

## BACKGROUND

- Crohn's disease (CD) is an inflammatory bowel disease which may affect the entire gastrointestinal tract from the mouth to the anus and is characterized by abdominal pain, bleeding, diarrhea and weight loss<sup>1</sup>.
- In The United States, the prevalence of Crohn's disease ranged from 26 to 201 cases per 100,000 individuals and the incidence rate ranged between 3.1 and 14.6 cases per 100,000 person-years<sup>2</sup>.
- The mean annual costs for CD ranged from \$8,000 USD to \$19,000 USD<sup>3,4,5</sup>. CD has a profound economic burden that will likely continue to grow.

## OBJECTIVES

To assess the medical costs associated with Crohn's disease in The United States since 2014

## METHODS

### Search Strategy

A systematic search of electronic databases (Medline, Embase and Cochrane Library) was performed covering the period January 2014 to January 2019. Disease-related search terms were combined with either economic or cost terms to identify relevant publications. We chose to limit the search by geography (USA), language (English) and time (year 2014 and later) for feasibility purposes.

### Study Selection

Publications from the initial electronic search were screened in two phases as per the eligibility criteria to identify relevant papers.

- ✓Primary screening was done based on title and abstract.
- ✓Secondary screening consisting of a full paper review was conducted on all those publications and abstracts that met the general inclusion criteria.

All publications that reported medical costs related to CD were included.

### Data Extraction and Analysis

All the costs related to CD were extracted from the screened studies. Data were organized according to the research question. All economic data were reported as annual costs. All monetary values were adjusted for inflation using the Consumer Price Index to reflect costs in 2018 \$USD.

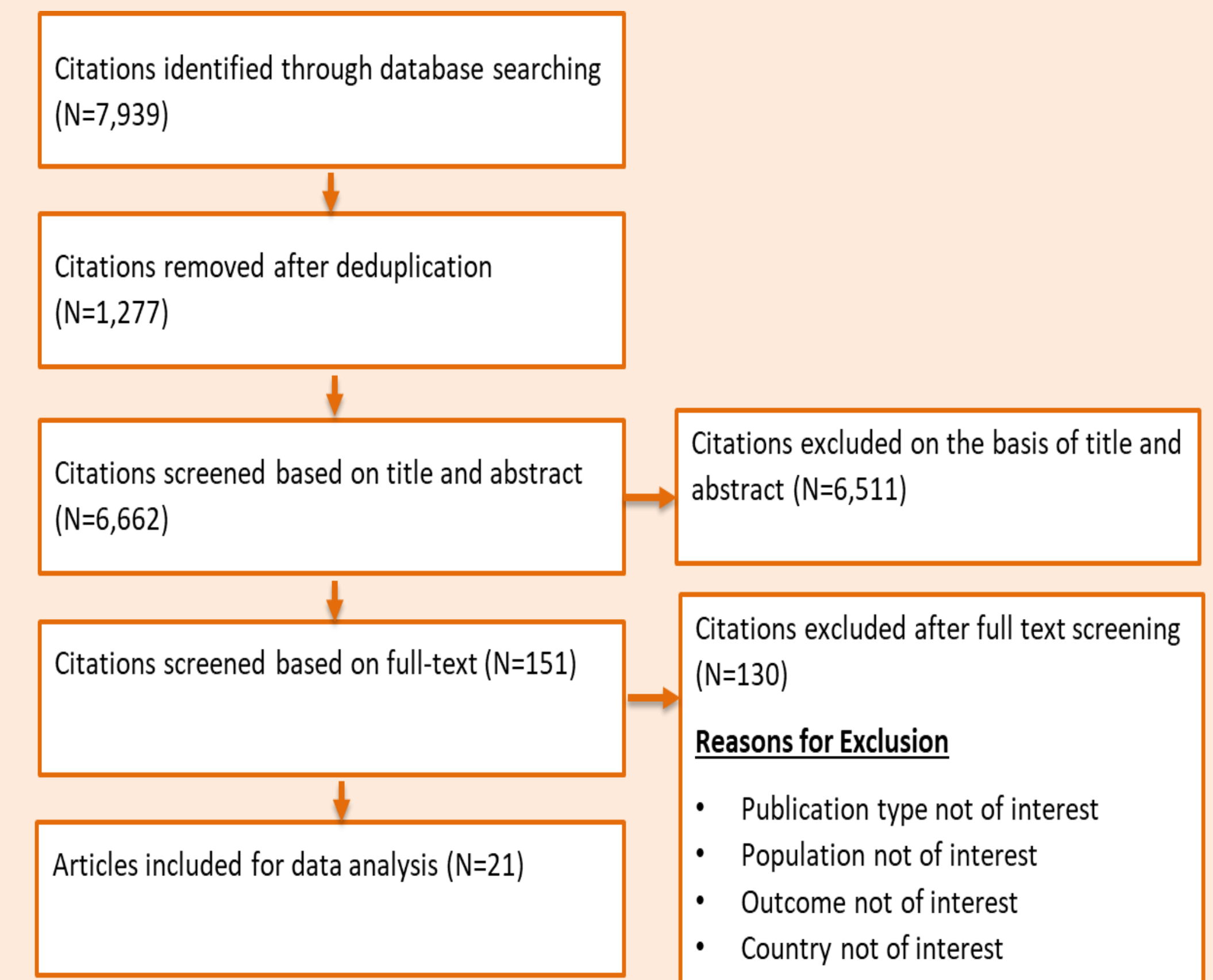
## CONCLUSIONS

This targeted literature review demonstrated the medical costs burden of CD. The management of CD has likely significant fiscal impact on the healthcare system. Since drug/pharmacotherapy (biologics) was the key player in explaining the high annual medical expenditure, implementing cost-effective therapies may help in reducing the overall expenditure on CD. Also, there is need to form effective policies for the cost-effective management of CD.

**Table 1: Eligibility Criteria**

PICOTS Elements	Inclusion Criteria	Exclusion Criteria
<b>Population</b>	Patients with Crohn's disease	Patients suffering from other diseases
<b>Intervention</b>	Any intervention	-
<b>Comparator</b>	Any comparator	-
<b>Outcomes</b>	Cost associated with CD Direct medical cost (disease management cost and medication cost)	Outcomes other than direct medical cost
<b>Time period</b>	Last five years (From January 2014 - January 2019)	Publication dated before January 2014
<b>Publication type/ Study design</b>	Real world/observational studies <ul style="list-style-type: none"> <li>Prospective cohort studies/longitudinal observational study</li> <li>Retrospective cohort studies</li> <li>Case-control studies</li> <li>Population based/cross-sectional studies</li> <li>Surveys</li> <li>Conference abstracts</li> </ul>	Case report, case series, protocols, validation studies, magazine, expert opinion, letters, editorials, comments, narrative literature review and books, systematic reviews, meta-analysis, randomized controlled trials, and erratum
<b>Country</b>	United States	Any other country
<b>Language</b>	English	Any other language

**Figure 1: Study Selection Process**



## RESULTS

The electronic database search yielded 7,939 records. After removing duplicates (n=1,277), 6,662 citations were screened through title and abstract and excluded 6,511 citations as they did not meet the eligibility criteria. Full text of the remaining 151 publications were evaluated and 130 publications were excluded, thus 21 records were finally included in qualitative analysis. A flow diagram of the study selection process is illustrated in Figure 1

- After screening 6,662 unique citations, a total of 21 publications were included in this review.
- Claims and pharmacy databases were used in most of the publications that were included in this review.
- Most of the studies reported that maximum number of CD patients were privately insured.
- Annual mean expenditures for the management of CD ranged from \$12,010 USD<sup>6</sup> to \$127,970 USD<sup>7</sup> (approx.) per patient. It was observed that expenditures for the management of CD was mainly comprised of in-patient costs, out-patient costs, hospitalization costs, pharmacy costs, emergency visit costs, office-based costs, drug/therapy costs and prescription costs.
- A gradual increase was observed in the annual expenditure for the management of CD from the year 2010-2015.
- Emergency visit costs and hospitalization costs varied significantly with respect to the therapy/treatment used during hospitalization or emergency visit along with the cause (any cause or CD related cause) of hospitalization or emergency visit.
- Out-patient costs associated with CD were observed to be higher in comparison to in-patient costs.
- A large portion of the medical costs was attributable to drug/pharmacotherapy (biologics).

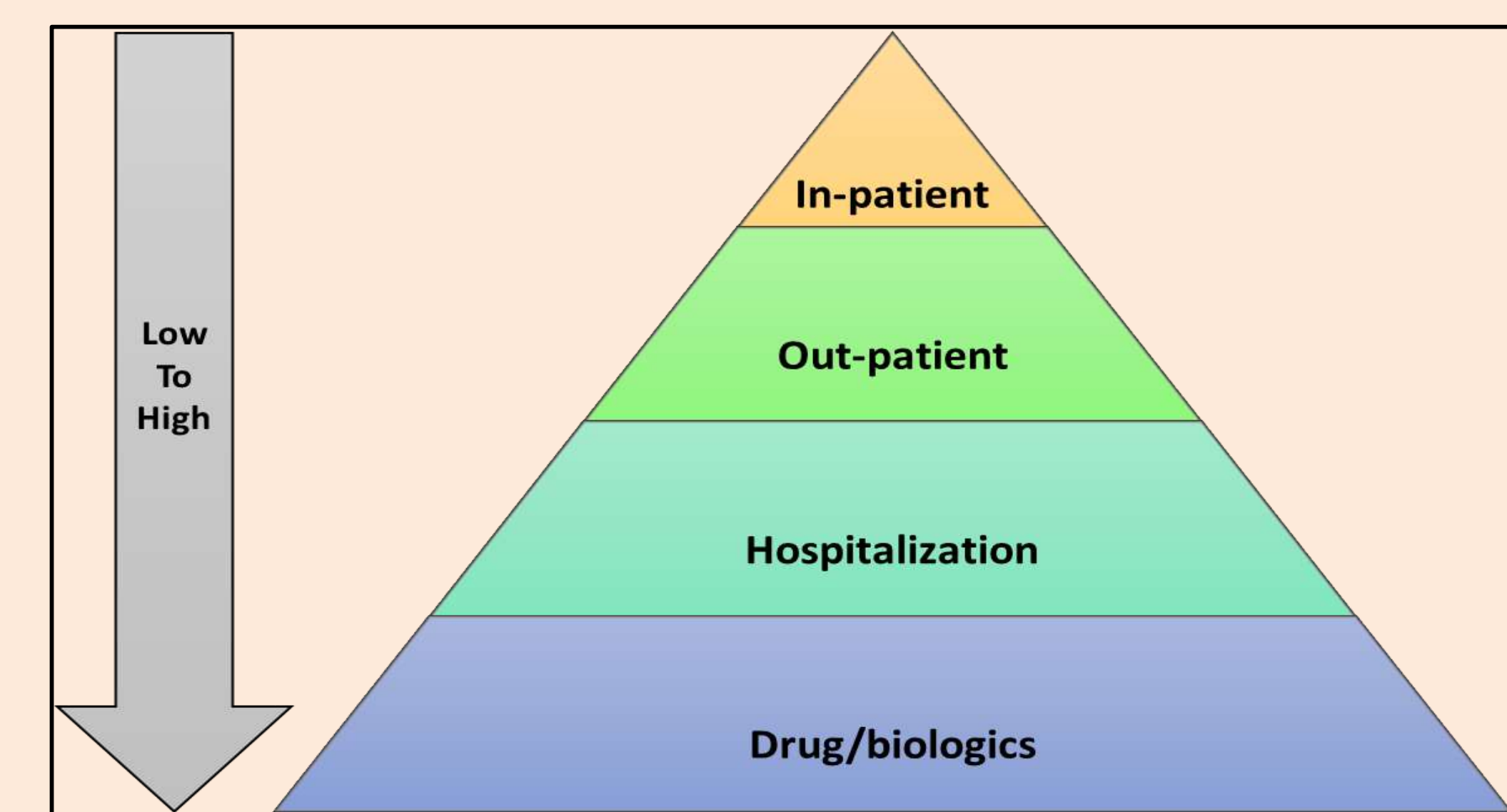
**Table 2: Distribution of Costs**

Type of costs	Minimum value*	Maximum value*
Emergency Visit	\$240 USD <sup>8</sup>	\$10,700 USD <sup>9</sup>
Hospitalization	\$4,560 USD <sup>10</sup>	\$96,565 USD <sup>7</sup>
Total Medical Expenditure	\$12,010 USD <sup>6</sup>	\$127,970 USD <sup>7</sup>

\* Reflecting annual per patient costs in 2018 \$USD

USD: United States Dollar

**Figure 2: Major Contributors in Annual Expenditure**



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