The Classification and Treatment of Hand Eczema
Objectives

- Period prevalence
- Risk factors
- Classification systems
- Differential diagnosis
- First-line therapy options
- **Prevalence**
  - Number of *new* cases per time period

- **Period prevalence**
  - Number of patients with *outbreaks* during a time period
  - Varies 2-10%\(^{1-3}\)
<table>
<thead>
<tr>
<th>STUDY</th>
<th>NO AD / NO IRRITANT WATER EXPOSURE</th>
<th>AD / NO IRRITANT WATER EXPOSURE</th>
<th>AD / IRRITANT WATER EXPOSURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meding et al. 1990</td>
<td>5-9%</td>
<td>14-23%</td>
<td>34-48%</td>
</tr>
<tr>
<td>Nilsson et al. 1986</td>
<td>16%</td>
<td>38%</td>
<td>62-72%</td>
</tr>
<tr>
<td>Rystedt et al. 1985</td>
<td>5%</td>
<td>37-50%</td>
<td>60-81%</td>
</tr>
</tbody>
</table>
- **Atopic dermatitis**
  - Lammintausta et al. 1991
  - Coenraads et al. 1998
  - Meding et al. 2000
  - Meding et al. 2004
  - Toledo et al. 2008
- Allergic rhinitis/asthma increases risk of hand eczema
- But not more than atopic dermatitis\(^4\)
**Female gender increased risk**

- Coenraads et al. 1983
- Kavli et al. 1984
- Lantinga et al. 1984
- Bryld et al. 2000
- Yngveson et al. 2000
- Meding et al. 2001
- Mortz et al. 2001
- Dickel et al. 2002
Why Female Gender?

- Meding et al.\textsuperscript{5}
  - Wet work in 19-29 year-olds
  - 37.5\% of women occupationally exposed
  - 18.2\% of men

- Learbek et al.\textsuperscript{6}
  - Private exposures
<table>
<thead>
<tr>
<th>STUDY</th>
<th>TYPE OF STUDY</th>
<th>STUDY POPULATION</th>
<th>INCIDENCE (PER 100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lantinga et al. 1984</td>
<td>Retrospective</td>
<td>General Population</td>
<td>7.9</td>
</tr>
<tr>
<td>Uter et al. 1994</td>
<td>Prospective</td>
<td>Hairdressers</td>
<td>152</td>
</tr>
<tr>
<td>Smit et al. 1994</td>
<td>Prospective</td>
<td>Hairdressers Nurses</td>
<td>328</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>145</td>
</tr>
<tr>
<td>Brisman et al. 1998</td>
<td>Retrospective</td>
<td>Bakers</td>
<td>M: 16.7 F:34.4</td>
</tr>
<tr>
<td>Uter et al. 1998</td>
<td>Prospective</td>
<td>Office workers</td>
<td>41</td>
</tr>
<tr>
<td>Funke et al. 2001</td>
<td>Prospective</td>
<td>Industrial Factory Workers</td>
<td>47</td>
</tr>
</tbody>
</table>
Support Risk
Edman et al.
Montnemery et al.
Linneberg et al.

Negative Risk
Lerbeack et al.
Berndt et al.
ACD⁷
Delay onset of effective treatment⁸
Atopic Dermatitis⁹
Greater area of involved skin¹⁰
> 1 year of duration⁸
- Etiology
- Morphology
  - No clear link between morphology and etiology\(^{11}\)
  - Question the need of morphological classification system
Classification System: Etiology

Irritant contact dermatitis
Allergic contact dermatitis
Atopic dermatitis

- 80%

Idiopathic

- 20%
- **Irritant Contact Dermatitis**
  - Most common
    - Wet work
      - Water
      - Mechanic / Machinery oils
    - Detergents
    - Tight-fitting gloves
    - Friction
- Wet hands or glove wearing > 2 cumulative hours daily\textsuperscript{11,12}
- Greater than 20 hand washes daily\textsuperscript{12}
- Allergic Contact Dermatitis
  - Way more common in occupational exposures vs. private exposures (Hobby)\textsuperscript{11}
  - “Hand eczema that spreads”\textsuperscript{13}
- Protein Contact Dermatitis
  - RARE
  - Latex
  - Food proteins
  - Burning, stinging and itching seconds to minutes after contact\textsuperscript{14}
- Systemic Contact Dermatitis
  - VERY RARE
  - Specific definition\textsuperscript{11}
    - Positive patch test
    - Ingest an oral version
    - Vesicular hand/foot rash
- Atopic dermatitis
- Other genetic
  - Filaggrin null mutations\textsuperscript{15,16}
  - Twin studies show that MZ twin individuals having a co-twin with hand eczema had an increased risk of hand eczema compared with DZ twins\textsuperscript{6}
    - Atopic dermatitis adjusted
- Idiopathic CHE
  - 20\%\textsuperscript{11}
Guidelines of the Danish Contact Dermatitis Group
- Chronic dry fissured hand eczema
- Vesicular hand eczema
- Hyperkeratotic (Tylotic) hand eczema
- Interdigital hand eczema
- Pulpitis
- Nummular hand eczema
- Mixed
  - 50.5% demonstrate multiple morphologies\textsuperscript{17}
Chronic Dry Fissured Hand Eczema
Chronic Dry Fissured Hand Eczema
Palmoplantar Psoriasis
Well-Marginated
Palmoplantar Psoriasis
Abrupt Wrist Cut-off
Palmoplantar Psoriasis
Micaceous Scale
- Frequency based on location\textsuperscript{19}
  - 1. Generalized Plaque – 49.3%
  - 2. Localized Plaque – 16.9%
  - 3. Guttate – 12.8%
  - 4. Arthropathic – 7.7%
  - 5. Palmoplantar – 7.5%
  - 6. Pustular – 3.1%
  - 7. Other – 2.7%
- Intermittent\textsuperscript{20}
  - Intensely pruritic
  - Palms/soles, nail, and sides of fingers
  - Attacks between 1 and 10 months
- Two historical descriptions
  - Pompholyx
  - Dyshidrosis
Frequency of location\textsuperscript{20}

1. Hands alone – 46.8%
2. Feet alone – 24.1%
3. Hands and feet – 15.6%
4. Nail apparatus – 13.5%
<table>
<thead>
<tr>
<th>Anatomic Location</th>
<th>Fungi Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hands</td>
<td>1.2%</td>
</tr>
<tr>
<td>Feet</td>
<td>47.8%</td>
</tr>
<tr>
<td>Epidermophyton interdigitale 100%</td>
<td></td>
</tr>
<tr>
<td>of feet cases</td>
<td></td>
</tr>
</tbody>
</table>
Lane et al.\textsuperscript{21}
- 25\% of any location positive fungal infection

Pitche et al.\textsuperscript{22}
- 10\% of any location positive fungal infection

Guillet et al.\textsuperscript{23}
- 15.8\% of any location with T. rubrum or candida infection
- Always check the feet
  - Foot involvement is rare
  - 47.8% dermatophyte infection
Vesicular Hand Eczema
Dyshidrosiform Pattern
Keratolysis Exfoliativa
- Presence of erythema
  - Controversial
- Progression of lesions\(^24\)
  - Early stage
    - Vesicular
  - Late stage
    - Chronic dry fissured presentation
    - Studded with pinpoint necrotic vesicles
    - Wet glazed look with pinpoint necrotic vesicles
Vesicular Hand Eczema:
Late Stage Dyshidrosiform Pattern
- Very rare
- Single episode of palms and soles
- Vesicular and BULLOUS eruption
Vesicular Hand Eczema: Pompholyx
Dyshidrosiform bullous pemphigoid
Herpes gestationis
Linear IgA
Lymphoma
- Localized to palms and soles\textsuperscript{25}
  - 1. Soles only 47.36%
  - 2. Palms only 31.57%
  - 3. Both soles and palms 21%
- Mildly pruritic
Middle-aged men

NEVER VESICLES
Hyperkeratotic Hand Eczema (Tylotic)
Palmoplantar Psoriasis
Tinea Manuum
- Dominant hand
- Site for the start of irritant hand dermatitis\textsuperscript{26,27}
Interdigital Hand Eczema
Interdigital Hand Eczema
Erosio Interdigitale Blastomycetica
Scabies
Pulpitis
- Very rare
  - Must rule out atopic dermatitis
    - No elevated IgE or eosinophilia
- Nummular Atopic Dermatitis (Bologna)
Nummular Hand Eczema
Any combination of above
- Systems good for academic pursuit
- Pure clinical pictures are less likely
  - 50.5% demonstrate multiple morphologies\textsuperscript{17}
  - Morphology changes frequently clinically and histologically\textsuperscript{17}
- No clear link between morphology and etiology
  - Johansen et al.\textsuperscript{28}
  - Cronin et al.\textsuperscript{29}
  - Diepgen et al.\textsuperscript{30}
- Is it an eczematous process?
- Acute – vesicles/bullae
- Subacute/Chronic – scaling/erythema
IF ACUTE
CHECK THE FEET
CHECK THE FEET
CHECK THE FEET
- **Hand Eczema**

- **Evaluation Irritant**
  - Do you touch liquids many times a day including water?

- **Evaluation Atopic**
  - Did you have childhood eczema, allergies or asthma?

- **Allergic**
  - What do you do for work?
- Standard Series
  - Toledo et al.
  - Linberg et al.
  - Menne et al.
- Worker’s Compensation

- Irritant contact dermatitis\textsuperscript{31-33}
- 21\% with positive patch test\textsuperscript{34}
  - 30\% relevant
  - Nickel (100\%)
- ACD worse prognosis\textsuperscript{7}
#1 Treatment is the same

#2 Blow them up
- Faster clearance at disease onset lowers risk of chronicity\(^{43}\)

#3 And then juice em up
- Systemic and topical steroids\(^{35}\)
  - One episode – 38.4%
  - Intermittent non-cyclic – 30.8%
  - Intermittent cyclic-28.5%
  - Chronic – 2.3%
  - Patients perceive systemic agents as powerful

#4 Don’t stop treatment if it gets better
- #5 Shake their hands
- #6 What worked before, may not work again
- #7 It gets better with time
  - Period prevalence decreases with aging
  - 78% of subjects claimed improvement of symptoms over 15 years\textsuperscript{36}
<table>
<thead>
<tr>
<th>Study</th>
<th>Years to Follow-Up</th>
<th>Persistence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agrup et al.</td>
<td>2 years</td>
<td>72%</td>
</tr>
<tr>
<td>Burrows et al.</td>
<td>10-13 years</td>
<td>79%</td>
</tr>
<tr>
<td>Reichenberger et al.</td>
<td>15 years</td>
<td>46%</td>
</tr>
<tr>
<td>Fregert et al.</td>
<td>3 years</td>
<td>68%</td>
</tr>
<tr>
<td>Gooskes et al.</td>
<td>15 years</td>
<td>55%</td>
</tr>
<tr>
<td>Lammintausta et al.</td>
<td>5 years</td>
<td>34%</td>
</tr>
<tr>
<td>Driessen et al.</td>
<td>5 years</td>
<td>50%</td>
</tr>
<tr>
<td>Keczkkes et al.</td>
<td>15 years</td>
<td>69%</td>
</tr>
<tr>
<td>Latinga et al.</td>
<td>3 years</td>
<td>59%</td>
</tr>
<tr>
<td>Rystedt et al.</td>
<td>3 years</td>
<td>83%</td>
</tr>
<tr>
<td>Pryce et al.</td>
<td>2 years</td>
<td>75%</td>
</tr>
<tr>
<td>Chia et al.</td>
<td>1 year</td>
<td>28%</td>
</tr>
<tr>
<td>Wall et al.</td>
<td>10 years</td>
<td>55%</td>
</tr>
<tr>
<td>Halbert et al</td>
<td>10 years</td>
<td>76%</td>
</tr>
<tr>
<td>Rosen et al</td>
<td>5 years</td>
<td>66%</td>
</tr>
<tr>
<td>Nethercott et al.</td>
<td>2 years</td>
<td>37%</td>
</tr>
<tr>
<td>Susitaival et al.</td>
<td>12 years</td>
<td>44%</td>
</tr>
</tbody>
</table>
Decrease number of washes daily (Brancaccio)

- “Your hands are broken, if your leg was broken would you still walk on it”

- Alcohol based disinfectants are less irritating to the skin than soap and water

Apply emollient within 2-3 minutes of wash

- Greasy as possible

- Fragrance free

- Apply as many times during day as you like
- Use gloves when **wet work or dirty work**
  - Latex or vinyl
  - Tight-fitting
  - Cotton liner
    - Change when damp
Which one should I use?\textsuperscript{17}

- Potent 65.5%
- Moderate 30.53%
- Superpotent 2.3%
- Mild 1.67%

How often and for how long?\textsuperscript{11}

- Once daily dosing equal efficacy as twice daily
- Two-week intervals
- Even switching in the same class can prove to be beneficial (Holland)
- Tacrolimus 0.1% vs. mometasone furoate\textsuperscript{37}
  - 50% improvement in both groups
- Pimecrolimus vs. mometasone furoate\textsuperscript{38}
  - Did not reach statistical significance
- Used in combination with steroids
  - Clear (Cohen)
  - 1\textsuperscript{st} week: ¾ Steroid Ointment ¼ Tacrolimus
  - 2\textsuperscript{nd} week: ½ Steroid ointment ½ Tacrolimus
  - 3\textsuperscript{rd} week: ¼ Steroid ointment ¾ Tacrolimus
  - 4\textsuperscript{th} week: ALL Tacrolimus
  - 5\textsuperscript{th}-on: ALL Tacrolimus Fri, Sat, Sun
- **First Blow**
  - Prednisone 40-60mg daily initial dose and taper between 3-4 weeks\(^{39}\)
  - Intramuscular Kenalog 40-80mg\(^{40}\)
    - Limit 4 shots per year (Wolverton)
- **Second Blow**
  - Prednisolone 30mg daily for 3 days at onset of eruptions\(^{41}\)
  - Prednisone 40-60mg x 1 dose on day 1 of the eruption\(^{23}\)
A Comparison on the Efficacy, Relapse Rate and Side Effects among Three Modalities of Systemic Corticosteroid Therapy for Alopecia Areata

- Triamcinolone acetonide 40mg monthly x 6
- Then 40mg every 6 weeks x 18 months
- Total treatment duration = 24 months (2 years)
- Total of TEN 40mg injections annually
A Comparison on the Efficacy, Relapse Rate and Side Effects among Three Modalities of Systemic Corticosteroid Therapy for Alopecia Areata

- 56 subjects IM Triamcinolone acetonide arm (29 in prednisolone)
  - 16 dysmenorrhea (vs 3)
  - 3 abdominal pain (vs 1)
  - 1 worsening acne (vs 0)
  - 5 adrenocortical impairment (vs 2)
  - Both groups resolved in 2 months without steroid taper
Twelve-year clinico-therapeutic experience in pemphigus: a retrospective study of 54 cases

- Intramuscular triamcinolone acetonide was given in cases of poor compliance
  - 80mg IM on day 0, 4, 7, 28
  - 40mg IM every for weeks x 6 doses
  - Total duration of treatment = 6 months
  - Total of TEN injections
- 1 subject with weight gain
- 1 subject with cushingoid features
  - Resolved within 4 months without steroid taper
Triamcinolone acetonide: a new management of noncompliance in nephrotic children$^{59}$

- 8 monthly doses of IM Triamcinolone acetonide 2mg/kg
  - Each month dose decreased by 10-20%
- Total duration of treatment = 8 months
- Total of EIGHT injection
- All subjects had decreased longitudinal growth
  - Normalized
- **S. aureus**
  - Systemic antibiotics superior to topicals$^{24}$
Botulinum toxin A$^{42}$
- Left versus right study
- Vesicular hand dermatitis only
- 100 units plus topical steroids

Botulinum toxin$^{43}$
- Left versus right study
- Vesicular hand dermatitis only
- 162 units of botox but no steroids
UVA >>> NBUVB >>> UVB$^{52}$
- Apoptosis of lymphocytes through reactive oxygen species and FAS ligand
- Increase in IL-10 inhibition of interferon –gamma.

Efficacy PUVA$^{53,54}$
- Systemic = Topical = Bath
- Bath with least side effect
  - Decreased UVA doses due to uniform absorption
  - Phototoxicity risk disappears after 2 hours
    - Sunblock and gloves
- High dose UVA-1
  - Max single dose of 130J/cm²
  - Cumulative dose 1720J/cm²
  - As effective as cream puva$^{52}$

Reduction in pruritus in first week$^{55}$
Azathioprine 100-150mg daily\textsuperscript{44}
Methotrexate 15-25mg weekly\textsuperscript{45}
Mycophenolate mofetil 2g/day\textsuperscript{46}
Cyclosporine 2.5mg/kg/day\textsuperscript{47}
Etanercept 25mg twice weekly\textsuperscript{48}
Approved Europe

– Indicated for chronic hand eczema refractory to topical and systemic steroids
– Not for vesicular hand dermatitis

Panagonist RXR, RAR

Retinoid Adverse Events

– Headache, mucocutaneous dryness, elevated liver enzymes, elevated blood lipid levels, teratogenicity

No combination studies
Alitretinoin 30mg daily\textsuperscript{49}
  – Median time to clear hands is 12 weeks
Placebo, Alitretinoin 10mg, 20mg, 40mg daily doses for 12 weeks\textsuperscript{50}
  – 70\% reduction in 50\%
Alitretinoin 10mg, 30mg daily for 24 weeks\textsuperscript{51}
  – 100\% reduction in 48\%
  – More response with 30mg
- Period prevalence
  - 2-10%
- Risk factors
  - Atopic dermatitis, allergic rhinitis/asthma, occupation, wet irritant exposure
- Classification systems
  - Etiology and morphology
  - Not practical day-to-day clinic
- Differential Diagnosis
  - Check the feet
- First-line therapy options
  - Blow em up and then juice em up
55. UVA1 Irradiation is effective in treatment of chronic vesicular dyshidrotic hand eczema. Acta Derm Venereol