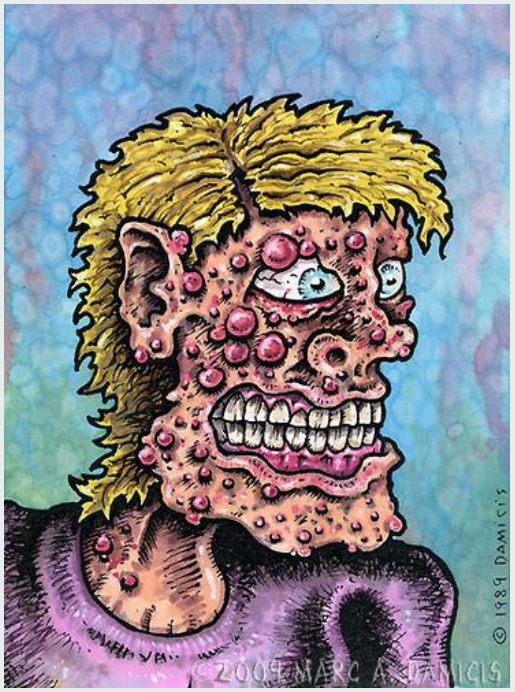


Skin Problems in Teenagers and Older Children

Maggie Kirkup

Outline

- Epidemiology
- Specific skin problems
- Management issues
- The future

- 24% population under 20 in 2011 census
- Over age 5, rate of presentation to GP because of skin disease falls
- However commonest reason for GP attendance age 15-24 is skin disease
- Age 5-14, skin is the commonest reason in females and 4th commonest in males

(isdscotland.org October 2013)

Males aged 15-24

General Practioner	
Diseases of the skin & subcutaneous tissue*	62,170
Psychological S&S	31,970
General abnormal S&S NEC	29,300
Digestive/abdominal S&S	26,660
Infectious diseases*	24,030
Skin S&S	22,760
Circulatory and respiratory S&S	21,560
Anxiety & other neurotic, stress-related, & somatoform disorders	17,890
Neurological/musculoskeletal S&S	17,640
Acute upper respiratory infections*	17,170

ISD Scotland National Statistics Oct 2013

Females aged 15-24

General Practioner	
Diseases of the skin & subcutaneous tissue*	95,370
Digestive/abdominal S&S	85,240
Genitourinary S&S	67,750
Psychological S&S	64,120
General abnormal S&S NEC	61,340
Menstrual disorders	44,430
Infectious diseases*	40,200
Circulatory and respiratory S&S	38,530
Acute pharyngitis & acute tonsillitis	36,230
Skin S&S	35,760

What conditions do we see in older children and teenagers?

- Acne
- Eczema
- Psoriasis
- Urticaria
- Lesions

- Cosmetic
- Dysmorphophobia
- Systemic disorders
- Genetic disorders

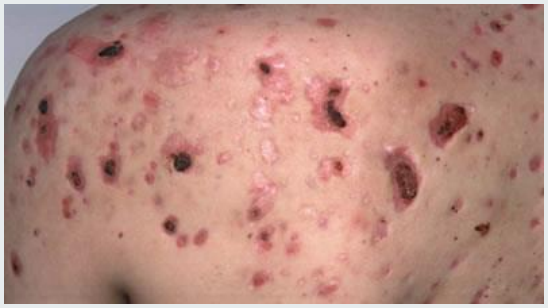
http://www.psychodermatology.co.uk/

Acne

- Affects almost all teenagers to some degree, 11% moderate to severe
- Peak prevalence 14-17 in females, 16-19 in males
- Around 5-9% consultations in dermatology units

Schofield et al Skin Conditions in the UK, Centre of Evidence Bases Dermatology, Nottingham, 2009

Impact



- Scars
- Significant psychological morbidity including anxiety, depression, suicidal ideation and suicide
- Dysmorphophobia (distorted body image) common especially in females
- Problems with treatment

Leeds grading scale

Simple grading system

- Mild = comedones +/- a few papules and pustules
- Moderate = more inflammatory lesions+/- occasional nodules and mild scarring
- Severe = widespread inflammatory lesions +/- nodules and scarring

Acne lesions

- Open comedones
- Closed comedones
- Pustules
- Papules
- Nodules
- Cysts
- Macules
- Scars
- Oily skin

Acne variants

- Acne excoriée des jeunes filles
- Drug induced
- Acne fulminans
- Acne conglobata/follicular occlusion syndrome
- Late onset acne

Drug induced acne

Tends to be monomorphic

Steroids - both prescribed and in body building supplements (illegal but available online)

Acne fulminans

Acne triad (follicular occlusion syndrome)

- Acne conglobata
- Hidradenitis suppurativa
- Dissecting cellulitis of scalp

Differential diagnosis

- Rosacea – rare in teenagers, telangiectases, location

Pityrosporum folliculitis

SLE

Other facial eruptions

- Seborrheoic eczema
- Can co-exist with acne
- Test for HIV if severe

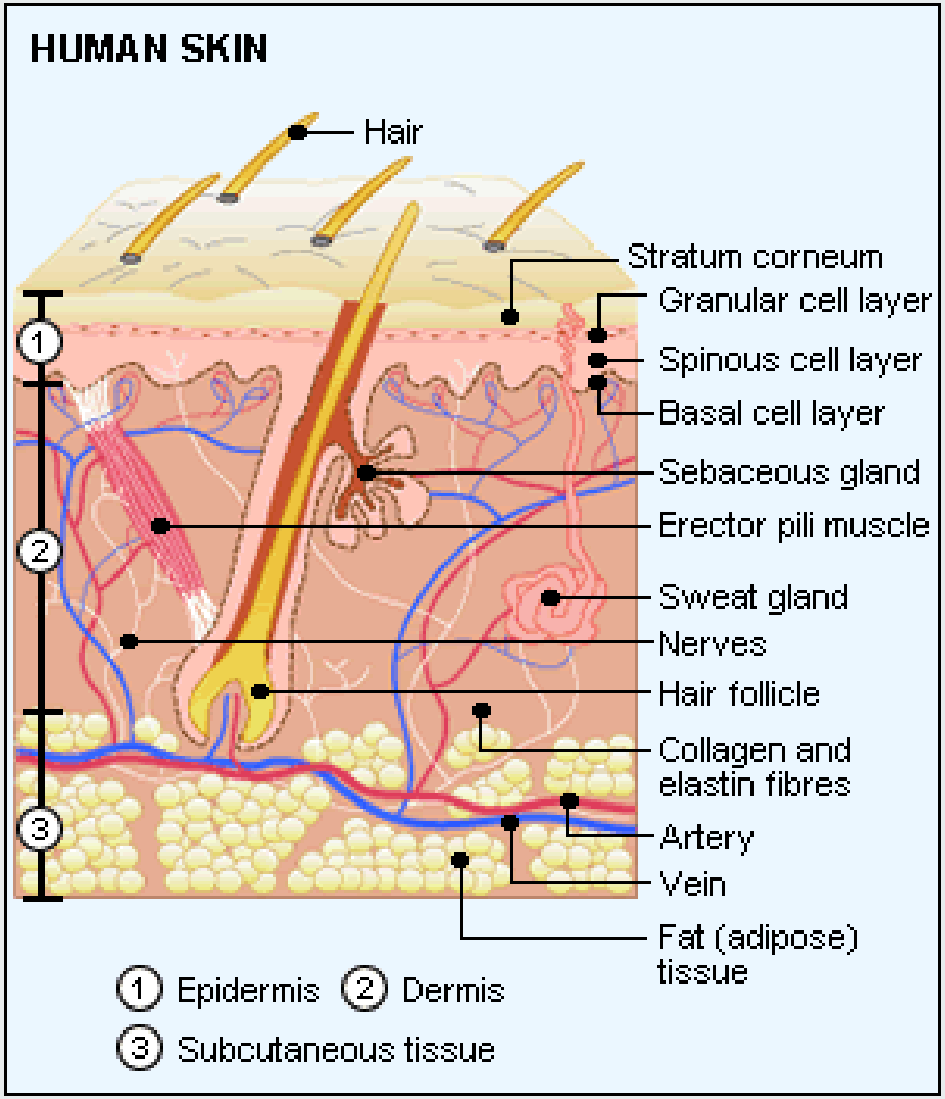
Acne pathogenesis

- Genetic?

- Twin studies suggest up to 80% genetic

Pathogenesis

- Follicular epidermal hyperproliferation leads to follicle plugging and comedones
- Excess sebum with altered lipid content
- Activity of Propionibacterium acnes
- Inflammation


HUMAN SKIN
Hair
Stratum corneum
Granular cell layer
Spinous cell layer
Basal cell layer
Sebaceous gland
Erector pili muscle
Sweat gland
Nerves
Hair follicle
Collagen and elastin fibres
Artery
Vein
Fat (adipose) tissue
1
2
3
1 Epidermis
2 Dermis
3 Subcutaneous tissue

Pathogenesis

- Follicular epidermal hyperproliferation leads to follicle plugging and comedones
- Excess sebum with altered lipid content
- Activity of Propionibacterium acnes
- Inflammation

Hormones and acne

- Perimenstrual flare
- Onset around puberty
- Polycystic ovaries
- Oral contraception – may improve
- Pregnancy

Role of hormones

- Androgens may be initial trigger
- Sebaceous glands have androgen receptors
- Androgens promote sebum production and excretion
- Other hormones including growth hormone also regulate sebaceous gland

Dehydroepiandosterone

- Androgen precursor
- Produced in adrenals and gonads
- Has some androgenic effects per se
- Also oestrogen receptor agonist
- Elevated in congenital adrenal hyperplasia and PCOD
- Degree of comedonal acne in girls is related to circulating level of DHEA

Role of P acnes

- Anaerobic (but aerotolerant) Gram +ve bacterium present in acne lesions
- Commensal
- Promotes inflammation by production of proinflammatory cytokines
- Speculated that hypersensitivity to P acnes explains why some and not all develop acne

Environmental factors

- Diet – no good evidence of effect

Some evidence that milk consumption contributes

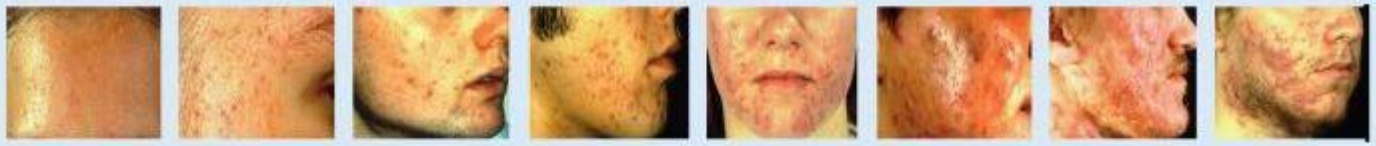
Associated with low food intake and insulin resistance in the obese

Occupational factors

- High humidity eg kitchens
- Oils (acne folliculitis)
- Halogenated hydrocarbons (chloracne)

Severity?

Acne treatment algorithm



	Mild			Moderate			Severe	
	Comedonal	Papular/pustular		Papular/pustular	Nodular†		Nodular/conglobate	
First choice‡	Topical retinoid	Topical retinoid + topical antimicrobial		Oral antibiotic + topical retinoid +/- BPO	Oral antibiotic + topical retinoid +/- BPO		Oral isotretinoin§	
Alternatives‡	Azelaic acid or salicylic acid	Alt. topical antimicrobial agent + alt. topical retinoid or azelaic acid¶		Alt. oral antibiotic + alt. topical retinoid +/- BPO	Oral isotretinoin or alt. oral antibiotic + alt. topical retinoid +/- BPA/azelaic acid¶		High-dose oral antibiotic + topical retinoid + BPO	
Alternatives for females‡,#	See first choice	See first choice		Oral anti-androgen†† + topical retinoid/ azelaic acid¶ +/- BPO	Oral antiandrogen†† + topical retinoid +/- oral antibiotic +/- alt. antimicrobial		High-dose oral anti-androgen†† + topical retinoid +/- alt. topical antimicrobial	
Maintenance therapy	Topical retinoid			Topical retinoid +/- BPO				

Benefits of early treatment

- Patient’s self esteem
- Prevention of scarring

Disadvantages of treatment

- Reactions (systemic and topical)
- Irritancy
- Antibiotic resistance
- Teratogenicity
- Compliance and waste

Dilemmas

- Topical versus systemic treatment
- What to use?
- For how long?
- When to give isotretinoin?

Aim of topical therapies

Reduce comedones

Prevent pustules

Prevent scarring

Are over the counter topicals any good?

Mainly cleansers, mild keratolytics, some contain benzoyl peroxide and antiseptics

Evidence is that

- Antibiotic washes do help in very mild acne
- Abrasive scrubs are no use
- Benzoyl peroxide is effective against P acnes
- Benzoyl peroxide bleaches clothing and towels

Evidence Based Dermatology 2nd edition
H Williams (ed)2008 Blackwell Publishing

What do topicals do?

- Benzoyl peroxide – mainly reduces P acnes but also effective against non-inflammatory lesions
- Antibiotics –reduce P acnes and reduce inflammation, some immune modulating
- Retinoids – normalise follicular epidermis, reduce comedones
- Azelaic acid – reduces keratinization and active against P acnes
- Nicotinamide – anti-inflammatory

Topical therapy

- Can be as effective as systemic antibiotics if used properly for mild and moderate acne

Evidence Based Dermatology 2nd edition H Williams (ed)2008 Blackwell Publishing

Problems with topicals

- Compliance
- Need counselling
- Area to treat
- Trunk
- Can be irritant
- Choice of base is important – eg alcoholic basis for oilier skins
- BP bleaches clothes and other textiles

Oral vs topical antibiotics

- Systematic and non-systematic reviews suggest they are equally effective
- No study used “intention to treat” analysis and only one used more than 100 patients
- Topicals seem to work faster so were favoured in short-term studies
- Oral more convenient for widespread disease so compliance is better

What about combinations?

- Good evidence that combination topical agents are more effective and help prevent bacterial resistance

- Avoid topical and systemic antibiotics together – use topical retinoids or benzoyl peroxide

Ghali et al Cutis 2009; 83: 4-15

Systemic antibiotics?

- Reduce P acnes
- Tetracyclines also have an immune modulating effect
- Resistance does occur
- 10-20% do not respond

Which antibiotic?

- No conclusive evidence that one is superior
- Second generation tetracyclines are easier so compliance likely to be better
- Be aware of side effect profile

Antibiotic side effects

- Idiosyncratic
- Opportunistic infections eg Candidiasis
- Staining of teeth (and bones)
- Interference with absorption of OC
- Lupus-like syndrome (minocycline)
- Hyperpigmentation (minocycline)
- Intracranial hypertension

Hyperpigmentation due to minocycline

Duration of oral antibiotic treatment for acne

- Should begin to work in 3-6 weeks
- Stop if further improvement unlikely
- Remember not useful for primarily non-inflammatory disease
- Risk of folliculitis (gram negative or yeast) with long-term treatment

Nagler et al The use of oral antibiotics before isotretinoin therapy in patients with acne. JAAD October 2015

- Average duration was 331.3 days
- Recommended duration – check in 6-8 weeks, stop if no improvement, otherwise continue up to 6 months if still improving
- Considering reducing dose after 3 months

Antibiotic resistance

- P acnes resistance occurs with both topical and oral antibiotic
- Resistance seems to be worse with erythromycin, clindamycin and doxycycline
- Studies suggest about 10% treatment failures are due to resistance
- Resistance to minocycline is rare but…
- Combination with benzoyl peroxide may help reduce incidence of resistance

What about combination of antibiotics and other agents?

- Good evidence that benzoyl peroxide and oral antibiotics work better than antibiotics alone
- In females, addition of antiandrogens also recommended if response inadequate

Antiandrogens

- Cyproterone acetate combined with ethinylestradiol as in “Dianette” is the only licensed hormone treatment for acne

- Dermatologists sometimes add higher dose for 10 days mid cycle

Retinoids

- Normalise follicular epidermis
- Prevent comedones and inflammatory lesions
- Topicals need to be used over all affected area (counselling)
- Irritant - start slowly eg every third day
- Adapalene least irritant
- Teratogenicity uncertain with topicals

Screening before oral retinoid therapy

- Counselling re teratogenicity, monitoring, side effects (depression)
- Measure liver function
- Measure fasting triglyceride and cholesterol

- Females who are sexually active need to be using effective contraception and give informed consent

Pregnancy prevention plan

- Isotretinoin licensed for four weeks at a time for a female of child-bearing potential
- Adequate contraception needs to be in place before starting and until four weeks after end of course
- Can only be dispensed if pregnancy test is negative

Problems with isotretinoin

- Teratogenicity
- Dry skin, lips, nose and eyes
- Can exacerbate eczema
- Hepatotoxic
- Idiosyncratic rise in triglycerides (risk of acute pancreatitis)
- Muscle aches and reduced exercise tolerance

Practical problems

- Secondary care attendance
- Missing education
- Gap years
- Heading off to university etc

Depression and isotretinoin

- Some conflicting evidence
- Probably does cause or trigger depression – rare
- May worsen pre-existing depression

Before and after isotretinoin

Other systemic treatments

- Dapsone (also 5% gel)
- Gold
- Mode of action uncertain

Aslam I[1], Fleischer A, Feldman S.
Emerging drugs for the treatment of acne. Exp Opin Emerg Drugs 2015 ; 20: 91-101

Mainly looks at topicals but includes a novel nitric oxide releasing agent which may reduce antibiotic resistance

What about alternative therapies?

- Laser, blue or other narrow band visible light and PDT
- Some evidence of effectiveness but short-lived

Why does acne resolve?
Why can it be of late onset?

Summary

- Treat comedones early
- Topicals for mild –moderate facial acne
- Combination therapies are effective
- Systemic treatment needed for trunk
- Keep systemic antibiotic trials short (weeks)
- Use “Dianette” if appropriate
- Refer early in severe acne (nodulocystic)

Referral

- Refer when optimum first line therapies have failed to bring about good sustained response
- Helpful to include information about issues of compliance and of sexual activity (females)
- Are they about to go backpacking or away to university?

Treatment of scarring

- Some evidence that laser re-surfacing helps (non NHS)
- Intralesional steroid for keloids
- Excision of small isolated linear scars

And don’t squeeze spots

Eczema

- Not a single diagnosis
- Classify by type and/or location

Eczemas

- Atopic
- Seborrhoeic
- Discoid
- Asteatotic
- Drug-induced
- Photosensitive
- Contact (allergic and irritant)

Patterns of eczema

- Flexural
- Predominantly hands
- Facial
- Lower legs
- Generalised (including erythroderma)

Dilemmas

- Diagnosis
- Steroid potencies
- Steroid phobia
- When are systemic treatments needed?

Diagnosis

- Features of eczema include:
  - Dry skin
  - Chronic +/- acute
  - Vesicles
  - Erythema
  - Pruritus
  - Family history - atopy

Eczema in teenagers and older children

- Distribution can change
- Flexural → extensor
- Facial predominance common
- Superimposed contact dermatitis - hands
- Lichen simplex chronicus

Further issues

- Compliance with therapy
- Parents' influence wanes
- Steroid phobia or overuse
- Quality of life – sleep – school – peers - relationships
- Choice of occupation

http://eczema.org.au/teenage-eczema/

Eczema herpeticum

Beware the cold sore

Optimum management of eczema

- Emollient of choice
- Topical steroids of appropriate potency for site and age and used for appropriate duration
- Intermittent topical steroid to prevent relapse
- Judicious use of non-steroid topicals
- Knowing when to step in with systemic agents

Alternatives to topical steroids

- Bandaging and wet wraps
- Coal tar
- Calcineurin inhibitors
  (topical tacrolimus and pimecrolimus)

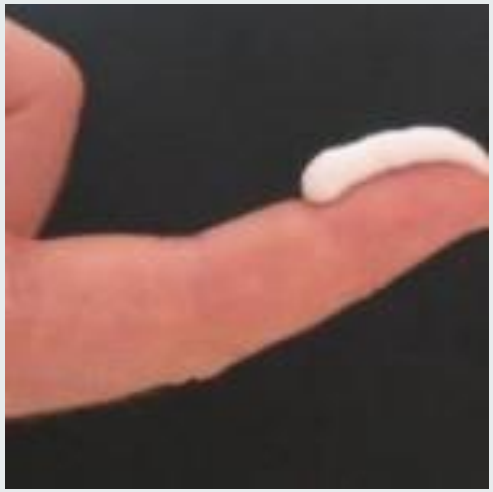
Cost of paste bandaging done by a specialist nurse versus ciclosporin (one month)

- Paste bandages (£200)
- Cotton tubular bandages (£15)
- Nursing time (£300)
- Drug (£220)
- Monitoring (£100)
- Appointments in secondary care (£100)

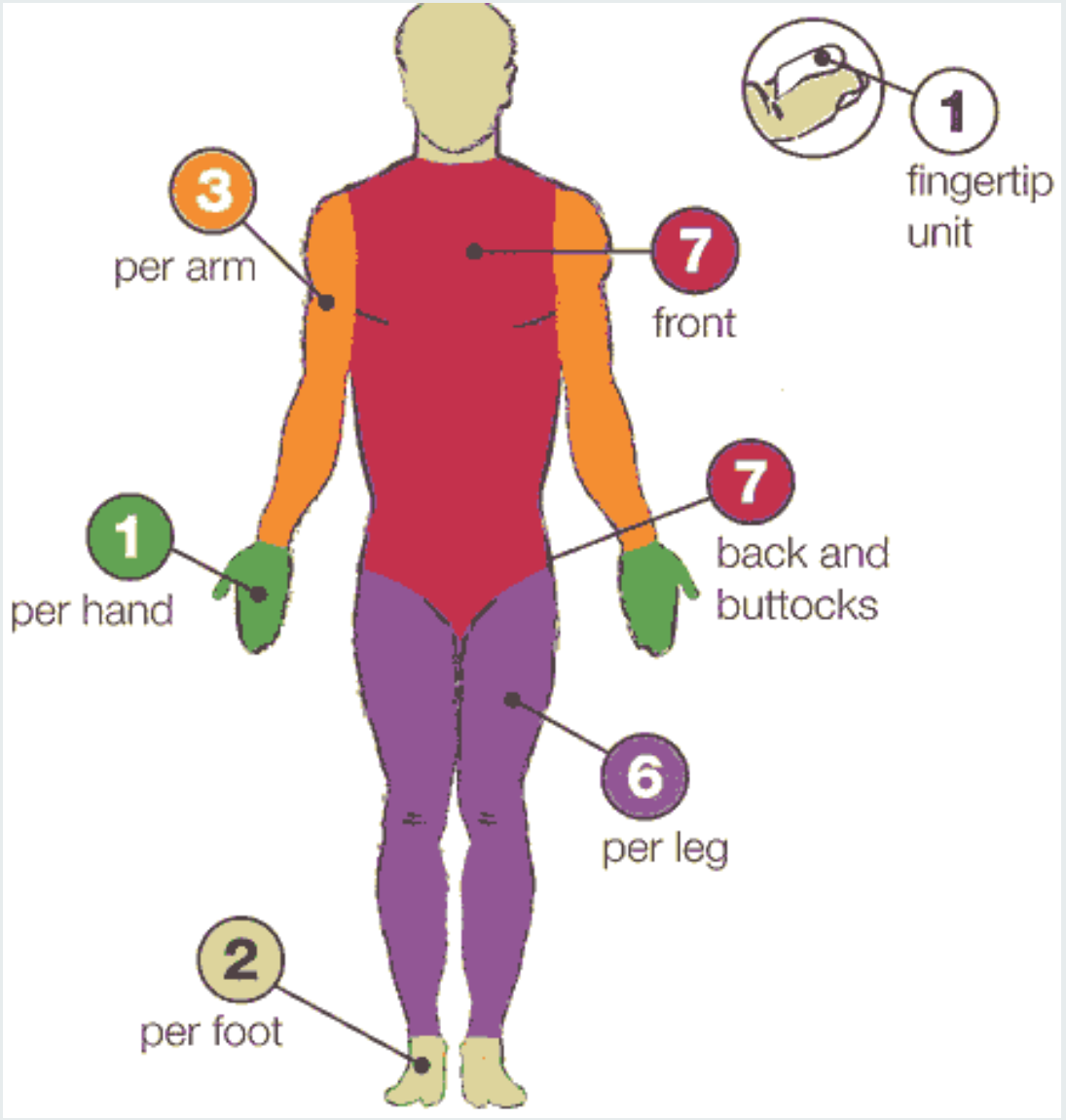
Steroid aversion

- Problem with over-cautious counselling and patient inserts
- Media hype
- “use sparingly” is not helpful
- Give an idea of how much can be safely used

“use sparingly” – what does that mean?



1FTU (adult) = 0.5 g



So 35 FTU or 17g per application

250g per week is not unreasonable for full body application of a topical agent

Absorption of topical steroids

- Can be a problem with fluorinated agents (anything potent or super-potent)
- More rapid on face, in flexures or under occlusion
- In practice, not common to make clinical impression but adrenal suppression does occur

Mr LG

- Attended paediatric dermatology then lost to follow-up as teenager
- Re-appeared at age 22 years
- Large amounts of oral, inhaled and topical steroids in childhood for atopic ezcema and asthma
- Diagnosed with adrenal suppression in teens

Mr LG

Had tried almost everything in childhood (admission, azathioprine, ciclosporin, mycophenolate, methotrexate)

Best response to IV immunoglobulin

Continued to use oral and topical steroids

Is it safer to use systemic steroids?

Second line therapies

- Ciclopsorin
- Azathioprine
- Mycophenolate
- Methotrexate

Dilemmas with second line therapies

- Monitoring – needle phobias
- Number and duration of appointments
- Red traffic light drugs
- Education of patients/parents
- Compliance – travel

Summary

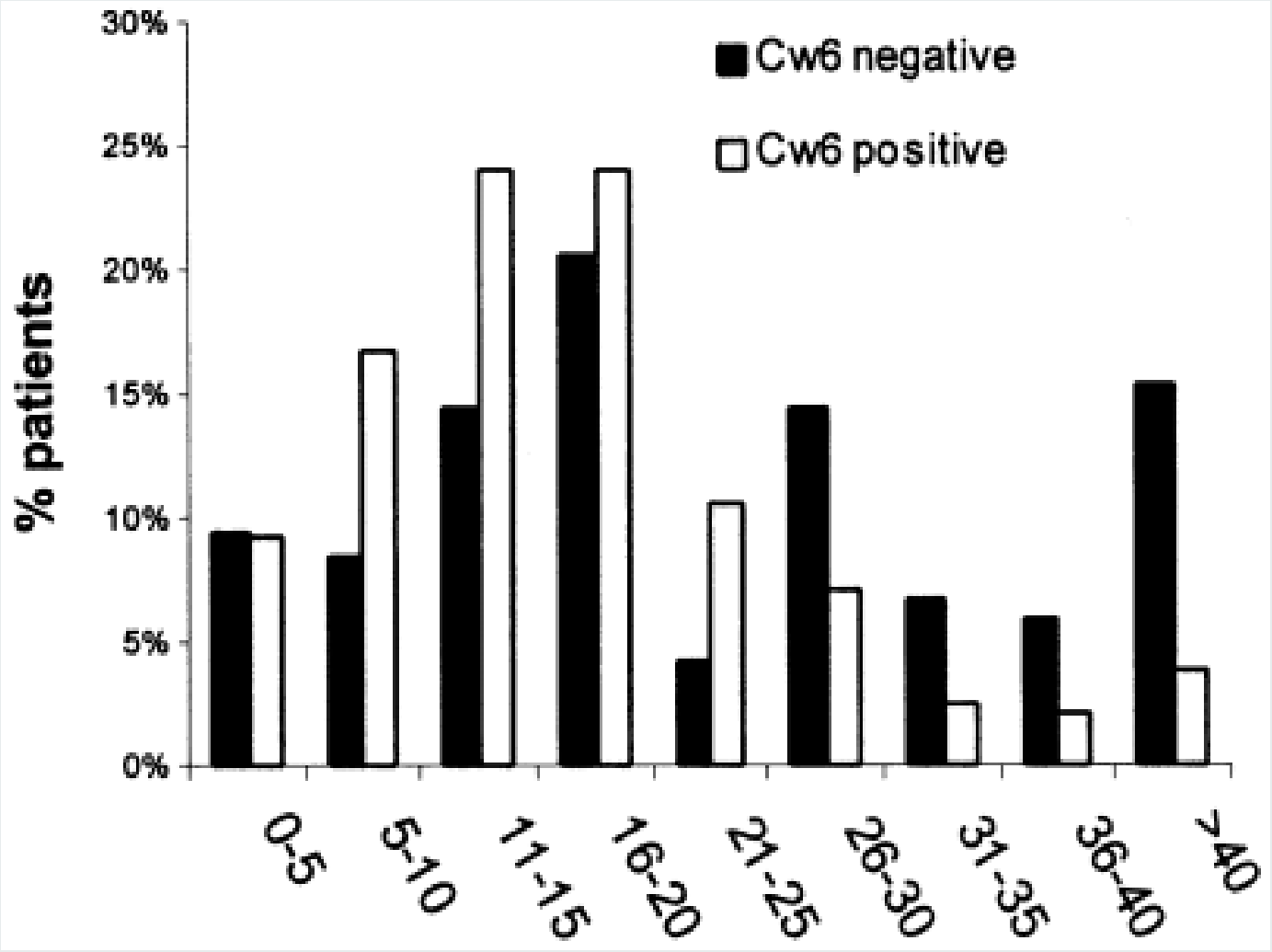
- Eczema is common
- Multiple variants
- Optimise topical therapy before prescribing systemic agents
- Caution with systemic steroid courses
- Counsel use of topicals to avoid over and under-use

Education

http://www.eczema.org/schools

Psoriasis

- Prevalence about 1.4% population
- Uncommon in children
- Mean age of onset 33 years
- However there are peaks of incidence – genetically determined



Gujonsson et al J Invest Dermatol 2012; 118: 362-365

Guttate psoriasis

- Associated with Strep infection
- May morph into plaque psoraisis
- Can recur

Impact of psoriasis

- Numerous studies
- Reduction in quality of life greater than many chronic conditions and malignancies
- Social stigma
- Symptoms
- Messy and time consuming topical treatment
- Missed school - psychosocial and clinic/UV attendance

Treatment options?

Topical agents

- Emollients
- Topical steroids
- Coal tar
- Topical retinoid
- Dithranol – needs motivation
- Pastes for scalp

Systemic agents

- Ciclosporin
- Methotrexate
- Acitretin
- Mycophenolate
- Biologics

- Apremilast (PGE4 inhibitor) – side effects mainly gastrointestinal

  (NICE appraisal in progress October 2015)

Psoriasis-association.org

Skin lesions in the young

- Congenital – naevi, haemangiomas
- Acquired benign naevi
- Dysplastic naevi
- Other benign lesions
- Melanoma
- Non-melanoma skin cancer
- Rare tumours - DFSP

Congenital naevus

Becker’s naevus

Tend to appear after the age of 10

Halo naevus

Association with vitiligo and naevus can completely resolve

Dysplastic naevi

Small increase in risk of melanoma especially if over 50 naevi and family history of melanoma.

History of change important to distinguish from melanoma

Imaging can be very helpful

Melanoma

- Second commonest cancer in 20-39 year olds
- Very rare in children and teenagers
- Can be very difficult for pathologist to differentiate from Spitz naevus

Spitz naevus

Melanoma in children

- Immune deficiency
- Large congenital naevus
- Atypical naevus syndrome
- Familial cancer syndromes
- Xeroderma pigmentosum
- Can be no obvious risk factor

Dermatofibroma

Dermatofibrosarcoma protruberans

Other disorders appearing in teenagers and older children

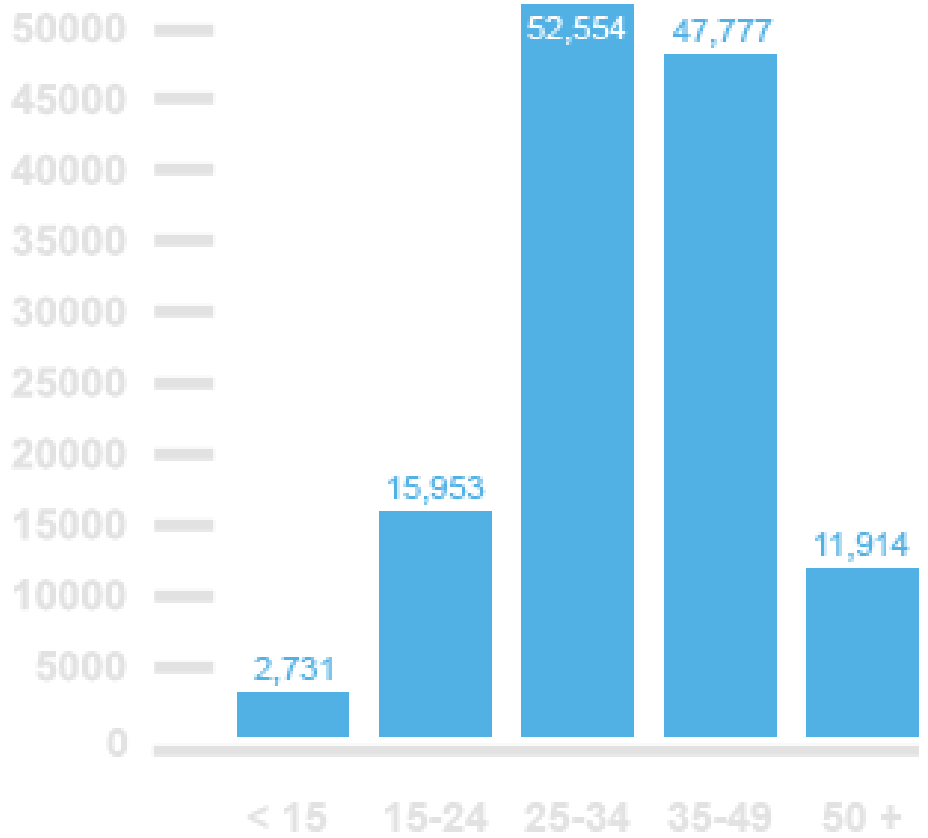
Pityriasis rosea

Alopecia areata

Pearly penile papules

Vitiligo

HIV DIAGNOSES BY AGE, UK, 1981-2012



Juvenile plantar dermatosis

Commoner in atopic disease

Sweating - high humidity - trainers

Juvenile plantar dermatosis management

- Avoid friction (no walking one day per week??) and unsuitable footwear
- Cover cracks – plasters, nail glue, spray “bandage”
- Topical steroids

Infections and infestations

- Herpes simplex
- Viral exanthems
- Sexually transmitted diseases
- Molluscum
- Impetigo
- Viral warts
- Scabies
- Fungal
- Head lice
- Fleas - papular urticaria

Urticaria

Relatively common genetic disorders presenting in childhood

- Dariers disease
- Epidermolysis bullosa
- Lamellar ichthyosis
- Cutaneous porphyria (esp EPP)
- Palmoplantar keratodermas

Keratosis follicularis (Darier’s disease)

Epidermolysis bullosa

Lamellar ichthyosis

Erythropoetic protoporphyria

Pain on exposed skin in sunlight

Palmoplantar keratodermas

The Future?

- Large prospective epidemiological studies
- New systemic therapies for atopic eczema
- Developments in genetics of psoriasis - ?targeted treatments

Better informed?

there are days when I wish I could wear one of these around my neck.