We identified neuropsychiatric events in unstructured EMR using deep-learning algorithms as well as in structured EMR.

The risk of neuropsychiatric events among child asthma was not higher in LTRA compared with ICS.

<table>
<thead>
<tr>
<th></th>
<th>LTRA</th>
<th>ICS</th>
<th>HR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-year risk</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>By diagnostic codes</td>
<td>2,486</td>
<td>2,167</td>
<td>0.62 (0.36 – 1.06)</td>
</tr>
<tr>
<td>By clinical notes</td>
<td>2,304</td>
<td>2,009</td>
<td>0.88 (0.64 – 1.20)</td>
</tr>
</tbody>
</table>

**RESULTS**
- A total of 2,486 users of LTRA and 2,167 users of ICS were included.
- The preference score distribution of study drugs and covariate balance plot before and after propensity score stratification were shown in Figure 1.
- 82 NPEs were identified using diagnostic codes, whereas the deep-learning model captured 220 events using narrative clinical notes.
- Across various risk windows, statistical analyses, and outcome definitions, the risk of NPEs in LTRA was not higher than ICS (Figure 2).

**CONCLUSION**
- Among children with asthma, the risk of NPEs was not increased in LTRA compared with ICS.
- This finding was consistent across sensitivity analyses.

**FUNDING**
- This research was supported by a grant (22231MFDS486) from Ministry of Food and Drug Safety in 2022.

**Statistical Analysis**
- We used Cox proportional hazard regression models to estimate the association of exposure with outcomes after the propensity score (PS) stratification.

**Sensitivity Analyses**
- Sensitivity analyses were conducted using different definitions of the time-at-risk window, and the statistical analysis.
- We set 4 more time-at-risk windows and 1 additional PS adjustment.