### BACKGROUND
- Cushing's disease (CD) results from excessive glucocorticoid exposure from a pituitary tumor that secretes adrenocorticotropic hormone (ACTH).
- Although recent US epidemiologic data are lacking for this rare disorder, reports of CD incidence were estimated to range from 1 to 2.4 per million population per year based on studies outside of the US.¹

### OBJECTIVE
- To estimate the annual incidence of CD in a commercially insured population in the US.

### METHODS

#### Study Design and Data Source
- This is a retrospective cohort study of CD patients (<65 years old) using data from 2007 to 2010 from a commercial HIPRA-compliant administrative claims database: Thomson Reuter MarketScan Commercial.
- Study Populations and Study Timeframe
  - Patients had a diagnosis of Cushing's syndrome (ICD-9-CM: 255.0) and either Cushingoid features (ICD-9-CM: 237.9) or hyperpigmentation (ICD-9-CM: 276.7, CPT: 01545, 01546, 01547) in the same calendar year, 2009 or 2010.
  - Study Cohorts
    - Main analysis cohort: Patients were continuously enrolled in the measurement year (2009 or 2010), the 2 prior years, and had no evidence of CD in the 2 prior years.
    - Sensitivity analysis cohort: Patients were continuously enrolled in the measurement year (2009 or 2010), the year prior, and had no evidence of CD in the 1 prior year.

#### Study Measures
- Incidence rates were calculated as follows:
  - Main analysis: (Number of patients in main analysis cohort) / (Number continuously enrolled that year and year before)
  - Sensitivity analysis: (Number of patients in sensitivity analysis cohort) / (Number continuously enrolled that year and year before)
- Analysis
  - Analysis were performed using SAS® version 9.3 (SAS Institute, Cary, NC).

### RESULTS

#### Main Analysis: Annual CD Incidence Rates

<table>
<thead>
<tr>
<th>Year</th>
<th>Gender</th>
<th>Age Group</th>
<th>No. of Patients in Cohort</th>
<th>No. of Patients in Sensitivity Analysis</th>
<th>No. of Patient in Cohort/10,000 PMPY</th>
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<tbody>
<tr>
<td>2009</td>
<td>Female</td>
<td>18-44</td>
<td>70</td>
<td>2,916,452</td>
<td>8.3</td>
<td>2.918,213</td>
</tr>
<tr>
<td>2010</td>
<td>Female</td>
<td>18-44</td>
<td>70</td>
<td>2,133,398</td>
<td>6.6</td>
<td>2.136,492</td>
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#### Sensitivity Analysis: Annual CD Incidence Rates

<table>
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<tr>
<th>Year</th>
<th>Gender</th>
<th>Age Group</th>
<th>No. of Patients in Cohort</th>
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<td>Male</td>
<td>18-44</td>
<td>80</td>
<td>2,565,773</td>
<td>7.7</td>
<td>2.568,833</td>
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### LIMITATIONS
- CD does not have its own ICD-9-CM code, and therefore some cases may have been missed.
- This study is based on claims alone, without verification in medical charts, so cases may have been missed due to miscoding of ICD-9-CM codes.
- Results may not be representative of the general CD population since our analysis included only patients with commercial insurance.
- Since we only examined patients under age 65, our results are not representative of older patients.

### CONCLUSIONS
- The annual incidence of CD in US individuals <65 years old may be up to 2 cases per 10,000, or approximately 2,000 new cases per year in this study, which may be higher in certain subgroups.
- Annual incidence of CD is highest among females and those <15 years old among commercially-insured patients <55 years old.
- Incidence may be as high as 27 in 15 year-olds.
- All estimates of annual incidence of CD, including age and gender specific rates, were confirmed by sensitivity analysis.
- Our estimates are higher than previously reported rates of 1.2 to 2.4 per million population per year.¹

### REFERENCES

### TABLES

#### Table 1: Annual CD Incidence Rates

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#### Table 2: Sensitivity Analysis: Annual CD Incidence Rates

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