

Prescribing patterns of nebulized bronchodilators: A prospective chart review

Dear Editor,

Bronchodilator misuse is widespread in the medical profession. The correct therapeutic use of bronchodilators is important both for hospital and primary care physicians. There appear to be two fundamental misconceptions contributing to prescriber habits. The first is under-appreciation of correct indications for bronchodilators. The second is a widely held perception that nebulizer therapy is more efficacious than drug delivery via inhaler devices.

A prospective chart review was conducted to examine the patterns of nebulized bronchodilator use in patients admitted to the medical wards of a tertiary hospital. All subjects prescribed a nebulized bronchodilator over a 4-week period were included. Patients were identified by the Pharmacy Department and their clinical notes were reviewed. Information collected included drug indication and the duration of nebulizer use. Because extended administration of nebulizers should seldom be required, the duration of regular nebulizer therapy was selected as a surrogate finding for physician choice between inhaler and nebulizer. A chart review does not allow a satisfactory sense of clinical circumstances under which the medicines were prescribed, and as such nebulization may have been perfectly appropriate in some instances or inappropriate in others.

A total of 57 patients were identified who received a nebulized bronchodilator over the study period. Treatment was not indicated in 10 patients (18% of cases). Incorrect indications included pneumonia (3 patients), cardiogenic pulmonary edema (5 patients), and restrictive lung disease (2 patients). Of the entire cohort, 47% (27 patients) remained on regular nebulizer therapy for >24 h. Excluding hyperkalemia patients, this figure rises to 52% of cases.

There is inadequate understanding of the medical conditions which correctly warrant bronchodilator therapy. Bronchodilators are indicated for obstructive airways and are of no utility in the absence of bronchoconstriction. Suitable problems include chronic obstructive pulmonary disease, asthma, and bronchiectasis. Nonobstructive causes of breathlessness, such as pneumonia and cardiogenic pulmonary edema are not reasons to prescribe bronchodilators, despite the practice being commonplace. This study found that 18% of bronchodilator prescriptions were for incorrect indications. There is no robust scientific evidence suggesting improved oxygenation in these settings after such treatment. For example, bronchodilators are

rarely followed by demonstrable improvement in oxygenation among patients with pneumonia. The infrequent case of pneumonia accompanied by bronchospasm may benefit from a bronchodilator such as salbutamol, but this should not become standard treatment. Furthermore, cardiogenic pulmonary edema is theoretically potentiated by bronchodilators because they induce vascular congestion and increase myocardial oxygen demand.^[1,2]

The second promoter of bronchodilator misuse is a widespread doctrine that the efficacy of nebulizer therapy exceeds that of inhaler devices. Many clinicians fail to recognize that with proper use inhalers and nebulizers provide an equivalent improvement in lung function. The primary reason for nebulization is patients that are too breathless to perform a coordinated actuation with inhaler and spacer.^[3,4] In capable, inhaler therapy delivered via spacer proves more cost-effective without compromising clinical gain.^[3-8] The present investigation indirectly confirms nebulizer overdependence. Major practice guidelines dictate that transition from nebulizer to inhaler should be made as soon as possible and that with proper use this should be achievable within 24 h of treatment.^[3,9] An unacceptably high proportion of patients in this cohort was continued on regular nebulization beyond 24 h. In fact, excluding patients treated for hyperkalemia, the majority of patients prescribed nebulizers (52%) continued therapy for >24 h. Contributing to this figure may be a tendency for physicians to elect nebulizers to simplify the task of drug administration for nursing staff. While appealing, this does not represent sound medical practice. Not only is nebulizer therapy unnecessary in many cases, early de-escalation to inhalers shortens hospital length of stay and improves patient inhaler technique.

This small study demonstrates that the use of nebulized bronchodilators is suboptimal and does not adhere to clinical guidelines. It is suggested that there is a misunderstanding about the correct therapeutic indications for bronchodilators. A significant minority of patients are administered treatment when they are unlikely to derive benefit and in some instances may be harmed. Many patients are also prescribed nebulizers in clinical settings which would permit the use of inhaler devices. Nebulizers can be safely reserved for patients with extreme breathlessness. In capable with good technique, inhalers delivered via spacer constitute an underutilized, equally efficacious, more cost-effective strategy. When treating obstructive lung disease with bronchodilators, an earlier transition to inhaler therapy should be considered in most circumstances.

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Conflicts of interest

There are no conflicts of interest.

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