



**LA ROCHE-POSAY**  
LABORATOIRE DERMATOLOGIQUE



EMOLLIENT THERAPY  
FROM BIRTH:  
A NEW APPROACH  
TO PREVENT  
ATOPIC DERMATITIS

From science to daily practice



# Edito

---

“ When prevention is the best therapeutic option, the sooner is definitely the better,”

Atopic dermatitis is a frequent skin disease, which strongly impairs quality of life in patients and their family. Atopic dermatitis has a strong hereditary component and is associated with the development later in life of other atopic manifestations such as food allergy, asthma, and allergic rhinitis – a process known as the “atopic march”. It may also be associated with a large range of disorders including behavioural and metabolic conditions. It is well-known that emollients are a cornerstone of atopic dermatitis management as they participate in restoration of skin barrier function. They relieve symptoms and improve quality of life by addressing further troubles such as sleep disturbance and stress. Thus, considering the current available data, we now need to provide parents of children at risk for atopy with a tool to prevent the development of atopic dermatitis.

Recent studies have shown that emollients can prevent babies from even developing atopic dermatitis in the first place: the sooner after birth they are used, the more efficient they are. Daily liberal use of emollients has been shown to significantly reduce atopic dermatitis onset, all the more since large amounts are applied. Even in babies with very sensitive skin, specifically designed emollients are safe from the first days of life onwards.

Therefore, as health care professionals, our role is to educate parents of children at risk for atopic disease and to recommend the use of emollients as a primary prevention treatment. Using emollients from birth, even before the onset of any sign of the disease, should become a daily routine for babies with a high-risk profile.

When the best therapeutic option is primary prevention, the sooner is definitely the better.

---

**Pr Pierre VABRES**

[Dermatology department](#)

Dijon-Bourgogne University Hospital

# EMOLLIENT THERAPY IMPROVES SKIN BARRIER AND BLOCKS INFLAMMATORY CASCADE

New insights into the pathophysiology of skin diseases point to an important role of structural abnormalities in the epidermis as well as immune dysregulation not only in AD initiation (Fig 1) but also for the development of other atopic diseases:

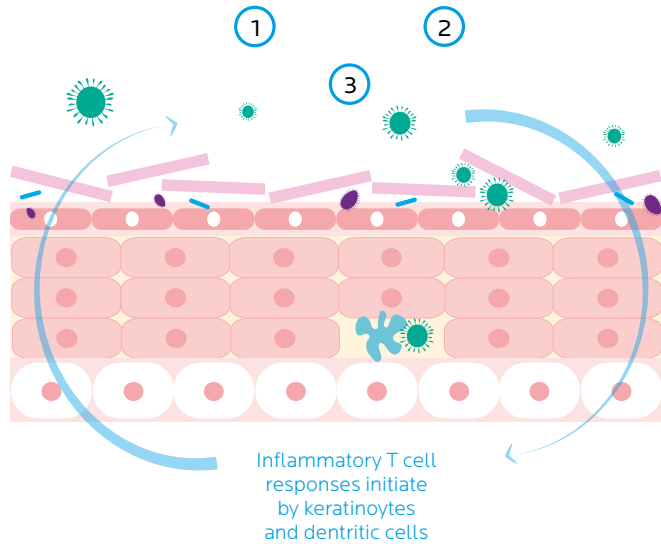


Fig 1: Mechanisms involved in the initiation and maintenance of skin inflammation in atopic dermatitis <sup>from 1,2,3,4,5</sup>

Therefore, measures directed at healing and protecting the skin barrier and addressing the immune dysregulation were essential and early intervention became a new strategy to improve outcomes for both the skin disease as well as other target organs. One of the approaches being explored was emollient therapy from birth.

Emollient therapy improves the barrier function of the skin by providing lipids to the stratum corneum, which in turn, improves skin hydration by trapping water<sup>2</sup>. Emollients also help to prevent inflammation caused by external irritants (Fig 2). In premature babies, emollients have been shown to reduce the incidence of skin inflammation<sup>2</sup>. Rebalancing the skin microbiota could have a beneficial effect too. **A study showed that 1 month daily application of emollient enriched with prebiotics leads to symptoms improvement and limits infections<sup>6</sup>.**

## 1 Genetic

Atopic dermatitis is highly heritable and shows strong familial clustering. Prevalent mutations in the gene encoding filaggrin (FLG), a key skin-barrier protein which aggregate keratin filaments in the uppermost layer of the epidermis (the stratum corneum), represent the strongest and most consistent known genetic risk factor for atopic dermatitis<sup>2</sup>. Disruption of the gene encoding FLG is associated with AD, as well as ichthyosis, and an increased transepidermal water loss, even before AD develops<sup>3</sup>.

## 2 Defective skin barrier

AD is caused by an increased transepidermal water loss due to a defective skin epidermal barrier, as well as increased colonization and penetration by microorganisms and allergens, evoking inflammatory responses<sup>4</sup>.

## 3 Skin microbiota dysbiosis

The evolution of the microbiota into distinct anatomical niches occurs after infancy until finally, in early childhood, an individual's microbial community achieves relative long-term stability<sup>5</sup>. Normal skin microbiota promotes normal skin barrier by production of antimicrobial peptides<sup>5</sup>. **Thus, dysbiosis of skin microbiota could also be a cause of AD.**

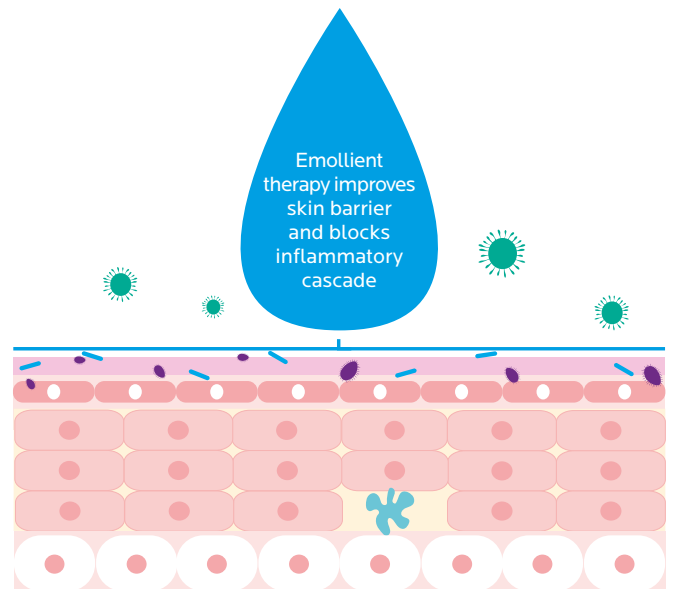


Fig 2: Prevention of atopic dermatitis development by emollient<sup>1</sup>



Keratinocytes



Emollient



Allergens



Skin microbiota



Antigen-presenting cell

# PREVENTION IS KEY: DAILY USE OF EMOLLIENTS FROM BIRTH CAN PREVENT AD

## The new primary prevention

Recently, several studies have shown indeed that daily application of emollients from birth could be the answer to prevent AD even before the disease has developed. Two main studies compared atopic dermatitis incidence in infants at high risk of developing the disease, due to their family profile.

In the first one, half of the neonates were moisturized at least once daily with an emollient from birth. Clinical outcomes showed that infants in the emollient group had a significantly reduced risk of developing atopic dermatitis by 6 months of age compared to those in the control group (43% versus 22%, respectively, relative risk, 0.50; 95% CI, 0.28–0.90; P=0.017)<sup>1</sup>.

Simpson EL *et al.* JACI 2014<sup>1</sup>



A further trial from Japan which included 118 infants showed similar results, with 32% fewer infants in the emollient group developing atopic dermatitis<sup>3</sup>. Another study showed that a daily emollient therapy from 6 weeks to six months of age for babies with dry skin but no itching or scratching resulted in significantly more often normal skin (75.0 vs. 37.5%, p=0.01) compared to the control group<sup>7</sup>.

Horimukai k *et al.* JACI 2014<sup>3</sup>



## Furthermore, primary prevention with emollients is cost effective

An American study showed that moisturization from birth to 6 months of life is a cost-effective strategy for the prevention of atopic dermatitis<sup>9</sup>. Primary prevention of atopic dermatitis using emollients may indeed theoretically reduce the risk of developing other atopic diseases and would represent a significant cost saving for health care providers through reduced treatment and appointment costs<sup>2</sup>.

## THE BURDEN OF ATOPIC DERMATITIS: DISEASES AND BEHAVIORAL DISORDERS

The increasing prevalence, patient morbidity, health care costs, and potential toxicities of current therapies make the development of disease prevention strategies in atopic dermatitis an important goal<sup>9</sup>.

### Allergies

There is a strong association between atopic dermatitis during infancy and the risk of food allergy, with the highest prevalence of food allergy reported in early onset and severe AD. Eczema is often the first manifestation of the so-called 'atopic march', in which a child progresses from atopic dermatitis to food allergy, asthma and allergic rhinitis later in life<sup>2</sup>.

### Behavior and metabolism

AD leads to sleep disturbance, and is also linked to attention deficit and hyperactivity disorders, as well as obesity and anemia<sup>8</sup>.

### Parental stress

The family impact of caring for a child with moderate or severe atopic dermatitis is greater than caring for children with type 1 diabetes mellitus, mainly due to sleep deprivation, employment loss, time to care for atopic dermatitis and financial costs<sup>2</sup>.

## KEY FACTS

Worldwide prevalence:

20% of children<sup>2</sup>

60%

of affected individuals first develop AD during the 1<sup>st</sup> year of life<sup>4</sup>

Around

40%

of cases of AD persist into adulthood<sup>2</sup>

## A well-known secondary prevention strategy

Emollients serve as first-line therapy during remission<sup>9</sup> too. Indeed, emollients are effective at preventing flares in established AD. A British study including 136 neonates and their parents followed for 12 weeks showed **the increase of the daily amount of emollient leads to a significant reduction of POEM** (Patient Oriented Eczema Measure), a score assessing the severity of eczema, recording the days in a week affected by seven signs of eczema: dryness, itching, bleeding, weeping, flaking, cracking of skin, and sleep loss. The same study designed a new simple measure called the Patient Eczema Severity Time (PEST). This score reflected the 'overall unhappiness' of patients from 'not at all unhappy' to 'extremely unhappy' scoring 1 to 5 respectively. Similarly, the PEST score reduced on average by 0.61 (95% CI: 0.47 to 0.75,  $p=0.001$ ), representing a 48% reduction from the baseline score with the increase of the daily amount of emollient applied<sup>10</sup>.

Moreover, several studies concluded that emollients, when used as an adjunctive treatment in AD, **demonstrated a steroid-sparing effect**<sup>4</sup>. Beyond its reach on baby skin, emollient application improves the health of the whole family. An average daily emollient use increased from 79,2 g to 166,8 g per week reduced sleep disturbance from 2.4 nights a week to 1.27 nights per week (95% CI: 0.85 to 1.68,  $p = 0.001$ )<sup>10</sup>. But we are starting to understand that emollients can do more.

## SPECIFIC EMOLLIENTS FOR 1<sup>ST</sup> DAYS OF LIFE

Neonates have thinner skin and greater surface area-to-volume-ratios than adults. Therefore a normally safe and non-irritating emollient may present more harm than benefits. A case-control study found that regular lotion use was common in children who later developed AD. Irritation resulting in damaged skin barrier in neonates may serve as a channel for penetrance of allergens and early sensitization<sup>4</sup>. Recently, products have been incorporating ingredients such as physiologic lipids which typically target the cornerstones of AD treatment, namely, **moisturization, anti-inflammation, anti-pruritic and anti-microbial**<sup>4</sup>.



## USING APPROPRIATELY FORMULATED BABY PRODUCTS<sup>11</sup>

### Bathing routine






| The whole body may be cleansed with water alone or by adding to water appropriately formulated liquid cleansers that are free of known irritants and neutral or mildly acidic (pH 5.5-7.0) or have minimal effect on the baby's skin surface pH.

| Syndet liquid cleansers, as opposed to syndet bars, enable more efficient delivery of beneficial ingredients such as emollients and occlusives.

### Use of emollients

| Emollients for babies **should not contain sodium lauryl sulfate** (SLS) because this emulsifier has been shown to adversely affect the skin barrier.

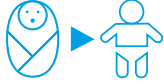
## LITERATURE REVIEW IN A NUTSHELL

 <b>STUDY</b>	<b>Simpson EL, et al.</b> J Allergy Clin Immunol. 2014 <sup>1</sup>	<b>Horimukai K, et al.</b> J Allergy Clin Immunology 2014 <sup>3</sup>	<b>Ng JPX, et al.</b> JEADV 2015 <sup>4</sup>	<b>Chalmers JR, et al.</b> Trial 2017 <sup>2</sup> <i>Study in progress</i>
 <b>OBJECTIVE</b>	Test whether skin barrier enhancement by emollient daily application from birth is a feasible strategy to reduce incidence of AD in high-risk neonates.	Investigate whether protecting the skin barrier with a moisturizer during the neonatal period prevents development of AD and allergic sensitization.	Review available evidences to provide recommendations about emollient application for AD prevention.	To determine whether applying emollient daily to the entire body surface area from the first year of life can prevent atopic dermatitis in high-risk children.
 <b>METHOD</b>	124 neonates at high risk for AD.  <b>Prevention group:</b> moisturized daily with emollient for 6 months + advices (ex : avoid soap or bubble baths).  <b>Control group:</b> only advices.  <b>Follow-up:</b> 6 months.	118 neonates at high risk for AD.  <b>Prevention group:</b> daily application of emollient for 32 weeks.  <b>Control group:</b> no emollient.  <b>Follow-up:</b> 8 months.	Review of literature.	1400 neonates at high risk for AD.  <b>Prevention group:</b> Daily application of emollient for 1 year + advices.  <b>Control group:</b> advices only.  <b>Follow-up:</b> 24 months (face to face) to 60 months (questionnaires).
 <b>RESULT</b>	-50% relative risk of developing AD with daily emollient application (p=0.017) vs control group.	-32% of infants developed AD with daily emollient application (p=0.012) vs control group.	<b>Emollients improve skin hydration, spare corticoids use and have to be applied daily in large quantity.</b>	<b>study in progress.</b>
 <b>CONCLUSION</b>	<b>Emollient therapy from birth represents a feasible, safe and effective approach for atopic dermatitis prevention.</b>	<b>Daily application of moisturizer during the first 32 weeks of life reduces the risk of AD in infants.</b>		


# THE BEST PRACTICES TIPS TO REMEMBER

## How to moisturize


To ensure the best efficacy, babies must be moisturized with emollient daily:



From birth to at least 6 months to 1 year old<sup>1,3,4,10</sup>




Emollients containing prebiotics could help<sup>5,6</sup>




Daily repeated applications are recommended<sup>4</sup>



One application should be post bathing<sup>4</sup>



On the whole body (except scalp)<sup>1</sup>



At least 12 g per application (3 teaspoons)<sup>10</sup>

## Other tips to remember

To help prevent AD, you must also:

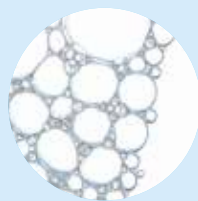


Use a mild, fragrance-free synthetic cleanser designed specifically for babies<sup>1</sup>

— AVOID<sup>1</sup>  —



SOAP



BUBBLE BATH



BABY WIPES



WASHING THE SUDS OVER THE BABY'S BODY

## Bibliography

**1-** Simpson EL, *et al.* Emollient enhancement of the skin barrier from birth offers effective atopic dermatitis prevention. *J Allergy Clin Immunol.* 2014;134:818-23. **2-** Chalmers JR, *et al.* Effectiveness and cost-effectiveness of daily all-over-body application of emollient during the first year of life for preventing atopic eczema in high-risk children (The BEEP trial): protocol for a randomized controlled trial. *Trials* 2017;18:343. **3-** Horimukai K, *et al.* Application of moisturizer to neonates prevents development of atopic dermatitis. *J Allergy Clin Immunology* 2014;134:824-30. **4-** Ng JPX, *et al.* Use of emollients in atopic dermatitis. *J Eur Acad Dermatol Venereol.* 2015;29:854-7. **5-** Powers CE, *et al.* Microbiome and pediatric atopic dermatitis. *J Dermatol.* 2015;42:1137-42. **6-** Seite S, *et al.* Clinical efficacy of emollients in atopic dermatitis patients - relationship with the skin microbiota modification. *Clin Cosmet Investig Dermatol.* 2017;10:25-33. **7-** Kvenshagen BK, *et al.* Can early skin care normalise dry skin and possibly prevent atopic eczema? A pilot study in young infants. *Allergol Immunopathol* 2014;42:539-43. **8-** Xu S, *et al.* Cost effectiveness of Prophylactic Moisturization for Atopic Dermatitis. *JAMA Pediatr.* 2017;171:e163909. **9-** Simpson EL, *et al.* A Pilot Study of Emollient Therapy for the Primary Prevention of Atopic Dermatitis. *J Am Acad Dermatol.* 2010; 63: 587-93. **10-** Mason JM, *et al.* Improved emollient use reduces atopic eczema symptoms and is cost neutral in infants: before-and-after evaluation of a multifaceted educational support programme. *BMC Dermatol.* 2013;13:7. **11-** Blume-Peytavi U, *et al.* Recommendations from a European Roundtable Meeting on Best Practice Healthy Infant Skin Care. *Pediatr Dermatol.* 2016;33:311-21.