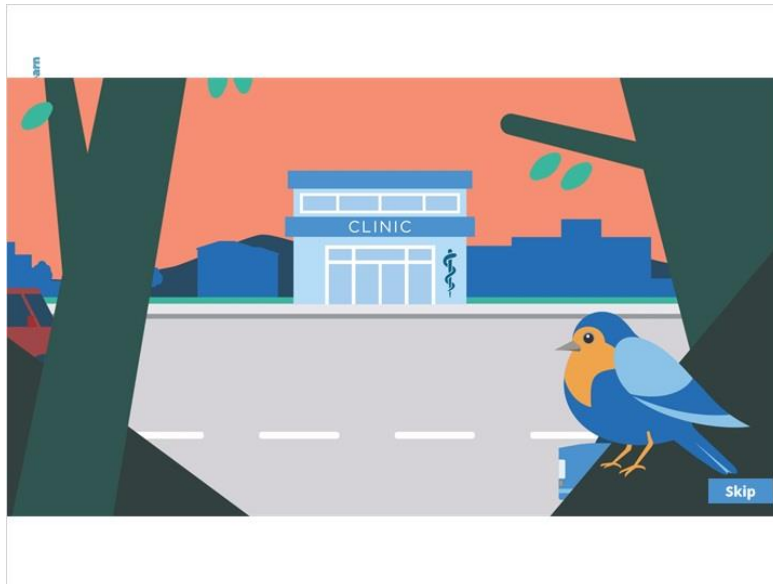


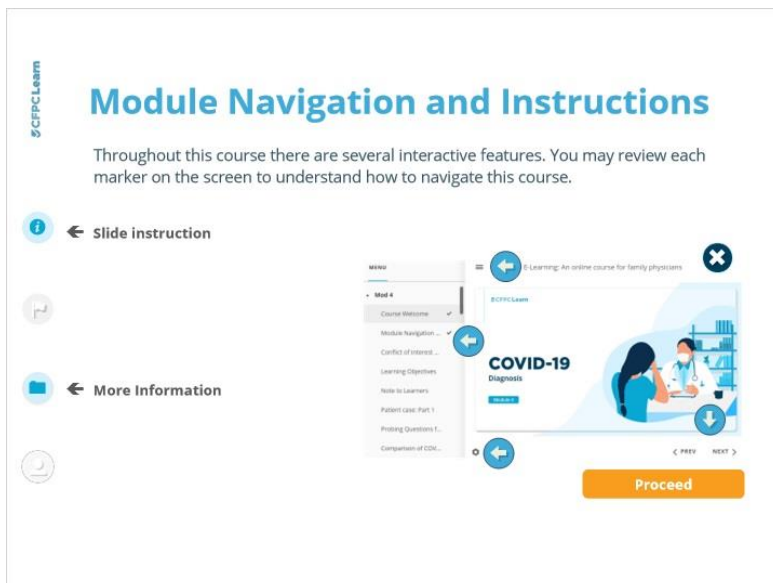
Case 38 Brea Salter, Part II

1. Conflicts

1.1 Intro Video



1.2 Module Navigation and Instructions



1.3 Learning Objectives

CFPC Learn

Learning Objectives

At the end of this module participants should be able to:

1. Identify key factors/findings in family medicine to help establish common clinical diagnoses.
2. Evaluate best evidence/guidance and practice tools to determine preferred treatment options for patients.
3. Synthesize patient preference, evidence and experience to formulate comprehensive plans for patient cases.

Approximately 15 minutes to complete each patient case.

Proceed

2. Brea Salter

2.1 Brea Salter

CFPC Learn


Brea Salter, 4

Brea Salter returns with her dad with a two-day history of wheezing. She has used salbutamol about eight times. Her symptoms started with a runny nose and a slight cough.

Prior to this episode, Brea used salbutamol seven times in the last two months, with a number uses associated with exercise.

Conversation History Examination

Moving Forward



Conversation (Slide Layer)

The screenshot shows a digital story interface for a character named Brea Salter, 4. The interface includes a vertical sidebar on the left with icons for home, back, forward, and search. The main content area is titled "Brea Salter, 4" and features a conversation window. The conversation window contains three messages: a blue bubble from the user saying "I think you are right. Brea, how does the puffer make you feel?", a yellow bubble from "Dad" saying "Well it looks like she has asthma like I do, unfortunately.", and another yellow bubble from Brea saying "It's good. It helps. With soccer!". Below the conversation window are three buttons: "Conversation" (selected), "History", and "Examination". At the bottom right is a "Moving Forward" button. To the right of the text is a full-body illustration of a young girl with dark hair in pigtails, wearing a yellow shirt and blue overalls.

History (Slide Layer)

The screenshot shows the same digital story interface, but the "History" tab is selected. The main content area displays the text: "Brea has eczema and has been using hydrocortisone 1% off and on." Below this text are the same three buttons: "Conversation", "History" (selected), and "Examination". The "Moving Forward" button is also present. The illustration of the girl remains on the right side of the screen.

Examination (Slide Layer)

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Brea Salter, 4

On examination, Breais alert and hydrated with coryza. She is able to speak in phrases with an occasional dry cough.

Chest examination shows suprasternal notch retractions and she is using her neck muscles (scalene). She had good air entry and bilateral high-pitched expiratory wheezes.

Conversation History Examination

Moving Forward



2.2 Multiple choice question

(Multiple Response, 10 points, 1 attempt permitted)

SCFPCLearn

Which of the following statements is most accurate?


Select all that apply.

A. Inhaled corticosteroids (ICS) should be started only if Brea needs the short-acting beta agonist ≥ 2 times per week.

B. Inhaled corticosteroids should be started because she has atopic/allergic disease.

C. Brea should be started on budesonide/formoterol as reliever and maintainer therapy.


Submit



2.3 Review

CFPC Learn

Review



Answer: A. Inhaled corticosteroids (ICS) should be started only if short-acting beta agonist is needed ≥ 2 times per week.

Risk factors

Inhalers: Acronyms

Inhalers: Regimens

Recommendations - I

Recommendations - II

Click on the buttons to view additional information


CTS: Canadian Thoracic Society; GINA: Global Initiative for Asthma; CPS: Canadian Pediatrics Society

Moving Forward

Recommendation (Slide Layer)

CFPC Learn

Review



Answer: A. Inhaled corticosteroids (ICS) should be started only if short-acting beta agonist is needed ≥ 2 times per week.

Risk factors

Inhalers: Acronyms

Inhalers: Regimens

Recommendations - I

Recommendations - II

Children ages 12 years and under

- The old 2012 recommendations: ICS if short-acting beta-agonists (SABA) use ≥ 4 times per week.
- The NEW 2021 recommendations: ICS should be started when SABA are being used ≥ 2 per week (from CTS and CPS 2021)
- Rationale: aligns with other international guidelines and research related to this criteria.

CTS: Canadian Thoracic Society; GINA: Global Initiative for Asthma; CPS: Canadian Pediatrics Society

Moving Forward

Risk Factors (Slide Layer)

SCFPCLearn

Review



Answer: A. Inhaled corticosteroids (ICS) should be started only if short-acting beta agonist is needed ≥ 2 times per week.

Risk factors

Inhalers: Acronyms

Inhalers: Regimens

Recommendations - I

Recommendations - II

Risk factors for exacerbations in children 5-12 years old: X

- Comorbid atopic/allergic diseases are **inconsistently** associated with increased risk of exacerbations
- Previous exacerbations (odds ratios: 2-4) and poor control and/or persistent symptoms (OR: 1.4-7.8) are consistently associated with increased risk

This suggests that Brea's eczema alone would not prompt daily inhaled corticosteroids but her persistent respiratory symptoms would.


CTS: Canadian Thoracic Society; GINA: Global Initiative for Asthma;
CPS: Canadian Pediatrics Society

Moving Forward

Acronyms (Slide Layer)

SCFPCLearn

Review



Answer: A. Inhaled corticosteroids (ICS) should be started only if short-acting beta agonist is needed ≥ 2 times per week. X

Risk factors

Inhalers: Acronyms

Inhalers: Regimens

Recommendations - I

Recommendations - II

- **SABA:** short-acting beta-agonist (salbutamol/albuterol (Ventolin), terbutaline (Bricanyl))
- **ICS:** inhaled corticosteroid. Budesonide (Pulmicort), mometasone (Asmanex), fluticasone (Flovent), beclomethasone (Qvar), ciclesonide (Alvesco).
- **LABA/ICS:** long-acting beta-agonist with inhaled corticosteroid. Salmeterol/fluticasone (Advair), vilanterol/fluticasone (Breo).
- **FABA/ICS:** fast-acting beta-agonist with inhaled steroid. Only one is formoterol (onset of action similar to SABA). Formoterol/budesonide (Symbicort®), formoterol/mometasone (Zenhale).


CTS: Canadian Thoracic Society; GINA: Global Initiative for Asthma;
CPS: Canadian Pediatrics Society

Moving Forward

Dosing Regimes (Slide Layer)

SCFPCLearn

Review



Answer: A. Inhaled corticosteroids (ICS) should be started only if short-acting beta agonist is needed ≥ 2 times per week.

- Risk factors**
- Inhalers: Acronyms**
- Inhalers: Regimens**
- Recommendations - I**
- Recommendations - II**

- Maintenance dosing = every day use of corticosteroid
- Intermittent dosing = use as needed for shortness of breath
- SMART = Single combination inhaler for maintenance and reliever therapy (FABA / ICS)

CTS: Canadian Thoracic Society; GINA: Global Initiative for Asthma; CPS: Canadian Pediatrics Society

Moving Forward

REcommen - II (Slide Layer)

SCFPCLearn

Review



Answer: A. Inhaled corticosteroids (ICS) should be started only if short-acting beta agonist is needed ≥ 2 times per week.

- Risk factors**
- Inhalers: Acronyms**
- Inhalers: Regimens**
- Recommendations - I**
- Recommendations - II**

- Adolescents (children ≥ 12 years) and adults**
- Patients using FABA-ICS on an as-needed basis had fewer severe exacerbations (5%) than FABA alone (11%).
- Intermittent use of ICS or FABA-ICS is similar to daily ICS in preventing exacerbations but intermittent use is associated with about five fewer weeks per year of well-controlled asthma.
- CTS and GINA recommend using FABA-ICS as reliever for adults/adolescents over 12 years. There are few studies with this approach in children.

CTS: Canadian Thoracic Society; GINA: Global Initiative for Asthma; CPS: Canadian Pediatrics Society

Moving Forward

2.4 Review

CFPC Learn

Review

Answer: A. Inhaled corticosteroids (ICS) should be started only if short-acting beta agonist is needed ≥ 2 times per week.

Inhalers: Summary Chart

Asthma: Good control

ICS: Doses

Asthma Management Continuum

Click on the buttons to view additional information

CTS: Canadian Thoracic Society; GINA: Global Initiative for Asthma; CPS: Canadian Pediatrics Society

Moving Forward

Pictures of puffers (Slide Layer)

CFPC Learn

Review

Answer: A. Inhaled corticosteroids (ICS) should be started only if short-acting beta agonist is needed ≥ 2 times per week.

Inhalers: Summary Chart

Asthma: Good control

ICS: Doses

Asthma Management Continuum

CTS: Canadian Thoracic Society; GINA: Global Initiative for Asthma; CPS: Canadian Pediatrics Society

Moving Forward

Reproduced with permission from British Columbia Respiratory Therapy

Well Controlled Asthma (Slide Layer)

SCFPCLearn

Review

Answer: A. Inhaled corticosteroids (ICS) should be started only if short-acting beta agonist is needed ≥ 2 times per week.

Inhalers: Summary Chart

Asthma: Good control

ICS: Doses

Asthma Management Continuum

Characteristic	Frequency
Daytime symptoms	≤ 2 days per week
Nighttime symptoms	<1 night/week and mild
Physical activity	Normal
Exacerbations	Mild and infrequent
Absence from work/school due to asthma	None
Need for reliever	≤ 2 per week

Adapted from 2021 Canadian Thoracic Society Guideline.

CTS: Canadian Thoracic Society; GINA: Global Initiative for Asthma; CPS: Canadian Pediatrics Society

Moving Forward

Inhaled corticosteroid doses (Slide Layer)

SCFPCLearn

Review

Answer: A. Inhaled corticosteroids (ICS) should be started only if short-acting beta agonist is needed ≥ 2 times per week.

Inhalers: Summary Chart

Asthma: Good control

ICS: Doses

Asthma Management Continuum

Corticosteroid	Low dose (ug)	Medium dose (ug)	Cost (90 days)
Beclomethasone *	50 bid	100 bid	\$15-30
Ciclesonide*	100 od	200 od	\$17-46
Fluticasone*	50 bid	100 bid	\$18
Budesonide	100 bid	400 bid	\$15-37

Examples of ICS doses. Metered dose inhalers* can be used with aerochambers

CTS: Canadian Thoracic Society; GINA: Global Initiative for Asthma; CPS: Canadian Pediatrics Society

Moving Forward

Asthma Management Continuum (Slide Layer)

Review

Answer: A. Inhaled corticosteroids (ICS) should be started only if short-acting beta agonist is needed ≥ 2 times per week.

Inhalers: Summary Chart

Asthma: Good control

ICS: Doses

Asthma Management Continuum

- An asthma management continuum for preschoolers, children and adults is available from the [CTS 2021 Guideline](#).

CTS: Canadian Thoracic Society; GINA: Global Initiative for Asthma; CPS: Canadian Pediatrics Society

Moving Forward

From 2021 Canadian Thoracic Society Guideline

2.5 Brea Salter

Brea Salter, 4

It looks like we are going to have to use a regular preventer puffer for Brea. You know, like your steroid puffer.

Father: I have heard that taking a daily steroid puffer will stunt her growth.



Moving Forward

2.6 Multiple choice question

(Multiple Response, 10 points, 1 attempt permitted)

#CFPCLearn

Which of the following statements is the most accurate?





- A. Daily ICS results in reduced height in children.
- B. Leukotriene receptor antagonists are a good option for asthma control in children.
- C. There is a role for LABAs in children under six years of age.

Submit

2.7 Review

#CFPCLearn

Review



Answer: The most accurate statement is "Daily ICS results in reduced height."

Evidence: Growth

LTRA for children

LABA for children



Click on the buttons to view additional information

Moving Forward

Cochrane review (Slide Layer)

SCFCLearn

Review



Answer: The most accurate statement is “Daily ICS results in reduced height.”

Evidence: Growth

LTRA for children

LABA for children

Cochrane review (2013) of different ICS versus non-ICS (8471 children, 3 months to 5 years of age):

- Linear growth velocity: mean reduction of 0.48cm/y
- Change from baseline height: 0.61 cm during a one-year treatment period in children with mild to moderate persistent asthma

Cochrane review (2014) of daily versus intermittent ICS use (532 children):



- Mean difference in height (over 44-52 weeks): 0.41 cm shorter with daily ICS

Moving Forward

LTRA (Slide Layer)

SCFCLearn

Review



Answer: The most accurate statement is “Daily ICS results in reduced height.”

Evidence: Growth

LTRA for children

LABA for children

Though popular because of perceived safety concerns with ICS, leukotriene receptor antagonists (LTRA):

- Alone: inferior to inhaled steroids (1 more exacerbation per year in every 21 patients)
- Add on: to steroids no better than steroids alone for exacerbations


Note: There are very few children under the age of five in the above trials.

Moving Forward

LABA (Slide Layer)

SCFPCLearn

Review



Answer: The most accurate statement is "Daily ICS results in reduced height."

Evidence: Growth

LTRA for children

LABA for children

LABA's are not recommended for children under 6 years of age due to lack of evidence in both CTS and GINA recommendations.

- The risk of asthma-related death, intubation or hospitalization with LABA alone increased with younger age.

Low dose LABA-ICS is part of escalation of care in children ages 6 and older.

Moving Forward


2.8 Brea Salter

SCFPCLearn

Brea Salter, 4

Dad: I feel more comfortable when I take my steroid puffer regularly, so I think we will try for taking this every day.

That sounds reasonable. But we need to treat Brea's flare-up right now.



Moving Forward

2.9 Brea Salter

%CFPCLearn

Brea Salter, 4

Brea's Score

Management

The Pediatric Respiratory Assessment Measure (PRAM) SCORE is a clinical tool to assess the severity of asthma exacerbations in children.

Interpretation:
 Mild: 0-3
 Moderate: 4-7
 Severe: 7-12

Criteria	Description	Score
O2 saturation	>95%	0
	92-94%	1
	<92%	2
Suprasternal retractions	No	0
	Yes	2
Scalene contractions	No	0
	Yes	2
Air Entry	Normal	0
	Decreased base	1
	Decreased base and apex	2
	Minimal or Absent	3
Wheezing	Absent	0
	Expiratory only	1
	Inspiratory (+ expiratory)	2
	Audible without stethoscope or silent	3

Moving Forward

Brea's score (Slide Layer)

%CFPCLearn

Brea Salter, 4

Brea's Score

Management

What is Brea's score?

Chest examination shows suprasternal notch retractions (2) and scalene contraction (2), good air entry (0) and bilateral high-pitched expiratory wheezes (1).

Score= 5 (Moderate)

Criteria	Description	Score
O2 saturation	>95%	0
	92-94%	1
	<92%	2
Suprasternal retractions	No	0
	Yes	2
Scalene contractions	No	0
	Yes	2
Air Entry	Normal	0
	Decreased base	1
	Decreased base and apex	2
	Minimal or Absent	3
Wheezing	Absent	0
	Expiratory only	1
	Inspiratory (+ expiratory)	2
	Audible without stethoscope or silent	3

Moving Forward

Chart (Slide Layer)

SCFPCLearn

Brea Salter, 4

Brea's Score

Management

The initial treatment of asthma exacerbation for patients with a moderate exacerbation includes:

- salbutamol q20 minutes for 1-3 doses
- O₂ saturation ≥94%
- oral steroids
- consideration of ipratropium 3 doses in one hour

References: [Managing the pediatric patient with an acute exacerbation](#), Canadian Pediatrics Society 2012.

Moving Forward

2.10 Multiple choice question

(Multiple Response, 10 points, 1 attempt permitted)

SCFPCLearn

What are some options for treatment of an exacerbations?

Select all that apply.



- A. Prednisone 0.5 mg/kg per day for 3-5 days
- B. Dexamethasone 0.6 mg/kg per day for 1-2 days
- C. Quintuple daily ICS dose

Submit

2.11 Review

CFPCLearn

Review



Answer: The prednisone regimen or dexamethasone regimen could be prescribed for exacerbations.

- Systemic steroids
- Oral dexamethasone
- Quintuple ICS Dose



Click on the buttons to view additional information

Moving Forward

Systemic corticosteroids (Slide Layer)

CFPCLearn

Review



Answer: The prednisone regimen or dexamethasone regimen could be prescribed for exacerbations.

- Systemic steroids
- Oral dexamethasone
- Quintuple ICS Dose



When systemic corticosteroids are given for asthma exacerbations within one hour of emergency department presentation, the risk of hospital admission decreases compared to placebo (NNT=8).

Moving Forward

Oral dexamethasone (Slide Layer)

SCFPCLearn

Review



Answer: The prednisone regimen or dexamethasone regimen could be prescribed for exact

Systemic steroids

Oral dexamethasone

Quintuple ICS Dose

Oral dexamethasone (the injectable form may be given orally) is more palatable than oral prednisone and is given as a 1-2 day treatment versus 3-5 day regimens typically used for prednisone.



- Dose: Dexamethasone 0.6 mg/kg x 1-2 doses
- For every ~20 children treated with dexamethasone, there will be one less vomited dose.

Moving Forward

RCT (Slide Layer)

SCFPCLearn

Review



Answer: The prednisone regimen or dexamethasone regimen could be prescribed for exacerbations.

Systemic steroids

Oral dexamethasone

Quintuple ICS Dose

There is only one randomized controlled trial of children (254 kids, age 5-11 years) being treated for mild asthma exacerbations by quintupling baseline daily ICS dose of fluticasone (88ug bid versus 440ug bid for 7d). The rate of severe exacerbations was no different between groups.

Though increasing inhaled corticosteroids (FABA/ICS) for mild exacerbations is recommended as a first step for patients aged 12 years and over, it is not recommended for children by either the CPS or CTS. Oral steroids are the treatment of choice.

2.12 Create a Plan

#CFPCLearn

Let's Make a Plan

Using what you have learned write a plan for Brea. It can include any/all of the following: lifestyle intervention(s), prescription intervention(s), lab(s)/test(s) required, follow up appointment time frame, and referral required.

Fill in your plan for the patient here

See how your plan compares

2.13 Plan Answers

#CFPCLearn

Brea Salter

This is the proposed plan for Brea. How does your plan compare?

Medication

Follow Up

Select details on the left to see suggested recommendations



What's in a name?

Moving Forward

Medication (Slide Layer)

SCFPCLearn

Brea Salter



This is the proposed plan for Brea. How does your plan compare?

Medication

Follow Up



What's in a name?

Brea has a moderate asthma exacerbation (PRAM =5). Therefore, she qualifies for oral corticosteroids. You prescribe dexamethasone 0.6 mg/kg for 2 doses. You start fluticasone 100ug bid as a maintenance puffer and as needed salbutamol. You advise that Brea should be taken to the emergency room if she is breathing worsens or she is not able to drink adequately.

Follow Up (Slide Layer)

SCFPCLearn

Brea Salter



This is the proposed plan for Brea. How does your plan compare?

Medication

Follow Up

What's in a name?

Moving Forward

Brea's father has been keeping track of her symptoms in a diary. You book a follow-up appointment in 3 months to review her diary of symptoms.

Name (Slide Layer)

The screenshot shows a software interface slide titled "Brea Salter". On the left, there is a vertical sidebar with the logo "CEPCLearn" and four circular navigation icons. The main content area has a blue header with the name "Brea Salter" and a circular profile picture of a young girl. Below the header, the text reads: "This is the proposed plan for Brea. How does your plan compare?". There are two blue buttons: "Medication" and "Follow Up". A light blue callout box titled "Meaning Behind the Name:" contains the text: "Brea" is taken from the word 'breath.' and "The last name Salter is a nod to Dr. Henry Hyde Salter who described clinical asthma in the 1800s." At the bottom, there is a green button labeled "What's in a name?" and an orange button labeled "Moving Forward".

2.14 References

The screenshot shows a software interface slide titled "References". It features a blue header with the title "References" and a circular profile picture of the same young girl. The main content area contains the text: "Thanks for visiting the clinic!" followed by "References are available [here](#)." Below this, it states: "This activity is eligible for up to 0.25 Mainpro+ credits." The left sidebar is identical to the previous slide, showing the "CEPCLearn" logo and navigation icons.