

## Differential Diagnosis of Runny Nose (Rhinorrhea)

A runny nose, or rhinorrhea, is a common symptom with a broad differential diagnosis. The underlying causes range from benign, self-limited conditions to more serious diseases. The most frequent etiologies are infectious and allergic, but structural, irritant, and rare systemic causes should also be considered.

### Common Causes

- **Viral Upper Respiratory Infection (Common Cold):**
  - Most common cause, especially with acute onset (less than one week).
  - Associated symptoms: sore throat, cough, low-grade fever, malaise.
  - Mucus may start clear and become thicker or colored as the illness progresses<sup>[1] [2] [3]</sup>.
- **Allergic Rhinitis:**
  - Triggered by exposure to allergens (pollen, dust mites, animal dander).
  - Symptoms: watery rhinorrhea, sneezing, nasal itching, congestion, itchy/watery eyes.
  - Often has a seasonal or environmental pattern<sup>[1] [2] [3] [4]</sup>.
- **Nonallergic (Vasomotor) Rhinitis:**
  - Triggered by irritants (smoke, perfumes, pollution), temperature changes, or spicy foods.
  - No identifiable allergen; often chronic or intermittent.
  - Watery discharge, congestion, sneezing without itching<sup>[2] [3] [4]</sup>.

### Other Important Causes

- **Sinusitis (Acute or Chronic):**
  - May follow a viral URI.
  - Symptoms: purulent (thick, colored) nasal discharge, facial pain/pressure, nasal obstruction, fever<sup>[5] [6] [2] [3]</sup>.
- **Foreign Body (especially in children):**
  - Unilateral, persistent, and often foul-smelling or purulent discharge.
  - Consider in young children with unilateral symptoms<sup>[5] [7] [2]</sup>.
- **Structural Abnormalities:**
  - Deviated septum, nasal polyps, or tumors can cause chronic or unilateral rhinorrhea.
  - May be associated with nasal obstruction or bleeding<sup>[5] [2] [3]</sup>.
- **Medication-Induced Rhinitis (Rhinitis Medicamentosa):**

- Overuse of topical nasal decongestants (>3 days).
- Rebound congestion and persistent runny nose<sup>[7] [3]</sup>.
- **Cerebrospinal Fluid (CSF) Rhinorrhea:**
  - Rare, but important to recognize.
  - Clear, watery rhinorrhea, often unilateral, may increase with straining or bending over.
  - History of trauma, surgery, or increased intracranial pressure<sup>[7] [2]</sup>.
- **Other Noninfectious Causes:**
  - Hormonal changes (pregnancy rhinitis).
  - Occupational exposures (irritant or allergic rhinitis).
  - Systemic diseases (granulomatosis with polyangiitis, sarcoidosis, Sjögren's syndrome, lupus)<sup>[5] [2] [3]</sup>.

## Less Common Infectious Causes

- **Bacterial Infections:**
  - Can complicate viral rhinitis or occur with chronic sinusitis.
  - Purulent discharge, more severe symptoms<sup>[2] [3]</sup>.
- **Fungal or Granulomatous Infections:**
  - Rare, seen in immunocompromised patients or with chronic symptoms<sup>[3]</sup>.

## Key Points in Evaluation

- **Acute vs. Chronic:** Acute (less than 4 weeks) is usually viral or allergic; chronic suggests nonallergic, structural, or systemic causes<sup>[2] [3]</sup>.
- **Unilateral vs. Bilateral:** Unilateral symptoms raise suspicion for foreign body, structural lesion, or CSF leak<sup>[5] [7] [2]</sup>.
- **Associated Symptoms:** Itching, sneezing, and watery eyes suggest allergy; facial pain and purulent discharge suggest sinusitis; systemic symptoms may indicate underlying systemic disease<sup>[2] [3]</sup>.

## Summary Table: Differential Diagnosis of Runny Nose

Cause	Key Features	Typical Duration	Discharge Type
Viral URI	Sore throat, cough, malaise, fever	Acute (days to 1 week)	Clear → thick/colored
Allergic Rhinitis	Sneezing, itching, watery eyes, seasonal pattern	Acute or chronic	Watery
Nonallergic Rhinitis	Triggers: irritants, temperature, no allergy symptoms	Chronic/intermittent	Watery
Sinusitis	Facial pain, purulent discharge, congestion, fever	Acute or chronic	Purulent

Cause	Key Features	Typical Duration	Discharge Type
Foreign Body	Unilateral, foul-smelling, persistent	Chronic	Purulent
Structural Abnormalities	Obstruction, possible bleeding, unilateral	Chronic	Variable
Medication-induced	Overuse of decongestants, rebound congestion	Chronic	Watery/congested
CSF Leak	Clear, unilateral, worse with bending/straining	Chronic	Clear, watery
Systemic Disease	Associated systemic symptoms, rare	Chronic	Variable

## References

- Mayo Clinic<sup>[5]</sup>
- Cleveland Clinic<sup>[1]</sup>
- Society for Pediatric Urgent Care<sup>[7]</sup>
- ScienceDirect<sup>[6]</sup>
- American Academy of Family Physicians (AAFP)<sup>[2]</sup>
- Merck Manual<sup>[3]</sup>
- StatPearls/NCBI<sup>[4]</sup>

A careful history and physical examination are essential to narrow the differential diagnosis and guide further workup or treatment.

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1. <https://my.clevelandclinic.org/health/symptoms/17660-runny-nose>
2. <https://www.aafp.org/pubs/afp/issues/2006/0501/p1583.html>
3. <https://www.merckmanuals.com/home/ear-nose-and-throat-disorders/nose-and-sinus-disorders/rhinitis>
4. <https://www.ncbi.nlm.nih.gov/books/NBK538186/>
5. <https://www.mayoclinic.org/symptoms/runny-nose/basics/causes/sym-20050640>
6. <https://www.sciencedirect.com/science/article/pii/S0091674995702113>
7. <https://urgentcarepediatrics.org/runny-nose/>