1 Hour Session and
Asthma & COPD Action Plans

January 8, 2021

12:00pm-1:00pm

OneCare Vermont

onecarevt.org

Title of Program: OneCare Vermont: Knowledge Hour Session

Title of Talk: Asthma & COPD Action Plans

Speaker/Moderator: Dr. Ram Baalachandran, Dr. Norman Ward

Planning Committee Members: Dr. Norman Ward, Tawnya Safer, Lindsay Morse

Date: January 8, 2021 Noon to 1:00pm

Workshop #: 21-267-06

Learning Objectives
1. To analyze the components of the action plan
2. Recognize the effect on outcomes
3. Learn the limitation and barriers to use

DISCLOSURE:
Is there anything to disclose? ☐ Yes or ☒ No
Please list the Potential Conflict of Interest (*if applicable*): ****

All Potential Conflicts of Interest have been resolved prior to the start of this program.
☒Yes or ☐ No   (*If no, credit will not be awarded for this activity.*)
(CMIE staff members do not have any interests to disclose)

All recommendations involving clinical medicine made during this talk were based on evidence that is accepted within the profession of medicine as adequate justification for their indications and contraindications in the care of patients.☒Yes

COMMERCIAL SUPPORT ORGANIZATIONS *(if applicable)***:** This activity is free from any commercial support

Claiming Instructions

OneCare Vermont: Knowledge Hour Session - Asthma & COPD Action Plans 01/08/2021

Use the following link to access the claiming app, or scan the QR code below.

Claiming App:
http://www.highmarksce.com/uvmmed/index.cfm?do=ip.claimCreditApp&eventID=15691

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The University of Vermont designates this internet live activity for a maximum of 1 *AMA PRA Category 1 Credit(s)*™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

This program has been reviewed and is acceptable for up to 1 Nursing Contact Hours

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Welcome

Norman Ward, MD
Chief Medical Officer

Agenda

	Presenter	Time
Noon-12:05pm	Norman Ward, MD Chief Medical Officer, OneCare Vermont Introduction & Session Logistics	5 Minutes
12:15pm-12:45pm	Dr. Ram Baalachandran UVMMC Critical Care Medicine & Pulmonary Disease	40 Minutes
12:45pm-1:00pm	Q&A	15 Minutes

OneCare Vermont

Presenter Bio: Ramasubramanian Baalachandran, MBBS

Dr. Ram Baalachandran is a pulmonologist and intensivist in the Pulmonology and Critical Care department of Internal Medicine at the University of Vermont Medical Center, treating those that suffer from asthma, COPD, ILD, lung nodules and lung masses. His special procedures include bronchoscopy and endo-bronchial ultrasound. Beyond his clinical interests, which include lung cancer, pleural diseases, and pulmonary function testing, he believes his work is centered around improving the quality of life of his patients and helping them navigate the complex world of medicine. With this as the foundation for a meaningful patient-doctor relationship, he believes small victories in the clinic can have a big impact on people's lives.

Dr. Baalachandran is also an Assistant Professor at the at the Larner College of Medicine at UVM in Burlington, VT. His research interests include biomarkers in sepsis, offering a tool in facilitating early diagnosis.

https://www.uvmhealth.org/medcenter/provider/ramasubramanian-baalachandran-mbbs#section-video

Session Goal & Learning Objectives

Session Goal: Analyze the action-plan based strategy to manage asthma and COPD exacerbations

Learning Objectives:
1. **To Analyze the components of the action plan**
2. **Effect on outcomes**
3. **Limitations and barriers to use**

Accreditation Designation Statement

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As a Jointly Accredited Organization, The Robert Larner College of Medicine at the University of Vermont is approved to offer social work continuing education by the Association of Social Work Boards (ASWB) Approved Continuing Education (ACE) program. Organizations, not individual courses, are approved under this program. State and provincial regulatory boards have the final authority to determine whether an individual course may be accepted for continuing education credit. The University of Vermont maintains responsibility for this course. Social workers completing this course receive 1 continuing education credits.

This activity was planned by and for the healthcare team, and learners will receive 1Interprofessional Continuing Education (IPCE) credit for learning and change.
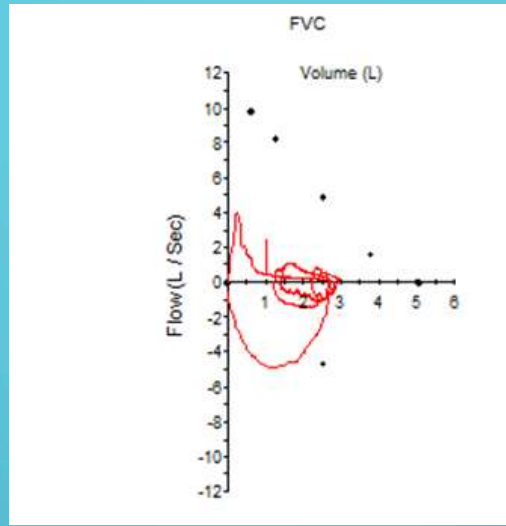
ACTION PLAN FOR COPD AND ASTHMA

RAM BAALACHANDRAN, MBBS

ASSISTANT PROFESSOR, DIVISION OF PULMONARY AND CRITICAL CARE MEDICINE,

UNIVERSITY OF VERMONT, BURLINGTON.

OBJECTIVES

- Effect of Action Plan on outcomes

- Components of Action Plan

- Limitations and disadvantages of the action plan

COPD IS A SIGNIFICANT CAUSE OF PREVENTABLE WORLDWIDE MORBIDITY AND MORTALITY
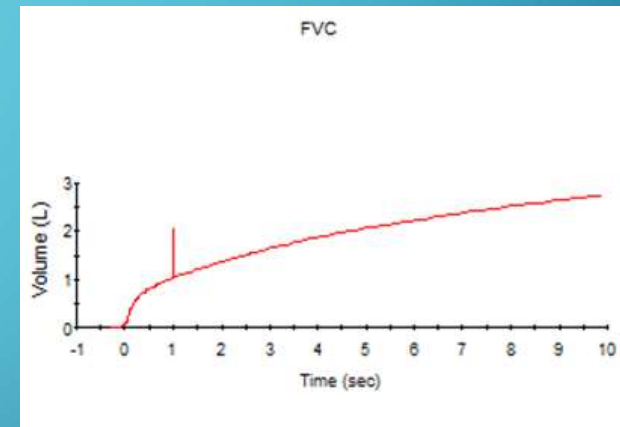
- The prevalence of COPD is predicted to increase owing to the persisting incidence of smoking and ageing of the global population (GOLD 2016).

- The World Health Organization (WHO) predicts that COPD will become the third leading cause of death by 2030 (WHO 2008).

- COPD will become the seventh leading cause of disability-adjusted life-years (DALYs) by 2030 (Mathers 2006).
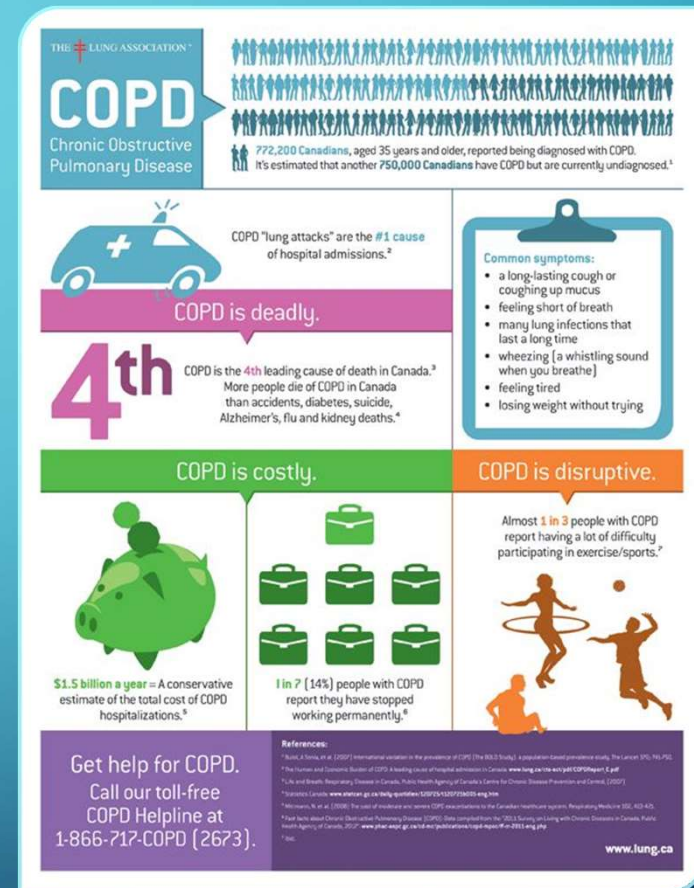
WHAT IS AN EXACERBATION?

- *Characterized by a worsening of the patient's respiratory symptoms that is beyond normal day-to-day variations and leads to a change in medication*

- Exacerbations are a major driver of decline in health status and health-related quality of life

- People with frequent exacerbations of COPD experience poorer health status, accelerated decline in FEV1, worsened quality of life and increased hospital admissions and mortality
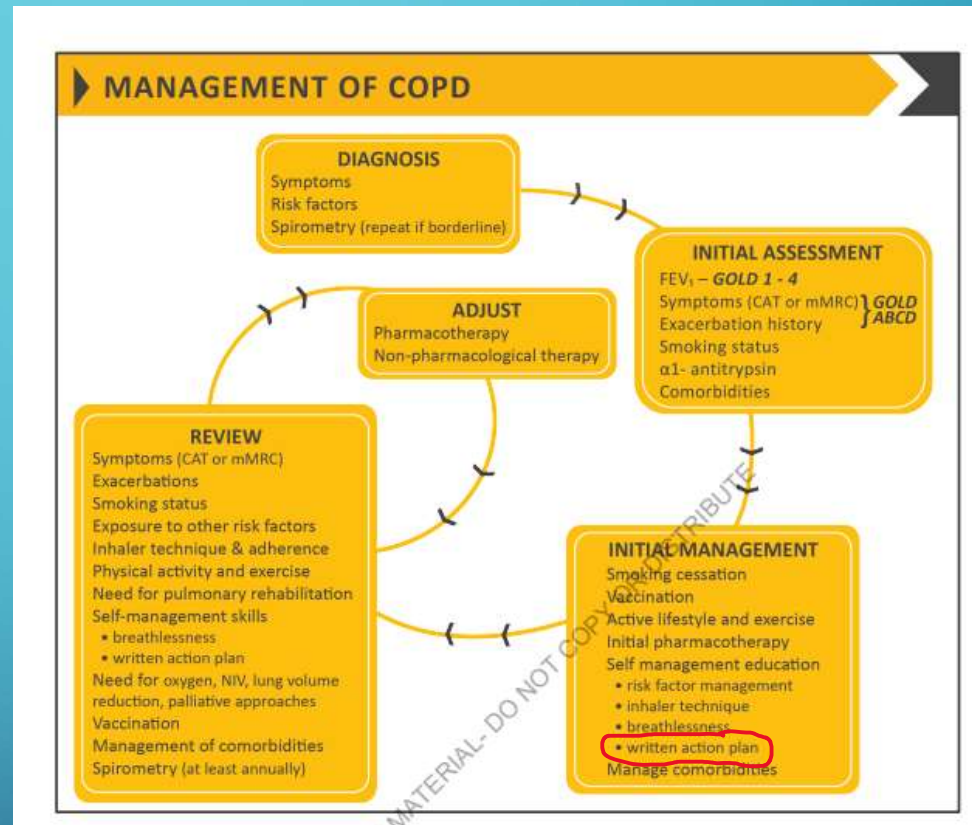
Preventing to hospital/ER visit ≠ Preventing an exacerbation

GOLD 2020 GUIDELINES

Written action plan suggested for all patients diagnosed with COPD

ACTION PLAN – *WHY?*

- Unreported exacerbations are usually less severe but still impact health status

- Late treatment of exacerbation is associated with slower recovery, worse quality of life and increased healthcare utilization

Yellow Zone: bad day or COPD flare	Actions
- More breathless than usual - I have less energy for my daily activities - Increased or thicker phlegm/mucus - Using quick relief inhaler/nebulizer more often - Swelling of ankles more than usual - I feel like I have a "chest cold" - Poor sleep and my symptoms woke me up - My appetite is not good - My medicine is not helping	- Use quick relief medication: • - Continue daily medications - Use oxygen as prescribed - Get plenty of rest - Use pursed lip breathing - At all times avoid cigarette smoke, inhaled irritants - Call provider immediately if symptoms don't improve

Red Zone: I need urgent medical care	Actions

- Severe shortness of breath even at rest
- Not able to do any activity because of breathing
- Not able to sleep because of breathing
- Fever or shaking chills
- Feeling confused or very drowsy
- Chest pains
- Coughing up blood
	- Call 911 or seek medical care immediately
	- While getting help, immediately do the following:
	  • _____
	  • _____

ACTION PLAN – *WHAT?*

- Action plans include interventions designed to allow patients to recognize and initiate early treatment for exacerbations.

- "A COPD self-management intervention is structured but personalised and often multicomponent, with goals of motivating, engaging and supporting the patients to positively adapt their health behaviors and develop skills to better manage their disease" (EHing 2016).

Table 2. Action plan (AP) intervention and comparison used in included studies

	Individu-alised AP	Standard written AP	Support for AP during study peri-od	SME (individual/group)	Prescrip-tion /sup-ply OCS	Prescrip-tion /sup-ply ABS	Written COPD ed-ucational component	Comparison
Martin 2004	Written		3-Monthly visit regard-ing use of AP	Individual interview with respirato-ry nurse, length not stated, individu-alised action plan according to cur-rent treatment and symptoms	All had 7-day supply	All had 7-day supply	No	Usual care by own GP
McGeoch 2004		Yes	No	Individual session by practice nurse or respiratory educator in associa-tion with GP 1 hour, covering major points of COPD self-management plan, and use of validated sputum colour charts	Prescription	Prescription	Educational package	Non-standard educa-tion on COPD accord-ing to practice stan-dards
Rice 2010	Written		Monthly phone call from nurse	Group 1-1.5 hours, individualised ac-tion plan with respiratory nurse	Yes	Prescription		Usual care + 1-page summary of princi-ples of COPD care ac-cording to published guidelines. No AP
Root-mensen 2008	Oral		No	Individual protocol-based educa-tional session covering disease, medications, vaccination, smoking cessation and exacerbation manage-ment, 45 minutes in length	Oral med-ication pro-vided to some, % un-known	Oral med-ication pro-vided to some, % un-known	No	Usual care
Trappen-burg 2011	Written		Standard-ised phone calls at 1 and 4 months	Individualised action plan education, length of session not stated	2%'	22%	✓ COPD in-formation	Usual care - phar-macological and non-pharmacolog-ical care according to most recent evi-dence-based guide-lines, specifically AP denied. All includ-ed participants seen by respiratory nurse, who systematical-ly checked and dis-

COMPONENTS OF COPD ACTION PLAN

- Listed the participant's maintenance medications

- Early recognition of symptoms associated with exacerbations of COPD.

- Short course of oral corticosteroids and an antibiotic

- Instructions to initiate antibiotics

- To increase their dose of inhaled /nebulized bronchodilators

- *To double dose of ICS?*

- Contact physician

- Given prescriptions

Triage Plan for Exacerbations

☐ always call physician

☐ automatic action plan

☐ patient needs to be seen by PCP or at pulmonary clinic

Action Plan for Exacerbations

1. Rescue Medication

Albuterol MDI	Ipratropium and albuterol (COMBIVENT RESPIMAT)
Albuterol nebulizer solution	Ipratropium and albuterol (DUONEB) nebulizer solution
Albuterol (PROAIR HFA) MDI	Levalbuterol (XOPENEX) nebulizer solution
Albuterol (PROVENTIL HFA) MDI	Levalbuterol (XOPENEX) HFA MDI
Albuterol (VENTOLIN HFA) MDI	Other (specify in comment)

Dose

1 puff	2 puffs	3 puffs	4 puffs	2 ml	3 ml

Frequency

as needed	three times per day	every 4 hours, as needed
once per day	four times per day	every 6 hours, as needed
twice per day	every 2 hours, as needed	every 4 to 6 hours, as needed

2. Steroids

☐ Prednisone 40 mg per day for 7 days

☐ Prednisone 40 mg per day decreasing by 10 mg every 5 days until gone

Other: _____

3. Antibiotics

☐ Augmentin (875/125 1 tab twice a day for 10 days)

☐ Azithromycin (Z-Pak, 500 mg on day one, then 250 mg per day for days 2 through 5) or 500 mg per day for 3 days

☐ Bactrim DS (1 tab twice a day for 10 days)

☐ Cefpodoxime (200 mg twice per day for 7 days)

☐ Cefuroxime (250 mg twice per day for 10 days)

☐ Ciprofloxacin (500 mg once per day for 10 days)

☐ Doxycycline (100 mg twice per day for 10 days)

☐ Levaquin (500 mg once per day for 10 days)

Other: _____

4. If no improvement in 72 hours or worse at any time, call or go to the emergency room.

Date this plan was updated: _____ 🗓

↱ Go to Letters Activity (To Create COPD Action Plan)

☐ COPD Action Plan was created or modified during this encounter.

Yellow Zone: bad day or COPD flare

Yellow Zone: bad day or COPD flare	Actions
- More breathless than usual - I have less energy for my daily activities - Increased or thicker phlegm/mucus - Using quick relief inhaler/nebulizer more often - Swelling of ankles more than usual - I feel like I have a "chest cold" - Poor sleep and my symptoms woke me up - My appetite is not good - My medicine is not helping	- Use quick relief medication: - - Continue daily medications - Use oxygen as prescribed - Get plenty of rest - Use pursed lip breathing - At all times avoid cigarette smoke, inhaled irritants - Call provider immediately if symptoms don't improve

Red Zone: I need urgent medical care	Actions
- Severe shortness of breath even at rest - Not able to do any activity because of breathing - Not able to sleep because of breathing - Fever or shaking chills - Feeling confused or very drowsy - Chest pains - Coughing up blood	- Call 911 or seek medical care immediately - While getting help, immediately do the following: - _____ - _____

NON-PHARMACOLOGICAL ASPECTS OF ACTION PLAN

- Oxygen – increase the flow rate of oxygen

- Monitor Spo2

- NIV – to be advised with caution

EFFECT ON COPD OUTCOMES

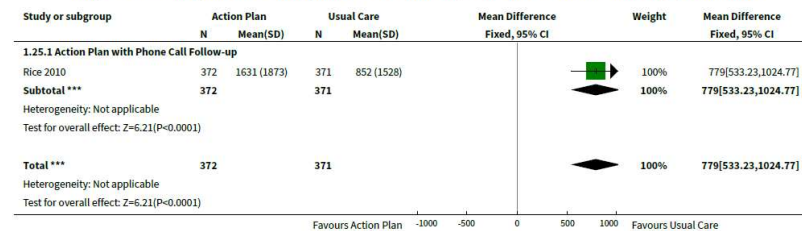| Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	Number of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with usual care	Risk with action plan				
Hospitalisations for COPD/100 patient-years (action plan + phone follow-up) Follow-up: 12 months			Rate ratio 0.69 (0.47 to 1.01)	743 (1 RCT)	⊕⊕⊕⊕ Moderate[a]	
Hospitalisations and emergency visits for COPD/100 patient-years (action plan + phone follow-up) Follow-up: 12 months			Rate ratio 0.59 (0.44 to 0.79)	743 (1 RCT)	⊕⊕⊕⊕ High	
At least 1 hospital admission Follow-up: 12 months	209 per 1000	154 per 1000 (114 to 204)	Odds ratio 0.69 (0.49 to 0.97)	897 (2 RCTs)	⊕⊕⊕⊕ Moderate[b]	
Mortality (all-cause) Follow-up: 12 months	103 per 1000	91 per 1000 (63 to 130)	Odds ratio 0.88 (0.59 to 1.31)	1134 (4 RCTs)	⊕⊕⊕⊕ Moderate[a]	

- Number needed to treat to prevent 1 hospitalization for COPD exacerbation is 19
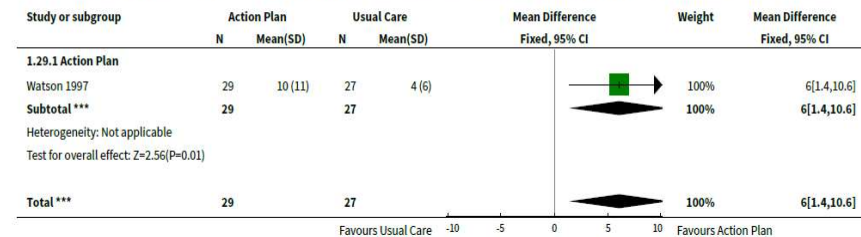
- No effect on mortality

EFFECT ON COPD OUTCOMES

- Action plan associated with increase in total number of days on prednisone and total dose of steroids used in 1 year compared to usual care

- Action plan associated with increase in one or more courses of antibiotics and total number of days on antibiotics compared to usual care

Analysis 1.25. Comparison 1 Action plan versus usual care, Outcome 25 Prednisolone mg (12 months).

Study or subgroup	Action Plan		Usual Care		Mean Difference	Weight	Mean Difference
	N	Mean(SD)	N	Mean(SD)	Fixed, 95% CI		Fixed, 95% CI
1.25.1 Action Plan with Phone Call Follow-up							
Rice 2010	372	1631 (1873)	371	852 (1528)		100%	779[533.23,1024.77]
Subtotal ***	372		371			100%	779[533.23,1024.77]
Heterogeneity: Not applicable							
Test for overall effect: Z=6.21(P<0.0001)							
Total ***	372		371			100%	779[533.23,1024.77]
Heterogeneity: Not applicable							
Test for overall effect: Z=6.21(P<0.0001)							

Favours Action Plan -1000 -500 0 500 1000 Favours Usual Care

Analysis 1.29. Comparison 1 Action plan versus usual care, Outcome 29 Days on antibiotics (6 months).

Study or subgroup	Action Plan		Usual Care		Mean Difference	Weight	Mean Difference
	N	Mean(SD)	N	Mean(SD)	Fixed, 95% CI		Fixed, 95% CI
1.29.1 Action Plan							
Watson 1997	29	10 (11)	27	4 (6)		100%	6[1.4,10.6]
Subtotal ***	29		27			100%	6[1.4,10.6]
Heterogeneity: Not applicable							
Test for overall effect: Z=2.56(P=0.01)							
Total ***	29		27			100%	6[1.4,10.6]

Favours Usual Care -10 -5 0 5 10 Favours Action Plan

EFFECT ON QUALITY OF LIFE

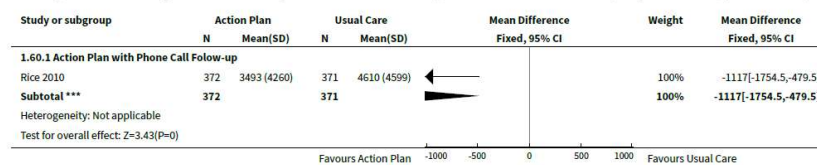|						
Respiratory-related quality of life: SGRQ overall score Scale from 0 (best) to 100 (maximum impairment) Follow-up: 12 months	Mean respiratory-related quality of life: SGRQ overall score ranged from -2 to +6 units	Mean respiratory-related quality of life: SGRQ overall score in the intervention group was 2.82 units lower (0.83 lower to 4.81 lower)	-	1009 (3 RCTs)	⊕⊕⊕⊝ Moderate[c]	Not downgraded for presence of substantial heterogeneity, which is explicable by differences in study design
Depression score assessed with HADS Scale from 0 to 21 (worst) Follow-up: 12 months	Mean depression score was -0.04	Mean depression score in the intervention group was 0.25 lower (1.14 lower to 0.64 higher)	-	154 (1 RCT)	⊕⊕⊝⊝ Low[a,d]	

Analysis 1.60. Comparison 1 Action plan versus usual care, Outcome 60 Cost HADM per patient US$ (12 months).

Study or subgroup	Action Plan		Usual Care		Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
	N	Mean(SD)	N	Mean(SD)			
1.60.1 Action Plan with Phone Call Follow-up							
Rice 2010	372	3493 (4260)	371	4610 (4599)		100%	-1117[-1754.5,-479.5]
Subtotal ***	372		371			100%	-1117[-1754.5,-479.5]
Heterogeneity: Not applicable							
Test for overall effect: Z=3.43(P=0)							

Favours Action Plan -1000 -500 0 500 1000 Favours Usual Care

Analysis 1.61. Comparison 1 Action plan versus usual care, Outcome 61 Cost EDV Per Patient US$ (12 months).

Study or subgroup	Action Plan		Usual Care		Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
	N	Mean(SD)	N	Mean(SD)			
1.61.1 Action Plan with Phone Call Follow-up							
Rice 2010	372	221 (557)	371	362 (729)		100%	-141[-234.31,-47.69]
Subtotal ***	372		371			100%	-141[-234.31,-47.69]
Heterogeneity: Not applicable							
Test for overall effect: Z=2.96(P=0)							

Favours Action Plan -100 -50 0 50 100 Favours Usual Care
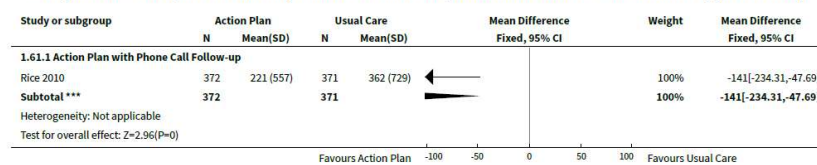
EFFECT ON COST

- Significantly lower cost of hospital admissions (HADM) per participant

- Significantly lower cost of ED visits

PROBLEMS

- No effect on hospitalization

- No effect on quality of life?

- Missed diagnosis

- Resources

- Increased use of medications

- Delayed presentation to hospital

ASTHMA ACTION PLAN – SINGLE MAINTENANCE AND RELIEVER THERAPY (SMART)

- As-needed use in SMART is defined as 1 to 2 puffs (4.5 μg of formoterol per puff) every 4 hours as needed for asthma symptoms, up to a maximum of 12 total puffs per day for individuals aged 12 years or older

- Prednisone

- Antibiotics?

ASTHMA ACTION PLAN

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	Number of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with no PAAP	Risk with PAAP				
Exacerbation requiring ED or hospitalisation. Follow-up: range 14 weeks to 6 months.	82 per 1000.	63 per 1000 (39 to 100)	OR 0.75 (0.45 to 1.24)	1385 (5 RCTs)	⊕⊕⊝⊝ LOW[a]	No clear benefit or harm of a PAAP (low-quality evidence).
Asthma control, change from baseline in ACQ.	Mean asthma control, change from baseline in ACQ was -0.29.	MD 0.16 lower (0.25 lower to 0.07 lower)	-	141 (1 RCT)	⊕⊕⊝⊝ LOW[b]	No clear benefit or harm of a PAAP (low-quality evidence); MCID for ACQ was 0.5.
Serious adverse events (including deaths).	16 per 1000.	49 per 1000 (5 to 538)	OR 3.26 (0.33 to 32.21)	125 (1 RCT)	⊕⊝⊝⊝ VERY LOW[c]	No clear benefit or harm of a PAAP (very low-quality evidence).
Quality of life, change from baseline in AQLQ.	Mean quality of life, change from baseline in AQLQ ranged from 0.1 to 0.91.	MD 0.18 higher (0.05 higher to 0.3 higher)	-	441 (3 RCTs)	⊕⊕⊝⊝ LOW[d]	Mean between-group difference in improvement from baseline did not exceed the minimum clinically important difference (0.5 for AQLQ) and is unlikely to be clinically relevant.
Exacerbation requiring OCS.	306 per 1000.	390 per 1000 (270 to 523)	OR 1.45 (0.84 to 2.48)	1136 (3 RCTs)	⊕⊝⊝⊝ VERY LOW[e]	No clear benefit or harm of a PAAP (low-quality evidence).
Lung function, change from baseline in FEV$_1$ (L).	Mean lung function, change from baseline in FEV$_1$ (L) was 0 L.	MD 0.04 L lower (0.25 lower to 0.17 higher)	-	392 (3 RCTs)	⊕⊕⊝⊝ LOW[f]	No clear benefit or harm of a PAAP (low-quality evidence).
Days lost from work or study.	Mean days lost from work or study was 0.	MD 6.2 lower (7.32 lower to 5.08 lower)	-	74 (1 RCT)	⊕⊕⊝⊝ LOW[g]	PAAP was associated with significantly fewer days lost from work or study.

MAY INCREASE RESPIRATORY RELATED MORTALITY?

						0.0263).
Respiratory-related mortality assessed with: number of respiratory-related deaths follow up: range 3 months to 24 months	48 per 1000	89 per 1,000 (57 to 136)	OR 1.94 (1.20 to 3.13)	1,219 (7 RCTs)	⊕⊖⊖⊖ VERY LOW [4]	Pooled risk difference of 0.028 (95%

CONCLUSION

- Implement with caution

- Understand phenotype and disease course – personalization is improtant

- Important to review with patient regularly

Who to Contact with Questions:

Tawnya Safer

Clinical Program Specialist

OneCare Vermont

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