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## Editorial

# Eating disorders: clinical update

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**Abstract**

Variation exists in our attitude and behaviour towards food and exercise, resulting in different degrees of health and ill health. Cultural and economic factors contribute to this, alongside personal choices, leading to a spectrum from normative eating, through disordered eating to the extremes of eating disorders (EDs). Understanding the intricate interplay between biological, psychological, and sociocultural factors to eating, exercise and body image is paramount to understand the current state regarding EDs and to deliver/develop multifaceted and individualised treatments. Significant service developments have occurred following the launch of the Irish Health Service Executive Model of Care for EDs in 2018. However, incomplete roll out and surge in EDs referrals post Covid-19 require generic child and adolescent mental health services (CAMHS) to be competent in assessment of EDs, and to keep abreast of clinical updates in order to offer effective treatment.
This review provides an evidenced based update on eating related difficulties, outlines a useful assessment framework, offers information on appropriate clinical management, and highlights exciting clinically relevant research developments.

**Keywords:** Anorexia nervosa; bulimia nervosa; binge eating disorder; eating disorders; youth

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## Introduction

Eating patterns have changed radically over the last few decades from post-world war rationing to the plentiful and year-round supply of fresh, frozen, canned, and dried products. The processed food industry has grown to accommodate our increasingly busy work schedules, fragmented eating patterns and personal choices. This has resulted in unhealthy eating habits and an exponential increase in overweight status (World Health Organization, 2022). More than one in two EU citizens are overweight (BMI >25) and one in six obese (BMI >30) (OECD, 2020). Children are not immune and the prevalence of overweight or obese youth rose in Ireland from 13% in 1990, to 24% in 2020 (Moore Heslin et al., 2020). Disordered eating is known to increase with increasing BMI and internationally, stand at 22% for adolescents (Lopez-Gil et al., 2023). Most recent worldwide estimates of lifetime rates for anorexia nervosa (AN) are 4% in females and 0.3% in males, and 3% for bulimia nervosa (BN) in females and 1% in males (Van Eeden et al., 2021). It is acknowledged that the rates of AN have seen only a slight increase from 1990 to 2017 in most countries, while the rates of BN are declining. Higher rates of binge eating disorders (BEDs) have been reported, with lifetime prevalence among an Australian cohort of 0.74% and 1.85% for males and females, respectively (Bagaric et al., 2020). Whilst AN and BN display a notable gender disparity, BED occurs equally in both sexes. Additionally, although BED is associated strongly with obesity and carries increased risk for psychiatric and medical comorbidities along with serious psychosocial impairments, it frequently goes unrecognised and untreated (Grilo & Juarascio 2023).

Avoidant restrictive food intake disorder or ARFID has recently been added to the DSM-5 (American Psychiatric Association, 2013) and ICD-11 (World Health Organization, 2019) classification systems. Although individuals may present with food avoidance or restrictions, resulting in often significant weight loss, the core psychopathology of fear of fatness or body image disturbance is not present. Avoidance or restriction may be driven by sensory experiences, fear-related avoidance of eating, or low interest in food. Estimated prevalence are difficult to establish but reported as between 5 and 14% (Sanchez-Cerezo et al., 2023).

In Ireland, a National Clinical Programme for Eating Disorders (NCPED) was established by HSE in 2014. This has led to a national standardised model of care (published in 2018), collaboratively developed between interprofessional clinicians in the HSE, a clinical advisory group from the college of psychiatrists of ireland and bodywhys. Services are delivered by specialist community outpatient teams (two for children and adolescents, one for adults). During the COVID-19 pandemic, the NCPED saw a significant increase in referrals across all age groups, highlighting a nationwide trend (O'Driscoll et al., 2023). Rates for AN and other specified feeding or eating disorder (OSFED) significantly increased, as did rates of psychiatric hospitalisation for youth (O'Driscoll et al., 2023). Additionally, data from the Hospital In-Patient Enquiry (HIPE) and the Health Research Board's National Psychiatric In-Patient Reporting System (NPIRS) (Daly & Craig, 2020) and ED community teams also reported

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increased referrals (Campbell et al., 2002). This aligns with international data which reports a global increase in EDs and disordered eating behaviours across the age spectrum (McLean et al., 2022). However, unlike other EDs, increased rates for ARFID have not been reported (Maunder et al., 2024). Given the rising numbers, it is imperative that clinicians are well informed about the clinical features of these conditions and equipped to conduct thorough and accurate assessments. The "Medical Emergencies in Eating Disorders (MEED): guidelines, published by the Royal College of Psychiatrists in 2022, offers a crucial framework for managing patients with ED (Nicholls et al., 2022). This comprehensive guideline on recognition and management of EDs applies to children and adolescents and adults and succeeds the 2012 Junior MARSIPAN (Management of Really Sick Patients with Anorexia Nervosa) guidance, widely used among clinicians (Royal College of Psychiatrists 2012).

Deviation from Normative Eating: Variations in eating behaviours exist along a continuum, influenced by diverse factors such as cultural norms, individual preferences, economic factors, and psychological perceptions. While occasional deviations are commonplace, more extreme, and persistent deviations contribute to disturbances in eating behaviours, body image dissatisfaction, and preoccupation with weight and shape and the resultant increased morbidity and mortality. Standardised mortality rates (SMR) for AN are estimated to be 12–18 times higher and six times higher for BN (Fichter & Quadflieg 2016). Of note, a number of studies have reported significantly higher mortality rates among males (SMR = 7.24) compared to females (SMR = 4.59) (Iwajomo et al., 2021).

The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) and the International Classification of Diseases (ICD-11) provide standardised criteria for the diagnoses of the 3 main eating disorders (AN, BN, and BED). Subthreshold presentations (ICD-11) are also listed and include atypical AN, where individuals maintain a BMI within or above the normal range but otherwise meet the diagnostic criteria for AN, and atypical BN or BED, where binge eating, or compensatory behaviours occur less frequently than required. Two new syndromes are identified within the category of other specified feeding or eating disorders (OSFED): (i) purging disorder, characterised by recurrent purging behaviours aimed at influencing body shape or weight in the absence of binge eating, and (ii) night eating syndrome, where a significant portion of food intake occurs during the night, including episodes of awakening from sleep to eat. By broadening the diagnostic criteria, such as removing the requirement for amenorrhoea and allowing clinical judgement to determine low weight in AN, as well as incorporating BED, ICD-11 enhances diagnostic precision, facilitating standardised treatment and research (see Table 1).

### Assessment framework

A comprehensive assessment for an eating disorder requires the clinician to consider multiple domains, readily guided by the IF-ME (Individual, Family, Medical and Environment) (McDevitt & McNicholas 2019) or BBI (Behaviour-Belief-Impairment) framework (Ridgeway et al., 2023). The clinician elicits the behaviour of concern, for example, calorie restriction or binge episodes; the associated belief system driving the behaviour, for example, pursuit of thinness or emotional coping; and any associated impairment such as low weight, or adverse psychological or psychosocial consequences. Evaluation may further include eliciting individual symptoms of both eating and other psychopathology, as comorbidity occurs frequently (>50%) in ED.(Juli et al., 2023). Establishing any family history of eating pathology, family or peer conflict and any academic struggles will assist in child-specific additional treatment. Establishing the medical sequalae, as part of the IF-ME, is crucial in ED given the multisystem impact of either starvation or purging on the body. Additionally, it is recognised that individuals with BED carry a greater medical morbidity than same-weight obese non-BED individuals and are more likely to have higher rates of depression (Bulik et al., 2002). Whilst most of the deaths in AN are attributable to medical complications, those in BN are more often associated with suicide (Smith et al., 2018). This represents an 18 times increased risk of suicide among individuals with AN compared to gender and aged matched controls, and for individuals with BN, a seven times increased risk.

### Biological and genetic factors

The aetiology of ED involves complex interactions between biological, genetic, and environmental influences. Research indicates alterations in neurotransmitter systems, particularly serotonin and dopamine, which play a role in appetite regulation, mood modulation, and reward processing. Increased concordance among MZ twins and first-degree relatives have pointed to high heritability rates. The expansion on genome-wide association studies (GWAS) to AN, and more recently all EDs have identified 8 loci of interest (Watson et al., 2019). These have implicated genes involved in neuronal development, connectivity, synaptic plasticity, and neuroendocrine signalling, leading some investigators to recommend genetic testing as part of routine ED assessment. Abnormality in peripheral hormones regulating appetite have been found. Anorexigenic hormones (eg Leptin) which signal satiety when high, and hunger and eating when low, have been found to be low (Leptin) (Hebebrand et al., 2007). In contrast, orexigenic hormones, which stimulate appetite and increased eating have been found to be high (ghrelin), suggesting dysregulation in the peripheral appetite system (Cuesto et al., 2017). Abnormal microbiomes have been identified in AN (Terry et al., 2022). This has led to creating germ-free mice models, where faecal transplants from AN patients led to a preference for exercise over food, mirroring behaviour seen in AN (Hata et al., 2019; Fan et al., 2023).Immunological markers have also been identified, with the most promising cytokines involved in the pathogenesis of AN being interleukin-6 or IL-6, and TNF-alpha (Maunder et al., 2023).

### Treatment modalities

Effective management of EDs necessitates a multifaceted approach tailored to the individual needs of the patient and family. A recent systematic review retains family-based treatment (FBT), also referred to as the Maudsley approach, as first line treatment for naive youth with AN (Datta et al., 2023). This is a manualised approach, with a strong emphasis of placing responsibility of refeeding to the parents, while offering support and consultation. Parents are tasked with taking responsibility for plating, supervising, and monitoring food intake and progress is reviewed by an in-session family meal and subsequent weekly sessions with weights. The first phase lasts 10–12 weeks before moving to less frequent sessions where the young person takes more responsibility for nutrition. Adolescent related difficulties are addressed as part of the final phase. Research supports either a 10 or a 20-session delivery, with early weight regain indicative of a good response. Despite its superiority over other treatments, only 25%–50% achieve full remission and it is increasingly recognised that

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**Table 1.** Table: ED categorisation using BBI assessment framework

| | AN | BN | BED | ARFID |
|---|---|---|---|---|
| Behaviour | Calorie restriction (restrictive type)<br><br>Over exercise<br><br>May have episodes of purging (purge type) | Binge episodes (frequency > weekly for 3 months)<br><br>Compensatory behaviour (purging, laxative/diuretic misuse/ severe fasting or exercise) | Binge episodes (frequency > weekly for 3 months)<br><br>May eat alone, faster than usual, eat until uncomfortably full, eat even when not hungry | Calorie restriction<br><br>Food selectivity: may only eat certain food brands/colours/ groups |
| Belief | Desire to lose weight<br><br>Intense fear of fatness<br><br>Over evaluation of weight/shape<br><br>Body image dissatisfaction | Loss of control during binges<br><br>Over evaluation of weight/shape | Loss of control during binges<br><br>Feeling of disgust, shame, depression<br><br>May have other MH concerns, low self-worth | **Sensory**: dislike taste/sight/smell of avoided food groups<br><br>**Interest**: very low interest in eating<br><br>**Phobic**: past aversive experiences, eg choking on fish, so all fish avoided<br><br>No body image disturbance |
| Impairment | Significantly low body weight (clinically determined*)<br><br>Symptoms linked to malnutrition | May have weight loss & symptoms linked to malnutrition<br><br>Electrolyte abnormalities<br><br>Dental erosion, calluses on fingers linked to vomiting | Symptoms linked to overweight status<br><br>Gastrointestinal symptoms including gastric rupture | Substantial weight loss (or failure to make expected weight gain)<br><br>Nutritional deficiency<br><br>Significant psychosocial interference |

AN, anorexia nervosa; BN, bulimia nervosa; BED, binge eating disorder; ARFID, Avoidant Restrictive Food Intake Disorder.
*highlights possible medical instability due to weight loss in an otherwise normal weight range.

adjunctive treatments are often necessary. FBT has been adapted for BN and in the absence of high family expressed emotion, may be considered first line (Datta et al., 2023).

Cognitive behavioural therapy (CBT) has a strong evidence base in the treatment of BN and BED in adults and is increasingly used in adolescents, especially where FBT has not succeeded(Datta et al., 2023). CBT targets maladaptive thoughts and behaviours aiming to foster healthier coping mechanisms and self-evaluation separate to one's weight or shape. Maintaining factors such as dietary restriction and reinforcing behaviours such as post binge purging are reviewed with the individual using a transdiagnostic formulation. Sessions follow a structured approach with agenda setting, and a review of weight and homework on each occasion. As with many therapies, establishing a trusting relationship with the individual, signposting ending early ahead of time, and gradual shift once medically stable to more patient led topics including relapse prevention and recovery are core components. CBT may be delivered both individually and group-based, along with the involvement of family members as appropriate.

Whilst the evidence base for pharmacological interventions is less established in youth with EDs, there have been a significant number of RCTs in adults, which support the use of Fluoxetine 60 mg in the treatment of BN and Lisdexamphetamine 70 mg in the treatment of BED (Muratore & Attia 2022). Both are FDA approved and have been found to have beneficial effects in both frequency of binge/purge episodes and overall quality of life. Lisdexamphetamine has not been found to have contribute to weight loss, such that in overweight individuals, weight loss behavioural treatments are also required. Olanzapine has been the most studied atypical antipsychotic, including some studies in adolescents, with evidence to support weight gain, but little effect on eating psychopathology (Han et al., 2022). Notwithstanding the positive studies, it is accepted that psychotropic medication is best viewed as adjunctive treatments, complementing psychotherapy in addressing specific ED symptoms. Psychotropic medications often play an important in the treatment of comorbid conditions, such as the Fluoxetine when co-occurring depression or anxiety.

Given the ego-syntonic nature of AN in particular, ambivalence towards recovery and adherence to treatment may be difficult. This is especially so when considering the weight gaining profile of anti-psychotics. Medical risks associated with ED, even in BED, mean that careful medical monitoring is essential when medications are prescribed. Consideration to ethical and legal challenges associated with treating against the young person's wishes need multidisciplinary review and contribute to high levels of anxiety among staff. Ensuring the young person is at the centre and involved in decision making, to the extent that they can, is crucial in maintaining what is often a long-term therapeutic relationship with the person and their family. Connecting with eating disorder support networks, including clinicians and organisations like (Bodywhys | The Eating Disorders Association of Ireland), can be invaluable for the patient and their family.

### *Emerging therapeutic avenues*

Advancements in neurobiological research offer promising avenues for novel interventions (Bryson et al., 2024). These include medications targeting central and peripheral circuits implicated in appetite regulation, reward processing, and emotional regulation. Abnormalities in gut microbiome has led to exploration of nutrition precision treatments and advocacy for clinical trials using Leptin (Hebebrand & Albayrak 2012). The growing evidence of cognitive deficits such as cognitive rigidity, weak central coherence and executive dysfunction supports the exploration of adjunctive cognitive remediation strategies. Neuromodulation and use of

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virtual reality assisted therapy have also been trialled with promising results (Duriez et al., 2020; Bryson et al., 2024).

## Conclusion

Eating disorders represent complex psychiatric disorders, existing at the end of a spectrum from normative and disordered eating behaviour. They necessitate comprehensive assessment and early and aggressive interventions. Despite such efforts, treatment success has been surprisingly and disappointingly slow. Clinicians play a pivotal role in recognising diagnostic nuances, addressing multifaceted treatment needs, and integrating existing and emerging treatment modalities to optimise outcomes and promote holistic care for individuals with EDs. New research into biological and genetic factors are both exciting and necessary to help inform targeted treatment approaches and improve the clinical outcome for this cohort of patients.

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## References

**American Psychiatric Association** (2013). *Diagnostic and Statistical Manual of Mental Disorders*, 5th edn. American Psychiatric Association: Arlington, VA.

**Bagaric M, Touyz S, Heriseanu A, Conti J, Hay P** (2020). Are bulimia nervosa and binge eating disorder increasing? Results of a population-based study of lifetime prevalence and lifetime prevalence by age in South Australia. *European Eating Disorders Review* **28**, 260–268.

**Bodywhys | The Eating Disorders Association of Ireland.** *Eating disorders explained*. Bodywhys: Blackrock, Co Dublin, Ireland. https://www.bing.com/search?q=bodywhys+support&FORM=AWRE

**Bryson C, Douglas D, Schmidt U** (2024). Established and emerging treatments for eating disorders. *Trends in Molecular Medicine* **30**, 392–402.

**Bulik CM, Sullivan PF, Kendler KS** (2002). Medical and psychiatric morbidity in obese women with and without binge eating. *International Journal of Eating Disorders* **32**, 72–78.

**Campbell S, Maunder K, Lehmann O, McKeown M, McNicholas F**. (2022). The Long-Term Impact of Covid-19 On Presentations To A Specialist Child & Adolescent Eating Disorder Program. *Irish Medical Journal* **115**, 653.

**Cuesto G, Everaerts C, Leon LG, Acebes A** (2017). Molecular bases of anorexia nervosa, bulimia nervosa and binge eating disorder: shedding light on the darkness. *Journal of Neurogenetics* **31**, 266–287.

**Daly A, Craig S.** (2021). *Annual Report on the Activities of Irish Psychiatric Units and Hospitals 2020*. Health Research Board: Dublin, Ireland.

**Datta N, Matheson BE, Citron K, Van Wye EM, Lock JD** (2023). Evidence based update on psychosocial treatments for eating disorders in children and adolescents. *Journal of Clinical Child & Adolescent Psychology* **52**, 159–170.

**Duriez P, Bou Khalil R, Chamoun Y, Maatoug R, Strumila R, Seneque M, Gorwood P, Courtet P, Guillaume S** (2020). Brain stimulation in eating disorders: state of the art and future perspectives. *Journal of Clinical Medicine* **9**, 2358.

**European Union**. Health at a glance: Europe 2020. State of Health in the EU Cycle. 2020.

**Fan Y, Støving RK, Berreira Ibraim S, Hyötyläinen T, Thirion F, Arora T, Lyu L, Stankevic E, Hansen TH, Déchelotte P, Sinioja T**, The gut microbiota contributes to the pathogenesis of anorexia nervosa in humans and mice. *Nature Microbiology* **8**, 787–802.

**Fichter MM, Quadflieg N** (2016). Mortality in eating disorders-results of a large prospective clinical longitudinal study. *International Journal of Eating Disorders* **49**, 391–401.

**Grilo CM, Juarascio A** (2023). Binge-eating disorder interventions: review, current status, and implications. *Current Obesity Reports* **12**, 406–416.

**Han R, Bian Q, Chen H** (2022). Effectiveness of olanzapine in the treatment of anorexia nervosa: a systematic review and meta-analysis. *Brain and Behavior* **12**, e2498.

**Hata T, Miyata N, Takakura S, Yoshihara K, Asano Y, Kimura-Todani T, Yamashita M, Zhang X-T, Watanabe N, Mikami K, Koga Y, Sudo N** (2019). The gut microbiome derived from anorexia nervosa patients impairs weight gain and behavioral performance in female mice. *Endocrinology* **160**, 2441–2452.

**Hebebrand J, Albayrak Ö.** (2012). Leptin treatment of patients with anorexia nervosa? The urgent need for initiation of clinical studies. *European Child & Adolescent Psychiatry* **21**, 63–66.

**Hebebrand J, Muller TD, Holtkamp K, Herpertz-Dahlmann B** (2007). The role of leptin in anorexia nervosa: clinical implications. *Molecular Psychiatry* **12**, 23–35. doi:10.1038/sj.mp.4001909.

**Iwajomo T, Bondy SJ, de Oliveira C, Colton P, Trottier K, Kurdyak P** (2021). Excess mortality associated with eating disorders: population-based cohort study. *The British Journal of Psychiatry* **219**, 487–493.

**JO Driscoll D, Jennings R, Clifford M, Maher C, Corbett M, Wade S, Dunne D, Collins C, McDevitt S** (2023). HSE National Clinical Programme for Eating Disorders in Ireland: COVID-19 pandemic and eating disorder care in a new national eating disorder service. *International Journal of Eating Disorders* **56**(8), 1637–1643.

**Juli R, Juli MR, Juli G, Juli L** (2023). Eating disorders and psychiatric comorbidity. *Psychiatria Danubina* **35**, 217–220.

**López-Gil JF, Garcia-Hermoso A, Smith L, Firth J, Trott M, Mesas AE, Jimenez-Lopez E, Gutierrez-Espinoza H, Tarraga-Lopez PJ, Victoria-Montesinos D** (2023). Global proportion of disordered eating in children and adolescents: a systematic review and meta-analysis. *JAMA Pediatrics* **177**, 363.

**MARSIPAN J** (2012). *Management of Really Sick Patients With Anorexia Nervosa <18yrs*. Royal College of Psychiatrists: London, UK. Accessed August 9, 2024.

**Maunder K, Markey O, Batchelor R, McNicholas F** (2024). A systematic review of COVID-19 and the presentation of avoidant/restrictive food intake disorder and avoidant/restrictive food intake disorder-like symptoms. *BJPsych Open* **10**, e56.

**Maunder K, Molloy E, Jenkins E, Hayden J, Adamis D, McNicholas F** (2023). Anorexia nervosa in vivo cytokine production: a systematic review. *Psychoneuroendocrinology* **158**, 106390.

**McDevitt S, McNicholas F** (2019). *Eating Disorders: Treatment, Management and Recovery. Working with People Affected by Eating Disorders: Developing Skills and Facilitating Recovery*, pages 106.

**McLean CP, Utpala R, Sharp G** (2022). The impacts of COVID-19 on eating disorders and disordered eating: a mixed studies systematic review and implications. *Frontiers in Psychology* **13**, 926709. doi:10.3389/fpsyg.2022.926709.

**Moore Heslin A, O'Donnell A, Kehoe L, Walton J, Flynn A, Kearney J, McNulty B.** (2023). Adolescent overweight and obesity in Ireland—Trends and sociodemographic associations between 1990 and 2020. *Pediatric Obesity* **18**(2), e12988.

**Muratore AF, Attia E** (2022). Psychopharmacologic management of eating disorders. *Current Psychiatry Reports* **24**, 345–351.

**Nicholls D, Robinson P, Ayton A, Donoghue K, Ernest N, Gautam-Aitken E, Greenwood H, Popis J, Taylor C** (2022). *Medical Emergencies in Eating Disorders*. Royal College of Psychiatrists: London, UK.

**Ridgeway L, Katzman D, McNicholas F** (2023). Belief and impairment (BBI): a diagnostic procedure for eating disorders in primary care. *Irish Journal of Medical Science* **192**, 1447–1452.

**Sanchez-Cerezo J, Nagularaj L, Gledhill J, Nicholls D** (2023). What do we know about the epidemiology of avoidant/restrictive food intake disorder in children and adolescents? A systematic review of the literature. *European Eating Disorders Review* **31**(2), 226–246.

**Smith AR, Zuromski KL, Dodd DR** (2018). Eating disorders and suicidality: what we know, what we don't know, and suggestions for future research. *Current Opinion in Psychology* **22**, 63–67.

**Terry SM, Barnett JA, Gibson DL** (2022). A critical analysis of eating disorders and the gut microbiome. *Journal of Eating Disorders* **10**, 154.

**Van Eeden AE, Van Hoeken D, Hoek HW** (2021). Incidence, prevalence and mortality of anorexia nervosa and bulimia nervosa. *Current Opinion in Psychiatry* **34**, 515–524.

**Watson HJ, Yilmaz Z, Thornton LM, Hübel C, Coleman JR, Gaspar HA, Bryois J, Hinney A, Leppä VM, Mattheisen M, Medland SE** (2019). Genome-wide association study identifies eight risk loci and implicates metabo-psychiatric origins for anorexia nervosa. *Nature Genetics* **51**, 1207–1214.

**World Health Organization**. (2022). WHO European regional obesity report [2022]. Copenhagen: World Health Organization Regional Office for Europe [cited 2024 Oct 10]. Available from: https://apps.who.int/iris/handle/10665/353747

**World Health Organization**. (2019). ICD-11 international classification of diseases for mortality and morbidity statistics (11th revision). Retrieved from https://icd.who.int/browse11/l-m/en#/http%3a%2f%2fid.who.int%2ficd%2fentity%2f1119008568. Accessed November 20, 2021.

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