

# Upfront computed tomography scanning is more cost-beneficial than empiric medical therapy in the initial management of chronic rhinosinusitis.

[Leung R<sup>1</sup>](#), [Kern R](#), [Jordan N](#), [Almassian S](#), [Conley D](#), [Tan BK](#), [Chandra R](#).

## [Author information](#)

1

Department of Otolaryngology-Head and Neck Surgery, Northwestern Memorial Hospital, Northwestern University, Chicago, IL 60611, USA. [randy.leung@utoronto.ca](mailto:randy.leung@utoronto.ca)

## Abstract

### BACKGROUND:

Current treatment algorithms for patients with symptoms of chronic rhinosinusitis (CRS) recommend a trial of empiric medical therapy prior to obtaining a sinus computed tomography (CT) scan, even in cases of negative nasal endoscopy. This empiric approach evolved in an era when same day conventional CT was both impractical and economically irresponsible. The objective of this work was to determine whether upfront CT scanning is more cost-beneficial than empiric medical therapy for patients presenting with CRS symptoms but negative endoscopic findings.

### METHODS:

A Markov economic model was employed. Medication costs, CT costs, treatment response rates, and treatment associated adverse event rates were included as model parameters. Treatment cost values were derived from Medicare.

### RESULTS:

There is a clear cost advantage to the upfront CT algorithm over empiric therapy regardless of the availability of point-of-care CT scanning (POC-CT). This advantage persists during the sensitivity analysis when costs and response rates are fully biased toward empiric therapy. If POC-CT is available, upfront CT can save \$320.50 per patient (range, \$138.5-671.5). When POC-CT CT is unavailable, upfront CT savings persist at \$296.60 (range, \$106.09-655.40).

### CONCLUSION:

In patients meeting symptom criteria for CRS but without endoscopic evidence of inflammation, upfront CT scanning is more cost-beneficial than empiric medical therapy. Adopting upfront CT scanning can save the U.S. healthcare system \$1.2 billion dollars per year. Further, POC-CT can offer same day diagnosis, facilitate prompt treatment, and decrease unnecessary antibiotic prescriptions.

PMID:22144057

DOI: [10.1002/alr.20084](https://doi.org/10.1002/alr.20084)