

Assessment of asthma outcomes among children with and without a timely physician diagnosis of asthma

Yoon JW^{1,2}, Ryu E³, Wi CJ¹, Kwon JH^{1,4}, King KS⁵, Bublitz JT³, Park M⁵, Sohn S⁶, Liu H⁶, Juhn Y⁷

¹Department of Pediatric and Adolescent Medicine, Mayo Clinic, Rochester, MN, US ²Department of Pediatrics, Myongji Hospital, South Korea ³Division of Biomedical Statistics and Informatics, Mayo Clinic, Rochester, MN, US ⁴Department of Pediatrics, Korea University College of Medicine, Seoul, South Korea ⁵Division of Allergic diseases, Mayo Clinic, Rochester, MN, US ⁶Division of Digital Health Sciences, Mayo Clinic, Rochester, MN, US ⁷Department of Pediatric and Adolescent Medicine and Internal Medicine, Mayo Clinic, Rochester, MN, US

Background		Methods		Results		Results		Discussion																																																																																																																																																																																																		
<ul style="list-style-type: none"> A number of studies have assessed asthma diagnosis and found that asthma is frequently underdiagnosed and undertreated. Untimely diagnosis of asthma becomes a significant concern <ul style="list-style-type: none"> If it results in delays in assessing health services for asthma If such a delay adversely affects asthma illness and complications. Our previous studies reported about delay in a diagnosis of asthma with the following different points; Not differentiated between without physician diagnosis and delayed physician diagnosis Limited patients during 2002-2006 This study aims : to compare asthma outcomes between children with and without a timely physician diagnosis of asthma among those with recurrent asthma-like symptoms 		Categorization of subjects <ul style="list-style-type: none"> 1) Timely diagnosis group (TD) : Children with a physician diagnosis of asthma within 4 weeks of index date 2) Delayed diagnosis group (DD) : Children with a physician diagnosis of asthma beyond 4 weeks of index date Asthma Outcome events <ul style="list-style-type: none"> Asthma specific emergency department (ED) visits Hospitalizations during the first 5 years after index date Statistical analysis <ul style="list-style-type: none"> Descriptive analysis for baseline sociodemographic and clinical characteristics Logistic regression model adjusting for potential confounders Predetermined asthma criteria (PAC) <ul style="list-style-type: none"> Definitive asthma : If a physician had made a diagnosis of asthma and/or if each of the following three conditions were present Probable asthma : Only the first two conditions were present; <ul style="list-style-type: none"> 1. History/exam: wheezing with cough and/or dyspnea 2. Recurrent and variable symptoms and ≥3 weeks of absent symptoms between episodes 3. Two or more of the following: <ul style="list-style-type: none"> Sleep disturbance by cough/wheeze Non-smoker (age≥14) Nasal polyps Serum eosinophil count > 300/μL Positive wheal and skin flare tests OR 1 IgE History of allergic rhinitis or eczema OR cough, dyspnea, wheezing on exposure to antigen PFT showing FEV1/FVC < 70% predicted + another with ≥12% improvement OR methacholine challenge test ≥ 20% decline 		Table 1. Comparison Demographics and Clinical Characteristics between Timely diagnosis and Delayed diagnosis <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Timely diagnosis (N=808)</th> <th>Delayed diagnosis (N=590)</th> <th>p value</th> </tr> </thead> <tbody> <tr> <td>Age at index date</td> <td colspan="3"><0.0001*</td> </tr> <tr> <td> N</td> <td>808</td> <td>590</td> <td></td> </tr> <tr> <td> Median (IQR)</td> <td>3.2 (1.3, 6.0)</td> <td>1.4 (0.8, 2.8)</td> <td></td> </tr> <tr> <td>Well child visits per year</td> <td colspan="3"><0.0001*</td> </tr> <tr> <td> N</td> <td>808</td> <td>590</td> <td></td> </tr> <tr> <td> Median (IQR)</td> <td>0.9 (0.7, 1.1)</td> <td>0.9 (0.7, 1.1)</td> <td></td> </tr> <tr> <td>Number of days between PAC Index and Physician diagnosis</td> <td colspan="3"><0.0001*</td> </tr> <tr> <td> N</td> <td>808</td> <td>590</td> <td></td> </tr> <tr> <td> Median (IQR)</td> <td>462.0 (179.0, 1252.0)</td> <td></td> <td></td> </tr> <tr> <td>Gender</td> <td colspan="3">0.3973†</td> </tr> <tr> <td> Male</td> <td>479 (59%)</td> <td>363 (62%)</td> <td></td> </tr> <tr> <td> Female</td> <td>329 (41%)</td> <td>227 (39%)</td> <td></td> </tr> <tr> <td>Race/Ethnicity</td> <td colspan="3">0.3701‡</td> </tr> <tr> <td> White</td> <td>632 (78%)</td> <td>472 (80%)</td> <td></td> </tr> <tr> <td> African American</td> <td>49 (6%)</td> <td>33 (6%)</td> <td></td> </tr> <tr> <td> Hispanic</td> <td>35 (4%)</td> <td>14 (2%)</td> <td></td> </tr> <tr> <td> Asian</td> <td>32 (4%)</td> <td>28 (5%)</td> <td></td> </tr> <tr> <td>HOUSES Birth Quartiles</td> <td colspan="3">0.9292§</td> </tr> <tr> <td> Missing</td> <td>45</td> <td>18</td> <td></td> </tr> <tr> <td> Q1</td> <td>186 (24%)</td> <td>147 (26%)</td> <td></td> </tr> <tr> <td> Q2</td> <td>180 (24%)</td> <td>129 (23%)</td> <td></td> </tr> <tr> <td> Q3</td> <td>189 (25%)</td> <td>138 (24%)</td> <td></td> </tr> <tr> <td> Q4</td> <td>208 (27%)</td> <td>158 (28%)</td> <td></td> </tr> <tr> <td>Family History of Asthma</td> <td colspan="3">0.8482‡</td> </tr> <tr> <td> No</td> <td>537 (67%)</td> <td>395 (67%)</td> <td></td> </tr> <tr> <td> Yes</td> <td>271 (34%)</td> <td>195 (33%)</td> <td></td> </tr> <tr> <td>Mother smoking during Pregnancy</td> <td colspan="3">0.2715‡</td> </tr> <tr> <td> Missing</td> <td>99</td> <td>87</td> <td></td> </tr> <tr> <td> No</td> <td>645 (91%)</td> <td>448 (89%)</td> <td></td> </tr> <tr> <td> Yes</td> <td>64 (9%)</td> <td>55 (11%)</td> <td></td> </tr> <tr> <td>Adjusted factor</td> <td colspan="3"><0.0001†</td> </tr> </tbody> </table>			Timely diagnosis (N=808)	Delayed diagnosis (N=590)	p value	Age at index date	<0.0001*			N	808	590		Median (IQR)	3.2 (1.3, 6.0)	1.4 (0.8, 2.8)		Well child visits per year	<0.0001*			N	808	590		Median (IQR)	0.9 (0.7, 1.1)	0.9 (0.7, 1.1)		Number of days between PAC Index and Physician diagnosis	<0.0001*			N	808	590		Median (IQR)	462.0 (179.0, 1252.0)			Gender	0.3973†			Male	479 (59%)	363 (62%)		Female	329 (41%)	227 (39%)		Race/Ethnicity	0.3701‡			White	632 (78%)	472 (80%)		African American	49 (6%)	33 (6%)		Hispanic	35 (4%)	14 (2%)		Asian	32 (4%)	28 (5%)		HOUSES Birth Quartiles	0.9292§			Missing	45	18		Q1	186 (24%)	147 (26%)		Q2	180 (24%)	129 (23%)		Q3	189 (25%)	138 (24%)		Q4	208 (27%)	158 (28%)		Family History of Asthma	0.8482‡			No	537 (67%)	395 (67%)		Yes	271 (34%)	195 (33%)		Mother smoking during Pregnancy	0.2715‡			Missing	99	87		No	645 (91%)	448 (89%)		Yes	64 (9%)	55 (11%)		Adjusted factor	<0.0001†			Table 2 & Figure 1. 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