DEVOTED TO REDUCING MALARIA DEATHS & SUFFERING IN HUMANITARIAN CRISIS
Trachoma
Epidemiology, Vector Biology, & Environmental Risk Factors

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Epidemiology

84 million infected worldwide in 55 countries

Map of endemic areas: from International Trachoma Initiative

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Vector Biology

Life cycle:
- Egg matures and hatches (1 day)
- Larval feeding stages (4-10 days)
- Pupa stage (3-6 days)
- Adult fly emerges (lifespan of 15-30 days)

Three vector species:
- Musca sorbens (bazaar fly)
- Musca domestica (housefly)
- Musca vetustissima (bushfly)

BTER Foundation
Vector Ecology

Ecological Factors:

- more flies in isolated human feces vs. latrines
- dog, calf, and goat feces also viable for larval growth
- eye-seeking behavior of vector

Crenshaw
Mechanical Transmission

Flies landing on faces and feeding off secretions

Gilbert; International Trachoma Initiative
Direct Transmission

Contact with secretions in school/playground

Contact with secretions at home

Mukhida, Sightsaver Matthews

Orbis International
Indirect Transmission

Contaminated hands, face cloths, towels, and bed sheets (fomites) also transmit infection

Mukhida, Sightsavers; Orbis
Environmental Risk Factors: 6 D’s

Dirt, Dust, Dung, Dry, Discharge, Density

Poor sanitation and hygiene; “dirty faces”

Vasquez, Orbis International
Environmental Risk Factors: 6 D’s

Dirt, Dust, Dung, Dry, Discharge, Density

“Dirty faces”

Gilbert; International Trachoma Initiative
Environmental Risk Factors: 6 D’s

Dirt, Dust, Dung, Dry, Discharge, Density

Vector breeding ground

Crenshaw
Environmental Risk Factors: 6 D’s

Dirt, Dust, Dung, Dry, Discharge, Density

Limited access to water; compromised hygiene

Mukhida, Sightsvaers
Environmental Risk Factors: 6 D’s

Dirt, Dust, Dung, Dry, Discharge, Density

Ocular/nasal secretions

Coughing/sneezing

Matthews, Sightsavers
Environmental Risk Factors: 6 D’s

Dirt, Dust, Dung, Dry, Discharge, Density

Overcrowding fosters favorable conditions for transmission

Fraser, Science Photo Library
Environmental Risk factors: 5 F’s

Flies, Feces, Faces, Fingers, Fomites

Serve as mechanical vectors by landing on faces, feeding off secretions, and spreading to others

Gilbert; International Trachoma Initiative
Environmental Risk factors: 5 F’s

Flies, Feces, Faces, Fingers, Fomites

Vector breeding ground, presence of livestock
Environmental Risk factors: 5 F’s

Flies, Feces, Faces, Fingers, Fomites

Direct transmission through ocular and nasal secretions

Gilbert, International Trachoma Initiative
Environmental Risk factors: 5 F’s

Flies, Feces, Faces, **Fingers**, Fomites

Indirect transmission through dirty hands

Development Media
Environmental Risk factors: 5 F’s

Flies, Feces, Faces, Fingers, Fomites

Contaminated face cloths, handkerchiefs, towels, and pillowcases can transmit infection.
Risk Populations

Children under 10

Children are main reservoir due to poorer hygiene/contact with infected children
Risk Populations

Women are main caretakers of children, 3x more likely to be infected than men

Mukhida, sightsavers
Current challenges

Priorities:

- vector control vs. mass drug administration

- targeting risk populations vs. whole communities

Mukhida, Sighsavers
Current challenges

Priorities:
- diagnosis vs. treatment
- mortality vs. morbidity
- latrines vs. access to clean water

Holt, Saighsavers
Current challenges

Context of Humanitarian Crisis:

- diagnosis vs. treatment
- mortality vs. morbidity
- limited capacity in refugee camps and conflict zones

Holt; Sightsavers
Current challenges

Context of Humanitarian Crisis:

- endemic areas made inaccessible through conflict

- lack of political will or instability

International Trachoma Initiative