

Pica

DSM-5-TR 307.52 | ICD-10-CM F98.3 (CHILD), F50.89 (ADULT)

Persistent eating of nonnutritive, nonfood substances beyond developmental expectation, risking obstruction, poisoning, and infection.

PREVALENCE

Up to 25% with ID or ASD

TYPICAL ONSET

Ages 2–3; also in pregnancy

SEX RATIO

Roughly equal

COURSE

Remits in childhood; chronic in ID

CLINICAL PICTURE

- Ingestion of substances such as soil, clay, chalk, laundry starch, ice, paper, hair, paint chips, soap, cloth, or metal for a month or longer.
- The behavior is not culturally sanctioned in the patient's own context and is developmentally inappropriate, so it is not diagnosed before about age 2.
- Presentation is often through complications: iron deficiency anemia, lead poisoning, bowel obstruction, perforation, dental erosion, or parasitosis.
- Trichophagia can produce a **trichobezoar**, and Rapunzel syndrome extends the hair mass from the stomach through into the small bowel.
- In pregnancy, cravings for ice, clay, or laundry starch are common, frequently concealed, and rarely volunteered unless asked directly.
- In intellectual disability and autism, ingestion is often automatic and sensory-driven, occurring across settings and resistant to redirection.

DIAGNOSTIC CRITERIA AT A GLANCE

- Requires persistent eating of one or more nonnutritive, nonfood substances over a period of at least 1 month.
- The eating must be inappropriate to the individual's developmental level, which excludes normal mouthing behavior in infants and toddlers.
- The behavior must not form part of a culturally supported or socially normative practice within the person's own community.
- When it occurs alongside another mental disorder, intellectual disability, or pregnancy, it is diagnosed separately only if severe enough to warrant independent attention.
- Pica may be diagnosed together with anorexia nervosa or avoidant restrictive food intake disorder, and an in-remission specifier is available.

NEUROBIOLOGY & PHYSIOLOGY

- Iron and zinc deficiency are the most consistently reported associations, and repletion frequently resolves ice craving within days to weeks.
- Pagophagia responds to **iron** replacement faster than hemoglobin recovers, suggesting a direct iron-dependent central mechanism rather than anemia itself.
- Lead absorption is enhanced by iron deficiency, creating a feedback loop in which paint chip ingestion deepens the deficiency that drives it.
- Geophagia can bind dietary iron and zinc within the gut, worsening the deficiency and reinforcing the behavior independent of its origin.
- Dopaminergic reward pathways are implicated in animal models, and pica serves as the standard rodent proxy for nausea because rats cannot vomit.
- Complications include heavy metal toxicity, mercury and arsenic exposure, geohelminth and toxoplasma infection, and mechanical bowel injury.

PSYCHOLOGICAL MECHANISMS

- In developmental disability, pica is typically maintained by automatic sensory reinforcement rather than by attention or by escape from demands.
- Functional analysis separates automatic, attention-maintained, and escape-maintained topographies, and directly dictates the intervention chosen.
- Neglect, understimulation, food insecurity, and institutional environments substantially raise both the risk and the frequency of ingestion.
- Stress, trauma, and obsessive-compulsive spectrum features contribute in some adults, with ingestion serving a self-soothing or ritual function.
- Caregiver responses that involve reprimanding or dramatically removing items can inadvertently reinforce attention-maintained ingestion.

DIFFERENTIAL & COMORBIDITY

- Distinguish from culturally sanctioned geophagia, from normal infant mouthing, and from nonnutritive ingestion during a psychotic episode.
- Exclude self-injury without ingestion, factitious disorder, and deliberate foreign body ingestion for secondary gain in correctional settings.
- Comorbidity centers on intellectual disability, autism spectrum disorder, schizophrenia, trichotillomania, and obsessive-compulsive disorder.
- Obtain CBC, ferritin, iron studies, zinc, and a **blood lead level**, plus abdominal imaging whenever obstruction or bezoar is suspected.
- Mortality risk comes from obstruction, perforation, and toxicity, so an acute abdomen in a patient with pica is a surgical question first.

Treatment EVIDENCE-BASED MANAGEMENT

PHARMACOLOGIC

- No agent is approved for pica; correcting an identified deficiency is the closest thing to a specific and curative treatment.
- Replete with **ferrous sulfate 325 mg** once or twice daily, or with IV iron when absorption is poor, and recheck ferritin at 8 to 12 weeks.
- Supplement **zinc** where deficiency is documented, and treat identified geohelminth infection with albendazole or mebendazole.
- Chelation with succimer is indicated for blood lead levels at or above 45 mcg/dL, always alongside removing the environmental source.
- **SSRIs** and low-dose **antipsychotics** have case-report support only, and are reserved for comorbid OCD, psychosis, or severe self-injury.

PSYCHOTHERAPY

- **Applied behavior analysis** guided by a functional analysis is the evidence base, particularly in intellectual disability and autism.
- Differential reinforcement of alternative behavior plus response interruption and redirection substantially reduces ingestion rates.
- Discrimination training teaches sorting of edible from inedible items, paired with reinforcement for consistently correct selection.
- Overcorrection and brief physical guidance are used sparingly and only within an approved behavior support plan with formal oversight.
- **CBT** with habit reversal suits cognitively intact adults, especially where trichophagia or ritualized ingestion is the presentation.

ADJUNCT & SUPPORTIVE

- Environmental safety comes first: remove accessible nonfood items, secure cleaning products, and remediate lead paint within the home.
- Increase supervision and structured activity, since unstructured and understimulating time is when most ingestion episodes occur.
- Nutritional consultation addresses deficiency, food insecurity, and hunger-driven ingestion, all frequent contributors in practice.
- Dental and gastroenterology follow-up manages enamel erosion, bezoar removal, and recurrent obstruction in chronic cases.
- Screen household children when elevated lead is found, and involve public health for environmental testing and abatement.

CLINICAL PEARLS

- Not diagnosed under about age 2, and never when the practice is culturally sanctioned.
- Check ferritin and blood lead in every case; pagophagia often resolves with iron.
- Trichophagia plus an abdominal mass means bezoar until imaging says otherwise.

References

- Al Nasser, Y., Muco, E., & Alsaad, A. J. (2023). *Pica*. In *StatPearls*. StatPearls Publishing. <https://www.ncbi.nlm.nih.gov/books/NBK532242/>
- American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th ed., text rev.). <https://doi.org/10.1176/appi.books.9780890425787>
- American Psychiatric Association. (2023). *The American Psychiatric Association practice guideline for the treatment of patients with eating disorders* (4th ed.). <https://doi.org/10.1176/appi.books.9780890424865>
- Miao, D., Young, S. L., & Golden, C. D. (2015). A meta-analysis of pica and micronutrient status. *American Journal of Human Biology*, 27(1), 84-93. <https://doi.org/10.1002/ajhb.22598>
- National Institute of Mental Health. (n.d.). *Eating disorders*. U.S. Department of Health and Human Services. <https://www.nimh.nih.gov/health/topics/eating-disorders>
- Sadock, B. J., Sadock, V. A., & Ruiz, P. (2021). *Kaplan & Sadock's synopsis of psychiatry* (12th ed.). Wolters Kluwer.
- Young, S. L. (2010). Pica in pregnancy: New ideas about an old condition. *Annual Review of Nutrition*, 30, 403-422. <https://doi.org/10.1146/annurev.nutr.012809.104713>

NOTE

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