Clinician Summary
Controller Medications
For Asthma
December 2009

DRAFT

The literature search for this report included MEDLINE®, the Cochrane Database of Systematic Reviews®, and the Cochrane Central Register of Controlled Trials® and the International Pharmaceutical Abstracts (through April 2008).

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Category: Asthma Controller Medications

Drug classes:

Inhaled corticosteroids (**ICS**)

Beclomethasone (Q-Var), Budesonide (Pulmicort), Flunisolide (AeroBid, Aerospan) Fluticasone (Flovent), Mometasone (Asmanex), Triamcinolone (Azmacort)

Long acting beta agonists **(LABA)** – available only as combination with ICS

Salmeterol (Advair® - salmeterol + fluticasone)
Formoterol (Symbicort® – formoterol + budesonide)
Formoterol (Foradil Aerolizer®)
Salmeterol (Serevent Diskus®)

Leukotriene modifiers **(LM)**

Montelukast (Singulair), Zafirlukast (Accolade), Zileuton (Zyflo)

Limits of evidence: For studies that met inclusion criteria: Most studies were short term, less than one year. Study populations only included patients with mild to moderate asthma without other health problems. Most outcomes were asthma symptoms. Little data on health care utilization, measures of pulmonary function, or quality of life. Literature searched through April 2008.

Efficacy comparisons among classes:

Monotherapy:

Good evidence: **ICS** better than **LM** in adults
No comparative data in children
LABA not used for monotherapy due to increased risk of death.

Combination therapies: (Recommended only for moderate to severe asthma)

Good evidence: **LABA + ICS** better than **ICS** alone in adults, no data in children
Good evidence: **LABA + ICS** better than **LM** in adults, **Fair evidence** in children
Fair evidence: **ICS + LM** not better than **ICS** alone in adults, no data in children

Efficacy comparisons within classes:

Fair evidence: all **ICS** are comparable in adults, no data in children
Insufficient evidence to determine differences among **LM** or combinations of **LABA + ICS**

Adverse effects:

Good evidence: no difference among **ICS** in adults, no data in children
Fair evidence: no difference among **ICS + LABA** combination in adults, no data in children
Studies of **ICS** effects on growth in children are inconclusive.
Zileuton has more liver toxicity than other **LMs**

Strengths of evidence based on included studies:

Good: size, design, and consistency allow conclusions about endpoints that make a clinical difference
Fair: some evidence of difference that is limited by study size, design, or consistency of results
Poor: evidence is considered the same as no evidence.
For more in depth information please refer to the complete report found at the link below:
http://www.oregon.gov/OHPPR/HRC/Evidence_Based_Reports.shtml

Table1: Long-term controller medication class, trade names, manufacturers, formulations, and indications

Generic Name	Trade Name	Dosage Form/ Device	Strength	Approved Indication	Black Box Warnings?
Inhaled Corticosteroids					
Beclomethasone dipropionate	QVAR®	HFA	40 mcg/puff 80 mcg/puff	Asthma (age ≥ 5)	No
Budesonide	Pulmicort Flexhaler®	DPI	90 mcg/dose 180 mcg/dose	Asthma (age ≥ 6)	No
	Pulmicort Respules®	Inhalation suspension	0.25 mg/2ml 0.5 mg/2ml 1 mg/2ml	Asthma (age 1-8)	No
	Pulmicort Nebuamp®	Inhalation suspension	0.125 mg/ml 0.25 mg/ml 0.5 mg/ml	Asthma (age ≥ 3 months)	No
Flunisolide	AeroBid® AeroBid-M®	MDI MDI-menthol	250 mcg/puff	Asthma (age ≥ 6)	No
	AeroSpan®	HFA	80 mcg/puff+		No
Fluticasone propionate	Flovent®	HFA	44 mcg/puff 110 mcg/puff 220 mcg/puff	Asthma (age ≥ 4)	No
	Flovent Diskus®	DPI	50 mcg/dose+	Asthma (age ≥ 4 yrs)	No
Mometasone furoate	Asmanex Twisthaler®	DPI	220 mcg/dose	Asthma (age ≥ 4)	No
Triamcinolone acetonide	Azmacort®	MDI – with spacer mouthpiece	75 mcg/dose	Asthma (age ≥ 6)	No
Leukotriene modifiers					
Montelukast	Singulair®	Tablets Chewable tablets Granules	10 mg+ 4 mg, 5 mg+ 4 mg/packet+	Asthma (age ≥ 1)	No
Leukotriene receptor antagonists					
Zafirlukast	Accolate®	Tablets	10 mg+ 20 mg+	Asthma (age ≥ 5yrs);	No
5- lipoxygenase inhibitor					
Zileuton	Zyflo® Zyflo CR®	Tablets Extended release tablets	600 mg 600 mg	Asthma (age ≥ 12 yrs)	No
Long-Acting Beta-2 Agonists					

Arformoterol	Brovana®	Inhalation solution	15 mcg/2ml	Not approved for asthma (COPD only)	Yes
Formoterol fumarate/ Eformoterol	Foradil Aerolizer®	DPI	12 mcg/capsule+	Asthma (age ≥ 5 yrs)	Yes
Salmeterol xinafoate	Serevent Diskus®	DPI	50 mcg/blister+	Asthma (age ≥ 4 yrs)	Yes
Anti-IgE medications					
Omalizumab	Xolair®	Powder for subcutaneous injection	202.5 mg (delivers 150 mg/1.2ml)	Asthma (age ≥ 12 yrs)	Yes
Combination products					
Fluticasone propionate/ Salmeterol xinafoate	Advair Diskus®	DPI	100mcg/50mcg+ 250mcg/50mcg+ 500mcg/50mcg+	Asthma (age ≥ 4 yrs)	Yes
	Advair HFA	HFA	45mcg/21mcg 115mcg/21mcg 230mcg/21mcg	Asthma (age ≥ 12 yrs)	Yes
Budesonide/ formoterol	Symbicort®	HFA	80mcg/4.5mcg 160mcg/4.5mcg	Asthma (age ≥ 12 yrs)	Yes

Abbreviations: DPI = dry powder inhaler; HFA = hydrofluoroalkane propellant; MDI = metered dose inhaler.
+This product is available in the US & Canada.