Acne rosacea: non-contagious, chronic skin disorder characterized by recurrent flushing (transient erythema) & persistent redness (erythema) of central face

Epidemiology
- 2 million Canadians (10%)
- Adults age 30-50 yo; any skin type (frequently Euro-Caucasian)
- More women affected; men more severe
- Affects persons who easily flush/blush; sensitive skin
- Chronic skin condition that doesn’t go away (can be controlled)
- Often misdiagnosed as acne

Phases of rosacea
1. Pre-rosacea phase: embarrassing flushing, blushing & stinging (triggers); persist throughout the other phases
2. Vascular phase: facial erythema & edema with multiple telangiectasias (persistent vasomotor instability)
3. Inflammatory phase: sterile papules & pustules
4. Late phase: coarse tissue hyperplasia (fibrosis) of the cheeks and nose (rhinophyma) caused by tissue inflammation, collagen deposition, and sebaceous gland hyperplasia

- Usually sequential but can bypass earlier stages

Grading primary features of rosacea
- 0-3 scale: absent, mild, moderate, severe
  - Flushing (transient erythema): note frequency & grade intensity
  - Nontransient erythema: evaluate underlying redness
  - Papules & pustules: grade # & presence of plaques
  - Telangiectasia (dilated capillaries): number, location, description (fine, threadlike or coarse)

Grading secondary features of rosacea
- Burning or stinging: locations & establish ongoing scoring system
- Plaques (red areas among papules/pustules): severity & location
- Dry appearance: distribution and severity
- Edema: location, acute/chronic recurrent/chronic persistent; if chronic: pitting or non-pitting; 0-3 scale (extent of swelling)
- Ocular manifestations: tearing, redness or bulbar and/or palpebral conjunctivae; telangiectasia of conjunctiva & lid margin; lid or periocular erythema; styes; foreign-body sensation; gritty feeling, burning, stinging, itching, dryness, light sensitivity, blurred vision or decreased visual acuity
- Peripheral location: extracranial S/S (note anatomic site)
- Phymatous changes: 0-3 scale (1: patulous follicles, no contour changes); 2 (change in contour w/o nodules); 3 (change in contour w/ nodular component)

Subtypes of acne rosacea
1. Erythematotelangiectatic rosacea: persistent central erythema; prolonged flushing; telangiectasia, roughness (scaling); burning or stinging possible (topical agents)
2. Papulopustular rosacea: persistent erythema of central face with small papules & pinpoint pustules; NO comedones; burning, stinging, flushing possible; episodes of facial edema
3. Phymatous rosacea: skin thickening & irregular nodularities of nose, chin, ears, forehead or eyelids; rhinophyma
4. Ocular rosacea: watery, bloodshot eyes, dry eyes, foreign body sensation, irritation, photophobia; blepharitis, conjunctivitis, scleritis, keratitis, eyelid irregularities, inflammation; vision loss possible
### Pathophysiology

1. **Immune dysfunction** → increased production of abnormal cathelicidin peptides & kallikrein 5 (& activators such as Toll-like receptor 2 & matrix metalloproteinases)
2. **UV radiation & temperature extremes** → exacerbation (activate immune system – 4 TRPV and 1 anykrin receptor (cation channel))
3. **Vascular hyperreactivity/neurovascular dysregulation** → flushing
   - Microorganisms (demodex foliculorum (mite) or helicobacter pylor) as triggers – unlikely
   - Genetic

![Diagram of Acne Rosacea Pathophysiology]

#### Treatment

- **Avoidance of triggers**
- **Use of sunscreens**
- **Topical treatments**
  - Brimonidine for erythema (vascular phase)
  - Metronidazole, azelaic acid (papulopustular phase)
  - Sulfacetamide/sulfur, erythromycin, clindamycin
- **Oral treatments**
  - Abx: tetracycline, doxycycline, minocycline
  - Isotretinoin
- **Vascular laser surgery**

#### Topical treatments

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td><strong>Brimonidine</strong>: α2 adrenergic receptor agonist</td>
<td>0.33% gel once daily</td>
</tr>
<tr>
<td>- ADRs: mild &amp; transient</td>
<td>- Pruritus, irritation, worsened erythema</td>
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<tr>
<td>- No tachyphylaxis after 12 mo</td>
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<tr>
<td><strong>Sodium sulfacetamide 10%</strong></td>
<td>Cream, lotion, gel, susp., cleanser</td>
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<tr>
<td><strong>Sulfur 5%</strong></td>
<td>Allergic reactions: swollen eyes, facial dryness, pruritus, hives, increased erythema</td>
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<tr>
<td><strong>Metronidazole</strong>: antibacterial, antiprotozoal, anti-inflammatory &amp; antioxidant effects</td>
<td>0.75% cream/lotion or 1% cream/gel once daily</td>
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<td>- ADRs: local skin irritations (facial burning, stinging, pruritus)</td>
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<tr>
<td><strong>Azelaic acid</strong>: anti-inflammatory, antibacterial, keratolytic</td>
<td>15% gel once daily</td>
</tr>
<tr>
<td>- ADRs: local skin irritations irritations (facial burning, stinging, pruritus)</td>
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#### Oral antibiotics

- Tetracycline 500-100 mg daily (anti-inflammatory effect)
- Doxycycline: 40 mg daily (subantimicrobial dose; anti-inflammatory)
  - AEs: nasopharyngitis, diarrhea, headaches
- Minocycline: 5x adverse effects (hyperpigmentation, hepatotoxicity, drug induced lupus)
- Erythromycin/azithromycin, metronidazole are options
**Sunscreens to be used in acne rosacea**

- Daily broad spectrum (UVA & UVB light) sunscreen
- Physical blockers (titanium dioxide & zinc oxide) well tolerated
- Contain protective silicones (dimethicone or cyclomethicone)
- Green-tinted foundations/creams can provide coverage of erythema
- Avoid: astringents, toners, menthols, camphor, waterproof cosmetics requiring solvents for removal, or products containing sodium lauryl sulfate or chemical exfoliating agents (alpha hydroxy acids)

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**Acne vulgaris vs. rosacea**

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<thead>
<tr>
<th></th>
<th>Rosacea</th>
<th>Vulgaris</th>
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</thead>
<tbody>
<tr>
<td>Comedones</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Telangiectasias</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Deep diffuse erythema</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Age of onset</td>
<td>Peak 40-50 y</td>
<td>Peak adolescence</td>
</tr>
<tr>
<td>Areas of involvement</td>
<td>Usually central face</td>
<td>Face, back, chest</td>
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<tr>
<td>Androgen stimulation</td>
<td>No</td>
<td>Yes</td>
</tr>
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