ATOPIC DERMATITIS
ECZEMA

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Eczema

- Definition: inflammation of the skin
- Eczema vs. dermatitis

Eczema

- **Acute eczema:**
- **erosion, oozing and vesicles**

Eczema

- **Chronic eczema:**
- **lichenification, dark pigmentation and thick papules and plaques**

Dermatitis 101

- Atopic
- Seborrheic
- Contact
  - Allergic
  - Irritant
- Nummular
- Asteatotic
- Stasis
- Neurodermatitis/Lichen Simplex Chronicus

Atopic Dermatits

- **Definition:** chronic relapsing itchy skin disease in genetically predisposed patients.

  Associated diseases: bronchial asthma, allergic rhinitis, allergic congectivitis

- **Incidence:** up to 15% in developed countries
- Grow out tendency!

Atopic Dermatitis

- **Pathogenesis:**
  - Multifactorial;
  - "Atopy": genetic predisposition
  - Dry (atopic) skin (decrease human B-defensin 3 predisposing patients to frequent skin infections).
  - T-Cell (elevated Th2 cytokines and increased IgE production.
  - Recent studies showed a potential role for the Th17 pathway, with increased circulating Th17 cells in atopic patients, & increased Th17 in acute eczematous lesions. A decreased Th17 in chronic eczema argues for a dynamic role for the Th17 pathway.
  - Allergy, increased tendency to certain allergens.

Atopic Dermatitis

- Prevalence and association with other atopic disorders:
- Prevalence is almost 20% in US, representing a marked increase during the past several decade.
- Studies before 1960 estimated the prevalence to be up to 3%.
- AD is often the 1st manifestation of the "atopic march"
- AD → asthma → allergic rhinitis

Atopic Dermatitis

- Asthma occurs in up to 50% of children who develop AD during the first 2 years of life;
- Allergic rhinitis develop in 43-80% of children with AD.
- In general children showing more severe dermatitis have a higher risk of developing asthma, as well as sensitization to foods and environmental allergens.

Atopic Dermatitis

- AD occurs more frequently in urban areas than in rural areas, in smaller families, and in higher socioeconomic classes.

- Ultimately 80% of patients will develop increased IgE levels.

Atopic Dermatitis

- Loss-of-function mutations in profilaggrin (FLG) cause ichthyosis vulgaris, a common genetic disorder characterized by dry, scaling skin and hyperlinear palms that has long been known to be common in individuals with AD.
- Distinct mutations in FLG have been discovered in the European and Japanese populations, but all are strongly linked with AD, particularly of early onset.

Atopic Dermatitis

- Histology:

- Edema within the epidermis (spongiosis) and infiltration with lymphocytes and macrophages in the superficial dermis.

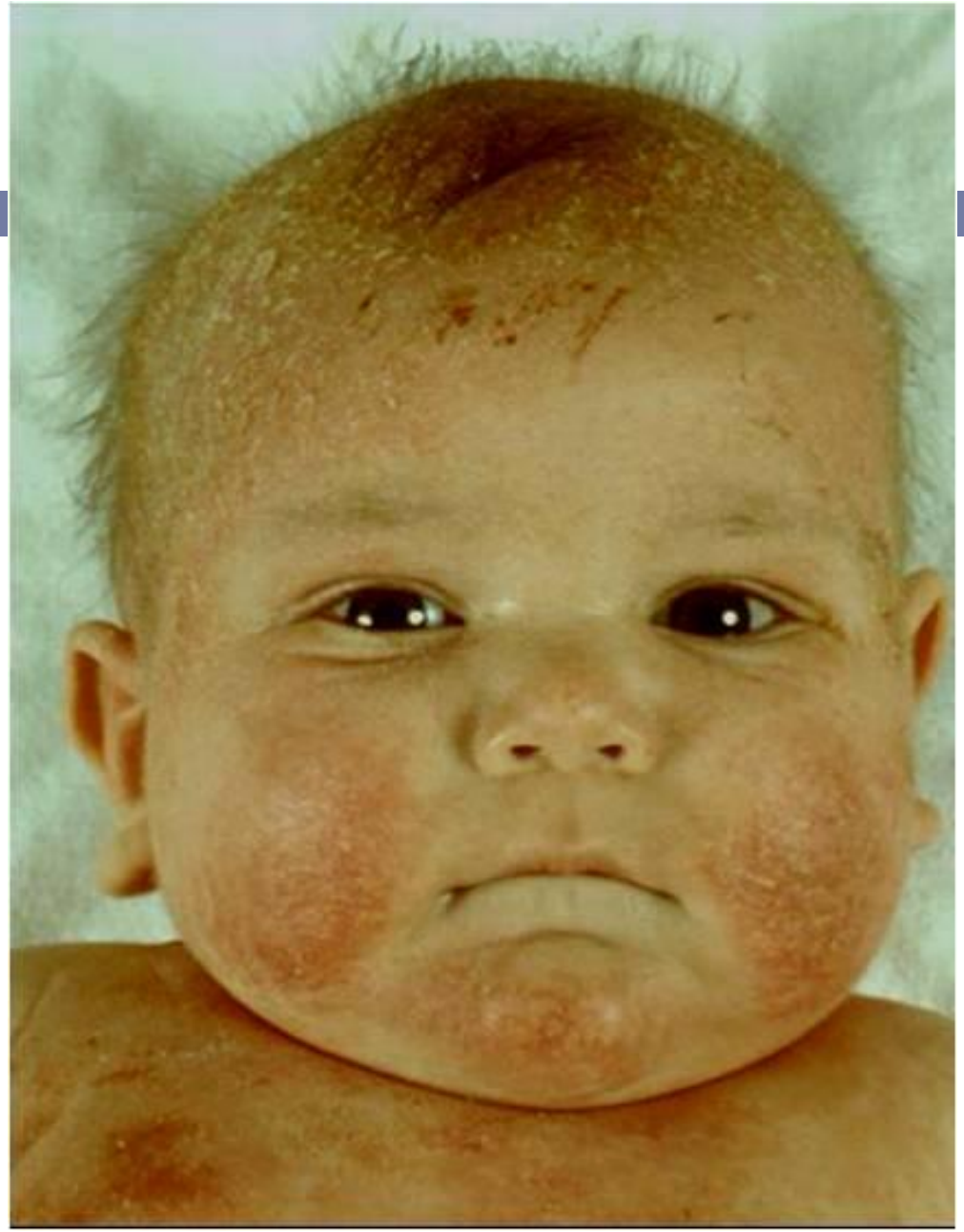
Atopic Dermatitis

- **Clinical Variants:**
  - **Infantile AD**
  - **Childhood AD**
  - **Adult AD**

Atopic Dermatitis

- **Infantile AD:**

- 60% of case AD present in the first year of life, after 2 months of age
- Begin as itchy erythema of the cheeks
- Distribution include scalp, neck, forehead, wrist, and extensors



Atopic Dermatitis

- **Childhood AD:**

- Characterized by less acute lesions
- Distribution: antecubital and popliteal fossae, flexor wrist, eyelids, and face.
- Severe atopic dermatitis involving more than 50% of body surface area is associated with growth retardation.

Atopic Dermatitis

- **Adult AD:**
- Distribution: antecubital and popliteal fossae, the front side of the neck, the forehead, and area around the eyes.
- Atopic individuals are at greater risk of developing hand dermatitis than are the rest of the population
- 70% develop hand dermatitis some times in their lives


Erythroderma: is a very rare complication of atopic dermatitis

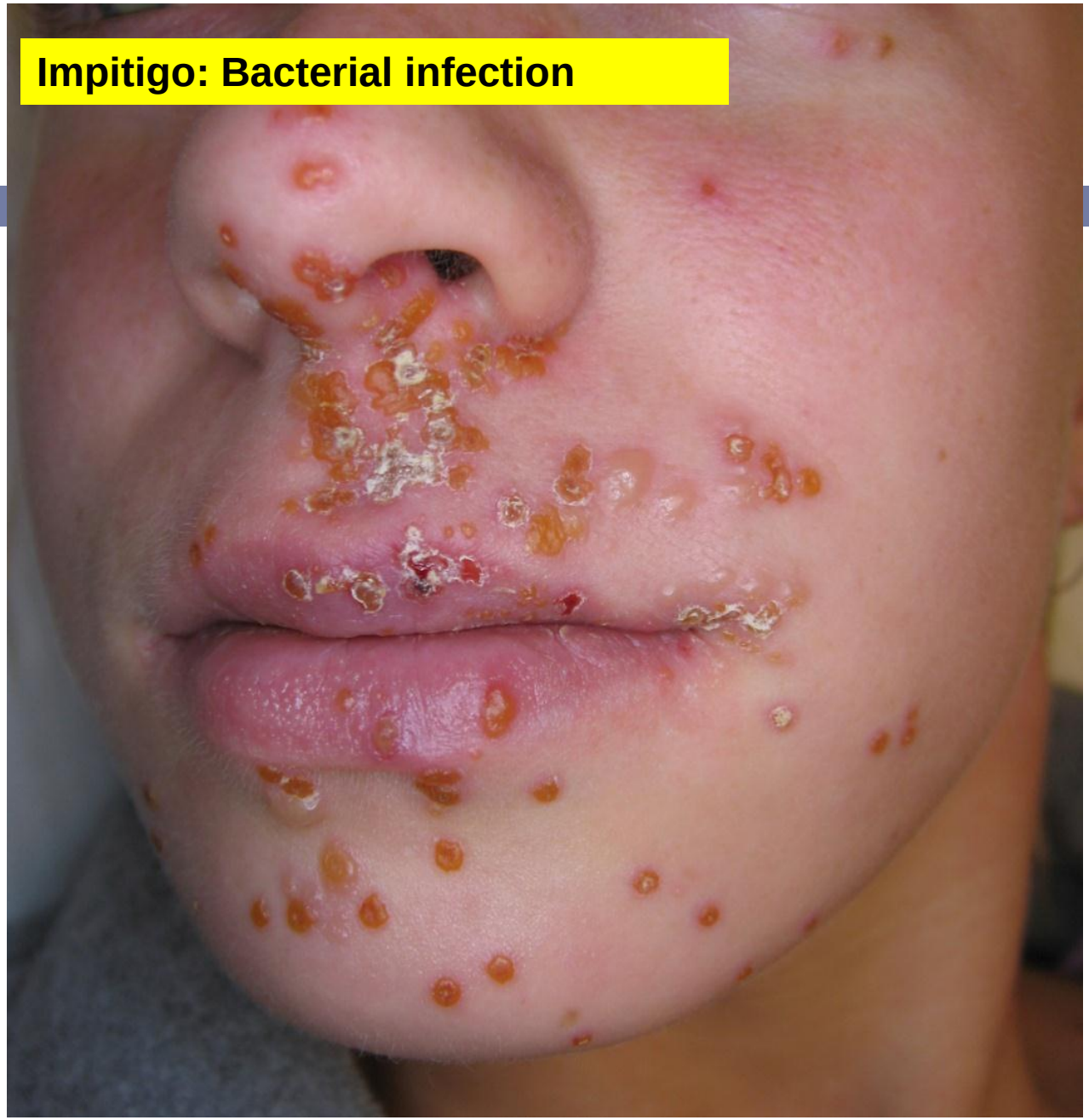
Atopic Dermatitis

- Atopic individuals have a distinct tendency toward an extra line or groove of the lower eyelid, so called ”atopic pleat”, is present at birth or shortly after and usually retained throughout life, referred to as “Dennie-Morgan fold”.
- Another feature, an exaggerated linear nasal crease, caused by frequent rubbing of the nasal tip (allergic salute), although not a specific sign of AD.

Atopic Dermatitis

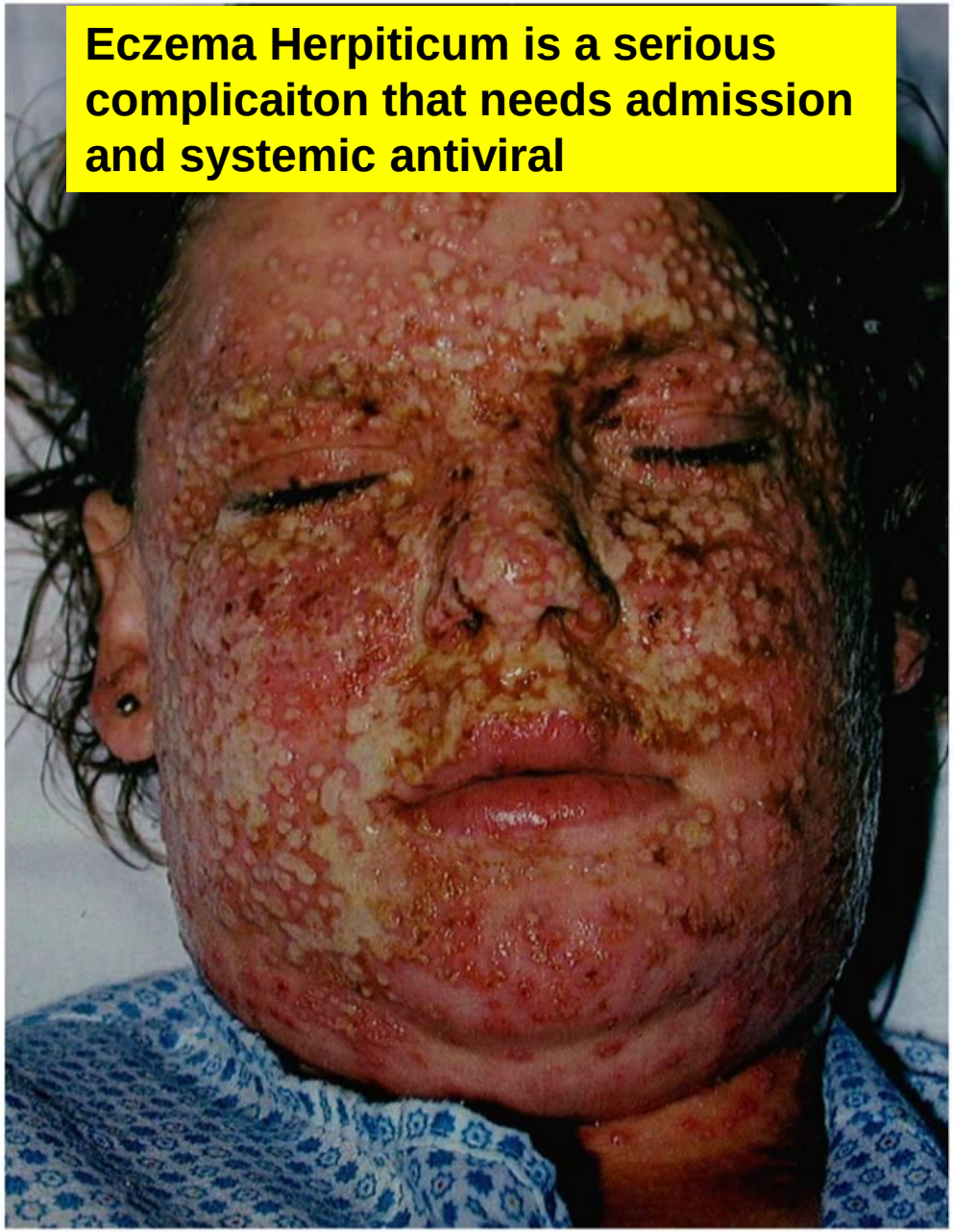
- **Complications:**
  - Secondary infections
  - Eczema herpeticum
  - Growth retardation
  - Psychological
  - PIH

Impitigo: Bacterial infection




Cellulitis

Eczema Herpiticum is a serious complicaiton that needs admission and systemic antiviral



Atopic Dermatitis

- **Investigations:**
  - **????????**

Atopic Dermatitis

- **Management:**
  - Education! **Education! Education!**
  - Support!
  - Skin care: **moisturizing the skin**
  - Topical therapy: (topical steroids, Tacrolimus, Pimecrolimus)
  - Phototherapy
  - Systemic therapy: steroids, Cyclosporin, Methotrexate, Azathioprine

- Local cutaneous side-effects
  - Atrophy
  - Striae
  - Periorificial granulomatous dermatitis
  - Acne
  - Telangiectasia
  - Erythema
  - Hypopigmentation
- Ocular effects
  - Cataracts
  - Glaucoma
- Systemic side-effects
  - Hypothalamic-pituitary-adrenal axis suppression

Atopic Dermatits

- **AD and Food!**
- **minor role**

Nummular dermatitis

- Coin shaped patches and plaques
- Secondary to xerosis cutis
- Primary symptom itch

Notice the surrounding xerosis

Regional eczema

- Ear eczema
- Eyelid dermatitis
- Nipple eczema
- Hand eczema
- Diaper dermatitis
- Juvenile plantar dermatosis

Ear eczema

- Most frequently caused by seborrheic or atopic dermatitis
- Staph, Strep, or Psoeudomonas
- Earlobe is pathognomonic of nickel allergy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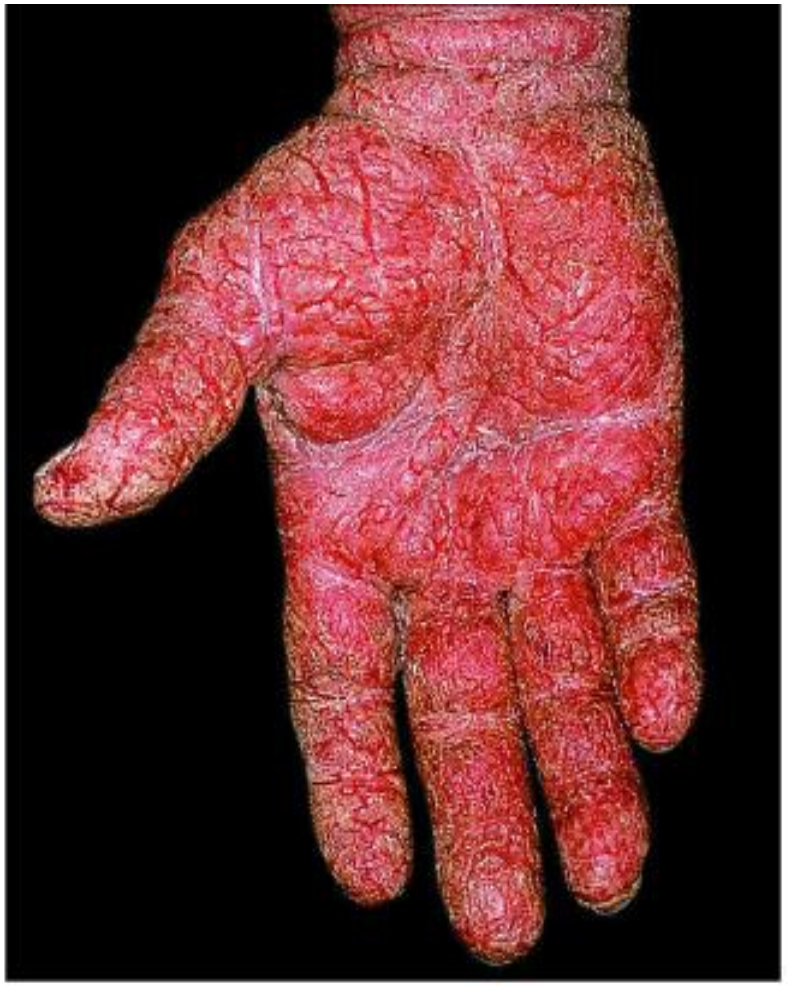
Nipple dermatitis

- Painful fissuring, seen especially in nursing mothers
- Maybe an isolated manifestation of atopic dermatitis
- If it persists more than 3 month, and/or unilateral, biopsy is mandatory to rule out Pagets disease



Hand eczema

- Spongiosis histologically
- Irritant hand dermatitis- seen in homemakers, nurses. Resulting from excessive exposure to soaps
- Pompholyx- tapioca vesicles, on sides of fingers, palms, and soles
- Irritant versus allergic

Juvenile plantar dermatosis

- Begins as a patchy symmetrical, smooth, red, glazed macules on the base of the great toes
- Affect age 3 to puberty.
- Symmetrical lesions on weight bearing area
- Virtually always resolve after puberty

Xerotic eczema

- Aka winter itch, nummular eczema, eczema craquele, and asteototic eczema.
- Anterior shins, extensor arms, and flank
- Elderly person predisposed.
- Use of bath oils in bath water is recommended to prevent water loss
- Moisturizers – urea or lactic acid.

Allergic contact dermatitis

- Type 4 Hypersensitivity Response
- Classically well demarcated/patterned
- Exposure can be infrequent (once a month)
- Patch testing is gold standard for diagnosis

Allergic contact dermatitis

Poison Ivy/Oak/Sumac

Allergic contact dermatitis

Potassium Dichromate
in Leather

Allergic Contact Dermatitis

TOP TEN ALLERGENS AS IDENTIFIED BY THE NORTH AMERICAN CONTACT DERMATITIS GROUP

Test substance	Allergic reactions (%)	Relevant reactions (%)
Nickel sulfate	14.2	49.1
Neomycin sulfate	13.1	46.2
Balsam of Peru	11.8	82.9
Fragrance mix	11.7	86.9
Thimerosal	10.9	16.8
Sodium gold thiosulfate	9.5	40.6
Formaldehyde	9.3	63.2
Quaternium-15	9.0	88.7
Cobalt chloride	9.0	55.1
Bacitracin	8.7	50.4

Irritant Contact Dermatitis

- Most contact dermatitis is irritant in nature
- Occupational morbity
- Irritant vs allergic
- Prevention is key!

IRRITANTS AND MECHANISMS OF TOXICITY	
Irritant	**Mechanisms of toxicity**
Detergents	Solubilization and/or disruption of barrier lipids and natural moisturizing factors in the stratum corneum Protein denaturation Membrane toxicity
Acids	Protein denaturation Cytotoxicity
Alkalis	Barrier lipid denaturation Cytotoxicity through cellular swelling
Oils	Disorganization of barrier lipids
Organic solvents	Solubilization of membrane lipids Membrane toxicity
Oxidants	Cytotoxicity
Reducing agents	Keratolysis
Water	If barrier is disrupted, cytotoxicity through swelling of viable epidermal cells

Neurodermatitis/Lichen Simplex Chronicus

- Paroxysmal pruritus
- Habitual excoriating or rubbing
- Skin thickens to defend
- Consider underlying disease

Increased skin markings

Lichen simplex chronicus

- No fungus on the scrotum!

Prurigo simplex

Seborrheic Dermatitis

- Distribution
  - Face, scalp, axillae, upper chest
- Pityrosprum ovale " malassezia furfur"
- Oily greasy skin
- Nasolabial folds

- Thank You