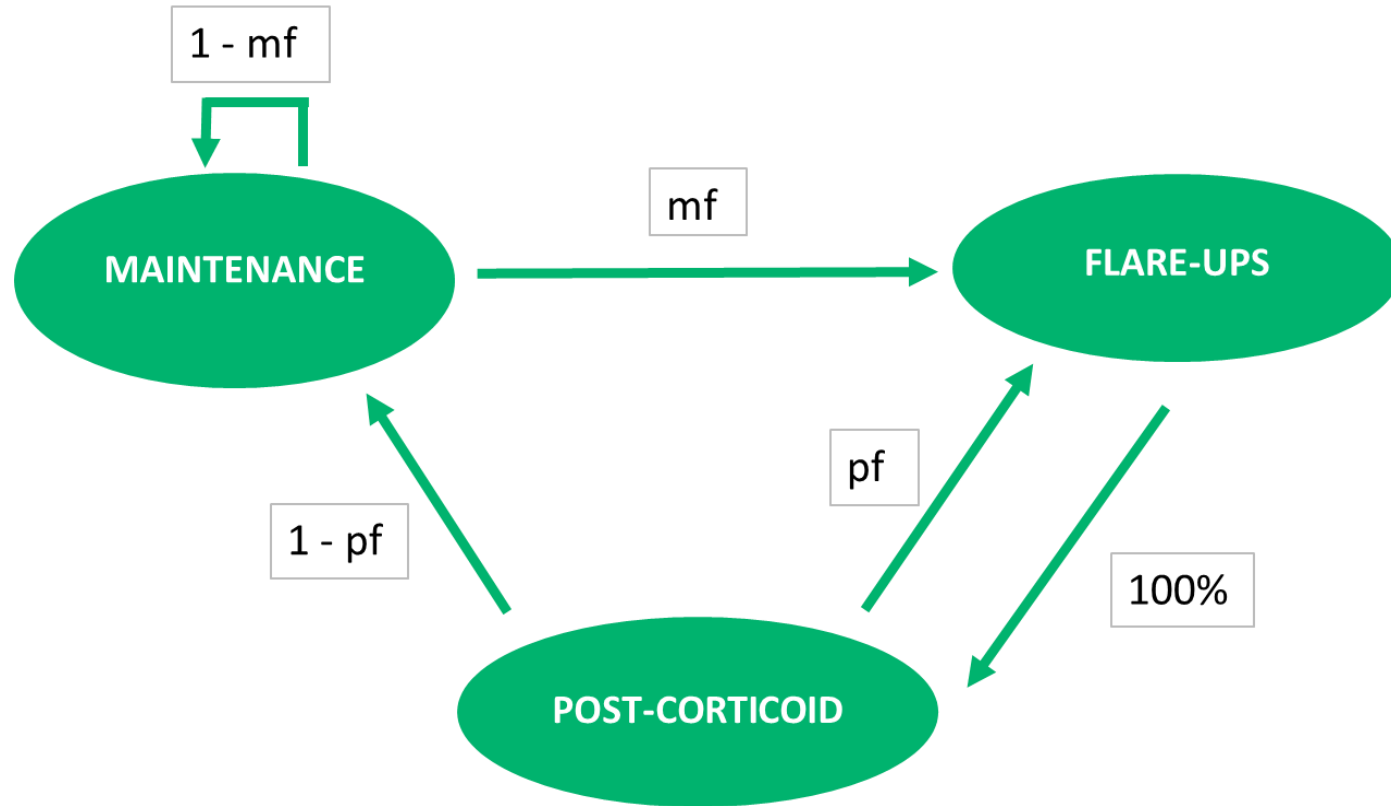


AD associates with higher rates of anxiety, depression, lost productivity, activity impairment and poorer health-related quality of life (Whiteley, 2016).

# A cost-effectiveness model

-  Demonstrate the medical value of emollient prescribing
-  Understand the cost and quality of life impact of emollient use
-  Explore the cost-saving when using Lipikar as opposed to comparators
-  Construct on an evidence-based model from literature
-  Implement a cohort Markov model over 5 years of follow-up

# Structure of the model



## Transition probabilities

- **pf** : portion of patients who report flare-ups in post-corticosteroid state
- **1-pf** : portion of patients who enter in maintenance state ie no flare-up
- **mf** : portion of patients who report flare-ups in maintenance state
- **1-mf** : portion of patients who stayed in maintenance state ie no flare-up

# Hypothesis and management



## Hypothesis

- ❖ **Duration of a cycle: 4 weeks**
- ❖ **No consideration of seasonality**
- ❖ **After the flare-ups period (ie one cycle in the flare-ups state), all patients go into the post-corticosteroid state**
- ❖ **Pf and Mf equivalent**
- ❖ **No consideration of intercurrent events**
- ❖ **The definition of flare-ups period is given by a degradation of SCORAD > 20%**

# Population and comparators

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## Population

A 1 000 cohort of patients with atopic dermatitis undergoing maintenance (pre-treated to eliminate flare-ups)



## Comparators

- Lipikar Balm AP+
- Dexeryl cream
- Atopiclair cream
- Eucerin AtopiControl Body Lotion
- No moisturizer

# Inputs



## General settings

- Comparators
- Time horizon
- Perspective



## Emollient efficacy

- Probability of flare-up in post-corticosteroid state
- Probability of flare-up in maintenance state



## Utilities

- Utility of maintenance state
- Utility of flare-up state



## Ressource use

- Quantity of moisturizer use
- Quantity of corticosteroid use
- Number and frequency of hospitalization
- Number of physician visit
- Number of day of sick leave
- Frequency of patients that use non-medical items



## Unit costs

- Moisturizer unit cost
- Corticosteroid unit cost
- Hospitalization unit cost
- GP consultation unit cost
- Dermatology outpatient clinic visit cost
- Median full-time gross earnings
- Non-medical items out-of-pocket expenditure

# Moisturizer data : example

| Reference                     | Comparators      | Transition probability over 4 weeks | Application / day | Mean quantity / application | Used quantity (g/day) | Used quantity by cycle | Unit costs (£/mL) | Costs per cycle (£) |
|-------------------------------|------------------|-------------------------------------|-------------------|-----------------------------|-----------------------|------------------------|-------------------|---------------------|
| Zelenkova, 2018               | Lipikar Balm AP+ | 18,00%                              | 2                 | -                           | 6.84                  | 191.6                  | 0,0311            | 5,96                |
| Tiplica et al., 2018          | No moisturizer   | 35,73%                              |                   |                             |                       |                        |                   |                     |
| Tiplica et al., 2018          | Dexeryl          | 20,56%                              | 2                 | 5.35                        | 10.7                  | 299.6                  | 0,0121            | 3,62                |
| Tiplica et al., 2018          | Atopiclair       | 28,38%                              | 3                 | 5.69                        | 17.1                  | 477.75                 | 0,1246            | 59,58               |
| Angelova-Fischer et al., 2018 | Eucerin          | 32,00%                              | 2                 | 5.69                        | 11.4                  | 318.5                  | 0,0317            | 10,11               |



# Outcomes

## Efficiency



QALY



Time without  
flare-ups

## Costs



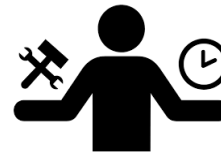
Consultations



Hospitalisations



Prescriptions



Lost productivity



Out-of-pocket

# Base Case over 5 years

|                               | Lipikar Balm AP+ | Dexeryl <sup>®</sup> cream | Atopiclair <sup>®</sup> cream | Eucerin <sup>®</sup> AtopiControl Body Lotion | No moisturizer   |
|-------------------------------|------------------|----------------------------|-------------------------------|---|------------------|
| <i>Efficacy</i>               |                  |                            |                               |   |                  |
| <b>Time without flare-ups</b> | <b>3,89</b>      | <b>3,80</b>                | <b>3,57</b>                   | <b>3,48</b>                                   | <b>3,38</b>      |
| QALY                          | 3,55             | 3,54                       | 3,51                          | 3,50  | 3,49             |
| <i>Costs</i>                  |                  |                            |                               |   |                  |
| Moisturizer                   | £373,99          | £222,16                    | £3 737,54                     | £620,04                                       | £0,00            |
| Corticoid                     | £112,00          | £125,32                    | £162,67                       | £178,54                                       | £194,03          |
| Hospitalisation               | £106,88          | £110,36                    | £120,11                       | £124,26                                       | £128,31          |
| Physician visit               | £781,82          | £874,74                    | £1 135,49                     | £1 246,25                                     | £1 354,37        |
| Lost productivity             | £0,00            | £0,00                      | £0,00                         | £0,00   | £0,00            |
| OOP expenses                  | £0,00            | £0,00                      | £0,00                         | £0,00   | £0,00            |
| <b>Total</b>                  | <b>£1 374,69</b> | <b>£1 332,57</b>           | <b>£5 155,82</b>              | <b>£2 169,09</b>                              | <b>£1 676,70</b> |

# Comparative results

|  | Costs     | $\Delta C$ | Benefit | $\Delta B$ | ICER ( $\Delta C/\Delta B$ ) |
|--|-----------|------------|---------|------------|------------------------------|
| <i>Dexeryl® cream</i>                    | £1 332,57 |            | 3,803   |            |                              |
| <i>Lipikar Balm AP+</i>                  | £1 374,69 | £42,13     | 3,885   | 0,082      | £513,85                      |
| <i>No moisturizer</i>                    | £1 676,70 | £302,01    | 3,380   | -0,505     | Dominated                    |
| <i>Eucerin® AtopiControl Body Lotion</i> | £2 169,09 | £794,40    | 3,475   | -0,410     | Dominated                    |
| <i>Atopiclair® cream</i>                 | £5 155,82 | £3 781,13  | 3,573   | -0,312     | Dominated                    |



- The strategy with Lipikar is a little more expensive by £42 but also more effective by 0.082 year without flare-ups corresponding to 30 days difference without flare-up.
- The ICER is £513/year without flare-ups. This ratio means that it would cost £515 for an additional year without flare-ups.
- Lipikar is the dominant strategy compared to no treatment : 184 more days without flare-ups and £302,01 cheaper.

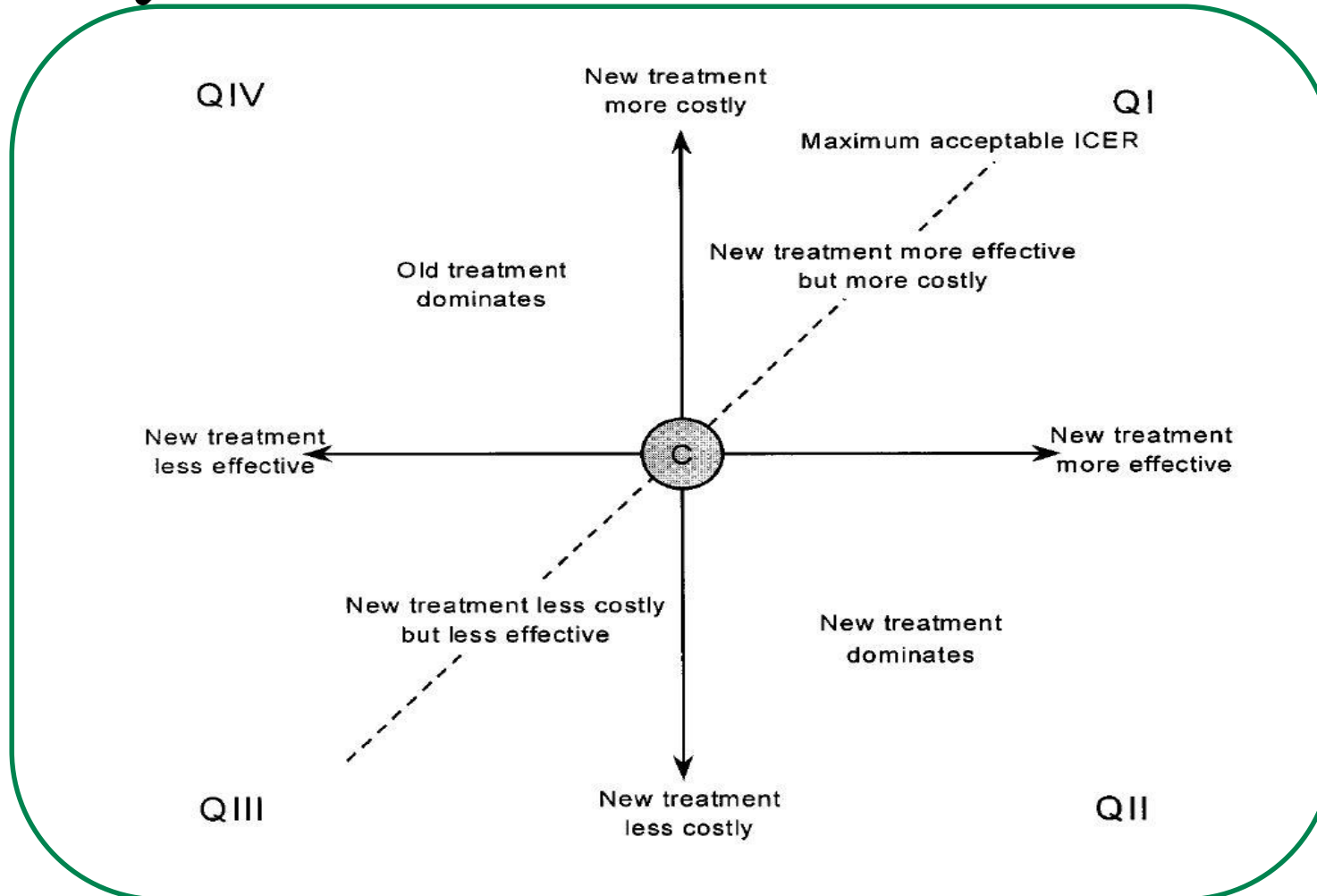
# Dealing with uncertainty

## Methods

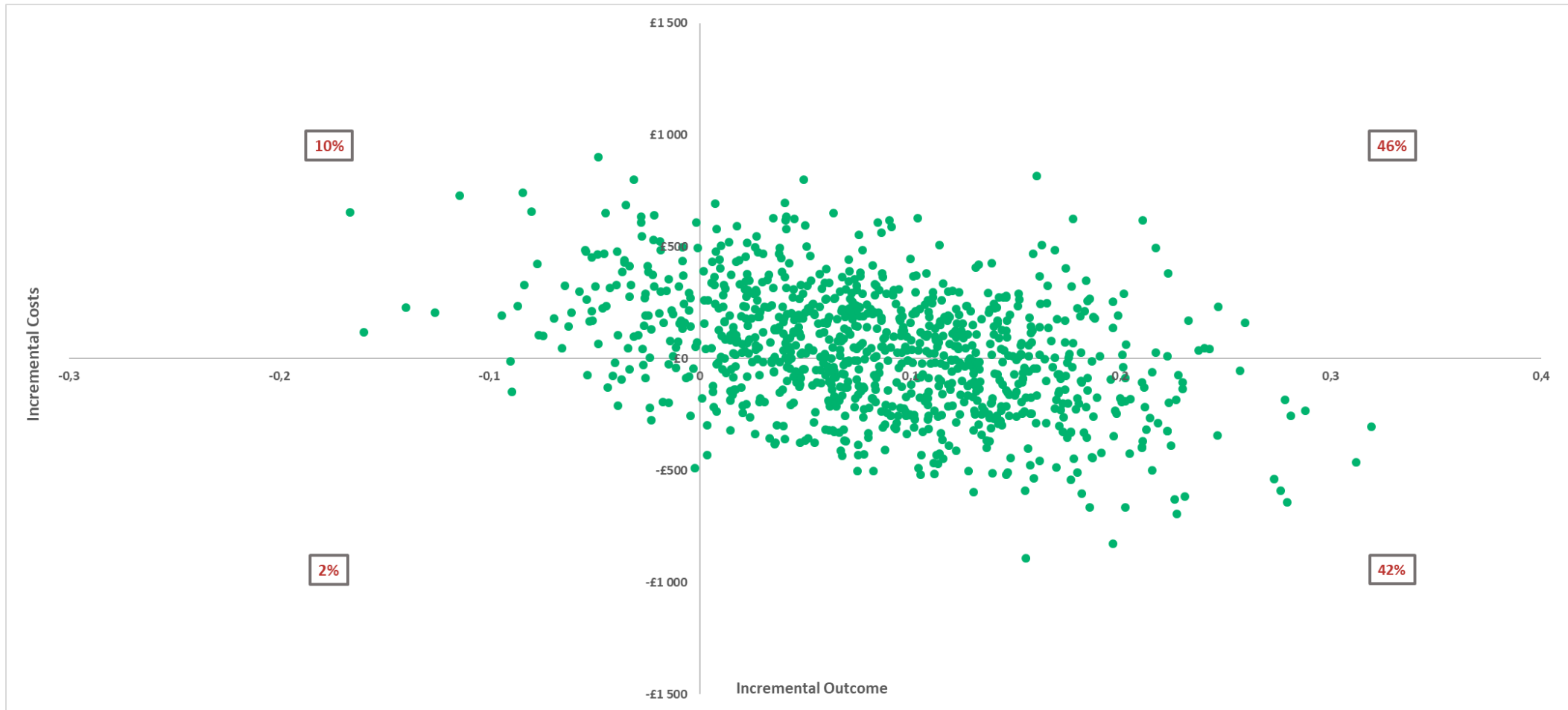
- ◆ Additional evidences can reduce uncertainty and provide more precise estimates
- ◆ An assessment of the implications of decision uncertainty is an essential part of any decision-making process.
- ◆ Two reasons why the uncertainty matters:
  - To provide correct evaluation of expected effect and cost
  - To assess the possible consequences of an uncertain decision for the NHS

# Cost-effectiveness plane

## Methods



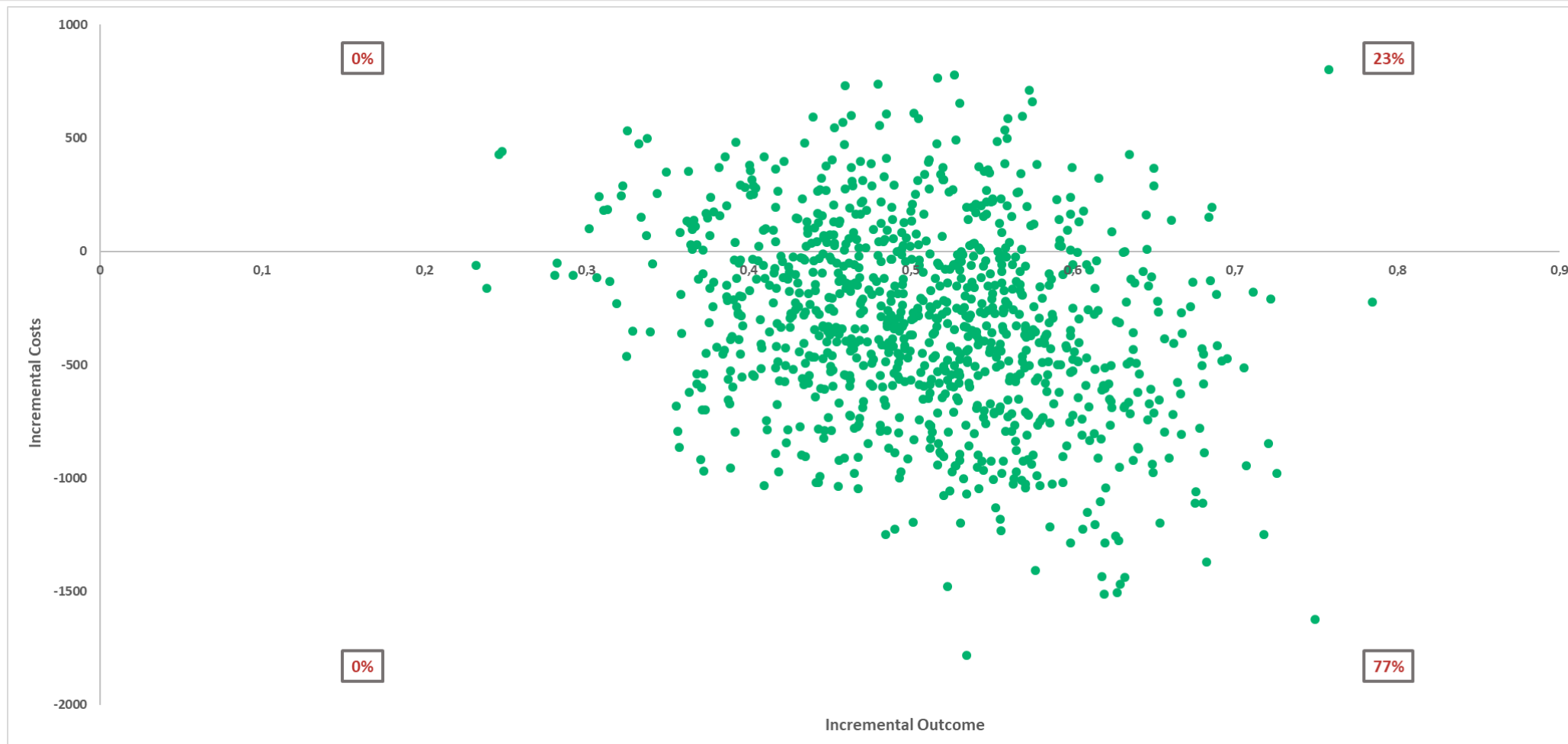
# Probabilistic Sensitivity Analysis : Lipikar vs. Dexeryl



→ X axis :  $\Delta$  efficacy  
↑ Y axis :  $\Delta$  costs

# Probabilistic Sensitivity Analysis : Lipikar vs. No Moisturizer

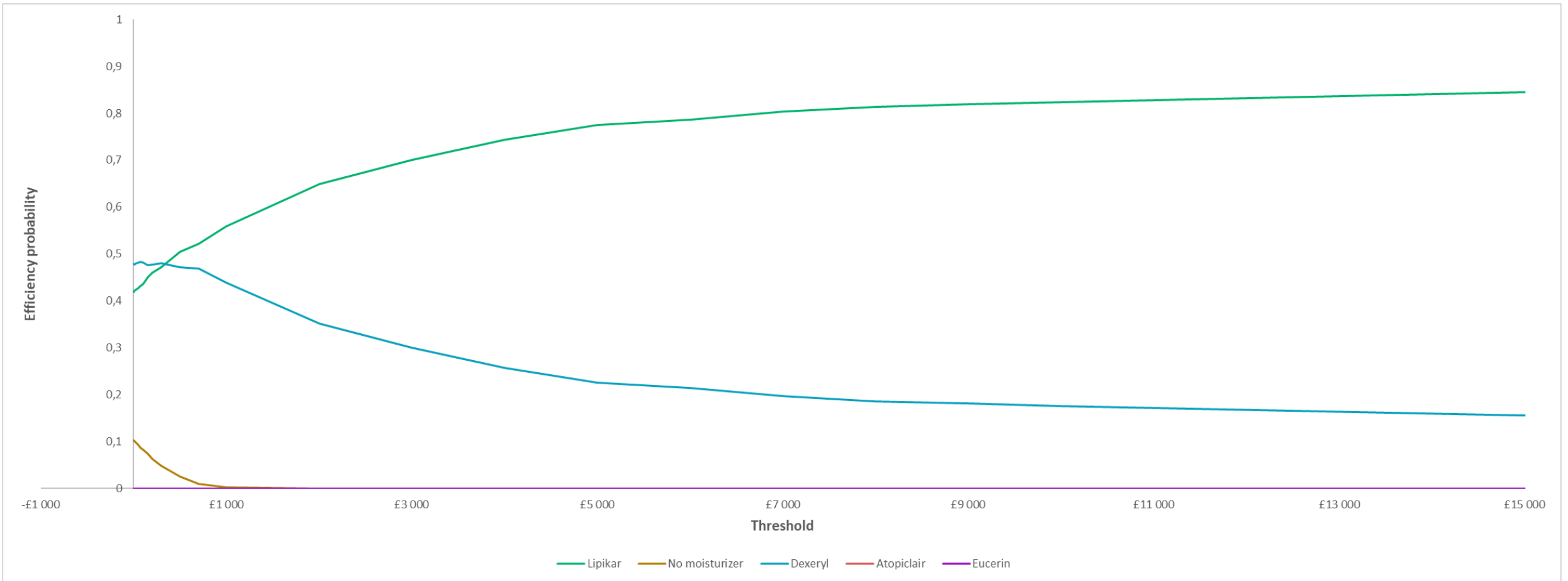
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→ X axis :  $\Delta$  efficacy

↑ Y axis :  $\Delta$  costs

# Acceptability Curves





# Societal perspective

|                   | Lipikar Balm AP+ | Dexeryl® cream   | Atopiclair® cream | Eucerin® AtopiControl Body Lotion | No moisturizer   |
|-------------------|------------------|------------------|-------------------|-----------------------------------|------------------|
| <i>Costs</i>      |                  |                  |                   |                                   |                  |
| Moisturizer       | £373,99          | £222,16          | £3 737,54         | £620,04                           | £0,00            |
| Corticoid         | £112,00          | £125,32          | £162,67           | £178,54                           | £194,03          |
| Hospitalisation   | £106,88          | £110,36          | £120,11           | £124,26                           | £128,31          |
| Physician visit   | £781,82          | £874,74          | £1 135,49         | £1 246,25                         | £1 354,37        |
| Lost productivity | £551,98          | £615,90          | £795,29           | £871,49                           | £945,86          |
| OOP expenses      | £186,23          | £193,10          | £212,40           | £220,59                           | £228,59          |
| <b>Total</b>      | <b>£2 112,90</b> | <b>£2 141,57</b> | <b>£6 163,50</b>  | <b>£3 261,17</b>                  | <b>£2 851,15</b> |

|  | Costs     | ΔC        | Benefit | ΔB     | ICER      |
|--|-----------|-----------|---------|--------|-----------|
| <i>Lipikar Balm AP+</i>                  | £2 112,90 |           | 3,885   |        |           |
| <i>Dexeryl® cream</i>                    | £2 141,57 | £28,67    | 3,803   | -0,082 | Dominated |
| <i>No moisturizer</i>                    | £2 851,15 | £709,58   | 3,380   | -0,423 | Dominated |
| <i>Eucerin® AtopiControl Body Lotion</i> | £3 261,17 | £1 119,60 | 3,475   | -0,328 | Dominated |
| <i>Atopiclair® cream</i>                 | £6 163,50 | £4 021,93 | 3,573   | -0,230 | Dominated |

# Price analysis

## Base case : -15%

|                | Costs     |           |              | Efficacy |         |              | ICER     |
|----------------|-----------|-----------|--------------|----------|---------|--------------|----------|
|                | Lipikar   | Dexeryl   | Differential | Lipikar  | Dexeryl | Differential |          |
| Basecase       | £1,374.69 | £1,332.57 | £42.13       | 3.885    | 3.803   | 0.082        | £513.85  |
| Price Analysis | £1,318.59 | £1,332.57 | -£13.97      | 3.885    | 3.803   | 0.082        | Dominant |
| Difference     | -£56.10   | £0.00     | -£56.10      | 0.00     | 0.00    | 0.00         | /        |
| Evolution      | -4%       | 0%        | -133%        | 0%       | 0%      | 0%           | Dominant |

## Societal perspective : +10%

|                | Costs     |           |              | Efficacy |         |              | ICER     |
|----------------|-----------|-----------|--------------|----------|---------|--------------|----------|
|                | Lipikar   | Dexeryl   | Differential | Lipikar  | Dexeryl | Differential |          |
| Basecase       | £2 112,90 | £2 141,57 | -£28,67      | 3,885    | 3,803   | 0,082        | -£349,76 |
| Price Analysis | £2 150,29 | £2 141,57 | £8,73        | 3,885    | 3,803   | 0,082        | £106,44  |
| Difference     | £37,40    | £0,00     | £37,40       | £0,00    | £0,00   | £0,00        | /        |
| Evolution      | 2%        | 0%        | -130%        | 0%       | 0%      | 0%           | -130%    |

# Conclusion

- ❖ Emollients are treatments with **preventive effects on effective relapses** compared to no moisturizer.
- ❖ Lipikar makes it possible to **improve** as much as possible **this period of remission of 0.6 years** is about **183 days without flare-ups** compared to no moisturizer.
- ❖ However, these treatments can be very expensive and particularly Atopiclair. The **least expensive treatment is Dexeryl**.
- ❖ In terms of efficiency, Lipikar is **£42 more expensive** than Dexeryl but **0.08 years (30 days) more efficace**, which implies an **ICER of £513**. Moreover, **Lipikar dominates all other strategies** that they all appear more expensive and less effective.
- ❖ With probabilistic analyzes, **Lipikar remains mostly more effective and a little more expensive** than Dexeryl. Lipikar is **the most efficient strategy starting from a willingness to pay of £500**. It maximizes the net monetary benefit. It reaches an **efficiency probability of 80% for a willingness to pay of £8000**.
- ❖ Taking into account different perspectives and in particular **the societal perspective**, which takes into account productivity losses and out-of-pocket expenditures, **Lipikar becomes the cheapest strategy**.

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