symptoms based on the Asthma control test (ACT) assessment tool.

Method: Prospective interventional, comparative study involving asthma patients in respiratory clinic UKMMC. Subjects were grouped into 2 groups based on their pre-existing inhalers; extra-fine and fine inhaled corticosteroid (ICS)/long acting B agonist (LABA). Treatment was continued for 6 weeks. Crossover was done at week 7 to receive the other treatment regime and this was continued for 7 weeks. Crossover study model was performed and each subject acted as their own control. Subjects were assessed at week 0, 6 and 13 using ACT score, spirometry (FEV1) and impulse oscillometry (R20, R5, (R5-R20) and X5). Inhaler technique was assessed periodically throughout the study.

Result: A total of 34 subjects were recruited; with mean age of 53.2 year old, there were 24 females (70%) majority were Malays 29 (85%) followed by Chinese 2 (6%), Indians 2 (6%) and 1 Sikh (3%).Baseline mean BMI was 29.5 kg/m^2. Median asthma duration was 20 years. Twenty (58%) subjects were fine ICS/LABA and 14(42%) subjects extra-fine ICS/LABA group. At 3 week 6, 31 subjects were analysed, and 29 subjects completed study. There was a significant improvement of FEV1 in the extra-fine ICS/LABA group (1.7±0.47 to 1.88±0.5; p value 0.01) in the crossover sample. Sub analysis data showed a significant reduction in ACT score in extra-fine ICS/LABA group (23±5 to 21±4; p value 0.04) at week 0 to week 6. There was a significant improvement at week 7 to week 13 of both the ACT score (16.5±3 to 20±3; p value 0.01) and FEV1(1.71±0.96 to 1.81±1.02:p value 0.01) in extra-fine ICS/LABA There was a significant difference of ACT score between extra-fine ICS/LABA and fine ICS/LABA in week 6(p= 0.02) and at week 13(p=value 0.03). There was a significant weak positive correlation between ACT score and FEV1(p= 0.03) at week 6 to week 13. There was no significant difference in (IOS) parameters between used of extra-fine ICS/LABA and fine ICS/LABA.

Conclusion: There was improvement of ACT score with extra-fine ICS/LABA. Extra fine ICS/LABA led to improvement of FEV1. There was no benefit in airway resistance with extra-fine ICS/LABA.

P9-76 | FP/SALM maintenance plus SABA reliever versus Bud/Form MART regimen in the treatment of uncontrolled asthma in a Philippine government hospital setting: Direct cost comparison

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Background: Combination inhaled corticosteroid/long-acting β2-agonist (ICS/LABA) has become standard treatment for uncontrolled asthma in Filipino adults. Local healthcare professionals believe available ICS/LABAs have similar efficacy. Price and access are issues in asthma therapy.[1]

Table 1.

	Treatment arm	Medication costs (Php)	Healthcare utilization costs (Php)	Total direct treatment costs (Php)	% Savings in Total cost by FP/Salm
AHEAD	FP/Salm (500/50)	47185.88	48.30	47234.18	4.24%
	MART (2x160/4.5)	49265.02	61.80	49326.82	
COMPASS	FP/Salm (250/50)	27666.5	210.40	27876.90	15.35%
	MART (160/4.5)	32816.2	115.50	32931.92	
COSMOS	FP/Salm (250/50)	36034.76	66.50	36101.26	9.36%
	MART (2x160/4.5)	39783.6	44.50	39828.10	
Overall (3 studies)	FP/Salm	36962.38	108.40	37070.78	8.91%
	MART	40621.61	73.93	40695.61	

Data are calculated as cost/patient/year.

A study in Thailand compared cost of treatment between fixed-dose ICS/LABA versus ICS/LABA Maintenance and Reliever Therapy (MART) regimens.[2]

Methods: Healthcare costs estimation comparing two ICS/LABAs, regular fixed-dose Fluticasone/Salmeterol (FP/Salm) twice daily plus as needed short-acting β2-agonist versus Budesonide/Formoterol(Bud/Form) as MART regimen in uncontrolled asthma. Treatment cost impact on societal perspective also evaluated.

Three randomized controlled trials were referenced to calculate direct healthcare costs. AHEAD, COMPASS and COSMOS included asthma patients >12years comparing ICS/LABA treatments in moderate/severe asthma.[3]

Estimated total direct healthcare cost was sum of drug acquisition cost and other healthcare costs. Unit costs of different healthcare resources obtained from a public hospital. Medication costs obtained from private pharmacy.

Results: FP/Salm group demonstrates higher healthcare utilization cost, except in AHEAD study. However, overall cost is lower in FP/Salm group.

Savings in total cost was highest in FP/Salm (COMPASS study). Overall, FP/Salm showed more savings in total cost (8.91%) versus MART regimen. Furthermore, total direct treatment savings is more than the price of another inhaler.

Conclusion: Twice daily FP/Salm maintenance therapy plus as needed SABA in uncontrolled asthma results in lower total direct treatment costs versus Bud/Form MART because of lower medication costs.

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P9-77 | The correlation of childhood asthma and family history of atopy in Harum Melati clinic, Pringsewu, Lampung, INDONESIA

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Background: Asthma is the most common chronic disease in pediatric age.1 Childhood-onset asthma is typically

characterized by a personal and often a family history of atopy.2 Family history of atopic diseases need to be confirmed as major risk factors for asthma occurrence and persistence in children.3

Aim: To determine whether or not asthma is related to family history of atopy in Indonesian children.

Methods: This cross-sectional study included 358 children who attended the Harum Melati Clinic, Pringsewu, Lampung, Indonesia, from March 2017 to August 2019. The patient group comprised 261 asthmatic children and the control group comprised 97 non-asthmatic children. Information was collected concerning their familial history of atopy. Kendall Tau-b test was used to measure the strength and direction of association between two variables measured.

Results: There were 316 children (88.3 %) had a family history of atopy and 42 children (11.7%) did not have a family history of atopy (11,7%). Asthma was reported in 65.9 % of children with a family history of atopy and 7 % of children without any family history of atopy. The statistical test showed that childhood asthma was correlated to family history of atopy ($p < 0.038$ and $R = 0.110$).

Conclusions: Childhood asthma was correlated with a family history of atopy. Family history of atopy could be a major risk factor for asthma occurrence and persistence in children.

P9-78 | Vitamin D binding protein (DBP) in Japanese patients with bronchial asthma

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Background: DBP is a plasma protein with a molecular weight of 58 kDa that exists in the 2-globulin fraction. Several studies have investigated the relationship between serum DPB and bronchial asthma, and some studies have suggested serum DBP related to asthma. It reported the concentration of serum DBP in bronchial asthma was higher than that in healthy donor. But the relationship is unclear yet. We investigated the correlation between serum DBP and clinical laboratory data (serum IgE and calcium, blood eosinophils and neutrophils, exhaled NO levels and pulmonary function test) in Japanese bronchial asthma patients.

Methods: The study group comprised 53 patients with bronchial asthma. We measured serum DBP, IgE and calcium concentrations, peripheral eosinophil and neutrophil counts and exhaled NO levels. And pulmonary function test was also examined.

Results: There was no correlation between serum DBP and clinical laboratory data (serum IgE and calcium, peripheral eosinophil and neutrophil counts or exhaled NO levels) statistically. Also, there was no correlation between serum DBP and pulmonary function test (%FVC, FEV1.0% and % FEV1.0) statistically. In the each GINA steps of asthma, there was no correlation between serum DBP and that. But there was an significant correlation between serum DBP and smoking history statistically.

Conclusions: Our results suggested that serum DBP concentrations may not be a diagnostic marker of Japanese bronchial asthma patients but it correlated with smoking history.

P9-79 | The relationship between the severity of obstructive sleep apnea and airway hyperreactivity in patients with asthma

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Background: Recent studies have suggested that a bidirectional relationship between obstructive sleep apnea syndrome (OSAS) and bronchial asthma. However, it remains unclear whether OSA severity affects airway hyperreactivity (AHR) in patients with asthma.

Aims: The aim of this study was to investigate the association between AHR and OSA severity in patients with asthma.

Methods: Patients with OSAS who underwent methacholine challenge test and diagnosed having asthma in Kindai University Hospital from April 2010 to April 2020 were retrospectively studied. Data on demographics, polysomnography, pulmonary function testing were collected.

Results: Twenty-nine patients (19 men and 10 women) were included in this study. The mean age was 58.2 ± 13.0 years (mean ± SD). The mean values of BMI and apnea-hypopnea index (AHI) were 27.3 ± 5.0 kg/m^2 and 42.4 ± 15.4 /hr, respectively. In severe OSAS patients, the mean values of FEV_1% were significantly lower than those in moderate OSAS patients (70.5±7.9 % vs 76.2 ± 4.9, $P = 0.05$). PC20 values were significantly lower in severe OSAS patients than those in moderate OSAS patients (3058.1 ± 2888.1 vs 6093.8 ± 3499.8 μg/ml, P=0.03).

Conclusions: To conclude, the severity of OSA was associated with increased AHR levels in asthma patients. Coexisting OSA may adversely impact on asthma-related clinical outcomes.