### 3.8.9. Abhishyanda (Neonatal Conjunctivitis)

### 3.8.9. Abhishyanda (Neonatal Conjunctivitis / Ophthalmia Neonatorum)

## Learning goals

By the end of this chapter you will be able to: write a precise exam definition of neonatal conjunctivitis; classify by **onset** and **cause**; recognise danger signs; outline **diagnostic tests** (bedside and laboratory); write **cause-specific treatment** (chemical, gonococcal, chlamydial, HSV, and other bacteria); describe **prevention** including ocular prophylaxis and maternal screening; and relate neonatal conjunctivitis to the **Ayurvedic concept of Abhishyanda**.

Classical anchor: In Suśruta Saṃhitā, Uttara-tantra, Sarvagata-roga-vijñānīya (Chapter VI), Abhiṣyanda is enumerated among diseases affecting the whole eye, and the text cautions that many eye diseases arise from, or progress from, Abhiṣyanda, hence it should be remedied swiftly.

# 1) Definition and terminology

**Neonatal conjunctivitis (ophthalmia neonatorum)** is **inflammation of the conjunctiva** occurring within the **first 28 days** of life, caused by **chemical irritation**, **bacteria** (notably *Neisseria gonorrhoeae*, *Chlamydia trachomatis*), **viruses** (HSV), or other organisms. In Ayurvedic nosology, it correlates with **Abhishyanda** (profuse ocular discharge with redness/irritation), a **Sarvagata netraroga**.

# 2) Etiology and pathogenesis (use onset to remember)

Onset from birth	Likely cause	Pathophysiology / notes
<24 h	<b>Chemical</b> (e.g., silver nitrate)	Direct irritation; typically self-limited in <b>24-48 h</b> .
2-5 days	Gonococcal	Hyper-acute purulent discharge; rapid corneal involvement, perforation risk; <b>medical emergency</b> .
5-14 days	Chlamydial	Mucopurulent discharge $\pm$ eyelid swelling; may herald <b>afebrile pneumonia</b> in weeks.
6-14 days	HSV	Watery to mucoserous discharge, periocular vesicles $\pm$ keratitis; risk of disseminated disease/encephalitis.
Any time	Other bacteria (Staph, Strep, GNB)	Purulent discharge, generally less aggressive than gonococcal; treat per local antibiogram.

Mechanisms: **exposure during delivery**, nosocomial contamination, or prophylactic chemical irritation. In the Ayurvedic frame, **Abhishyanda** implies **"oozing/flow"** from ocular channels (srotas) with **redness, irritation, and discharge**, matching modern features of conjunctivitis.

# 3) Clinical features & red flags

- **Common signs:** conjunctival hyperaemia, eyelid oedema, discharge (watery → mucopurulent → frankly purulent), glued eyelids after sleep.
- **Gonococcal clues: copious thick pus**, tense chemosis, rapid corneal haze/ulcer. **Red flags**: corneal involvement, severe lid oedema, systemic toxicity.

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- Chlamydial clues: mucopurulent discharge, moderate lid swelling, often bilateral but may start unilateral; later risk of chlamydial pneumonia.
- **HSV clues:** vesicular skin lesions, keratitis, or systemic HSV; may be subtle.
- Chemical: mild erythema/tearing/chemosis resolving within 24-48 h.

**Differentiate from: nasolacrimal duct obstruction** (continuous tearing/mucus without conjunctival injection), **congenital glaucoma** (photophobia, blepharospasm, corneal haze), trauma.





### **Ophthalmia Neonatorum**

This image shows gonococcal ophthalmia. Symptoms and signs of eyelid edema, chemosis, and purulent discharge develop 2 to 5 days after delivery.

DR M.A. ANSARY/SCIENCE PHOTO LIBRARY

# 4) Diagnostic approach (step-wise)

### A. Bedside:

- Age of onset; maternal STI history; type of discharge; exposure to prophylactic agent; systemic symptoms.
- Fluorescein stain **if corneal involvement** suspected (especially in gonococcus).

### B. Laboratory (collect before starting therapy if safe, but do not delay emergency treatment):

- Gram stain of conjunctival exudate: look for Gram-negative diplococci (gonococcus).
- Culture on selective media (e.g., Thayer-Martin) for N. gonorrhoeae.
- NAAT/PCR for Chlamydia trachomatis and Neisseria gonorrhoeae where available.
- HSV PCR from conjunctival swab/lesion if suspected; evaluate for systemic HSV.
- Consider **complete evaluation** for disseminated infection in gonococcus/HSV.

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## 5) Management principles (always write these first)

- 1. Infection control: hand hygiene; single-use swabs; clean away discharge with warm sterile saline.
- 2. Avoid topical corticosteroids in neonates unless directed by ophthalmology.
- 3. **Urgent ophthalmology referral** for corneal haze/ulcer, severe chemosis, or any suspected gonococcal/HSV disease.

# 6) Cause-specific treatment (with doses you can remember)

### 6.1 Chemical conjunctivitis

• Supportive only: frequent saline irrigation, reassurance; usually resolves in 24-48 h. No antibiotics needed.

### 6.2 Gonococcal ophthalmia—emergency

- Systemic antibiotic (single dose): Ceftriaxone 25-50 mg/kg IV/IM once (maximum 250 mg). Use caution in premature infants or those with hyperbilirubinaemia (risk of kernicterus); avoid with recent IV calcium use (see alternative below).
- Alternative if ceftriaxone contraindicated or calcium interactions: Cefotaxime 100 mg/kg IV/IM once.
- Irrigation: copious normal saline to clear exudate and reduce bacterial load.
- Topical therapy alone is inadequate and unnecessary when systemic treatment is given. Evaluate for disseminated gonococcal infection (sepsis, arthritis, meningitis).

### 6.3 Chlamydial conjunctivitis

- Preferred: Azithromycin 20 mg/kg orally once daily for 3 days.
- Alternative: Erythromycin base/ethylsuccinate 50 mg/kg/day orally in 4 divided doses for 14 days (watch
  for infantile hypertrophic pyloric stenosis; recurrence ~20% may require a second course). Evaluate for
  pneumonitis.
- Treat mother (and partner) per adult STI guidelines to prevent reinfection.

### 6.4 Herpes simplex (HSV) conjunctivitis/ keratoconjunctivitis

• Acyclovir IV 20 mg/kg every 8 hours for 14-21 days (as for neonatal HSV disease), with ophthalmology input; topical antivirals are not sufficient alone.

# 6.5 Other bacterial conjunctivitides (e.g., Staphylococcus/ Streptococcus, Gram-negative bacilli)

• **Topical** agents (per local sensitivity), e.g., **erythromycin** ointment or **polymyxin B/trimethoprim** drops; escalate if poor response or systemic features.

### 7) Prevention

## 7.1 Universal ocular prophylaxis at birth

- Apply within **first hour** after delivery (facility practice varies). Agents supported internationally include **0.5% erythromycin ointment**, **1% tetracycline ointment**, or **2.5% povidone-iodine** solution; all reduce **gonococcal transmission** (efficacy against **chlamydia** is limited).
- Operational issues: temporary erythromycin shortages have occurred but were resolved in many regions by late 2024. Always follow current local policy.

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### 7.2 Maternal screening and treatment

• Antenatal STI screening and intrapartum risk reduction are the most effective prevention for gonococcal/chlamydial disease; ensure partner treatment.

Kaumārabhrtya alignment: The classical warning that Abhishyanda can lead to severe ocular disease underscores early cleansing, gentle care, and prompt treatment, exactly mirrored by modern prophylaxis and early therapy.

## 8) Quick diagnostic & treatment algorithm

- 1. Age <24 h + mild tearing/congestion → chemical → saline care, observe 24-48 h.
- Age 2-5 days + copious pus/chemosis → suspect gonococcus → STAT ceftriaxone 25-50 mg/kg IV/IM (max 250 mg); saline irrigation; culture/NAAT; screen for dissemination.
- 3. Age 5-14 days + mucopurulent discharge → suspect chlamydia → azithromycin 20 mg/kg PO daily × 3 days (or erythromycin × 14 days); evaluate for pneumonia; treat mother/partner.
- 4. Vesicles/keratitis/systemic signs → HSV → acyclovir IV 20 mg/kg 8-hourly × 14-21 days; ophthalmology.
- 5. **Others** → topical antibiotic per local guideline; monitor response.

# 9) Documentation, counselling, and follow-up

- **Record**: onset, maternal history, exam (discharge type, cornea), investigations, treatment given (dose/time), and response.
- Counsel parents: hygiene (handwashing, separate towels), medication technique (ointment ribbon across lower sac), return immediately if reduced eye opening, corneal haze, fever, poor feeding, or no improvement in 24-48 h.

# 10) Abhishyanda: bridging classical & modern views

• Abhishyanda (Sarvagata netraroga) denotes profuse ocular "oozing" with redness/irritation; Suśruta places it among conditions affecting the entire eye and warns that many ocular diseases arise from or progress from Abhishyanda, demanding rapid remedy. The neonatal entity ophthalmia neonatorum fits this Abhishyanda-lākṣaṇa but needs mṛdu (gentle), evidence-based neonatal measures: early cleansing, systemic therapy for gonococcus/HSV, and oral therapy for chlamydia, alongside prophylaxis at birth.

## Self-check (MCQs)

- 1. A 3-day-old neonate has copious purulent discharge with tense chemosis. The best immediate step is:
  - A. Start topical tobramycin alone
  - B. Give ceftriaxone 25-50 mg/kg IV/IM single dose and irrigate; send swab
  - C. Start acyclovir IV
  - D. Observe for 24 h

**Answer: B.** Systemic therapy is mandatory for gonococcal ophthalmia; topical alone is inadequate.

- 2. The preferred regimen for chlamydial neonatal conjunctivitis is:
  - A. Erythromycin ointment both eyes  $\times$  14 days
  - B. Azithromycin 20 mg/kg PO daily  $\times$  3 days
  - C. Acyclovir IV 20 mg/kg 8-hourly × 21 days
  - D. Cefotaxime 100 mg/kg once

**Answer: B.** (Erythromycin **oral** ×14 days is an alternative.)

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- 3. Which **prophylaxis** statement is **true**?
  - A. Ocular prophylaxis prevents both chlamydial and gonococcal transmission equally
  - B. 0.5% erythromycin ointment at birth prevents gonococcal ophthalmia; efficacy for chlamydia is limited
  - C. Povidone-iodine 2.5% is unsafe for neonates
  - D. Prophylaxis is unnecessary if mother is screened

Answer: B.

- 4. The most dangerous early complication of gonococcal ophthalmia is:
  - A. Nasolacrimal obstruction
  - B. Corneal ulcer/perforation with vision loss
  - C. Dacryocystitis
  - D. Pseudomembrane formation only

Answer: B.

- 5. Which is **recommended** for **HSV** neonatal conjunctivitis?
  - A. Topical steroid + erythromycin only
  - B. Acyclovir IV 20 mg/kg every 8 h for 14-21 days
  - C. Levofloxacin drops only
  - D. No treatment needed

Answer: B.

# Short-answer prompts (3-4 lines each)

- 1. Define ophthalmia neonatorum and list four causes with typical onset windows.
- 2. Write the diagnostic tests you would send before antibiotics in suspected gonococcal disease.
- Outline azithromycin and erythromycin regimens for chlamydial conjunctivitis and one key caution for erythromycin.
- 4. Explain **why topical therapy alone** is insufficient for **gonococcal** ophthalmia.

### References

## Classical sources (conceptual alignment)

• Suśruta Saṃhitā, Uttara-tantra, Sarvagata-roga-vijñānīya (Chapter VI): enumeration of Abhishyanda among diseases affecting the whole eye, with note that many ocular diseases arise from Abhishyanda and should be treated promptly. English translation access: Wisdomlib edition.

### Modern guidelines & reviews

- 1. CDC STI Treatment Guidelines (2021)—Neonates, gonococcal infections: ceftriaxone 25-50 mg/kg IV/IM once (max 250 mg); alternative cefotaxime 100 mg/kg; topical therapy alone inadequate.
- StatPearIs: Ophthalmia Neonatorum / Neonatal Conjunctivitis—classification by onset, features, prophylaxis
  agents.
- USPSTF Recommendation (2019)—0.5% erythromycin at birth prevents gonococcal ophthalmia; benefits
  outweigh harms.
- 4. **Cochrane/Review (2020)**—evidence on **prophylactic agents** (erythromycin 0.5%, tetracycline 1%, povidone-iodine 2.5%, silver nitrate 1%).
- 5. **Chlamydial conjunctivitis therapy**—Azithromycin **20 mg/kg/day × 3 days** (evidence base) and erythromycin **50 mg/kg/day × 14 days**, recurrence and pyloric stenosis caution.
- Medscape/EyeWiki/MSF—additional practical dosing and preventive options; calcium-ceftriaxone interaction cautions.
- 7. AAP Red Book (advisory)—erythromycin ointment shortage update (resolved September 2024).

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### 60-second last-minute revision

- Think in windows: <24 h chemical; 2-5 d gonococcus; 5-14 d chlamydia; 6-14 d HSV.
- Emergency: gonococcus → ceftriaxone 25-50 mg/kg IV/IM once (max 250 mg); irrigate; topical alone isn't enough.
- Chlamydia: azithro 20 mg/kg/day × 3 d (or erythro ×14 d; warn IHPS). Treat mother & partner.
- HSV: acyclovir IV 20 mg/kg q8h for 14-21 d; ophthalmology.
- Prophylaxis at birth: erythromycin 0.5% (or tetracycline 1% / povidone-iodine 2.5%) within 1 h—prevents gonococcus, not reliably chlamydia.

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