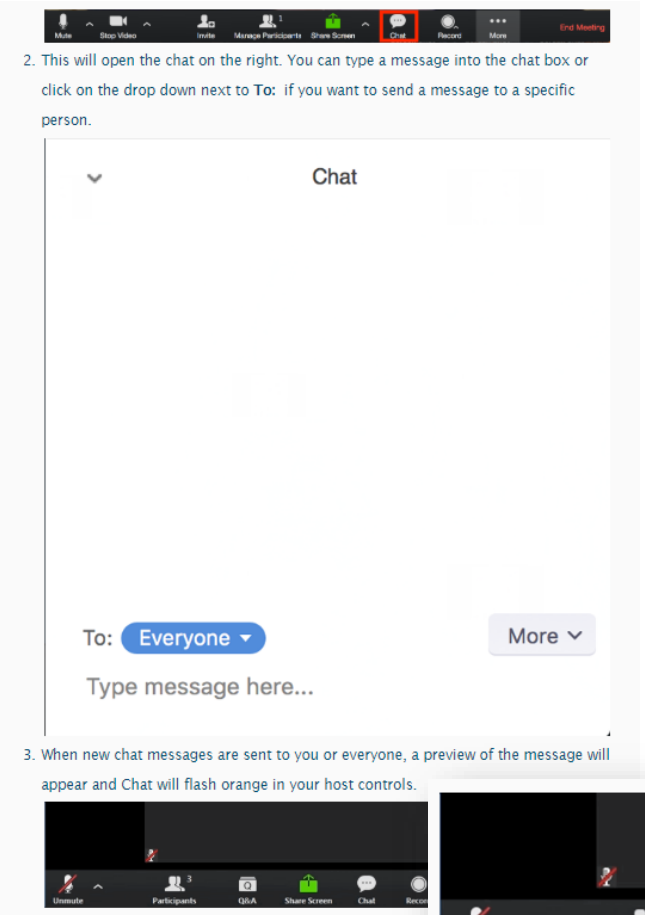
Community of Practice: Choosing Wisely in Paediatrics

Moderator:

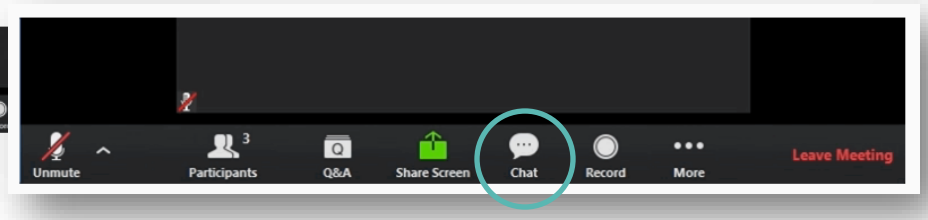
Dr. Olivia Ostrow
Staff Physician and Patient Safety Lead, Paediatric Emergency Medicine, Hospital for Sick Children
Associate Director, SickKids Choosing Wisely Program

Choosing Wisely Canada
Children's Healthcare Canada | Santé des enfants Canada



Have a Question?

- Use the **chat function** in Zoom at anytime
- If you wish to contribute to the conversation, be sure to **un-mute** on the Zoom dashboard
- Note: *we will moderate the Q&A after all presentations have been completed*



Choosing Wisely Canada

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Welcome (and welcome back)!

The Choosing Wisely in Paediatrics Community of Practice (CoP) mandate is to foster knowledge sharing and collaborative learning to promote high-quality, value-added care by focusing on the overutilization of certain tests and therapies.

Since launching in 2019:

- Reach is national with **~200 members**
- **8 webinars and 18 presentations have been held to date**
- Presentation topics from both **paediatric acute-care centres** and **community hospitals**

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Community of Practice – Participating Sites from Coast to Coast

BC Children's Hospital

IWK

Montreal Children's Hospital, St. Justine's

Stollery Children's Hospital, Alberta Children's Hospital

Jim Pattison Children's Hospital

SickKids, CHEO, OSMH, Markham-Stouffville Hospital, Halton Healthcare, NYGH, Michael Garron Hospital, William Osler, LHSC, Community Paediatricians, Unity Health

Choosing Wisely Canada

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National Steering Committee

(Re) launched in September 2022 to:

- Provide subject matter expertise to assist the CoP in achieving its mandate
- Encourage participation within the CoP at member sites and increase representation
- Shape program components including webinar topics of interest and potential speakers

Current Initiatives:

- Enhancing hub and spoke model with regional networks
- Engaging paediatric societies, and interest groups to amplify work (e.g., CPS, TREKK, PCC)
- Design and delivery of educational materials including PGME

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Webinar Topics to Date

Bronchiolitis	UTIs	*Antibiotics Wisely*	Choosing Wisely Canada and roles for paediatrics
Opioids	Respiratory infections	Iron deficiency	Pneumonia & CXRs
Engaging trainees in stewardship	Febrile neutropenia	*Blood Wisely*	HHFNC
Urine collection methods	Peripheral IVs (saline vs TKO)	Family partnerships in Choosing Wisely	

Children's Healthcare Canada

- **Established the Choosing Wisely in Paediatrics Health Hub**
  - Leveraged existing CHC online network
  - Goal – to connect individuals with "like" peers across Canada to share information and exchange resources
  - Currently houses materials and recordings from past webinars and relevant publications

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Future Webinars

June 2023 - TBC

Suggested topics are welcome!

If you are interested in presenting, have resources you wish to share, or would like to be added to the mailing list, please complete the webinar feedback survey or email lauren.whitney@sickkids.ca

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2023 Choosing Wisely Canada

National Meeting

May 11 & 12 | Toronto

Agenda

12:00 – 12:05	**Welcome and Introductions**
12:05 – 12:20	**Drop the Label: Challenging the misconceptions of penicillin allergies** Kathy Slayter BSc(Pharm), PharmD, FCSHP Tiffany Wong MD, FRCPC
12:20 – 12:35	**Allergy De-labeling Initiatives at SickKids** Kathryn Timberlake PharmD, RCSHP Michelle Science MD, MSc, FRCPC
12:35 – 12:45	**5 Things to Question in Pediatric Emergency Medicine: Development of Joint Canadian/American Choosing Wisely Recommendations** Jennifer Thull-Freedman MD, MSc
12:45 – 1:00	**Q&A**

Drop the Label: Penicillin allergy de-labeling is for everyone!

Tiffany Wong MD, FRCPC

Medical Lead, BC Children's Hospital Allergy Clinic
Faculty Associate, CQI and Patient Safety, UBC Postgraduate Medical Education
Physician Advisor, PHSA Spread Quality Improvement Initiative
Clinical Associate Professor, University of British Columbia, Department of Pediatrics

Disclaimer / Conflict of Interest

Presenter / Faculty	Tiffany Wong	Kathryn Slayter
Grants / Research Support	Doctors of BC ALK-Abello (unrestricted)	CIRN CIHR
Speakers Bureau / Honoraria	Stallergenes Greer, Pfizer, Leo Pharma, Aralez, Sanofi, Covis Pharma	None
Consulting Fees	None	None
Other	Media - Polaris	None

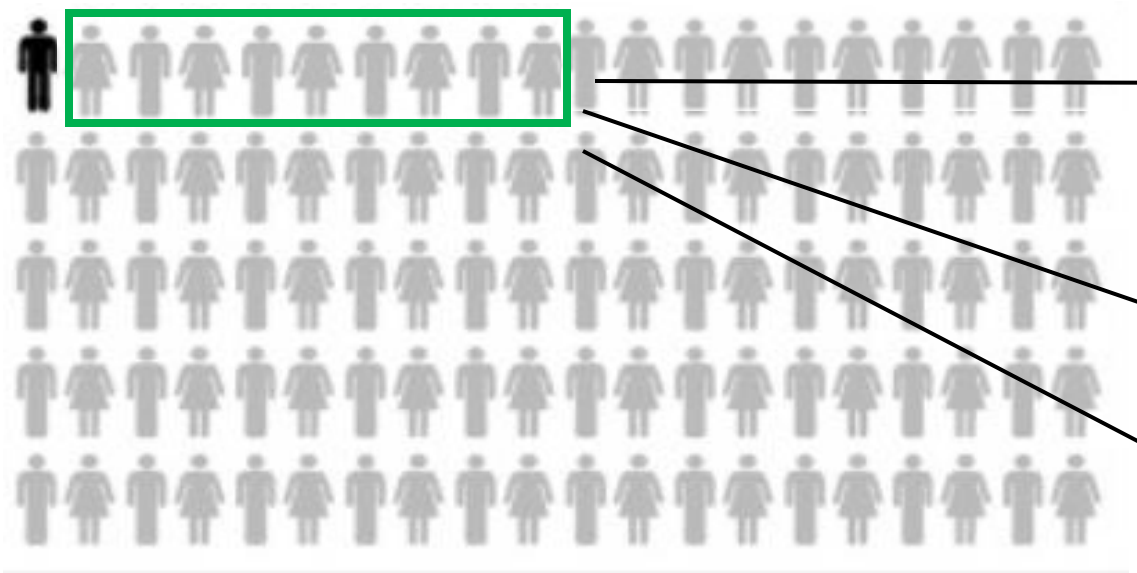
Penicillin allergy labels are common

Solensky R, Khan D. Ann Allergy Asthma Immunol. 2010;105.
Vyles D, et al. Academic Pediatrics.2017;17(3):251-255.

….but they are greatly overperceived

Abrams et al. *Allergy Asthma Clin Immunol* 2016
Mill C et al. *JAMA Pediatr* 2016
Roberts H et al. *Allergy Asthma Clin Immunol* 2020
Idsoe O et al. Bull WHO.1968;38:159-88
International Rheumatic Fever Study Group. Lancet. 1991;337:1308-1310

Why the discrepancy?



Miscategorized symptoms
- Illness
- Side effects
- Infectious exanthems

Never exposed, but
- Family member allergic
- Positive skin test

Fear and Anxiety

Penicillin "allergy" = Public health problem

Poorer care

- More antibiotics overall
- Broad spectrum antibiotics
- 2nd or 3rd line antibiotics

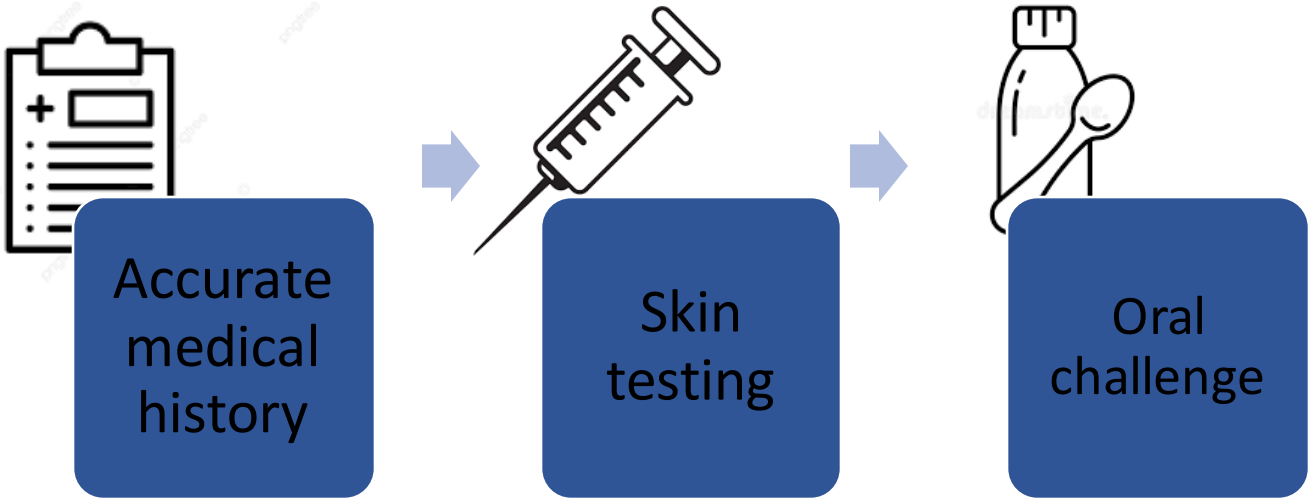
Poorer outcomes

- Antibiotic resistance
- Adverse events
- Longer hospital stay
- Higher readmission

Increased cost

Su T et al. *Clin Transl Allergy* 2017; 7(18)
Solensky R, Khan D. *Ann Allergy Asthma Immunol.* 2010;105
Macy E, et al. *J Allergy Clin Immunol.* 2014; 133
Charneski L et al. *Pharmacotherapy* 2011 Aug; 31(8)
Van Dijk et.al, *J Allergy Clin Immunol.* 2016

Penicillin allergy de-labeling

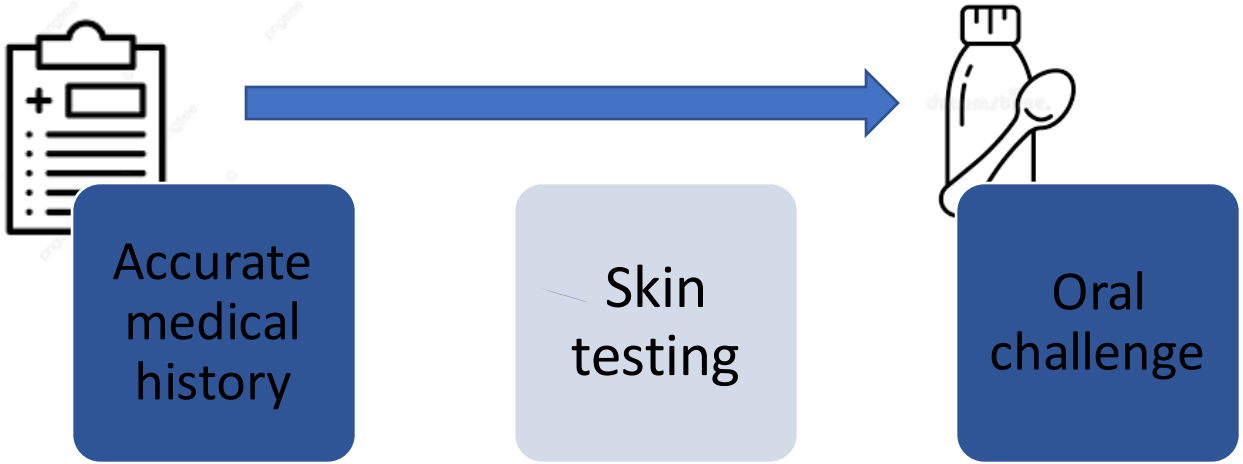


Penicillin de-labeling programs

- Goal: to identify patients who can safely receive penicillin and other β-lactam antibiotics
- Multidisciplinary: Antimicrobial stewardship, pharmacists, physicians (ID, general pediatrics, allergy)

Bauer ME et al. *Hospital Pediatrics* 2021;11(5)
Leis JA, *Clin Inf Dis*. 2017;65(7)

Penicillin allergy de-labeling



- Assessment of risk can be done in any setting
- Skin testing is not necessary in most cases
- **Remember**: The vast majority of patients are not allergic

Mill C et al. *JAMA Pediatr.* 2016; 170(6)
Stone CA et al. *Allergy*. 2020; 75

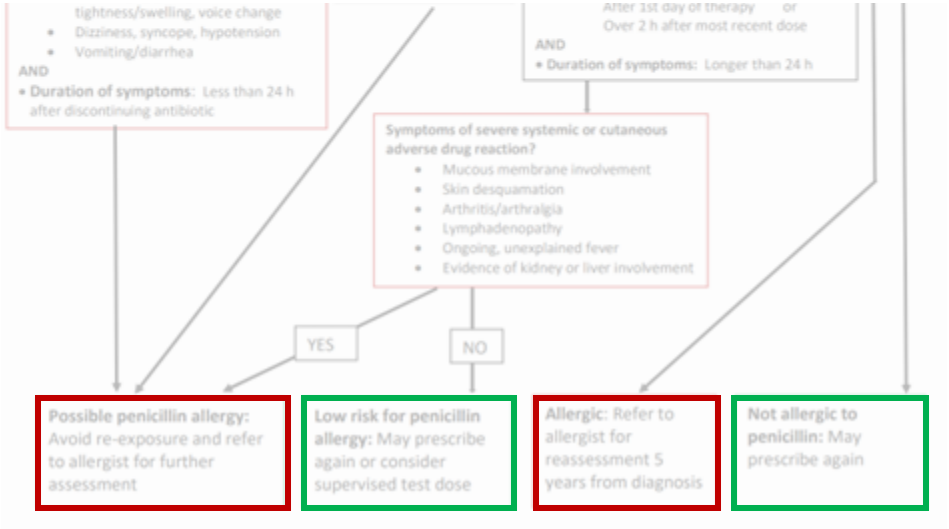
Roberts *et al.*
Allergy Asthma Clin Immunol (2020) 16:103
https://doi.org/10.1186/s13223-020-00501-6

Allergy, Asthma & Clinical Immunology

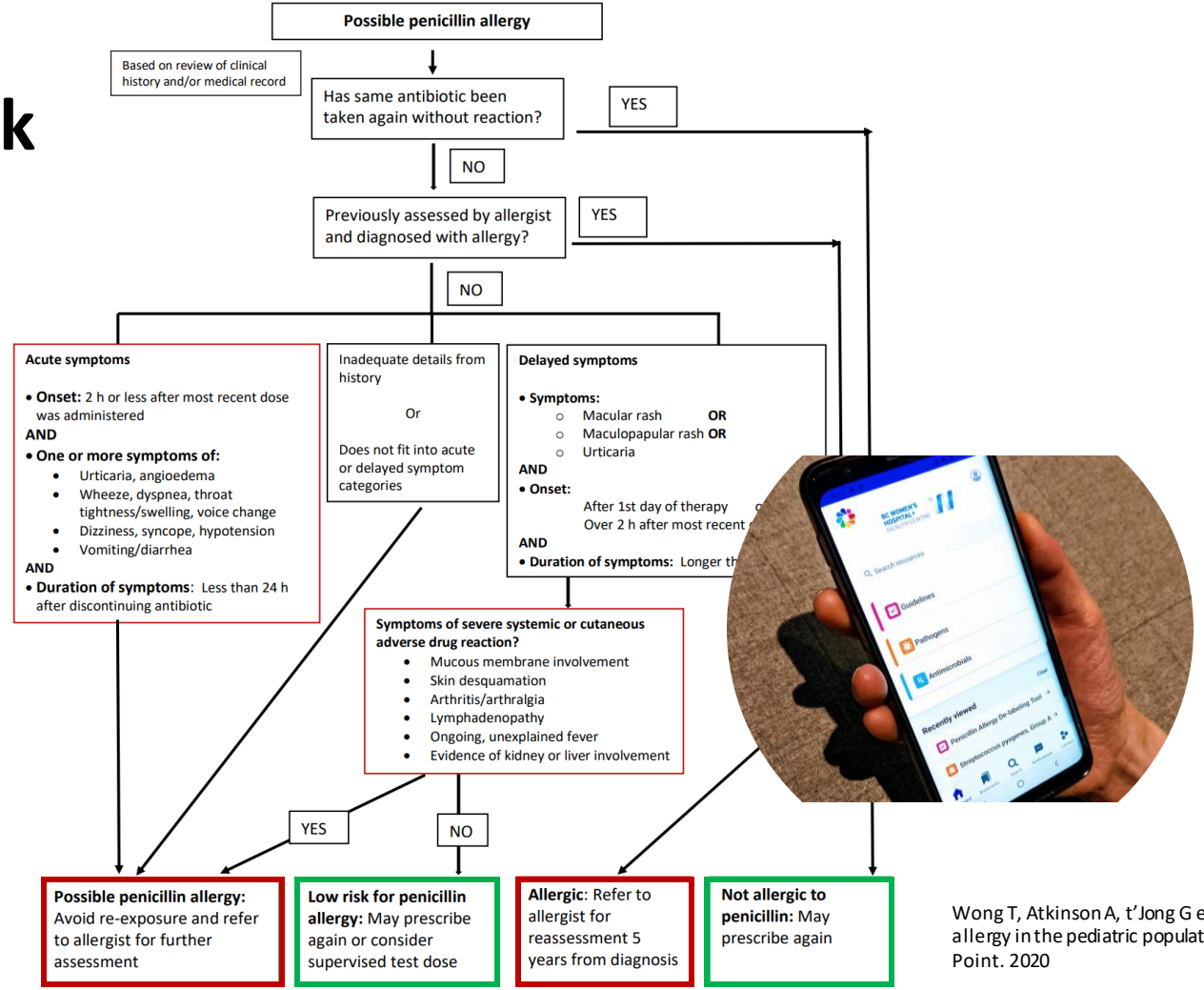
LETTER TO THE EDITOR Open Access

First pediatric electronic algorithm to stratify risk of penicillin allergy

Hannah Roberts[1*], Lianne Soller[2], Karen Ng[3], Edmond S. Chan[2], Ashley Roberts[4], Kristopher Kang[5], Kyla J. Hildebrand[2] and Tiffany Wong[2]



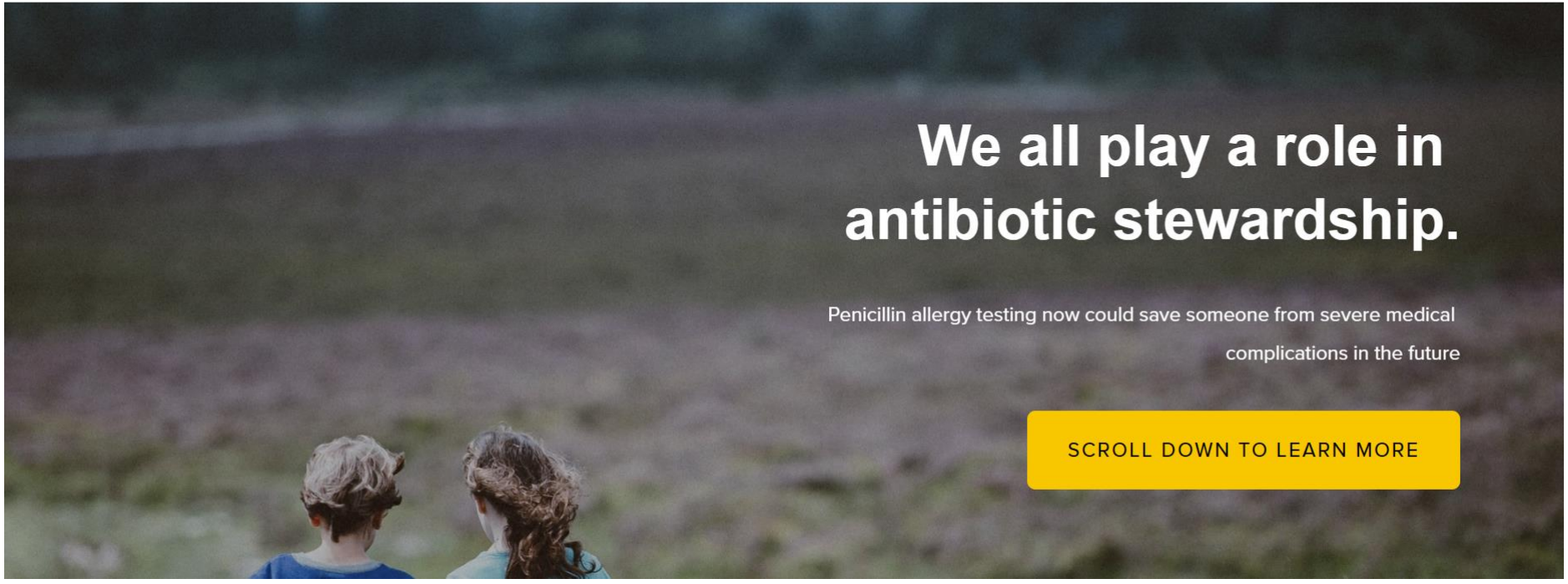
Assessing risk



Wong T, Atkinson A, t'Jong G et al. Beta-lactam allergy in the pediatric population. CPS Practice Point. 2020

DROP THE LABEL.

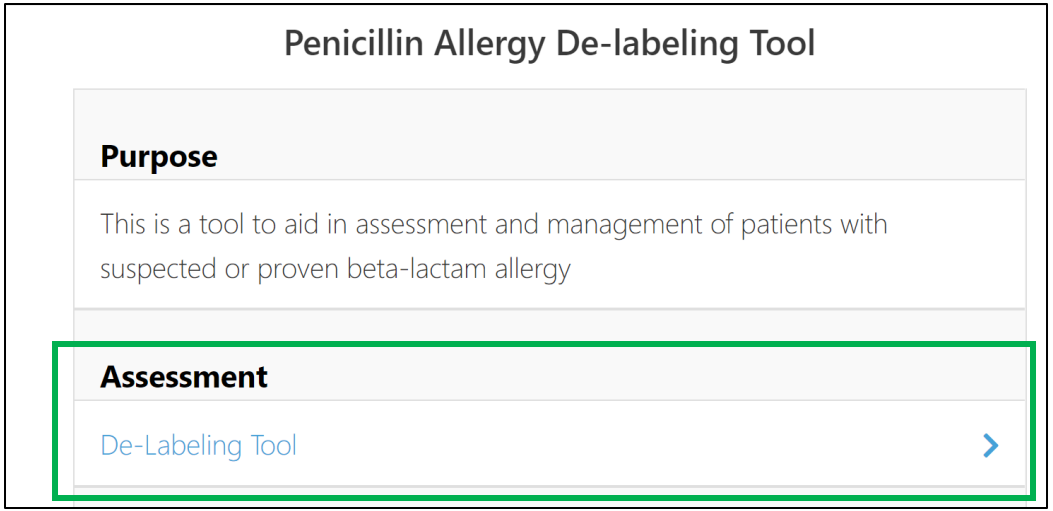
Try our point of care penicillin allergy de-labeling tool: FIRSTLINE



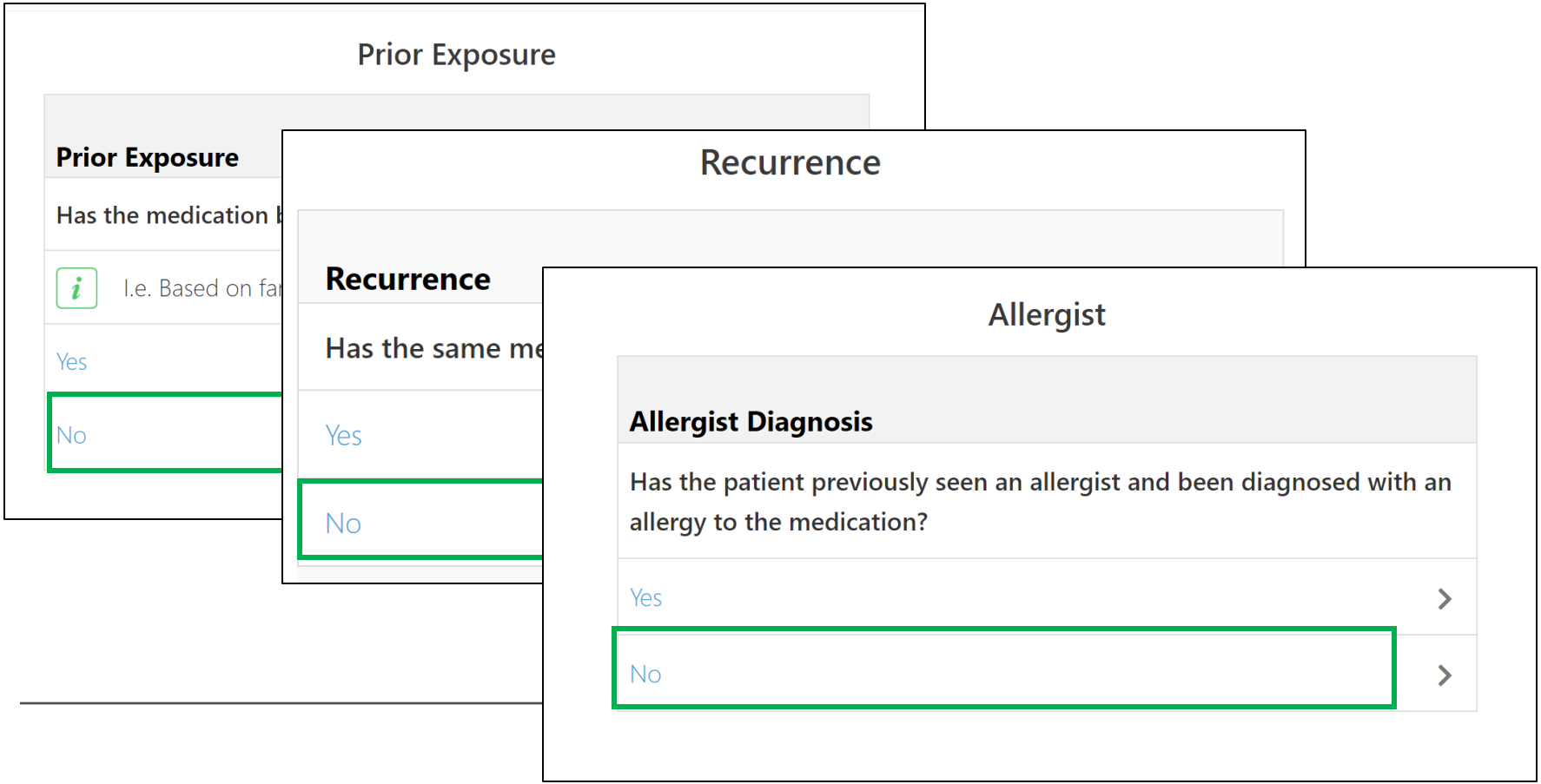
Guidelines

Pathogens

Antimicrobials



https://app.firstline.org/en/clients/39-bc-womens-hospital/steps/40356


Prior Exposure
Prior Exposure
Has the medication b
i
I.e. Based on fa
Yes
No
Recurrence
Recurrence
Has the same me
Yes
No
Allergist
Allergist Diagnosis
Has the patient previously seen an allergist and been diagnosed with an allergy to the medication?
Yes
No

Timing

How many days between start of medication and onset of reaction?

- [ ] ≤ 1 day (24 hours)
- [ ] > 1 day (24 hours)
- [ ] Don't know

How soon after the dose given did the reaction begin?

- [ ] ≤ 2h
- [ ] > 2h
- [ ] Don't know

DONE

Symptoms

What was the nature of reaction to the beta-lactam?

- Should be unrelated to illness for which antibiotic is prescribed, or known side effect of medication

- [ ] Macular and/or papular rash
- [ ] Urticaria (hives)
- [ ] Angioedema (swelling)
- [ ] New onset cough, wheeze, stridor/voice change or respiratory distress
- [ ] New onset rhinorrhea or conjunctivitis
- [ ] Nausea/vomiting
- [ ] Abdominal discomfort/pain
- [ ] Diarrhea
- [ ] Palpitations, dizziness, syncope or decreased level of consciousness
- [ ] Arthritis/arthralgia
- [ ] Erythema multiforme or bruising upon resolution of lesion
- [ ] Blistering/peeling skin or mucous membrane involvement
- [ ] Unexplained fever
- [ ] Liver involvement
- [ ] Kidney involvement
- [ ] Lymphadenopathy

DONE

Very Low Risk for Penicillin Allergy

No action required, may prescribe again

OR

In-office oral challenge of a beta lactam for patients and families requiring additional reassurance

OR

If healthcare provider is uncomfortable due t
referral can be made to an allergist

Oral Challenge

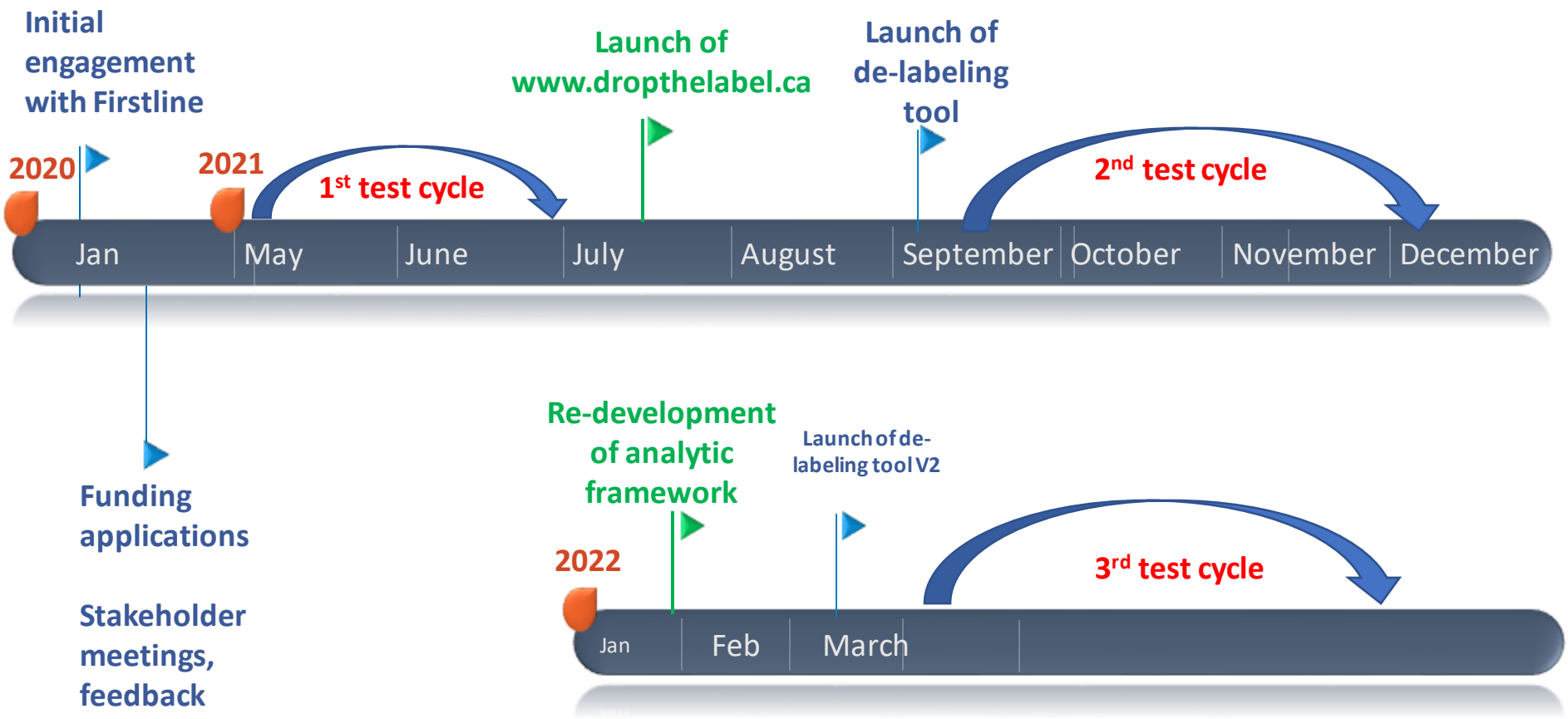
Amoxicillin

- **Child:** Amoxicillin 15 - 30mg/kg orally (max dose for challenge of 500mg).
  - Can use oral chewable amoxicillin of 125mg/tablet or 250mg/tablet to reduce cost to family/clinic
- **Adult:** 500mg tablet po x 1 dose

Observe in waiting room for 30-60 mins

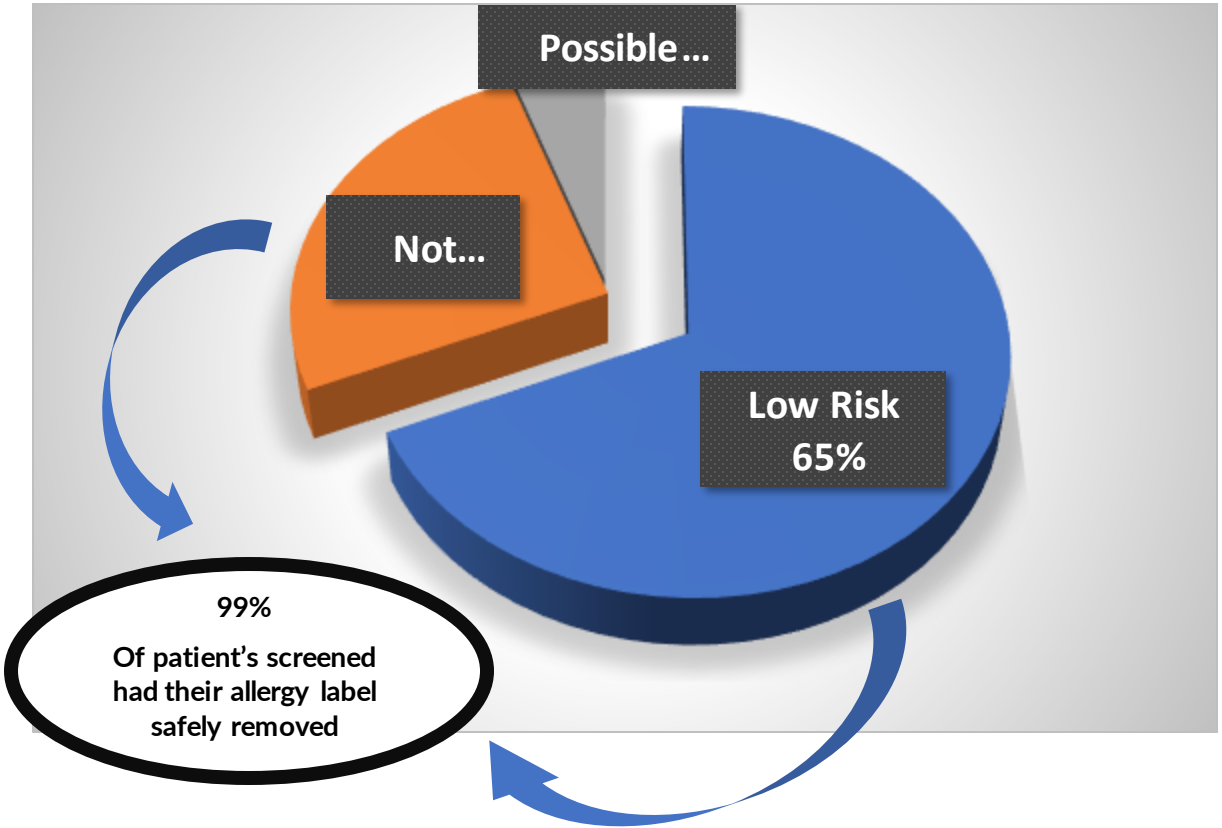
Guidance on management of anaphylaxis

Timeline


Initial engagement with Firstline
2020
2021
1st test cycle
Launch of www.dropthelabel.ca
Launch of de-labeling tool
2nd test cycle
Jan
May
June
July
August
September
October
November
December
Funding applications
Stakeholder meetings, feedback
Re-development of analytic framework
Launch of de-labeling tool V2
2022
3rd test cycle
Jan
Feb
March

BC Women's and Children's Hospital

Sept 2021 to May 2022 Patients screened (N= 360)

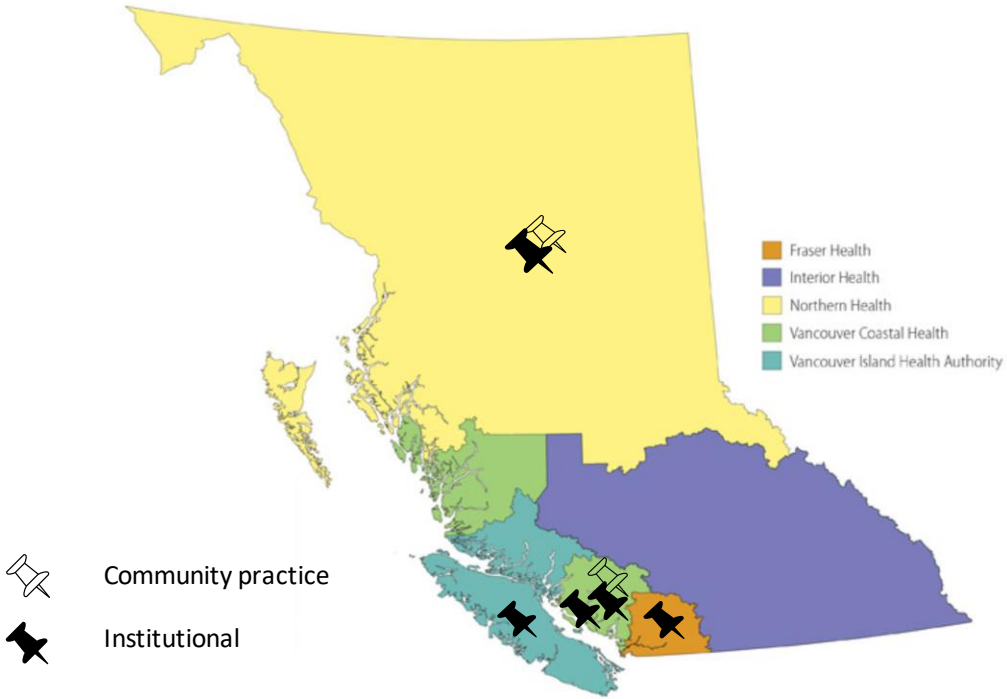


Slide credit: Mckernan, P

Identify Champions

- Rural and community
- Special populations
- Health Authority

Penicillin allergy de-labeling - Spread



- BC Children's Hospital
- BC Women's Hospital
- BC CDC

- Health Initiative for Men (HiM clinic)
- John Ruedy Clinic (JRC)
- BC Children's Hospital ER
- Victoria General Hospital
- Community Pediatrics Clinic
- Vanderhoof family physicians
- University Hospital of Northern British Columbia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600 km
400 mi
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Eckert VI
Yukon
Northwest Territories
Nunavut
British Columbia
Alberta
Saskatchewan
Manitoba
Ontario
Québec
Newfoundland and Labrador
Prince Edward Island
Nova Scotia
New Brunswick

https://www.dropthelabel.ca

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DROP THE LABEL.

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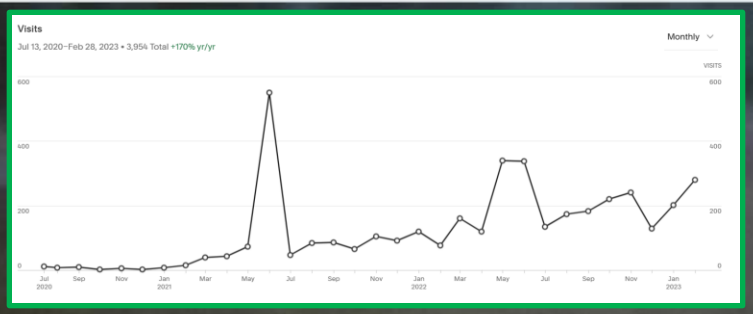
Try our point of care penicillin allergy de-labeling tool: FIRSTLINE



- 8.9 K total page views
- 3 K unique visits
- Clinical resources and de-labeling forms – 776 hits

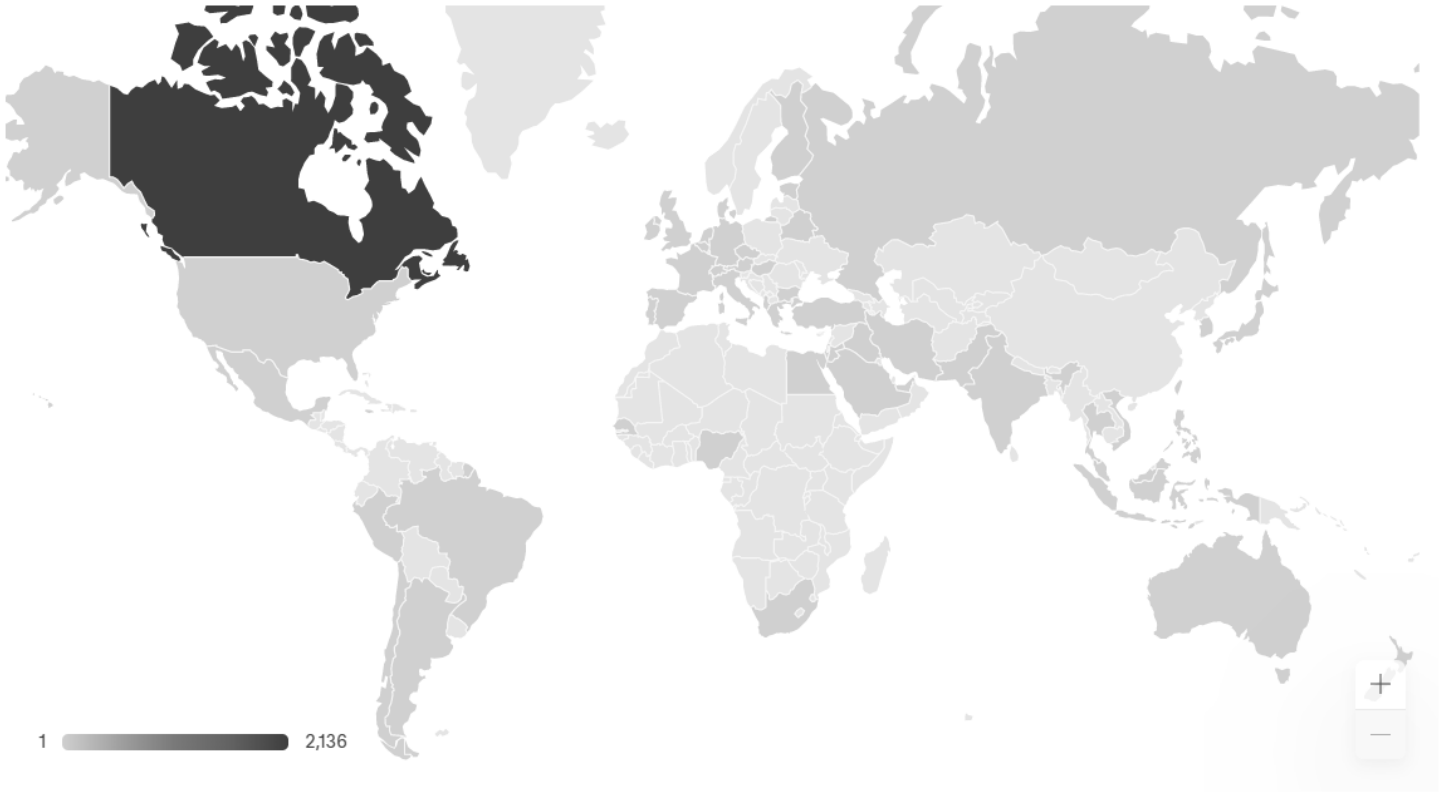
We all play a role in antibiotic stewardship.

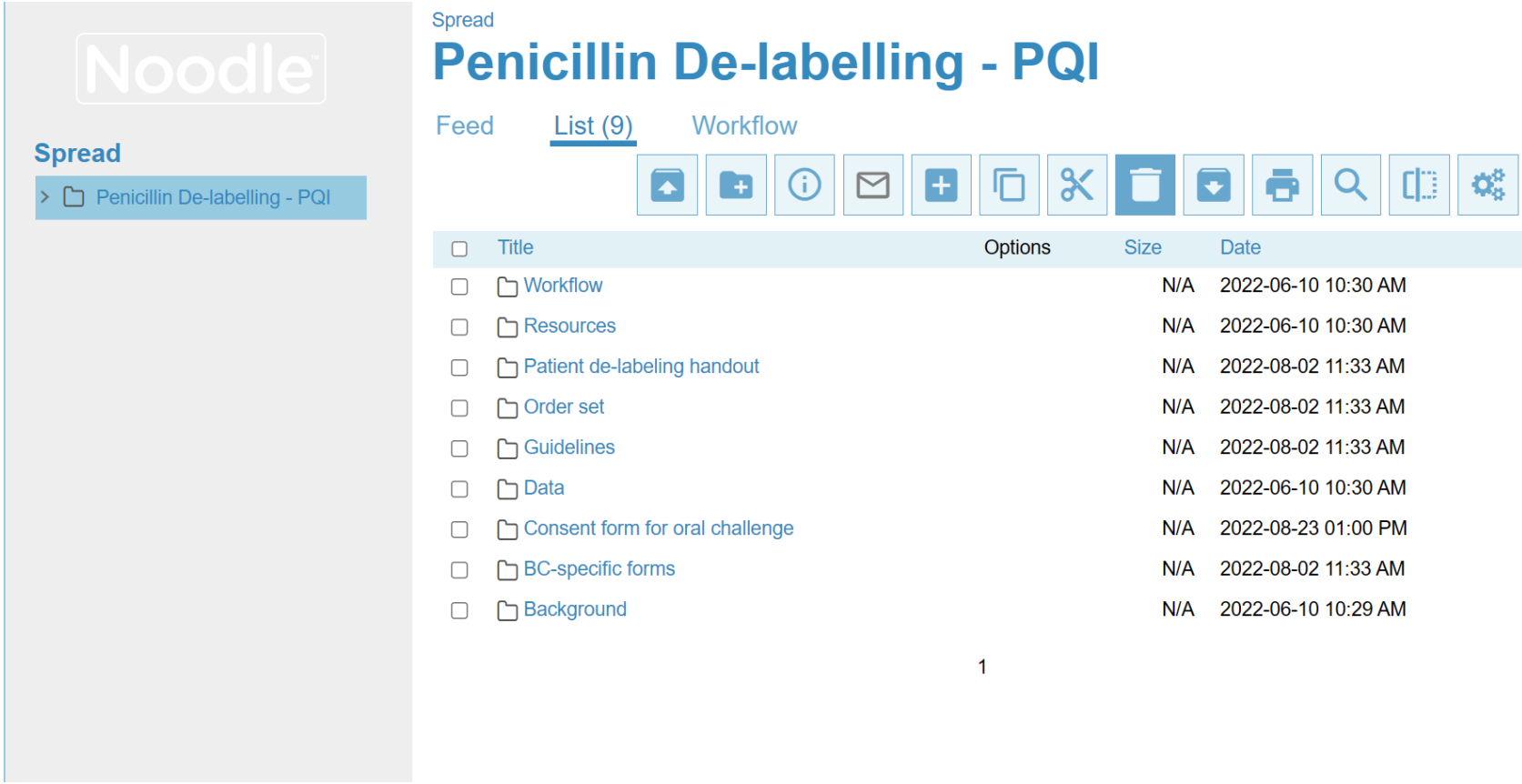
Penicillin allergy testing now could save someone from severe medical complications in the future

SCROLL DOWN TO LEARN MORE

Visits by Country

Jan 1, 2022–Mar 1, 2023 • 2,730 Total




Noodle
Spread
Penicillin De-labelling - PQI
Spread
Penicillin De-labelling - PQI
Feed
List (9)
Workflow
Title
Options
Size
Date
Workflow
N/A
2022-06-10 10:30 AM
Resources
N/A
2022-06-10 10:30 AM
Patient de-labeling handout
N/A
2022-08-02 11:33 AM
Order set
N/A
2022-08-02 11:33 AM
Guidelines
N/A
2022-08-02 11:33 AM
Data
N/A
2022-06-10 10:30 AM
Consent form for oral challenge
N/A
2022-08-23 01:00 PM
BC-specific forms
N/A
2022-08-02 11:33 AM
Background
N/A
2022-06-10 10:29 AM
1

Publications

- Abrams EM, Atkinson AR, Wong T, Ben-Shoshan M. The importance of delabeling beta-lactam allergy in children. The Journal of Pediatrics. 2019;204:291-297

- Wong T, Atkinson A, t'Jong G, Rieder MJ, Chan ES, Abrams EM. Beta-lactam allergy in the paediatric population. Paediatrics & Child Health. 2020;25(1):62

- Jeimy S, Ben-Shoshan M, Abrams E, Ellis AK, Connors L, Wong T. Practical guide for evaluation and management of beta-lactam allergy: Position statement from the Canadian Society of Allergy and Clinical Immunology. Allergy Asthma Clin Immunol. 16, 95 (2020).

- Roberts H, Soller L, Ng K, Chan ES, Roberts A, Kang K, Hildebrand K, Wong T. First pediatric questionnaire with clinical algorithm to stratify risk of penicillin allergy. *Allergy Asthma Clin Immunol* **16,** 103 (2020).

- Mak R, Wong T. This changed my practice. Specialists and Family Practice: Tackling the Pseudo-Penicillin Allergy Epidemic together. UBC Continuing Professional Development; Jan 27, 2021

- Zhang BY, Paquette V, McClymont E, Barlas A, Wong T, Watt M, Mak R, Elwood C. Implementing a penicillin allergy delabeling service for the obstetric population. J Allergy Clin Immunol Pract. 2021 Jun;9(6):2501-2502.e2. doi: 10.1016/j.jaip.2021.01.023. Epub 2021 Feb 2. PMID: 33545395.

- Duke S, Wong T, Toma W. Direct oral challenges in children at low-risk of beta-lactam allergy. BC Medical Journal. 2021;63:56-61

- Dhir, A., Kular, H., Elzagallaai, A.A. *et al.* DRESS induced by amoxicillin-clavulanate in two pediatric patients confirmed by lymphocyte toxicity assay. *Allergy Asthma Clin Immunol* **17,** 37 (2021).

- Wong T, Ito C, Mak R, Abrahams B. Use of quality improvement science to improve the accuracy of drug allergy status in pediatric patients after allergist assessments. BCMJ: 63(8);285-290

- Ghassemian A., Sadi G., Mak R, Erdle S, Wong T, Jeimy S. Virtually supported penicillin allergy de-labelling during COVID-19. *Allergy Asthma Clin Immunol* **19**, 17 (2023). https://doi.org/10.1186/s13223-023-00770-x

Accepted

- Saravanabavan S, Aulakh A, Douglas J, Elwood C, Erdle S, Chen Lin J, Mah A, Nguyen A, Paquette V, Roberts A, Watt M, Van Schalkwyk J, Zhang BY, Mak R, Wong T. Penicillin de-labelling in Vancouver, British Columbia Canada: Comparison of Approaches, Outcomes and future Directions

Submitted, pending review

- Want J, Elwood C, Paquette V, Kwan N, Erdle S, Watt M, Van Schalkwyk J, Bone JN, Roberts A, Mak R, Wong T. Specificity Comparison of Penicillin de-labelling Tools: PENFAST, JAMA and

Team (British Columbia)

- Firstline – Cyrus Greenall, Michael Campsall, Michael Long, Chiara-lyse Lee
- Medical trainees – Patrick McKernan, Bryan Ng, Justin Park, Sujen Saravanabavan
- ID – Ashley Roberts, Lis Parfitt
- Allergy – Scott Cameron, Raymond Mak, Hannah Roberts, Edmond Chan, Lianne Soller
- Pharmacy – Vanessa Paquette, Karen Ng, Natasha Kwan, Jolanta Pisczek, Roxane Carr
- Pediatrics – Kris Kang, Warda Toma, Alison Lee
- Family practice – Rochelle Stimpson, Cindy Huang, Rachel Vogler, Lina Yee, Irina Sainchuk
- Obstetrics/gynecology – Chelsea Elwood
- Internal medicine – Sharla Olsen
- Doctors of BC – Haneen Albayati, Bethina Abrahams

- ……and so many others!

Penicillin Allergy De-Labelling: IWK Experience

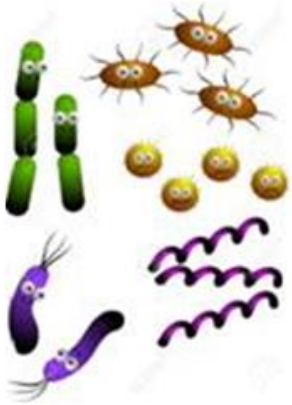
Dr. Kathy Slayter; BSc(Pharm), PharmD, FCSHP

Clinical Pharmacy Specialist, Antimicrobial Stewardship/Infectious Diseases

Assistant Professor Faculty of Medicine; Department of Medicine, Division of Infectious Diseases, Department of Pediatrics and Faculty of Graduate Studies, Dalhousie University,

Canadian Center for Vaccinology

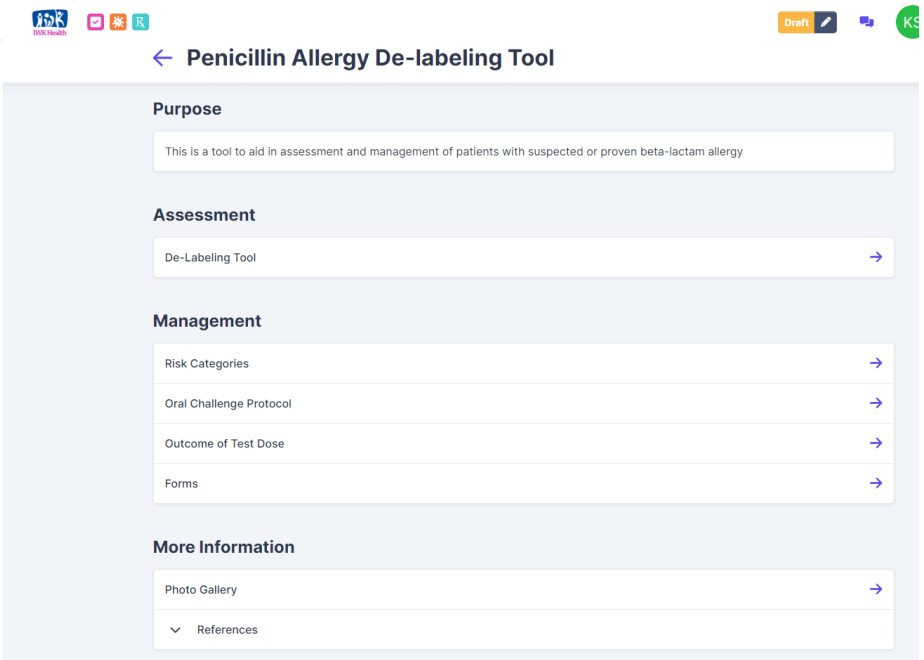
IWK Health



ANTIMICROBIAL STEWARDSHIP PROGRAM

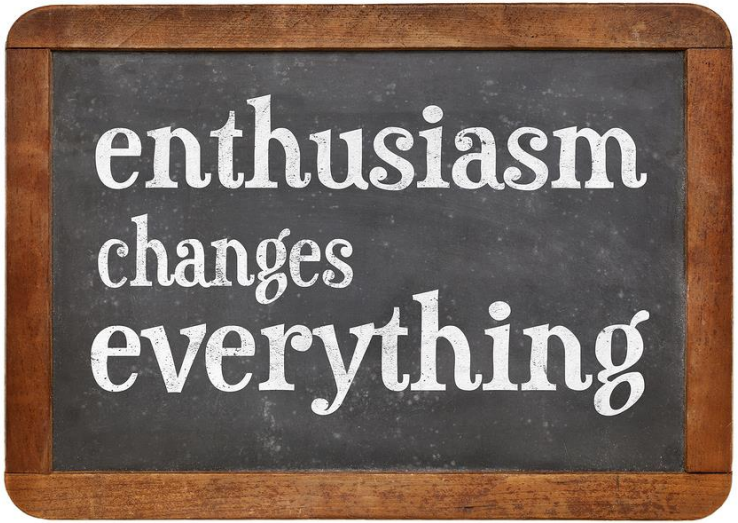
IWK Health

Guidelines | Pathogens | Antimicrobials



Rollout


WAKE UP
CANADA
#KeepAntibioticsWorking
WHEN YOU REALLY NEED THEM, WILL ANTIBIOTICS WORK?


enthusiasm
changes
everything

Rollout

- General Pediatricians
- Pediatric Residents
- Emergency Medicine Pediatrics
- Pharmacy

← Very Low Risk (R2NC)

Very Low Risk for Penicillin Allergy

No action required, may prescribe again

OR

In-office oral challenge of a beta lactam for patients and families requiring additional reassurance

OR

If healthcare provider is uncomfortable due to pregnancy or other condition, referral can be made to an allergist

Oral Challenge

℞ Amoxicillin

- **Child:** Amoxicillin 15 - 30mg/kg orally (max dose for challenge of 500mg)
  - Can use oral chewable amoxicillin of 125mg/tablet or 250mg/tablet to reduce cost to family/clinic
- **Adult:** 500mg po x 1 dose

Observe in waiting room for 30-60 mins

Guidance on management of anaphylaxis

Next Steps

Please help us improve! Take this 10 second, in-app survey

Test Dose Tolerated

Test Dose NOT Tolerated

Pre-Printed Order Set

IWK Health

Oral Amoxicillin Challenge for Penicillin Allergy De-Labelling in Low Risk Patients

K07002307 Jun/7/2002 M
SCA,TEST Visit
ER0000145/12 **HCN:** 22222222
Van den Hof, TEST / TEST, Maureen
Dec/8/2012

Patient: _____

❑ Alert Record Reviewed ❑ No Allergies Known

❑ Allergies-Adverse Reactions-Cautions: _____

Age _____ Patient's Weight _____ kg Date of Patient's Weight _____

DIAGNOSIS: _____

Items preceded by a **bullet** (•) are active orders. Items preceded by a **checkbox** (❑) are only actioned if checked (√)
The Comfort Promise will be offered to all patients.

CHALLENGE TEST

- Complete Anaphylaxis Recognition and Treatment (Form ID IWK_ANRT)
- If reaction occurs, notify the most responsible health care practitioner (MRHCP) and give medications according to IWK_ANRT

MEDICATIONS

❑ Amoxicillin Challenge:

- Amoxicillin _____ mg PO (15 to 30 mg/kg/dose) x 1 dose. Maximum dose for challange 500 mg
- Observe patient for 30 to 60 minutes after completing the challenge

- For any other concerns, consult MRHCP for direction/additional orders

DATE (yyyy/MON/dd)	Time (24hour/hh:mm)	Prescriber Signature	Printed Surname/Registration #
DATE (yyyy/MON/dd)	Time (24hour/hh:mm)	Verified by (Signature)	Printed Surname

ER0000145/12

IWKORAc

Further Rollout

Obstetrics /Gynecology Residents

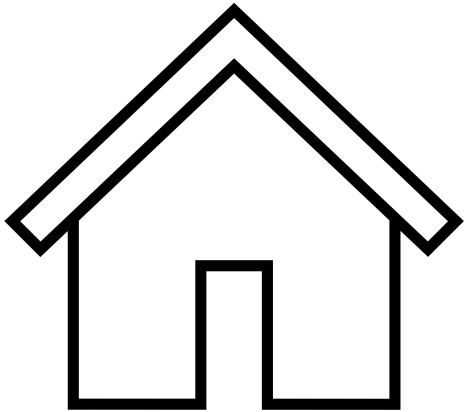
Deliverables/Metrics

- Usage of the mobile tool will be monitored in our IWK Community
- Satisfaction surveys; to continually improve the application.

Acknowledgements

- Tiffany Wong MD, FRCPC; Medical Lead Division of Allergy and Immunology, BCCWH
- Wade Watson
- Jeannette Comeau

Take home



- Penicillin allergy de-labeling improves health outcomes and reduces costs
- Risk assessment and management can occur in most clinical settings
- Most patients do not require specialized skin testing in order to de-label penicillin allergy

Anyone who can apply a penicillin allergy label can also take part in de-labeling

DE-LABELING OF ALLERGIES TO BETA-LACTAM (De-LABeL) PROGRAM INPATIENTS, OUTPATIENTS, AND SPECIAL POPULATIONS

Choosing Wisely Community of Practice

Michelle Science, MD

Kathryn Timberlake, PharmD

SickKids

DISCLOSURES

- K. Timberlake received financial compensation from Avir Pharmacy for consulting.

B-LACTAM ALLERGIES

- β-lactam allergies (BLAs) are most frequently reported antibiotic allergies
  - 95% of pediatric patients with suspected BLA were able to safely tolerate beta-lactam upon drug challenge

- Beta-lactam antibiotics are considered first-line therapy for many pediatric infectious diagnoses
  - Febrile neutropenia in Haematology and Oncology patients with BLA receive ciprofloxacin, gentamicin, and clindamycin

1. Mirakian et al. Clin Exp Allergy. 2015;45(2):300–27.
2. Kuniyoshi et al. Pediatr Res. 2022.
3. Freifeld et al. Clin Infect Dis. 2011;52(4):427–31.
4. Alexander et al. The Hospital for Sick Children. 2020.

DE-LABEL PROGRAM

- **De-L**abeling of **A**llergies to **Be**ta-**L**actams (De-LABeL) program
- Systematic, risk-based approach for assessing reported β-lactam allergies, and determining eligibility for an oral antibiotic challenge
  - Collaborative between ASP and Allergy
  - Includes
    - Systematic framework for obtaining allergy history
    - Program algorithm
    - Inpatient protocol for oral challenge
    - “Dear Doctor/Dear Pharmacist” letters

METHODS

- Single-centre prospective quality improvement study from January 2018 to January 2019
  - Patients with documented BLA admitted to general paediatric ward
  - Standardized allergy assessment →
    - Direct Delabel, offer OPC, or allergy referral

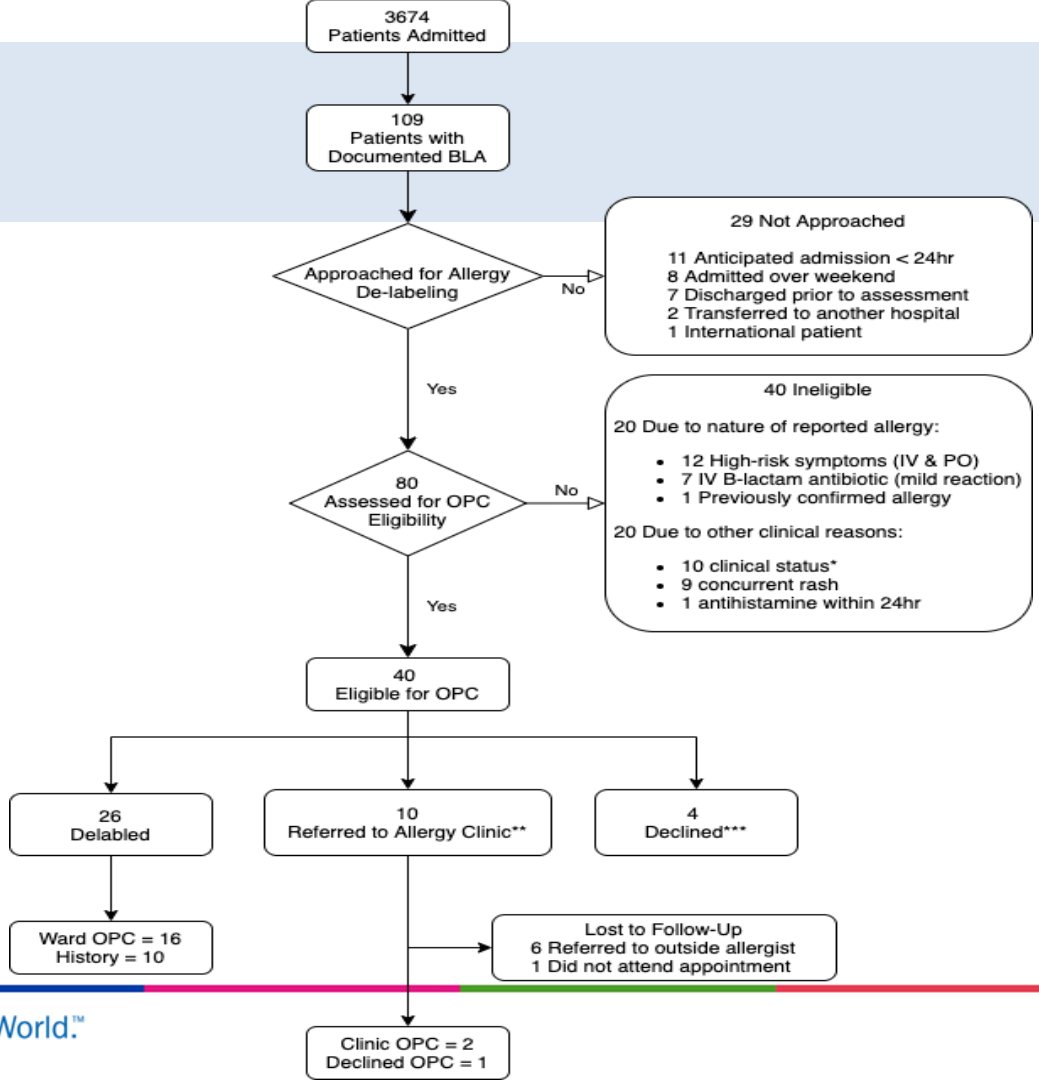
RESULTS

- 3674 patients admitted to Paediatric Medicine
  → 109 patients with documented BLA
  → 80 patients were assessed by ASP
  - Median age 8.1 years (4.8-12.9 years), 34 Females (42.5%)
  - 55 (68.7%) with underlying medical condition
  - 75 (94%) single BLA

SUSTAINABILITY

- Paediatric Medicine Pharmacists and Residents continue to implement De-Labeling program with ASP support
  - Infectious Disease service has identified and delabeled patients when appropriate in other areas of the hospital
- Expansion to other areas-
  - Outpatient – De-Label-ED project
  - Special populations – ORAL: Oncology Removing Allergy Labels

RESULTS


3674
Patients Admitted
109
Patients with
Documented BLA
Approached for Allergy
De-labeling
No
29 Not Approached
11 Anticipated admission < 24hr
8 Admitted over weekend
7 Discharged prior to assessment
2 Transferred to another hospital
1 International patient
Yes
40 Ineligible
20 Due to nature of reported allergy:
12 High-risk symptoms (IV & PO)
7 IV B-lactam antibiotic (mild reaction)
1 Previously confirmed allergy
20 Due to other clinical reasons:
10 clinical status*
9 concurrent rash
1 antihistamine within 24hr
80
Assessed for OPC
Eligibility
No
Yes
40
Eligible for OPC
26
Delabled
10
Referred to Allergy Clinic**
4
Declined***
Ward OPC = 16
History = 10
Lost to Follow-Up
6 Referred to outside allergist
1 Did not attend appointment
Clinic OPC = 2
Declined OPC = 1

DE-LABEL-ED
DELABELING BETA-LACTAM ALLERGIES IN THE ED

Dr. Michelle Science, MD; Adrienne Davis, MD; Dr. Adelle Atkinson, MD; Kathryn Timberlake, PharmD

SickKids

Epic Data from July 1, 2018 - July 1, 2019:

- 53,000 emergency visits
- 1,500 patients (2.8%) had a documented BLA

STUDY AIMS:

- To assess the impact, safety and feasibility of a beta-lactam allergy de-labeling program (the De-LABel program) in an Emergency Department (ED)
- To establish whether allergy de-labeling results in a decrease in the use of second-line antibiotic agent prescribing among patients with a self-reported beta-lactam allergy in the ED

METHODS:

- Prospective cohort study of all patients presenting to the ED with a BLA (Beta-lactam allergy)
- Patients will be assessed using a a systematic, risk based algorithm to determine whether the allergy is:
  1. High risk – referral to allergy
  2. Low risk – Oral provocation challenge
- Oral Provocation challenge – one time dose of the antibiotic (amoxicillin)
- If tolerated, allergy label removed and documentation given for primary care provider and pharmacist
- Call 2 weeks post discharge

ORAL (ONCOLOGY- REMOVING ALLERGY LABELS): DE-LABELING **BETA-LACTAM ALLERGIES IN HAEMATOLOGY/ONCOLOGY PATIENTS**

Project Lead: Maeryl Sumagang, PharmD
Co-Project Supervisors: Kathryn Timberlake, PharmD; Alicia Koo, PharmD
Collaborators: Dr. Michelle Science, MD; Dr. Sarah Alexander, MD;
Dr. Adelle Atkinson, MD; Dr. Donna Wall, MD

SickKids

RETROSPECTIVE CHART REVIEW

- **Eligibility**: Included all patients followed by the haematology or oncology team between September 1, 2021 and August 31, 2022 with an active treatment plan and a reported BLA on their electronic medical record

- **Preliminary results**: n = 60 patients included in the chart review

RETROSPECTIVE CHART REVIEW

Characteristic	Patients (*N* = 60)
Age (mean, range)	12 (2-21)
Primary Diagnosis (n, %)	
Acute Lymphoblastic Leukemia	10 (17%)
Acute Myeloid Leukemia	5 (8%)
Lymphoma	9 (15%)
CNS tumours	9 (15%)
Osteosarcoma	2 (3%)
Aplastic Anemia	1 (2%)
Fanconi's anemia	1 (2%)
MDS	2 (3%)
PTLD	1 (1.7%)
LCH	2 (3%)
BMT	15 (25%)
CAR-T	1 (2%)
Others	11 (18%)

Reported BLA (n, %)	
Penicillin	24 (40%)
Amoxicillin	26 (43%)
Amoxicillin-Clavulanate	4 (7%)
Piperacillin-tazobactam	12 (20%)
Reported Nature of BLA (n, %)	
Rash	35 (58%)
Hives	14 (23%)
Itching	4 (7%)
Shortness of breath	3 (5%)
Swelling	4 (7%)
Anaphylaxis	3 (5%)
Not reported	10 (17%)
Reported Severity of BLA (n, %)	
Low	31 (52%)
Medium	8 (13%)
High	7 (12%)
Not reported	14 (23%)

RETROSPECTIVE CHART REVIEW

Preliminary: Potential Risk for True Allergy (N=60)	
	n (%)
Minimal	3 (5%)
Low	34 (57%)
Moderate	16 (27%)
High	7 (12%)

Includes patients that have received the same/similar beta-lactam but still have the allergy label on their patient profile

Majority of patients describe their reaction as a rash on their patient profile

RETROSPECTIVE CHART REVIEW

Preliminary: Potential Risk for True Allergy (N=60)	
	n (%)
Minimal	3 (5%)
Low	34 (57%)
Moderate	16 (27%)
High	7 (12%)

Includes patients that have received the same/similar beta-lactam but still have the allergy label on their patient profile

IMPORTANCE OF COMMUNITY ANTIMICROBIAL USE

PublicHealthOntario.ca

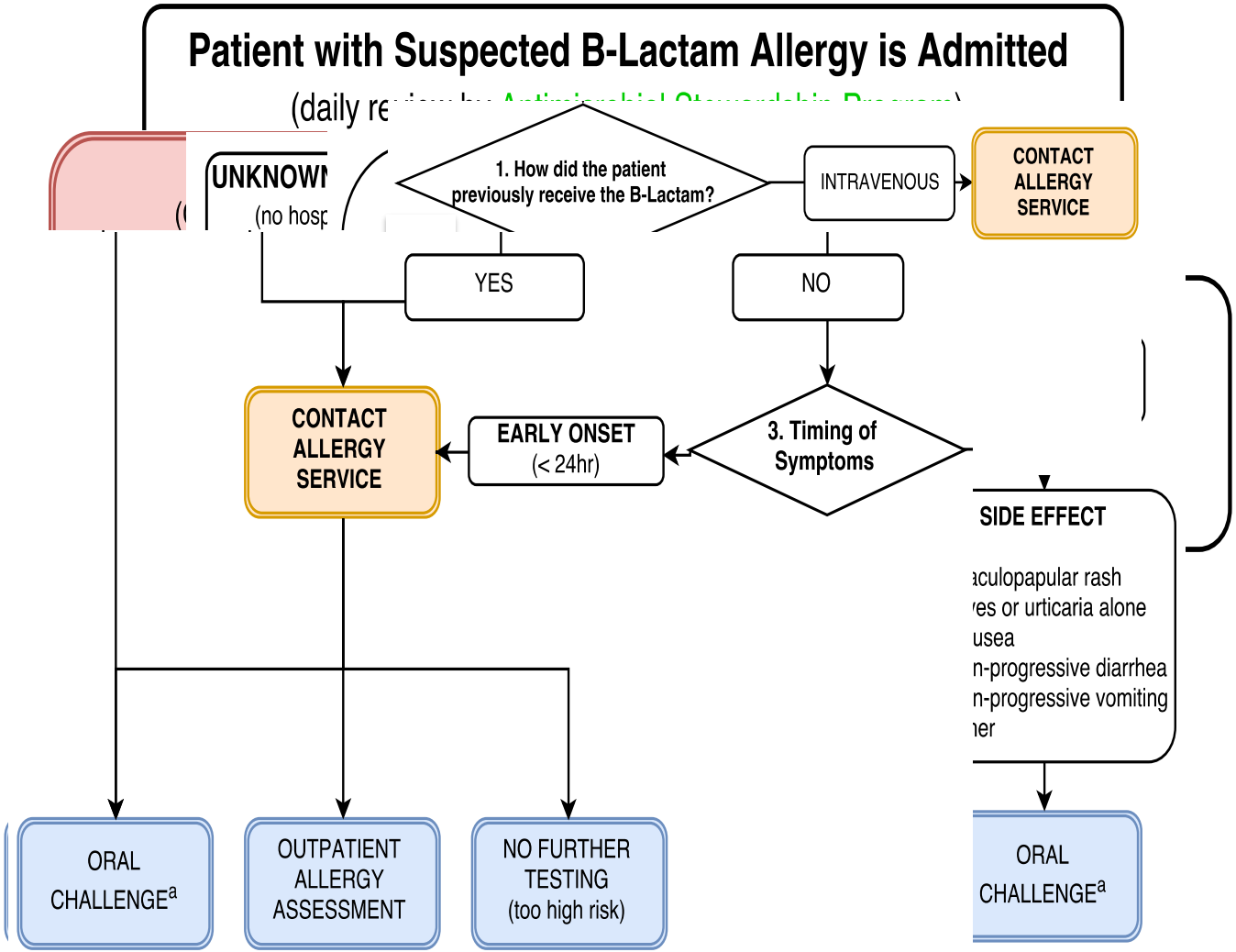
20% Humans

7% Hospital

93% Community

80% Animals

Public Health Agency of Canada. Canadian Antimicrobial Resistance Surveillance System – Report 2016. 10


Patient with Suspected B-Lactam Allergy is Admitted
UNKNOWN
(no hosp
1. How did the patient previously receive the B-Lactam?
INTRAVENOUS
CONTACT ALLERGY SERVICE
YES
NO
CONTACT ALLERGY SERVICE
EARLY ONSET (< 24hr)
3. Timing of Symptoms
SIDE EFFECT
aculopapular rash
es or urticaria alone
usea
n-progressive diarrhea
n-progressive vomiting
ner
ORAL CHALLENGE[a]
OUTPATIENT ALLERGY ASSESSMENT
NO FURTHER TESTING (too high risk)
ORAL CHALLENGE[a]

RETROSPECTIVE CHART REVIEW

Preliminary: Potential Risk for True Allergy (N=60)	
	n (%)
Minimal	3 (5%)
Low	34 (57%)
Moderate	16 (27%)
High	7 (12%)

Includes patients that have received the same/similar beta-lactam but still have the allergy label on their patient profile

Majority of patients describe their reaction as a rash on their patient profile

In this cohort of 60 patients, 37 (62%) may qualify for OPC
Patients with moderate risk can still be seen by Allergy and may qualify for OPC

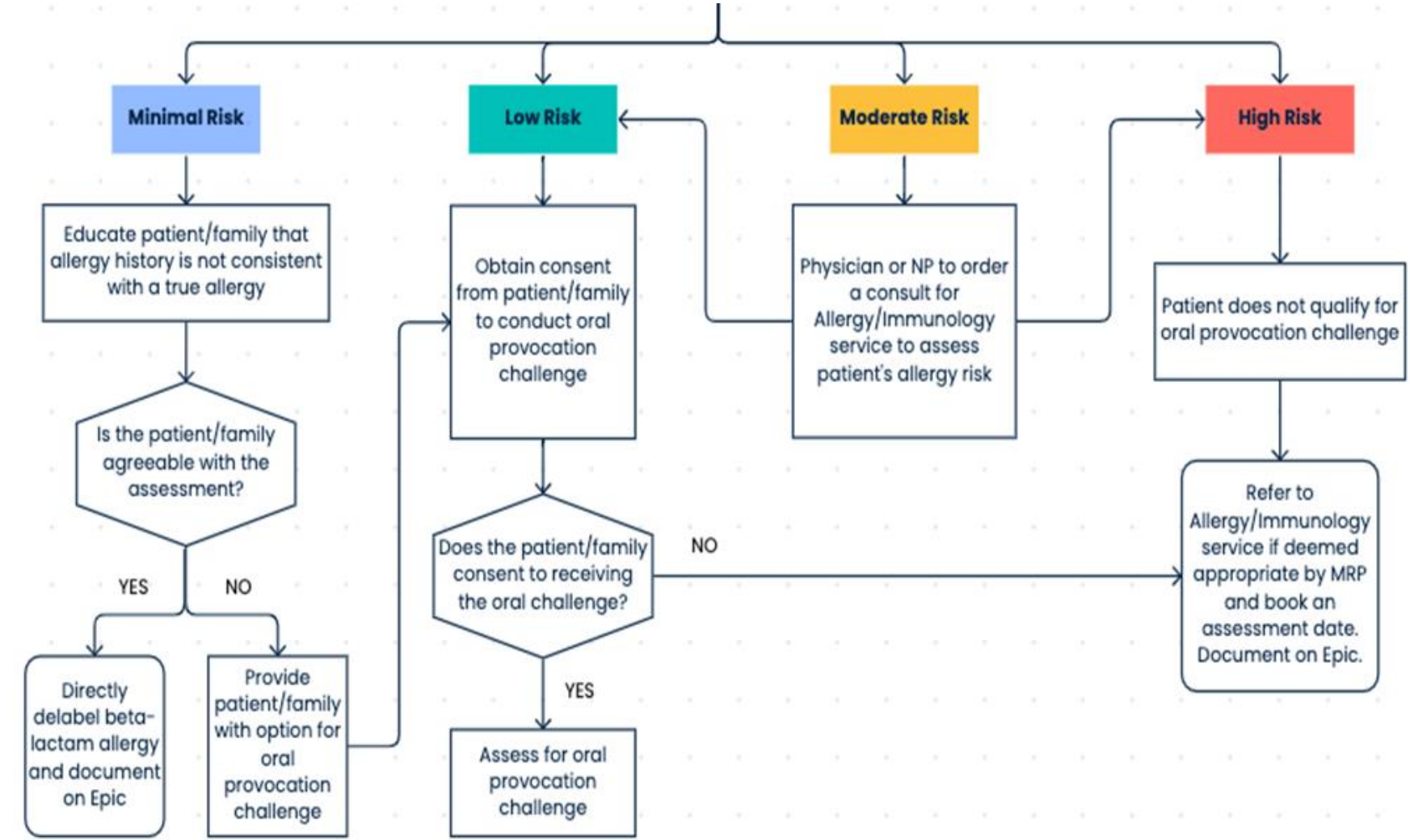
ORAL CHALLENGE INCLUSION & EXCLUSION CRITERIA

- All patients with a suspected BLA are eligible for **allergy history assessment**
- Inclusion/exclusion criteria for **oral challenge** in low-risk patients*:

Inclusion Criteria	• Patients under the service of Haematology/Oncology • Suspected beta-lactam allergy

Exclusion Criteria	• Hemodynamic instability or critically ill • Uncontrolled asthma or respiratory symptoms • Active rash (not including chronic dermatologic conditions) • Recent antihistamine use (≤72 hours) • True beta-lactam allergy based on a previously conducted allergy assessment • Pregnancy • Patients with high-risk BLA symptoms (i.e. anaphylaxis or systemic, non-immediate immunologic reaction; e.g. serum sickness, SJS, DRESS, drug-induced hemolytic anemia)

- **only patients deemed minimal/low risk for true allergy will be eligible for OPC*


Minimal Risk
Low Risk
Moderate Risk
High Risk
Educate patient/family that allergy history is not consistent with a true allergy
Is the patient/family agreeable with the assessment?
YES
NO
Directly delabel beta-lactam allergy and document on Epic
Provide patient/family with option for oral provocation challenge
Obtain consent from patient/family to conduct oral provocation challenge
Does the patient/family consent to receiving the oral challenge?
YES
Assess for oral provocation challenge
Physician or NP to order a consult for Allergy/Immunology service to assess patient's allergy risk
Patient does not qualify for oral provocation challenge
NO
Refer to Allergy/Immunology service if deemed appropriate by MRP and book an assessment date. Document on Epic.

IMPACT

- A delabeling program in the Haem/Onc population has the potential to benefit patients, families, and the healthcare system[5-9]
  - Patient use of effective first-line antibiotics
  - Avoids multiple antibiotic use which can increase risk of adverse events and complications
  - Provides narrower antimicrobial coverage
  - Decreased cost (antibiotic costs, labour costs, etc.)
  - Decreased hospital length of stay
  - Decreased rate of readmission

- Goal of developing a standardized BLA delabeling program that can be implemented after completion of the project

5. Vyles et al. Ann Allergy Asthma Immunol. 2020;124(6):558–65.
6. Shenoy et al. JAMA. 2019;321(2):188–99.
7. Macy et al. J Allergy Clin Immunol. 2014;133(3):790–6.
8. MacFadden et al. Clin Infect Dis. 2016;63(7):904–10.
9. Wu et al. Can J Hosp Pharm. 2018;71(1):29–35.

CONCLUSIONS

- The De-LABeL program provides a systematic approach to documenting and removing allergy labels when appropriate
- Oral provocation challenge is feasible and safe for expanding BLA delabeling to inpatient pediatric ward
- Future efforts include multi-centred studies and measuring the impact on antibiotic prescribing

ACKNOWLEDGEMENTS

- Dr Jacqueline Wong, Infectious Disease, McMaster Children's
- Dr. Adelle Atkinson, Allergy and Immunology, Hospital for Sick Children
- Maeryl Sumagang, Pharmacy Resident, Hospital for Sick Children, ORAL project lead
- Alicia Koo, PharmD Co-investigator for ORAL project

THANK YOU

5 Things Physicians and Patients Should Question:

Creation of Joint Canadian and American Choosing Wisely Recommendations in Pediatric Emergency Medicine

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Pediatric Emergency Medicine Quality Lead,
Alberta Children's Hospital

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN™

CAEP | ACMU

Photo credit: Getty images

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- Paul Mullan, Children's Hospital of the King's Daughters, Norfolk, VA
- Kelly Levasseur, Children's Hospital of Michigan, Detroit, MI
- Shabnam Jain, Emory University, Atlanta, GA
- Michele Nypaver, University of Michigan, Detroit, MI
- Lalit Bajaj, Children's Hospital of Colorado, Denver, CO
- Jim Chamberlain, Children's National Medical Center, Washington, DC
- Olivia Ostrow, Hospital for Sick Children, Toronto, ON
- Jennifer Thull-Freedman, Alberta Children's Hospital, Calgary, AB

Background

- Over-testing of children in EDs
  - Pain and distress
  - Radiation exposure
  - Prolonged length of stay
  - Resource consumption
- No Choosing Wisely recommendations for pediatric emergency medicine
- Task force
  - Members of American Academy of Pediatrics, Section of Emergency Medicine, Quality Transformation Committee

Methods

- Modified Delphi Method
  - ED clinicians (MD, RN) from 6 pediatric EDs surveyed
    - Suggested overused tests and treatments
    - 72 items scored and ranked
  - Top 25 list sent to AAP Section of Emergency Medicine Quality Transformation Committee members for ranking
    - Based on frequency of overuse, evidence base, harm
  - Top 5 non-duplicative items sent for approval
    - American Academy of Pediatrics, sections and committees
    - Canadian Association of Emergency Physicians
    - CW Canada/US circulated to >100 affiliated societies

Choosing Wisely®

1 Do not obtain radiographs in children with bronchiolitis, croup, asthma, or first-time wheezing.

Respiratory illnesses are among the most common reasons for pediatric emergency department (ED) visits, with wheezing being a frequently encountered clinical finding. For children presenting with first-time wheezing or with typical findings of asthma, bronchiolitis, or croup, radiographs rarely yield important positive findings and expose patients to radiation, increased cost of care, and prolonged ED length of stay. National and international guidelines emphasize the value of the history and physical examination in making an accurate diagnosis and excluding serious underlying pathology. Radiography performed in the absence of significant findings has been shown to be associated with overuse of antibiotics. Radiographs should not be routinely obtained in these situations unless findings such as significant hypoxia, focal abnormalities, prolonged course of illness, or severe distress are present. If wheezing is occurring without a clear atopic etiology or without upper respiratory tract infection symptoms (eg, rhinorrhea, nasal congestion, and/or fever), appropriate diagnostic imaging should be considered on a case-by-case basis.

2 Do not obtain screening laboratory tests in the medical clearance process of pediatric patients who require inpatient psychiatric admission unless clinically indicated.

The incidence of mental health problems in children has increased in the last two decades, with suicide surpassing homicide as the second leading cause of death in teenagers. Most children with acute mental health issues do not have underlying medical etiologies for these symptoms. A large body of evidence, in both adults and children, has shown that routine laboratory testing without clinical indication is unnecessary and adds to health care costs. Any diagnostic testing should be based on a thorough history and physical examination. Universal requirements for routine testing should be abandoned.

3 Do not order laboratory testing or a CT scan of the head for a patient with an unprovoked, generalized seizure or a simple febrile seizure who has returned to baseline mental status.

Children presenting with unprovoked, generalized seizures or simple febrile seizures who return to their baseline mental status rarely have blood test or CT scan findings that change acute management. CT scans are associated with radiation-related risk of cancer, increased cost of care, and added risk if sedation is required to complete the scan. A head CT scan may be indicated in patients with a new focal seizure, new focal neurologic findings, or high-risk medical history (such as neoplasm, stroke, coagulopathy, sickle cell disease, age <6 months).

4 Do not obtain abdominal radiographs for suspected constipation.

Functional constipation and nonspecific, generalized abdominal pain are common presenting complaints for children in emergency departments. Constipation is a clinical diagnosis and does not require testing, yet many of these children receive an abdominal radiograph. However, subjectivity and lack of standardization result in poor sensitivity and specificity of abdominal radiographs to diagnose constipation. Use of abdominal radiographs to diagnose constipation has been associated with increased diagnostic error. Clinical guidelines recommend against obtaining routine abdominal radiographs in patients with clinical diagnosis of functional constipation. The diagnosis of constipation or fecal impaction should be made primarily by history and physical examination, augmented by a digital rectal examination when indicated.

5 Do not obtain comprehensive viral panel testing for patients who have suspected respiratory viral illnesses.

Viral infections occur frequently in children and are a common reason to seek medical care. The diagnosis of a viral illness is made clinically and usually does not require confirmatory testing. Additionally, there is a lack of consistent evidence to demonstrate the impact of comprehensive viral panel (i.e., panels simultaneously testing for 8–20+ viruses) results on clinical outcomes or management, especially in emergency department settings. Hence, most national and international clinical practice guidelines do not recommend their routine use. Additionally, some viral tests are quite expensive, and obtaining nasopharyngeal swab specimens can be uncomfortable for children. Comprehensive viral panel testing can be considered in high-risk patients (eg, immunocompromised) or in situations in which the results will directly influence treatment decisions such as the need for antibiotics, performance of additional tests, or hospitalization. Testing for specific viruses might be indicated if the results of the testing may alter treatment plans (e.g., antivirals for influenza) or public health recommendations (e.g., isolation for SARS-CoV-2). For more specific recommendations related to diagnosis and management of SARS-CoV-2, please see www.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/).

Do not obtain radiographs in children with bronchiolitis, croup, asthma or first-time wheezing

- For children presenting with first-time wheezing or typical findings of asthma, bronchiolitis, or croup, radiographs rarely yield important results
  - Radiation, increased cost, prolonged stay, antibiotic overuse
  - Should not be obtained unless hypoxia, focal abnormalities, prolonged illness, or severe distress
  - Case-by-case basis for wheeze occurring without atopic etiology or without symptoms of upper respiratory tract illness

Do not obtain screening lab tests in the medical clearance of pediatric patients requiring psychiatric admission unless clinically indicated.

- Most children with acute mental health issues do not have underlying medical etiologies for these symptoms
  - A large body of evidence showing that routine laboratory testing without clinical indication is unnecessary and adds costs
  - Any diagnostic testing should be based on a thorough history and physical examination
  - Universal requirements for routine testing should be abandoned

Do not order lab testing or a CT scan of the head for pediatric patients with an unprovoked, generalized seizure or a simple febrile seizure who have returned to baseline mental status.

- Children with unprovoked, generalized seizures or simple febrile seizures who return to their baseline mental status rarely have blood test or CT scan findings that change management.
  - CT scans associated with radiation risk, cost, and added risk if sedation required
  - Head CT may be indicated if new focal seizure, new focal neurologic findings, or high-risk history (such as neoplasm, stroke, coagulopathy, sickle cell disease, age <6 months)

Do not obtain abdominal radiographs for suspected constipation.

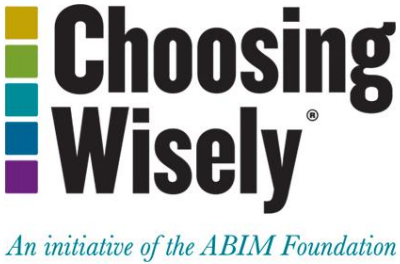
- Constipation is a clinical diagnosis and does not require an abdominal radiograph.
  - Poor sensitivity and specificity
  - Use of abdominal radiographs to diagnose constipation associated with diagnostic error
  - Diagnosis of constipation or fecal impaction should be made by history and physical examination

Do not obtain comprehensive viral panel testing for patients with suspected respiratory viral illness.

- Diagnosis of viral illness can be made clinically and usually does not require testing
  - Lack of evidence to demonstrate impact of comprehensive viral panels
  - Uncomfortable, costly
  - Consider when results directly influence treatment decisions (need for medication, additional tests, or hospitalization) or when indicated in public health recommendations

Next Steps

- Dissemination
  - PAS workshop, conferences (e.g. Canadian Association of Emergency Physicians
  - Podcasts
  - Publication
- Patient involvement
- QI opportunities



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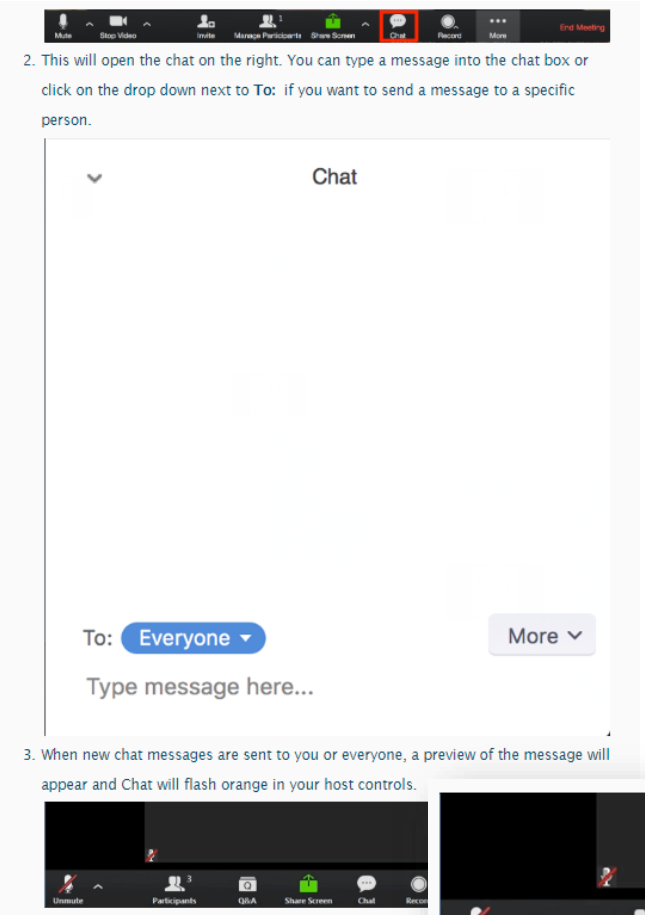
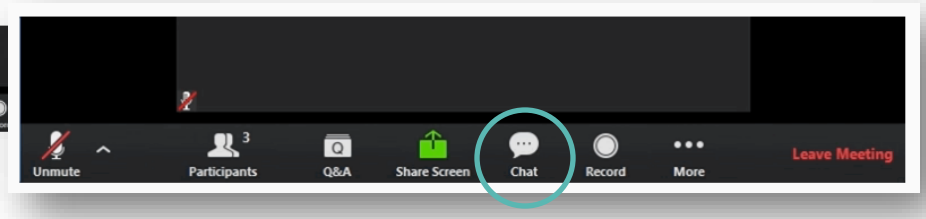


Q&A

- Please enter your questions using the **chat function**
- If you wish to contribute to the conversation, be sure to **un-mute** on the Zoom dashboard



Choosing Wisely Canada

Children's Healthcare Canada | Santé des enfants Canada