ORIGINAL RESEARCH Supplementary material

Pepose et al

# Supplementary material

# Direct and indirect costs of infectious conjunctivitis in a commercially insured population in the United States

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**Supplementary Table S1** Diagnosis codes used to identify conjunctivitis

|  |  |  |  |
| --- | --- | --- | --- |
| **Condition** | **ICD version** | **Diagnosis code** | **Description** |
| **Acute conjunctivitis** | ICD-9-CM | 032.81 | Conjunctival diphtheria |
|  |   | 077.98 | Unspecified diseases of conjunctiva due to Chlamydiae |
|  |   | 098.40 | Gonococcal conjunctivitis (neonatorum) |
|  |   | 370.40 | Keratoconjunctivitis, unspecified |
|  |   | 370.44 | Keratitis or keratoconjunctivitis in exanthema |
|  |   | 370.49 | Other keratoconjunctivitis |
|  |   | 370.8 | Other forms of keratitis |
|  |   | 372.00 | Acute conjunctivitis, unspecified |
|  |   | 372.02 | Acute follicular conjunctivitis |
|  |   | 372.03 | Other mucopurulent conjunctivitis |
|  |   | 372.04 | Pseudomembranous conjunctivitis |
|  |   | 372.15 | Parasitic conjunctivitis |
|  |   | 372.20 | Blepharoconjunctivitis, unspecified |
|  |   | 372.30 | Conjunctivitis, unspecified |
|  |   | 372.39 | Other conjunctivitis |
|  |   | 771.6 | Neonatal conjunctivitis and dacryocystitis |
|  | ICD-10 | A36.86 | Diphtheritic conjunctivitis |
|  |   | A54.31 | Gonococcal conjunctivitis |
|  |   | A74.0 | Chlamydial conjunctivitis |
|  |   | B30.3 | Acute epidemic hemorrhagic conjunctivitis (enteroviral) |
|  |   | B60.12 | Conjunctivitis due to *Acanthamoeba* |
|  |   | B60.13 | Keratoconjunctivitis due to *Acanthamoeba* |
|  |   | H10.011 | Acute follicular conjunctivitis, right eye |
|  |   | H10.012 | Acute follicular conjunctivitis, left eye |
|  |   | H10.013 | Acute follicular conjunctivitis, bilateral |
|  |   | H10.019 | Acute follicular conjunctivitis, unspecified eye |
|  |   | H10.021 | Other mucopurulent conjunctivitis, right eye |
|  |   | H10.022 | Other mucopurulent conjunctivitis, left eye |
|  |   | H10.023 | Other mucopurulent conjunctivitis, bilateral |
|  |   | H10.029 | Other mucopurulent conjunctivitis, unspecified eye |
|  |   | H10.221 | Pseudomembranous conjunctivitis, right eye |
|  |   | H10.222 | Pseudomembranous conjunctivitis, left eye |
|  |   | H10.223 | Pseudomembranous conjunctivitis, bilateral |
|  |   | H10.229 | Pseudomembranous conjunctivitis, unspecified eye |
|  |   | H10.30 | Unspecified acute conjunctivitis, unspecified eye |
|  |   | H10.31 | Unspecified acute conjunctivitis, right eye |
|  |   | H10.32 | Unspecified acute conjunctivitis, left eye |
|  |   | H10.33 | Unspecified acute conjunctivitis, bilateral |
|  |   | H10.501 | Unspecified blepharoconjunctivitis, right eye |
|  |   | H10.502 | Unspecified blepharoconjunctivitis, left eye |
|  |   | H10.503 | Unspecified blepharoconjunctivitis, bilateral |
|  |   | H10.509 | Unspecified blepharoconjunctivitis, unspecified eye |
|  |   | H10.89 | Other conjunctivitis |
|  |   | H10.9 | Unspecified conjunctivitis |
|  |   | H16.201 | Unspecified keratoconjunctivitis, right eye |
|  |   | H16.202 | Unspecified keratoconjunctivitis, left eye |
|  |   | H16.203 | Unspecified keratoconjunctivitis, bilateral |
|  |   | H16.209 | Unspecified keratoconjunctivitis, unspecified eye |
|  |   | H16.291 | Other keratoconjunctivitis, right eye |
|  |   | H16.292 | Other keratoconjunctivitis, left eye |
|  |   | H16.293 | Other keratoconjunctivitis, bilateral |
|  |   | H16.299 | Other keratoconjunctivitis, unspecified eye |
|  |   | P39.1 | Neonatal conjunctivitis and dacryocystitis |
| **Chronic conjunctivitis** | ICD-9-CM | 372.10 | Chronic conjunctivitis, unspecified |
|  |   | 372.11 | Simple chronic conjunctivitis |
|  |   | 372.12 | Chronic follicular conjunctivitis |
|  | ICD-10 | H10.401 | Unspecified chronic conjunctivitis, right eye |
|  |   | H10.402 | Unspecified chronic conjunctivitis, left eye |
|  |   | H10.403 | Unspecified chronic conjunctivitis, bilateral |
|  |   | H10.409 | Unspecified chronic conjunctivitis, unspecified eye |
|  |   | H10.421 | Simple chronic conjunctivitis, right eye |
|  |   | H10.422 | Simple chronic conjunctivitis, left eye |
|  |   | H10.423 | Simple chronic conjunctivitis, bilateral |
|  |   | H10.429 | Simple chronic conjunctivitis, unspecified eye |
|  |   | H10.431 | Chronic follicular conjunctivitis, right eye |
|  |   | H10.432 | Chronic follicular conjunctivitis, left eye |
|  |   | H10.433 | Chronic follicular conjunctivitis, bilateral |
|  |   | H10.439 | Chronic follicular conjunctivitis, unspecified eye |
| **Viral conjunctivitis** | ICD-9-CM | 053.29 | Herpes zoster with other ophthalmic complications |
|  |   | 053.22 | Herpes zoster iridocyclitis |
|  |   | 053.21 | Herpes zoster keratoconjunctivitis |
|  |   | 053.20 | Herpes zoster dermatitis of eyelid |
|  |   | 054.40 | Herpes simplex with unspecified ophthalmic complication |
|  |   | 054.41 | Herpes simplex dermatitis of eyelid |
|  |   | 054.42 | Dendritic keratitis |
|  |   | 054.43 | Herpes simplex disciform keratitis |
|  |   | 054.44 | Herpes simplex iridocyclitis |
|  |   | 054.49 | Herpes simplex with other ophthalmic complications |
|  |   | 055.71 | Measles keratoconjunctivitis |
|  |   | 077.4 | Epidemic hemorrhagic conjunctivitis |
|  |   | 077.8 | Other viral conjunctivitis |
|  |   | 077.99 | Unspecified diseases of conjunctiva due to viruses |
|  | ICD-10 | B00.50 | Herpesviral ocular disease, unspecified |
|  |   | B00.51 | Herpesviral iridocyclitis |
|  |   | B00.52 | Herpesviral keratitis |
|  |   | B00.53 | Herpesviral conjunctivitis |
|  |   | B00.59 | Other herpesviral disease of eye |
|  |   | B02.30 | Zoster ocular disease, unspecified |
|  |   | B02.31 | Zoster conjunctivitis |
|  |   | B02.32 | Zoster iridocyclitis |
|  |   | B02.33 | Zoster keratitis |
|  |   | B02.34 | Zoster scleritis |
|  |   | B02.39 | Other herpes zoster eye disease |
|  |   | B05.81 | Measles keratitis and keratoconjunctivitis |
|  |   | B30.3 | Acute epidemic hemorrhagic conjunctivitis (enteroviral) |
|  |   | B30.8 | Other viral conjunctivitis |
|  |   | B30.9 | Viral conjunctivitis, unspecified |
| **Adenoviral conjunctivitis** | ICD-9-CM | 077.1 | Epidemic keratoconjunctivitis |
|  |   | 077.2 | Pharyngoconjunctival fever |
|  |   | 077.3 | Other adenoviral conjunctivitis |
|  | ICD-10 | B30.0 | Keratoconjunctivitis due to adenovirus |
|  |   | B30.1 | Conjunctivitis due to adenovirus |
|  |   | B30.2 | Viral pharyngoconjunctivitis |

**Abbreviations:** ICD-9-CM, International Classification of Diseases, Ninth Revision, Clinical Modification; ICD-10, International Classification of Diseases, Tenth Revision.

**Supplementary Table S2** Seed patient disposition and demographics during the baseline period\*,†

|  |  |
| --- | --- |
| **Characteristic** | **All seed patients****(N=860,930)** |
| Age, years, mean±SD (median) | 32.4±24.8 (30.9) |
| Male, n (%) | 378,920 (44.0) |
| US census region, n (%) |  |
| Northeast | 166,543 (19.3) |
| Midwest | 220,849 (25.7) |
| South | 311,105 (36.1) |
| West | 132,649 (15.4) |
| Unknown | 29,784 (3.5) |
| Season of index date, n (%)‡ |  |
| Winter | 229,390 (26.6) |
| Spring  | 231,380 (26. 9) |
| Summer | 190,252 (22.1) |
| Fall | 209,908 (24.4) |
| Type of conjunctivitis, n (%)§ |  |
| Acute  | 788,197 (91.6) |
| Chronic  | 23,906 (2.8) |
| Viral  | 50,406 (5.9) |
| Adenoviral  | 5556 (0.6) |
| Quan-Charlson comorbidity index, mean±SD (median)||  | 0.1±0.5 (0.0) |
| Rate of all-cause medical visits, PPPM, mean±SD (median) | 1.0±1.5 (0.5) |
| Inpatient visits  | 0.0±0.2 (0.0) |
| Outpatient visits  | 0.8±1.3 (0.5) |
| All-cause health care costs, PPPM, 2016 US$, mean±SD (median) | $375±$2011 ($63) |
| Medical service costs  | $284±$1921 ($21) |
| Pharmacy costs  | $91±$452 ($0) |

**Notes:** **\***Nonseed patients (infected family members) are not included in this summary, but contributed to the costs of conjunctivitis episodes.

†The baseline period was the 60-day period before the index date (first conjunctivitis diagnosis on record).

‡Winter was defined as January to March, spring was defined as April to June, summer was defined as July to September, and fall was defined as October to December.

§Type of conjunctivitis identified by International Classification of Diseases, Ninth/Tenth Revision codes.

||Quan-Charlson comorbidity index computed according to the methods outlined in Quan et al.1

**Abbreviations:** PPPM, per person per month; SD, standard deviation.

# Supplementary reference

**1.** Quan H, Li B, Couris CM, et al. Updating and validating the Charlson comorbidity index and score for risk adjustment in hospital discharge abstracts using data from 6 countries. *Am J Epidemiol.* 2011;173(6):676–682.