



Published in final edited form as:

Arch Phys Med Rehabil. 2024 November ; 105(11): 2239–2241. doi:10.1016/j.apmr.2024.03.004.

Charles Bonnet Syndrome: Clinician Screening Tips and Strategies for Symptom Management

Kimberly Hreha, EdD, OTR/L,

Fay Tripp, MS, OTR/L, CLVT, CDRS,

Stephanie Stellato, OTD-S

Charles Bonnet Syndrome (CBS)¹ is a condition that manifests as visual hallucinations (VHs) because of progressive or sudden damage along the visual pathway.² CBS can occur due to multiple causes of complete or partial vision loss³. Vision impairments known to be associated with the development of CBS include but are not limited to age-related macular degeneration (ARMD)^{1,2,4}, glaucoma⁵, and diabetic retinopathy^{5,6}. Additionally, damage to the retrochiasmal visual pathways as seen in stroke or cerebral hemorrhage, for example may result in hallucinations that are restricted to the hemianopic or quadrantanopic visual fields¹. While the lack of normal sensory input explains the underlying cause of CBS there are theories regarding the mechanism or why this occurs, that relate to dysfunction at the cortical not the retinal level.^{1,5}

CBS has been estimated to occur in 11–34% of individuals experiencing vision impairments². The current body of research clearly identifies that CBS is not a psychiatric disorder and individuals are cognitively intact,¹ however the exact origination remains unknown because:

1. having a vision impairment does not guarantee an individual will experience CBS.
2. individuals of any age with vision impairment may experience CBS, even though it's primarily reported in older adult populations.^{2,5,7}

Individuals experiencing CBS articulate various VHs^{1,2,6} which are best described as being either:

1. formed or unformed images, such as faces or parts of faces
2. simple geometric patterns or

kimberly.hreha@duke.edu .

Disclaimer

This information is not meant to replace the advice of a medical professional and should not be interpreted as a clinical practice guideline. Statements or opinions expressed in this document reflect the views of the contributors and do not reflect the official policy of ACRM, unless otherwise noted. Always consult your health care provider about your specific health condition. This Information/Education Page may be reproduced for noncommercial use for health care professionals and other service providers to share with their patients or clients. Any other reproduction is subject to approval by the publisher.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

3. complex recognizable images, such as landscapes.

Moreover, someone experiencing CBS may provide a more detailed and visually clear description of the VH than their visual capacity permits.²

Research suggests that CBS may be under-detected for multiple reasons:^{2,6}

1. Some individuals are unbothered by their VH.²
2. Others fear reporting their VH would deem them as mentally unstable, possibly yielding negative consequences.^{1-3,6}
3. Individuals living with CBS can be misdiagnosed due to lack of practitioner awareness of CBS,^{1,6} or because multiple neurodegenerative or psychological conditions, such as Schizophrenia and Dementia, present with similar symptomology.^{1,8,9}

Therefore, it is critical for clinicians, especially occupational therapists, to pose precise screening questions, be familiar with distinctive factors of the condition, feel comfortable consulting with providers who have specialty training (e.g., neuropsychologist), and encourage the patient to share their symptoms.^{4,7} The purpose of this page is to provide practical information to improve screening for CBS visual hallucinations, as well as provide strategies clinicians can suggest to individuals living with CBS, which may help them self-manage their symptoms (visual hallucinations).

What is the screening process for CBS?

It is recommended that CBS be screened for routinely and comprehensively no matter the practice setting and no matter if the clinician has formal vision training.^{3,5} Simple screenings with targeted questions (such as: What types of images do you see?), followed by the practitioner reflecting on their answers using Figure 1 as a guide, can avoid premature assumptions and conclusions about the origin of symptoms and can start the conversation about a potential diagnosis of CBS. For example, if the clinician determines a diagnosis of CBS is possible, a referral for a comprehensive ocular examination can diagnose if the person has a vision impairment and to ensure best corrected visual acuity through appropriate optical devices. In addition, the clinician should rule out cognitive impairment, by asking the individual to complete a standardized cognitive assessment that does not rely on vision to perform the test battery.³

What strategies can clinicians recommend to individuals living with CBS to manage their visual hallucinations?

One strategy clinicians can offer individuals living with CBS is to have discussions with them about their VHs, including how CBS symptoms are not indicative of a psychological or neurological disorder.^{2,3,11} These conversations can be key to have with a care partner present, especially as it pertains to the distinction between CBS and psychiatric conditions. Clinicians can also support individuals in managing their VHs by modifying sensory input. This includes maximizing the persons' vision by:

1. updating their prescription glasses¹.
2. trialing low vision devices³, which may include a task light³, glare control filters, or an eye specialist recommended telescope.
3. educating them on strategies to maximize functional vision and self-manage their symptoms. This includes following the strategies identified in the Veteran's Administration Low Vision Intervention Trial (LOVIT; Table 1).¹² These strategies have undergone testing and are advised for individuals experiencing macular diseases and vision loss because they promote best vision and improve functional vision.¹²

Why is screening for CBS and recommendations for symptom management important?

Since pharmacologic management with anticonvulsant or antipsychotic medications have been tested in clinical trials have not yielded consistent outcomes, symptom management is key to improved quality of life.^{3,5} We also know that the prevalence of vision impairments is on the rise due to aging and increased life mortality. Hence, comprehensive and routine screening methods will be even more important, especially for individuals with age-related vision impairments known to contribute to CBS. Spontaneous improvement can occur in about a quarter of individuals who suffer from this condition, even with ongoing visual loss. Therefore, understanding more about the stimuli that induce VHS in individuals with CBS, identifying factors that reduce the intensity of these symptoms, and examining the frequency of such VHS is imperative.

Acknowledgment

We would like to thank the Duke Eye Center Vision Rehabilitation and Performance Clinic team specifically Omar Mohiuddin, OTR/L, MS, MPH, CLVT; Madison Dunning, OD; Leslie Koonce, COT; and Diane B. Whitaker, OD for their contributions. This work was supported in part by NIH NCMRR: K01HD106010 (Kimberly Hreha).

References

1. Pang L Hallucinations Experienced by Visually Impaired: Charles Bonnet Syndrome. *Optom. Vis. Sci. Off. Publ. Am. Acad. Optom.* 93, 1466–1478 (2016).
2. Carpenter K, Jolly JK & Bridge H The elephant in the room: understanding the pathogenesis of Charles Bonnet syndrome. *Ophthalmic Physiol. Opt.* 39, 414–421 (2019). [PubMed: 31591762]
3. Crumbliss KE, Taussig MJ & Jay WM Vision rehabilitation and Charles Bonnet Syndrome. *Semin. Ophthalmol.* 23, 121–126 (2008). [PubMed: 18320478]
4. Coerver KA & Subramanian PS Visual hallucinations in psychiatric, neurologic, and ophthalmologic disease. *Curr. Opin. Ophthalmol.* 31, 475–482 (2020). [PubMed: 33009079]
5. Menon GJ, Rahman I, Menon SJ & Dutton GN Complex visual hallucinations in the visually impaired: the Charles Bonnet Syndrome. *Surv. Ophthalmol.* 48, 58–72 (2003). [PubMed: 12559327]
6. Jones L, Ditzel-Finn L, Enoch J & Moosajee M An overview of psychological and social factors in Charles Bonnet syndrome. *Ther. Adv. Ophthalmol.* 13, 25158414211034716 (2021).
7. Satgunam P, Sumalini R, Chittapu G & Pamarthi G Screening for Charles Bonnet syndrome: Should the definition be reconsidered? *Indian J. Ophthalmol.* 67, 1127 (2019). [PubMed: 31238427]
8. Waters F & Fernyhough C Hallucinations: A Systematic Review of Points of Similarity and Difference Across Diagnostic Classes. *Schizophr. Bull.* 43, 32–43 (2017). [PubMed: 27872259]

9. Eversfield CL & Orton LD Auditory and visual hallucination prevalence in Parkinson's disease and dementia with Lewy bodies: a systematic review and meta-analysis. *Psychol. Med.* 49, 2342–2353 (2019). [PubMed: 30474581]
10. Hreha K, Weden K, Perea J, Roberts P & Rizzo JR A Model for Vision Rehabilitation and the Role of the Physiatrist on the Interdisciplinary Team. *Am. J. Phys. Med. Rehabil.* 100, e80–e81 (2021). [PubMed: 32701638]
11. Hamedani AG & Pelak VS The Charles Bonnet Syndrome: a Systematic Review of Diagnostic Criteria. *Curr. Treat. Options Neurol.* 21, 41 (2019). [PubMed: 31342218]
12. Stelmack JA et al. VA LOVIT II: a protocol to compare low vision rehabilitation and basic low vision. *Ophthalmic Physiol. Opt.* 32, 461–471 (2012). [PubMed: 22958237]

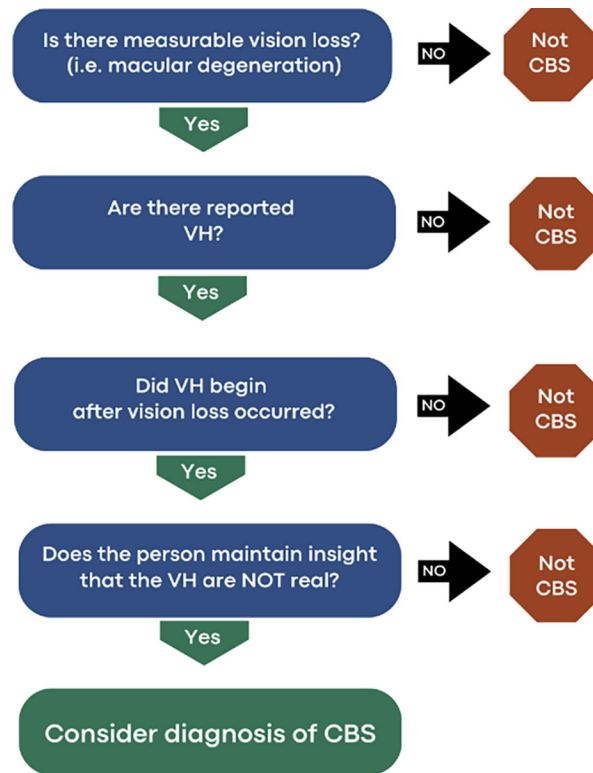


Figure 1.
CBS screening flow chart

Table 1.Considerations for symptom self-management¹²

	Strategy	Optical, Device, and Environmental Considerations
B	Brightness	Are bright colors used to enhance visual input (bright pillows, flowers, etc.)?
L	Light	Do lighting levels maximize functional vision for inside and outside areas?
O	Object Size	Is the best vision correction used, and at the correct working distance? Will use of a monocular or binocular telescope improve distance vision?
C	Contrast	Are living areas arranged with structures and with objects of contrasting color?
C	Clutter	Do surfaces (i.e., countertops, tables) present with simple visual input and decreased visual clutter?