COST-EFFECTIVENESS OF EMOLLIENTS IN PATIENTS WITH ATOPIC DERMATITIS

E Cabout[1], JB Trouiller[1] , R Launois[1], S Seité[2], C Taieb[3,4]

[1] Network for Evaluation in Health Economics, REES France, Paris, France; [2]La Roche-Posay Dermatological Laboratories, Levallois-Perret, France.[3]EMMA, Fontenay-sous-Bois, France [4]Hôpital Necker Enfants-Malades, Santé Publique, France

BACKGROUND

Atopic dermatitis (AD) is an inflammatory, relapsing skin disorder defined by inflammatory flares followed by periods of remission. The management of atopic dermatitis requires visits to the doctor, specific clothing, but also the need to apply local treatments to calm periods of crisis. All this care has a strong impact on the health and quality of life and social life of patients. The prevalence rate is estimated at 15%. The follow-up of AD and the prevention of relapses have a great impact on health care, society costs but also on patient's expenditures.

OBJECTVE

The aim of the study is to demonstrate the medical value of emollient prescribing and explore the cost-effectiveness of different emollients prescribed to AD patients.

METHOD

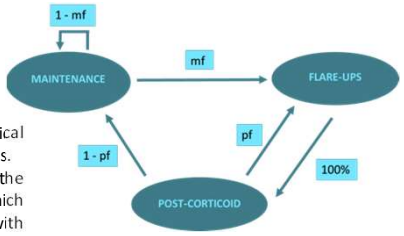
STRUCTURING CHOICE

-5-year period with cycles of 28 days
-Two perspectives:
1°NHS/PSS,
2°societal which adds productivity losses and out-of-pocket expenditures.
-The target population is composed of patients with AD who have just been treated with corticoid to remove flare-ups.
-Four different emollients compared: A, B, C, D with no emollient users
-Two outcomes: Time without flare-ups and QALY
-Costs: Consultations, hospitalizations, prescriptions, lost productivity and out-of-pocket

MODELLING

A Markov model with 3 health states:
"Flare-up",
"Post-corticoid" and
"Maintenance"

Patients were treated with topical corticosteroid during flare-ups periods.
The post-corticoid state represents the phase following the one during which patients were treated with corticosteroid, and lasts 28 days, i.e. 1 cycle. Therefore, patients can't stay in this state after a cycle, they either undergo new flare-ups or enter the maintenance state.



DATA INCLUDING

It is an evidence-based model constructed from the literature:
randomized clinical trials and literature review for the efficacy of treatments,
resource utilisation and quality of life from real world data,
unit prices from official prices lists.

SENSITIVITY ANALYSIS

Deterministic and probabilistic sensitivity analysis were performed. Scenario analysis also.

RESULTS

BASE CASE (NHS/PSS PERSPECTIVE)

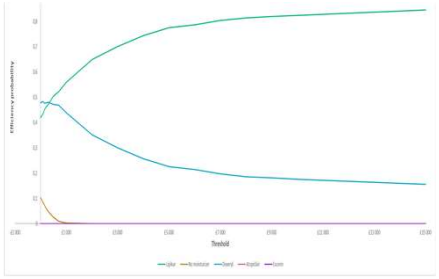
	A	B	C	D	No moisturizer
Efficacy					
Time without flare-ups	3,89	3,80	3,57	3,48	3,38
QALY	3,55	3,54	3,51	3,50	3,49
Costs					
Moisturizer	£373,99	£222,16	£3 737,54	£620,04	£0,00
Corticoid	£112,00	£125,32	£162,67	£178,54	£194,03
Hospitalization	£106,88	£110,36	£120,11	£124,26	£128,31
Physician visit	£781,82	£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
Total	£1 374,69	£1 332,57	£5 155,82	£2 169,09	£1 676,70

	Costs	ΔC	Benefit	ΔB	ICER (ΔC/ΔB)
B	£1 332,57		3,803		
A	£1 374,69	£42,13	3,885	0,082	£513,85
No moisturizer	£1 676,70	£302,01	3,380	-0,505	Dominated
D	£2 169,09	£794,40	3,475	-0,410	Dominated
C	£5 155,82	£3 781,13	3,573	-0,312	Dominated

The strategy with A is a little more expensive by £42 but also more effective by 0.082 year without flare-ups corresponding to a 30-day difference without flare-ups.
All other treatments (no moisturizer, D and C) are more expensive and less effective than A. They are therefore dominated.
The ICER is £513 by year without flare-ups. The ratio means that it would cost £513 with A for an additional year without flare-ups compared to B.

A is the dominant strategy compared to no treatment: 184 more days without flare-ups and £302 cheaper. Strategies A and B are on the efficiency frontier, which is composed of all the efficient treatments.

SENSITIVITY ANALYSIS



With probabilistic analysis, A remains mostly more effective and a little more expensive than B. A 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 off £8000.

SOCIETAL PERSPECTIVE

	A	B	C	D	No moisturizer
Costs					
Moisturizer	£373,99	£222,16	£3 737,54	£620,04	£0,00
Corticoid	£112,00	£125,32	£162,67	£178,54	£194,03
Hospitalization	£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
Total	£2 112,90	£2 141,57	£6 163,50	£3 261,17	£2 851,15

The societal perspective considers the rest of the patients but also the productivity losses for society (absenteeism and presenteeism).
With the support of productivity losses and the out-of-pocket costs, the strategy A becomes the cheapest strategy (£2,112.90). The strategy with B costs £2,141.57. The difference between these two strategies is now £28.67 in favor of A. In terms of efficacy, A is the only strategy on the efficiency frontier and dominates all other strategies because they are more expensive and less effective.

DISCUSSION

- Emollients are treatments with **effective effects on relapses** compared to no moisturizer.
- Emollient A **improves** as much as possible **this period of remission of 0.6 years** corresponding to about **183 days without flare-ups** compared to no moisturizer.
- In regard to the different perspectives and in particular **the societal** one which takes into account productivity losses and out-of-pocket expenditures, Emollient A **becomes the cheapest strategy.**

References:
Seite S, Moyal D. Observational Study on Patients with Atopic Dermatitis. SKIN J Cutan Med. 2017;1(3.1):42. doi:10.25251/skin.1.supp.41
Tiplica GS, Boralevi F, Konno P, et al. The regular use of an emollient improves symptoms of atopic dermatitis in children: a randomized controlled study. J Eur Acad Dermatol Venereol JEADV. 2018;32(7):1180-1187. doi:10.1111/jdv.14849
van Zuuren EJ, Fedorowicz Z, Christensen R, Lavrijsen AP, Arents BW. Emollients and moisturisers for eczema. Cochrane Skin Group, ed. Cochrane Database Syst Rev. February 2017. doi:10.1002/14651858.CD012119.pub2
Launois R, Ezzedine K, Cabout E, et al. Importance of out-of-pocket costs for adult patients with atopic dermatitis in France. Journal of the European Academy of Dermatology and Venereology. 0(0). doi:10.1111/jdv.15581
Sanders GD, Neumann PJ, Basu A, et al. Recommendations for Conduct, Methodological Practices, and Reporting of Cost-effectiveness Analyses: Second Panel on Cost-Effectiveness in Health and Medicine. JAMA. 2016;316(10):1093. doi:10.1001/jama.2016.12195
Office for National Statistics. Inflation and price indices - Office for National Statistics. https://www.ons.gov.uk/economy/inflationandpriceindices. Published 2019. Accessed March 12, 2019.
Fenwick E. Economic Evaluation,. In: Encyclopedia of Health Economics. Elsevier; 2014:224-231. doi:10.1016/B978-0-12-375678-7.01419-X