

Not a Duck or a Rabbit: Asthma Control and Why Physician Perception Matters



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In 1892, a humor magazine published the Duck-Rabbit Ambiguous Figure, in which the viewer sees either a duck or a rabbit, but with adjustment can see the other.¹ The figure sparked philosophical theorizing about whether the figure itself defines its interpretation or if the viewer's understanding and surrounding circumstances define her or his perception. This is one of several ambiguous images created over the past 2 centuries, including Necker's Cube, My Wife and My Mother-in-Law and Schroeder's Stairs. Although these images create intriguing philosophical debate, they are more relevant to physician bias and decision making in asthma care than one would like to admit. This is a problem presented by Fuhlbrigge et al² in the current issue of *JACI In Practice*.

In the same historical timeframe as the debate surrounding figure ambiguity and perception, asthma care has evolved to include a multitude of treatment options in a context of defined categorization of disease severity and control based on international guidelines.³ Nonetheless, the tenets of asthma care are the same as they have been since written by Stewart and Gibson in 1896⁴:

The treatment of asthma involves the treatment of the patient during fits and between the fits. The general indications are:

1. *To allay the spasm during the paroxysm*
2. *To find out and remove the exciting cause*
3. *To treat complications and sequelae to improve general health.*

Despite the historically consistent approach to asthma care and ground-breaking treatment innovations, clinical progress must be questioned if we, as clinicians, cannot perceive the problem in the individual patient. Fuhlbrigge et al undertook a retrospective analysis of US survey data from the Respiratory Disease Specific Programme. Physicians recorded patient disease characteristics and their perception of patient asthma control. Patient asthma control was assessed using the Asthma Control Test (ACT).⁵ Responses were compared with level of symptom

control per the 2019 Global Initiative for Asthma (GINA)⁶ and Work Productivity and Impairment questionnaire responses.

A striking finding in the Fuhlbrigge et al² report is that physician and patient perception of asthma control was concordant most of the time (80%), but only 21.8% of patients with self-reported, well-controlled asthma were classified as such by GINA symptom criteria. While items 1-4 of the ACT rely on measurable disease indices (impact on daily activities, frequency of shortness of breath, nighttime disturbances, and rescue inhaler usage), item 5 relies on subjective patient perception of control. The discordance between patient and physician perception of control and GINA criteria speaks directly to the misunderstanding of what well-controlled asthma should feel like for a patient. Based on GINA criteria, 27.7% (n = 215) of the study population was considered to have uncontrolled asthma compared with only 1.2% (n = 10) by patient perception based on item 5 of the ACT. In a large multinational study by Sastre et al,⁷ most patients (81%) perceived their asthma to be well or completely controlled while many reported features indicating uncontrolled asthma. Given these findings, the authors concluded that patients had low expectations of long-term asthma management. Physicians need to be able to use and interpret clinical tools, like the ACT, in the context of GINA guidelines to appropriately select treatment strategies for patients. Although item 5 of the ACT relies on the patient perception of asthma control, the physician needs to be able to properly ascertain disease control beyond the patient's perception and properly address and enable understanding of the goals of asthma control for patients.

Notably in the Fuhlbrigge et al² report, the association of physicians' overall perception of control and ACT item 5 was strong compared with item 3 (nighttime disturbances) and item 4 (rescue inhaler usage), which had a weak association with physicians' overall perception of control. Night disturbances were reported at least once or twice a week in more than half of the patients who considered their asthma well controlled. Nighttime symptoms require special attention by the clinician and might indicate high-risk symptomatology. Hendeles et al⁸ reported that at night, the response to albuterol in asthmatics is slower and required higher dose because more severe asthma obstruction was present on awakening. Further, the discordance in physician perception and item 4 is of particular concern. Overuse of short-acting beta-agonist (SABA) is a known risk factor for near fatal and fatal asthma. Silver et al⁹ reported that risk of excessive SABA use in the previous quarter is associated with risk of asthma exacerbation. It is striking that the correlation between physician perception and patient use of rescue inhaler usage is weak in the Fuhlbrigge et al² study, considering the known substantial risk implication carried with this particular clinical disease feature.

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While some details of asthma control are subjective or require detailed questioning by clinicians, some should be easily ascertained objectively. The Fuhlbrigge et al² study design involved primary care physicians, allergists, and pulmonologists responsible for making treatment decisions for patients with asthma. Assessments of control were based on the 4 weeks before survey completion. Physicians were to select patient disease severity using the “tick-box” options of mild, moderate, or severe based on their own clinical judgment and experience with each particular patient, which, the authors acknowledge, could have been confounding. The researchers, on the other hand, assigned patients to a GINA step (1-5) based on the patients’ current prescriptions. Based on GINA criteria, over half of the patients enrolled were categorized as steps 4 and 5. Only 6.6% of patients enrolled in the study were treated with a monoclonal antibody. The percentage of patients prescribed a monoclonal antibody seems incongruous with GINA guidelines based on patient severity and control. Furthermore, most patients in the study were on the same regimen for almost 2 years. This is a prolonged period for patients to remain on the same treatment regimen given the reported levels of control by GINA criteria in the study.

The authors also report that the most recent available ($n = 348$) pre-bronchodilator forced expiratory volume in 1 second (FEV1) predicted %, mean $\pm$ standard deviation was 79.5 ± 19.8 .² Given that the goal of the study was to ascertain alignment of patient and physician reported perception of asthma control, it is laudable that the authors present the available objective spirometry data. The paucity of patients who have had recent spirometric measurements in this population is noteworthy. In addition, FEV1 predicted % is not useful without other features of spirometry, including forced vital capacity (FVC)% and the FEV1/FVC ratio, which are essential to understanding objectively measurable airway obstruction.¹⁰

In conclusion, Fuhlbrigge et al² report the unfortunate finding that although physician and patient concordance of perception of asthma control is quite high, the perception is not in alignment with definitions of control by GINA guidelines. The implied risks include inappropriate assessment of asthma control by care providers, ensuing inappropriate management of asthma, ultimately resulting in increased morbidity and in some cases

mortality. When it comes to perception of asthma control, it is not a case of duck versus rabbit. The Duck-Rabbit image is neither; rather it is a simple collection of wavy lines and circles that requires interpretation. If the viewer cannot extrapolate the needed information from the image or the available tool, in our case the ACT, perhaps it is time to change our understanding of the image. Rather than relying on a “tick-box” or patient opinion of his or her asthma control to guide our clinical judgment, it is time to rely on the abundance of historical research that defined the individual items in the tools and use them accordingly. If we lost or never had the ability to understand the tool we created, what progress have we made?

REFERENCES

1. Anonymous Illustrator. Which animals are most like each other? Flying Pages [in German]. Braun & Schneider; 1892.
2. Fuhlbrigge AL, Marvel J, Electricwala B, Siddall J, Scott M, Middleton-Dalby C, et al. Physician-patient concordance in the assessment of asthma control. *J Allergy Clin Immunol Pract* 2021;9:3080-8.
3. Chu EK, Drazen JM. Asthma: One Hundred Years of Treatment and Onward. *Am J Respir Crit Care Med* 2005;171:1202-8.
4. Stewart TG, Gibson GA. Asthma. In: Stedman TL, editor. Twentieth century practice: an international encyclopedia of modern medical science by leading authorities of Europe and America, Vol. VI. New York: William Wood and Co; 1896. p. 585-617.
5. Schatz M, Sorkness CA, Li JT, Marcus P, Murray JJ, Nathan RA, et al. Asthma Control Test: reliability, validity, and responsiveness in patients not previously followed by asthma specialists. *J Allergy Clin Immunol* 2006;117:549-56.
6. Global Initiative for Asthma. Global Strategy for Asthma Management and Prevention; 2019. Available from: <https://ginasthma.org/>. Accessed May 25, 2021.
7. Sastre J, Fabbri LM, Price D, Wahn HU, Bousquet J, Fish JE, et al. Insights, attitudes, and perceptions about asthma and its treatment: a multinational survey of patients from Europe and Canada. *World Allergy Organ J* 2016;9:13.
8. Hendeles L, Beaty R, Ahrens R, Stevens G, Harman EM. Response to inhaled albuterol during nocturnal asthma. *J Allergy Clin Immunol* 2004;113:1058-62.
9. Silver HS, Blanchette CM, Kamble S, Petersen H, Letter M, Meddis D, et al. Quarterly assessment of short-acting β_2 -adrenergic agonist use as a predictor of subsequent health care use for asthmatic patients in the United States. *J Asthma* 2010;47:660-6.
10. Graham BL, Steenbruggen I, Miller MR, Barjaktarevic IZ, Cooper BG, Hall GL, et al. Standardization of spirometry 2019 update. An official American Thoracic Society and European Respiratory Society technical statement. *Am J Respir Crit Care Med* 2019;200:8.