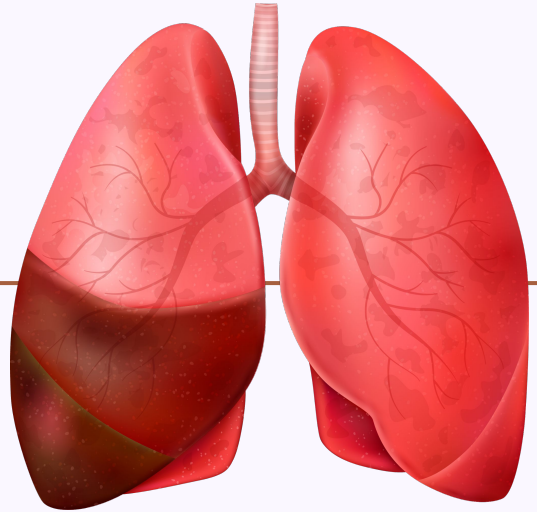
Pediatric Pulmonology (março/26)

MR4 Pneumologia Pediátrica
Mariana de Sousa Manganelli



01

ORIGINAL ARTICLE OPEN ACCESS

Risk Factors for Acute Rejection in Pediatric Lung Transplantation and Its Impact on Graft Failure

Sophie Li[1] | Spoorthi Kamepalli[1] | David Moreno McNeill[2] | Selena Li[3] | Abbas Rana[3]

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Introdução

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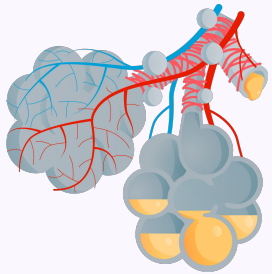
- O transplante de pulmão é um tratamento essencial para pacientes com doenças pulmonares avançadas.
- Rejeição aguda e falha do enxerto ainda são complicações comuns em pacientes.
- Em comparação com outros transplantes de órgão sólido, o transplante de pulmão apresenta taxas mais altas de rejeição aguda, provavelmente devido ao maior risco de lesão e infecção, bem como à exposição do órgão transplantado ao ambiente.



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Pré-Transplante

Idade, Etnia, Transplante Prévio, Alteração no HLA

Peri-Transplante

Tempo de Isquemia

Pós Transplante

Terapia de Indução e Manutenção

Métodos

Risk Factors for Acute Rejection in Pediatric Lung Transplantation and Its Impact on Graft Failure

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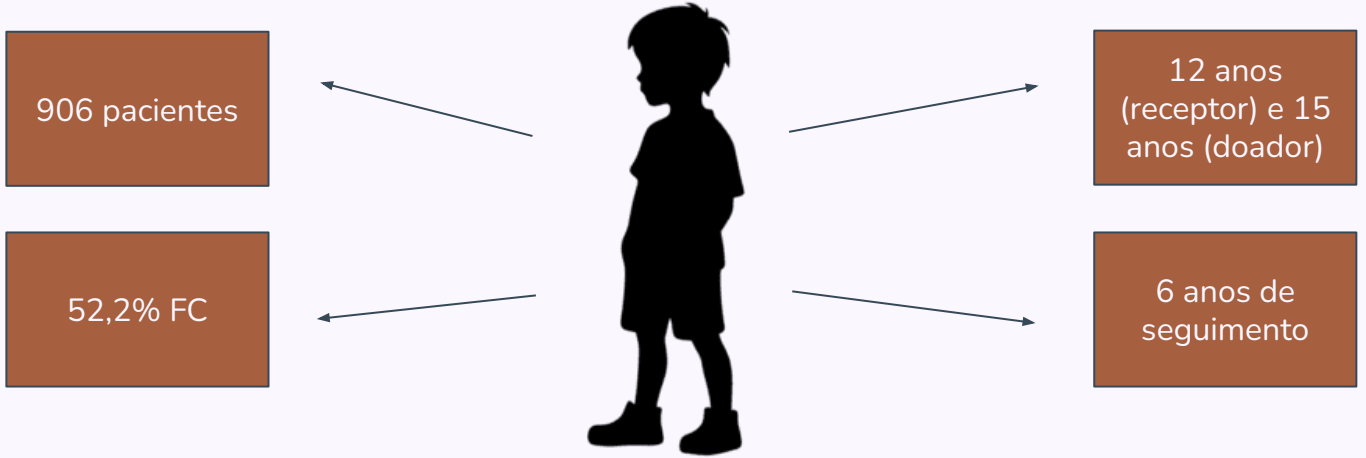
- Análise retrospectiva dos dados de nível de paciente da United Network for Organ Sharing (UNOS) de todos os pacientes listados para transplante entre 1 de outubro de 1987 e 30 de junho de 2023.



Métodos

TABLE 1 | Patient demographics.

Variable	No ($N = 906$)
Age (years, mean ± SD)	11.62 ± (5.36)
BMI (kg/m^2, mean ± SD)	17.40 ± (3.52)
Ischemic time (hours, mean ± SD)	5.30 ± (1.62)
Sex	
Female	533 (58.8%)
Male	373 (41.2%)
Ethnicity	
Caucasian	673 (74.3%)
African American	59 (6.5%)
Hispanic	146 (16.1%)
Asian	13 (1.4%)
American Indian/Alaska	8 (0.9%)
Multiracial	7 (0.8%)
Diagnosis grouping	
A (Obstructive Lung Disease)	38 (4.4%)
B (Pulmonary Vascular Disease)	140 (16.4%)
C (Cystic Fibrosis)	447 (52.2%)
D (Restrictive Lung Disease)	231 (27.0%)
Life support[a] at the time of transplant	
Yes	203 (22.4%)
No	703 (77.6%)
Induction therapy	
Yes	674 (74.4%)
No	232 (25.6%)
ATG	207 (22.9%)
Basiliximab	276 (30.5%)
Maintenance therapy	
Tacrolimus	703 (77.6%)
Cyclosporine	191 (21.1%)
Donor age	14.93 ± (12.47)

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Discussão

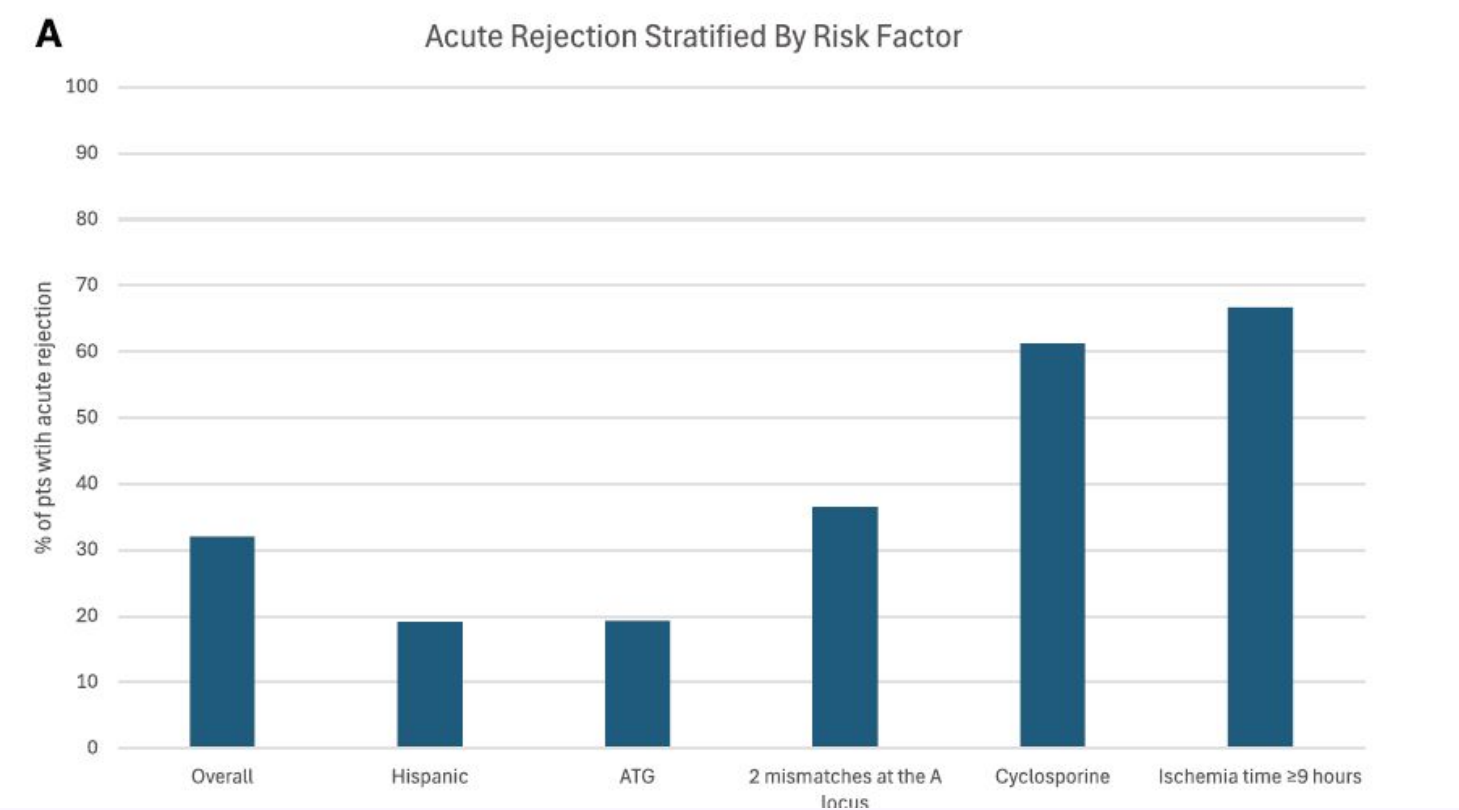
Rejeição Aguda

TABLE 2 | Multivariate logistic regression results for acute rejection.

Variable	OR (95% CI)	*P*
Age < 1 year	0.46 (0.20, 1.07)	0.071
Age 12–17 years	1.43 (0.96, 2.14)	0.081
ATG	**0.55 (0.36, 0.85)**	**0.007**
Basiliximab	0.76 (0.53, 1.10)	0.152
Cyclosporine	**4.26 (2.89, 6.27)**	**< 0.001**
BMI < 15 kg/m^2	1.34 (0.93, 1.94)	0.111
Female	1.37 (0.99, 1.89)	0.056
Hispanic	**0.56 (0.35, 0.91)**	**0.018**
Cystic fibrosis	1.25 (0.80, 1.96)	0.321
Restrictive lung disease	1.03 (0.64, 1.65)	0.903
Transfusion (pre-tx)	0.76 (0.42, 1.36)	0.351
Ventilator (pre-tx)	1.27 (0.68, 2.36)	0.449
ECMO (pre-tx)	0.72 (0.29, 1.81)	0.489
Tracheostomy (pre-tx)	0.97 (0.47, 1.98)	0.929
IV drug therapy for infection[a]	1.03 (0.73, 1.45)	0.877
Ischemia time ≥ 6 & < 9 h	0.75 (0.52, 1.08)	0.126
Ischemia time ≥ 9 h	**4.73 (1.25, 17.85)**	**0.022**
Regional share[b]	1.49 (0.93, 2.37)	0.095
National share[c]	0.89 (0.60, 1.33)	0.581
Donor history of smoking	1.52 (0.63, 3.69)	0.352
Donor death due to head trauma	1.10 (0.80, 1.51)	0.557
2 mismatches at the A locus	**1.42 (1.02, 1.96)**	**0.035**

Discussão

Rejeição Aguda



Discussão

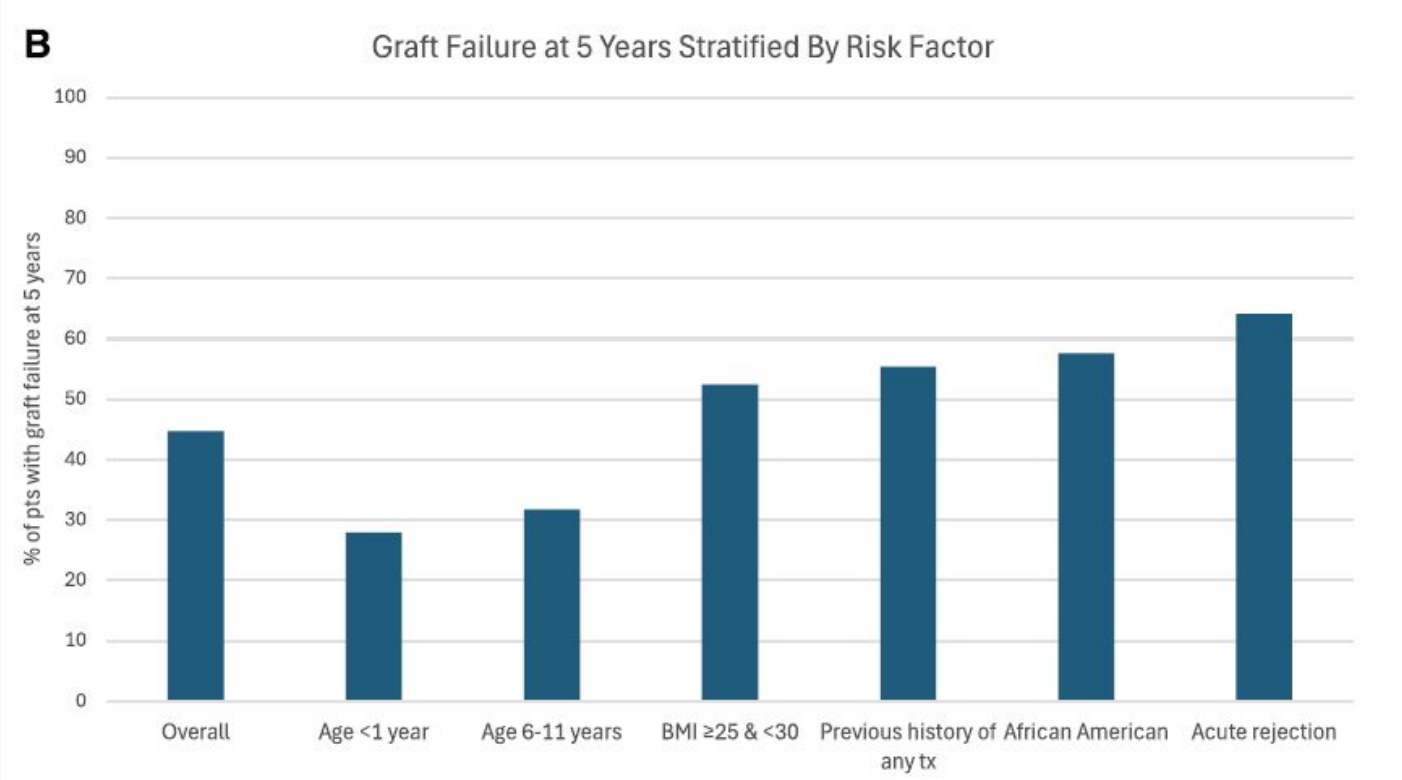
Falha no enxerto

TABLE 3 | Multivariate logistic regression results for graft failure.

Variables	HR (95% CI)	*P*
Acute rejection	**1.95 (1.61, 2.36)**	**< 0.001**
Age <1 year	**0.55 (0.33, 0.91)**	**0.021**
Age 6–11 years	**0.63 (0.43, 0.93)**	**0.021**
Age 12–17 years	0.79 (0.51, 1.22)	0.293
Basiliximab	0.99 (0.81, 1.21)	0.898
ATG	1.08 (0.86, 1.37)	0.500
Cyclosporine	0.96 (0.77, 1.19)	0.691
BMI ≥25 & <30 (kg/m^2)	**1.93 (1.14, 3.25)**	**0.014**
Female	1.13 (0.95, 1.35)	0.155
African American	**1.58 (1.13, 2.21)**	**0.008**
Previous history of any tx	**2.03 (1.40, 2.94)**	**< 0.001**
Cystic fibrosis	1.09 (0.89, 1.32)	0.404
Life support[a]	1.05 (0.72, 1.55)	0.792
Transfusion (pre-tx)	1.13 (0.71, 1.81)	0.599
Ventilator (pre-tx)	0.68 (0.45, 1.02)	0.064
ICU admission at tx	0.88 (0.62, 1.25)	0.468
Donor age < 10 years	0.84 (0.60, 1.16)	0.278
Donor age 10–19 years	1.02 (0.81, 1.29)	0.871
Donor history of smoking	1.48 (0.95, 2.31)	0.085
Donor history of other drug use[b]	1.18 (0.91, 1.53)	0.219
Donor death due to head trauma	1.09 (0.91, 1.30)	0.347
Donor death due to CNS tumor	0.42 (0.15, 1.15)	0.090
2 mismatches at A locus	1.16 (0.98, 1.39)	0.090

Discussão

Falha no enxerto



Conclusão

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- Esses achados acrescentam uma camada adicional à nossa compreensão do risco imunológico de rejeição do alotransplante e auxiliam os médicos no perfil dos pacientes para esse risco.

02

ORIGINAL ARTICLE OPEN ACCESS

Antenatal Maternal Smoking and Lung Function in Very Prematurely Born Children

Allan Jenkinson[1,2] | Sanja Zivanovic[3] | Christopher Harris[1,2] | Theodore Dassios[1,2] | Anne Greenough[2]

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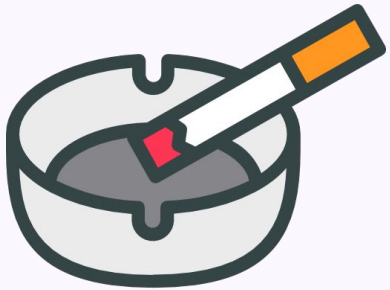
- Exposição à tabagismo intraútero está associada à crescimento fetal restrito, prematuridade e baixo peso ao nascer. Além disso, está associada a maior incidência de bronquiolite, asma e infecções respiratórias com necessidade de internação.
- Essas crianças também tem função pulmonar reduzida.



Introdução

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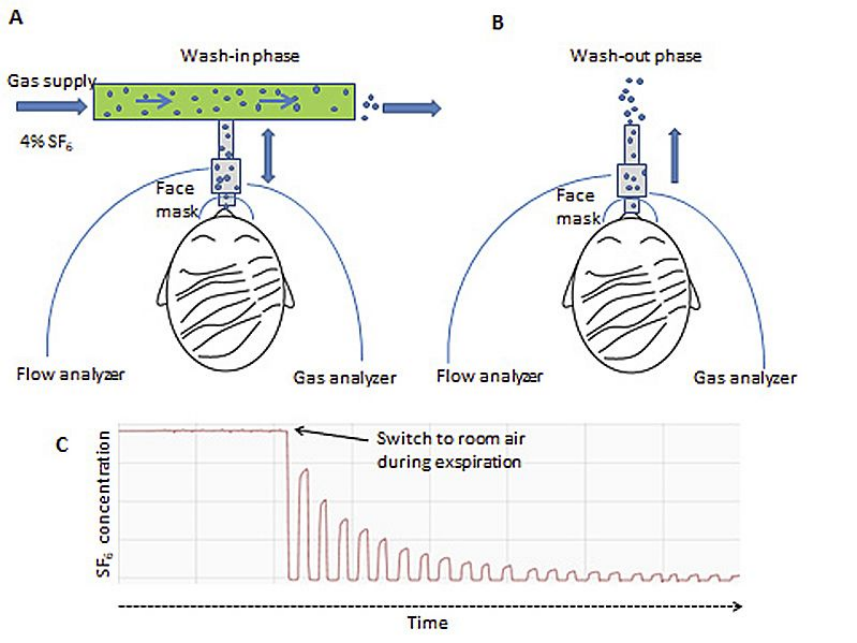

Índice de depuração pulmonar é um teste sensível de função pulmonar que mede a homogeneidade da ventilação, ou seja, quão uniformemente o ar se distribui pelos pulmões.

Introdução

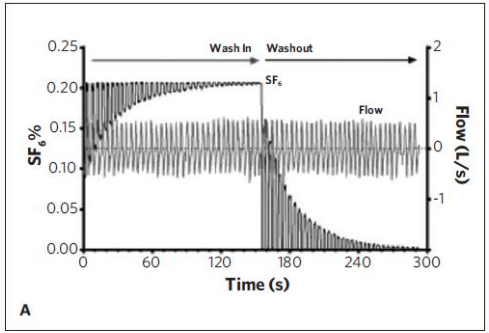

Figure 1: Multiple breath washout curves using SF_6 (**A**) and nitrogen (**B**).

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Interpretação:

Pulmão normal:

- Queda rápida da curva

Pulmão com doença:

- Queda lenta → retenção de gás

Introdução

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Considerações:

- ➔ Ele detecta doença de forma mais sensível e precoce que a espirometria porque avalia distribuição do ar, não só fluxo;
- ➔ Seu principal uso na atualizade é na Fibrose Cística;
- ➔ Não depende da cooperação da criança;

Métodos

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Nascimento

Prematuridade

01

02

Pesquisa

United Kingdom Oscillation Study (UKOS)

Follow-Up

Entre 11 - 14 anos

03

04

Função Pulmonar

Questionário + Função Pulmonar

Métodos

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TABLE 1 | Demographic differences.

	No maternal smoking $n = 175$	Maternal smoking $n = 55$	p value
Gestational Age (weeks)	27.7 (25.7–28)	27 (26.4–27.8)	0.747
Birthweight (grams)	865 (740–1050)	885 (710–1078)	0.472
Male	92 (52.6)	27 (49.1)	0.757
Antenatal corticosteroids	154 (89)	53 (96.4)	0.116
Chorioamnionitis	13 (7.4)	5 (9)	0.282
HFOV	89 (50.9)	31 (56.4)	0.537
Surfactant	168 (96)	54 (98.2)	0.684
Postnatal corticosteroids	49 (28.3)	12 (22)	0.482
BPD at 36 weeks corrected gestational age	92 (52.6)	35 (63.6)	0.164
Shared accommodation with smoker at follow up	31 (18)	37 (67)	< 0.001
Active smoking (urinary cotinine > 15 ng/mL)	12 (7)	23 (47)	< 0.001

Discussão

TABLE 2 | Lung function results according to antenatal maternal smoking exposure.

	No maternal smoking $n = 175$	Maternal smoking $n = 55$	Mean difference (95% CI)	
FEV_1	−0.80 (1.05)	−0.67 (1.1)	−0.13 (−0.46, 0.19)	0.214
FVC	−0.38 (0.98)	−0.28 (1.0)	−0.09 (−0.4, 0.2)	0.267
FEV_1/FVC	−1.5 (1.80)	−1.4 (1.9)	−0.12 (−0.68, 0.43)	0.328
PEF	−0.86 (0.84)	−0.87 (0.79)	0.01 (−0.23, 0.27)	0.440
FEF_{25}	−1.02 (0.96)	−0.93 (0.94)	−0.09 (−0.38, 0.20)	0.265
FEF_{50}	−1.21 (0.92)	−1.21 (0.89)	−0.007 (−0.28, 0.27)	0.480
FEF_{75}	−1.08 (0.88)	−1.0 (0.94)	−0.05 (−0.32, 0.22)	0.357
FEF_{25-75}	−1.45 (1.0)	−1.4 (1.1)	−0.03 (−0.38, 0.30)	0.423
RV	0.46 (1.29)	0.31 (1.26)	0.15 (−0.27, 0.57)	0.241
TLC	0.31 (1.08)	0.29 (1.02)	0.01 (−0.34, 0.37)	0.457
FRC_{pleth}	−0.03 (1.3)	−0.1 (1.2)	0.07 (−0.34, 0.49)	0.366
FRC_{he}	−0.61 (1.1)	−0.77 (0.98)	0.15 (−0.18, 0.50)	0.187
DLCO	−0.97 (1.0)	−0.73 (1.2)	−0.24 (−0.59, 0.11)	0.090
FeNO	19.66 (18.6)	19.31 (19.5)	0.34 (−5.59, 6.5)	0.456
R5Hz	0.53 (1.04)	0.62 (0.91)	−0.08 (−0.40, 0.23)	0.299
R20Hz	0.34 (1.1)	0.35 (0.98)	−0.01 (−0.34, 0.32)	0.473
LCI	7.4 (1.2)	7.8 (1.1)	−0.44 (−0.91, 0.02)	0.031

Discussão

- Crianças expostas à tabagismo intraútero e que nasceram prematuros extremos apresentaram maiores LCI na idade de 11 - 14 anos, sugerindo que apresentaram maior heterogeneicidade.

Exposição a nicotina está associada a aumento na deposição de colágeno, enfraquecimento das paredes alveolares e diminuição da musculatura respiratória.

Conclusão

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- Crianças nascidas extremamente prematuras expostas ao tabagismo intraútero tiveram um índice de depuração pulmonar mais elevado.
- Crianças nascidas muito prematuramente expostas ao tabagismo intraútero tinham maior probabilidade de serem fumadores ativos aos 11-14 anos de idade e de terem um membro do agregado familiar que fumava.

03

REVIEW OPEN ACCESS

The Role of Vitamin D in Severity and Control of Asthma in Children and Adolescents: A Systematic Review and Meta-Analysis

Joelia M. Ladeira | Olívia Zacas | Amanda Miranda Ferreira | Patrícia Chaib Gomes Stegun | Milena Baptistella Grotta | Adyleia A. D. Contrera Toro

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Introdução

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- Tem-se mostrado que a vitamina D modula vários biomarcadores inflamatórios relevantes para a patogênese do asma, incluindo IgE total, contagens de eosinófilos e citocinas como IL-4, IL-5 e IL-13.
- O objetivo dessa revisão sistemática e meta-análise é sintetizar as evidências disponíveis sobre a associação entre os níveis séricos de vitamina D e o controle e a gravidade da asma em crianças e adolescentes, e avaliar a sua correlação com a função pulmonar e biomarcadores inflamatórios.

Método

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- Esta revisão sistemática baseou-se em artigos publicados até maio de 2025.
- Bases de dados bibliográficas eletrônicas: PubMed, BVS-BIREME, Embase, EBSCOhost, Scopus, Web of Science, ProQuest e a Biblioteca Cochrane.
- Crianças e adolescentes de 2 a 18 anos, independentemente do sexo e etnia, foram considerados elegíveis, desde que o diagnóstico de asma seguisse critérios claramente definidos e reconhecidos internacionalmente.

Método

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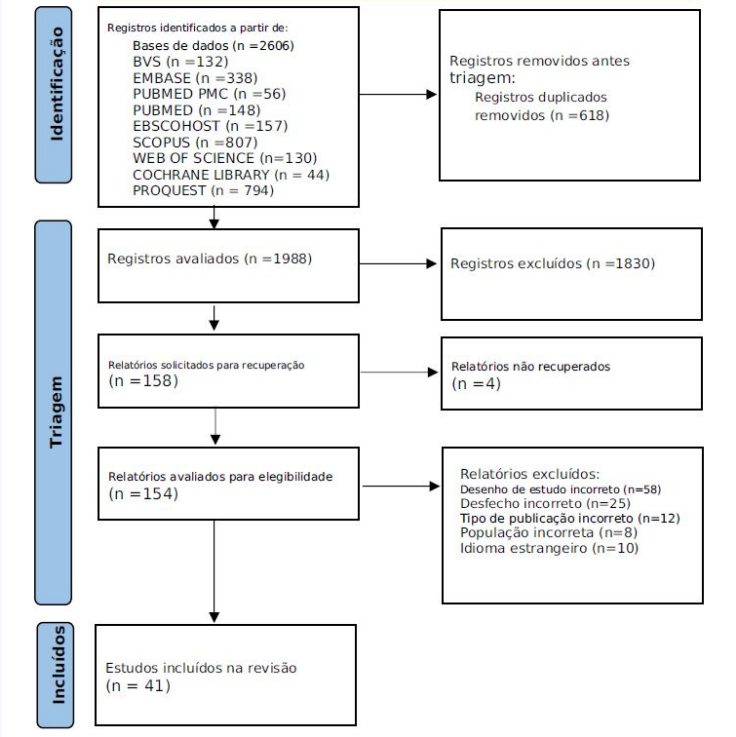

Resultado

The Role of Vitamin D in Severity and Control of Asthma in Children and Adolescents: A Systematic Review and Meta-Analysis

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- **Resultados da Meta-Análise Principal:** Níveis séricos de 25(OH)D significativamente mais baixos em crianças e adolescentes com asma em comparação com controles.

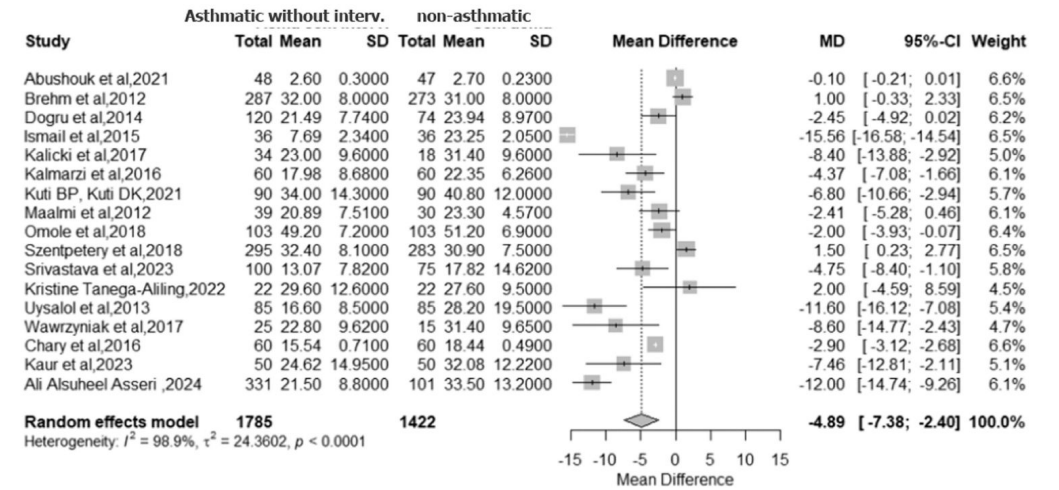

FIGURE 3 | Meta-analysis of mean vitamin D levels: asthmatic individuals without intervention versus non-asthmatic.

Resultado

The Role of Vitamin D in Severity and Control of Asthma in Children and Adolescents: A Systematic Review and Meta-Analysis

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Department of Pediatric, State University of Campinas (UNICAMP), Campinas, São Paulo, Brazil

- **Resultados da Meta-Análise de Subgrupos:** Tendência não significativa para níveis mais altos de vitamina D na asma controlada.

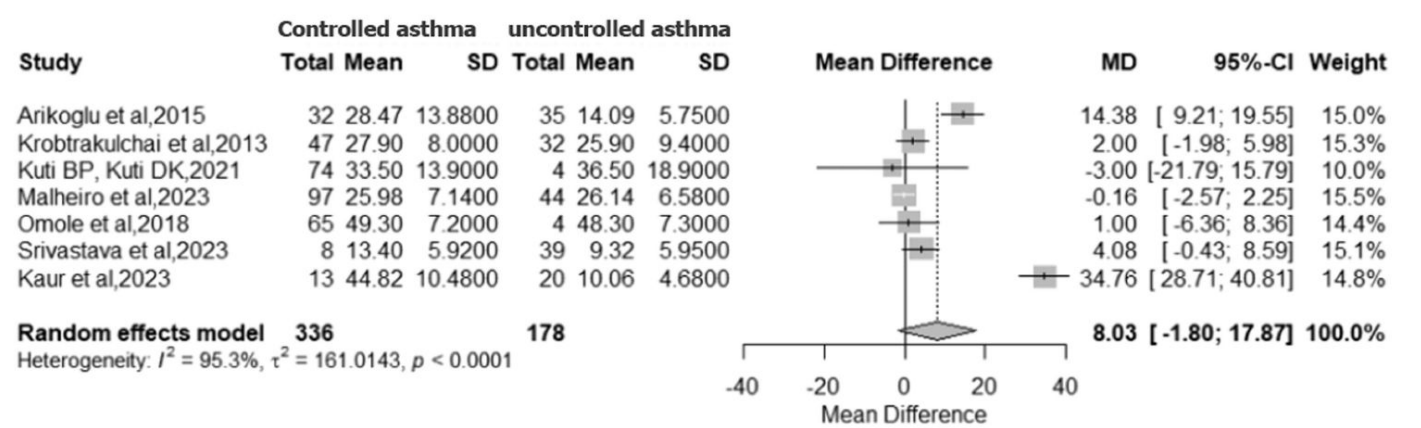

FIGURE 4 | Meta-analysis of mean vitamin D levels: Controlled asthma versus uncontrolled asthma.

Resultado

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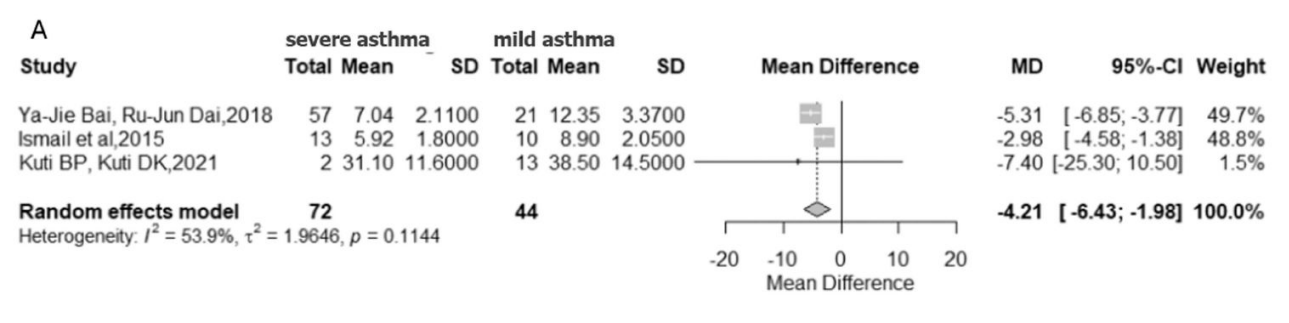
- **Resultados da Meta-Análise de Subgrupos:** Crianças com asma grave apresentaram níveis de vitamina D significativamente mais baixos em comparação com aquelas com doença leve.



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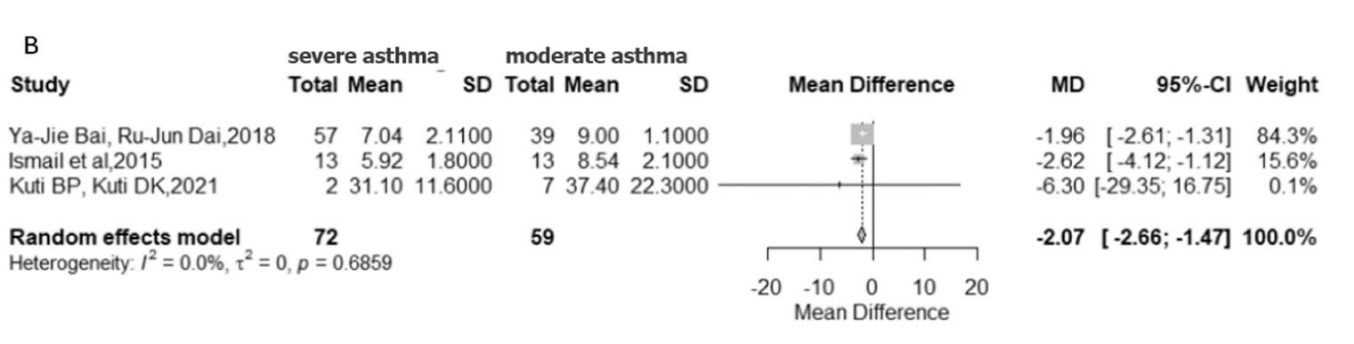
- **Resultados da Meta-Análise de Subgrupos:** A asma grave foi associada significativamente a níveis mais baixos de vitamina D do que a asma moderada.



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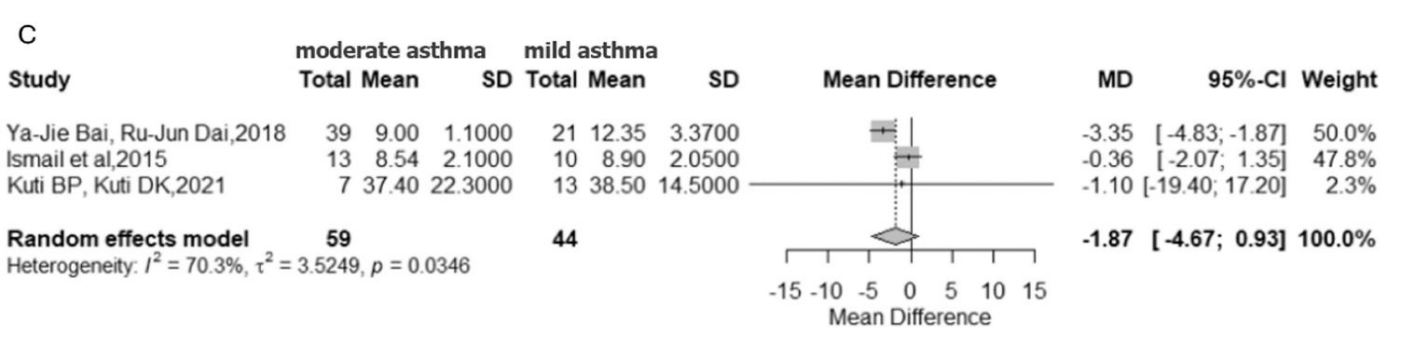
- **Resultados da Meta-Análise de Subgrupos:** Não foram observadas diferenças significativas entre moderada e leve.



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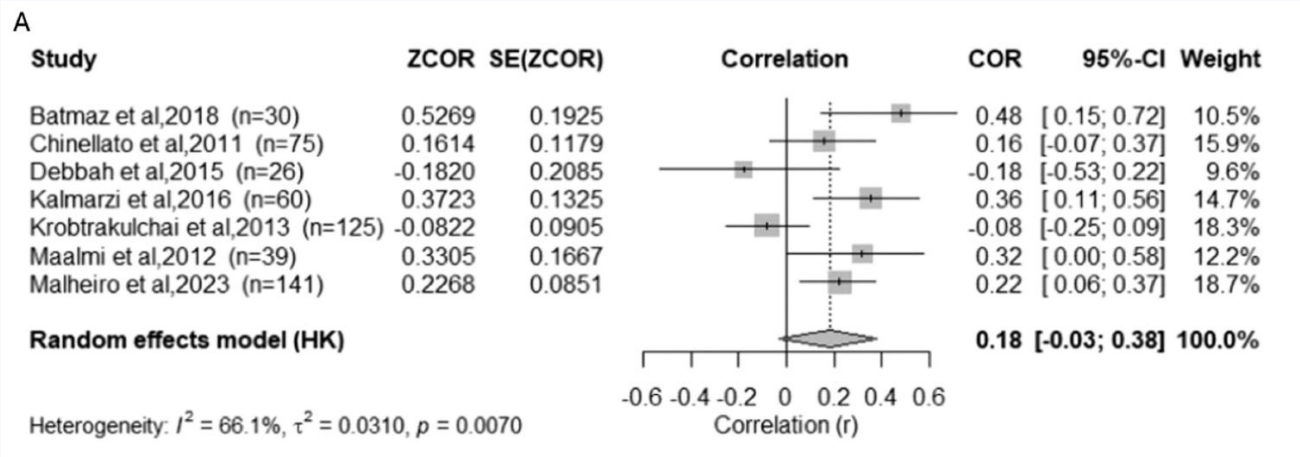
- **Resultados da Meta-Análise de Correlação:** Não foram observadas relações significativas entre concentrações séricas de 25(OH)D e VEF_1 (% previsto).



Resultado

- **Resultados da Meta-Análise de Correlação:** Foi encontrada uma correlação negativa moderada entre vitamina D e IgE total, enquanto correlações com contagens de eosinófilos e IL-10 não foram significativas.

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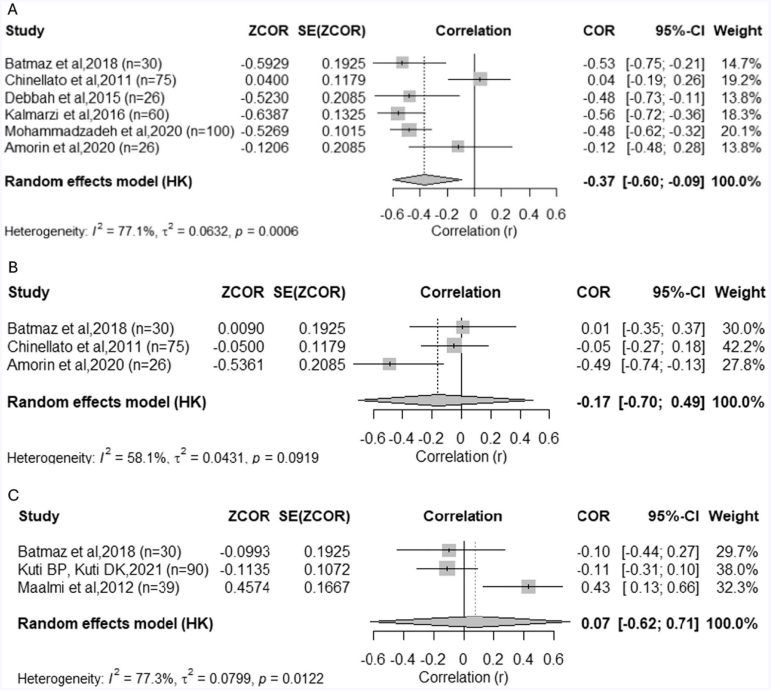

Conclusão

The Role of Vitamin D in Severity and Control of Asthma in Children and Adolescents: A Systematic Review and Meta-Analysis

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- As atuais evidências embasam uma associação e não relação causal.
- Embora esses achados apoiem um papel imunomodulador potencial da vitamina D, as evidências atuais não justificam seu uso como estratégia terapêutica independente.

04

REVIEW OPEN ACCESS

Disparities in Access to Cystic Fibrosis Therapy Across Countries

Bulent Karadag

Marmara University, Division of Pediatric Pulmonology, Istanbul, Turkey

Introdução

Disparities in Access to Cystic Fibrosis Therapy Across Countries

Bulent Karadag

Marmara University, Division of Pediatric Pulmonology, Istanbul, Turkey

- Ao longo da última década os moduladores de CFTR mudaram o prognótico e o tratamento da FC.
- Esses avanços, entretanto, são uma realidade principalmente em países desenvolvidos.
- Pacientes portadores de FC vivendo em paises subdesenvolvidos e em desenvolvimento foram excluídos desses ganhos.

Mapeando

Disparities in Access to Cystic Fibrosis Therapy Across Countries

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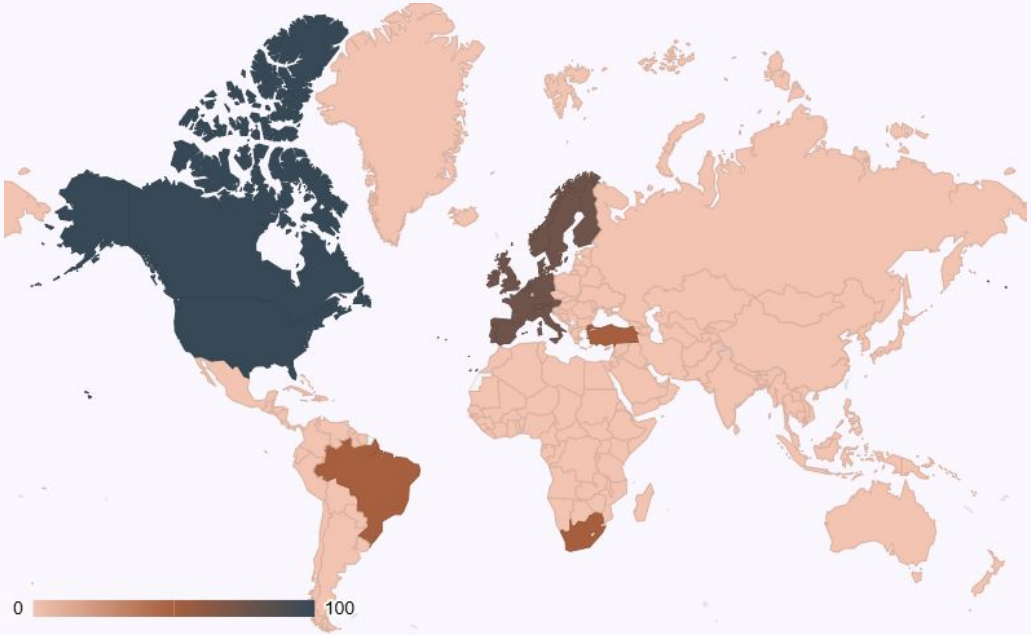

Diagnóstico

Disparities in Access to Cystic Fibrosis Therapy Across Countries

Bulent Karadag

Marmara University, Division of Pediatric Pulmonology, Istanbul, Turkey

- Diagnóstico tardio ainda é a principal barreira no manejo adequado.
- O diagnóstico depende de três componentes principais: triagem neonatal, acesso ao teste de cloreto no suor e análise genética abrangente.
- Algumas variações genéticas podem não ser abrangidas em triagens neonatais e testes genéticos.

Tratamento

Disparities in Access to Cystic Fibrosis Therapy Across Countries

Bulent Karadag

Marmara University, Division of Pediatric Pulmonology, Istanbul, Turkey

- Custo médio em países desenvolvidos: $ 10.000 por paciente por ano.
- As empresas farmacêuticas podem estar relutantes em registar medicamentos para a FC nos países de baixa e média renda devido às pequenas populações de pacientes e aos custos administrativos.
- Falta de centros especializados em cuidados multidisciplinares.
- A elegibilidade para terapia moduladora depende da distribuição da variante CFTR > A prevalência de F508del variou de 7% a 98% entre os países

Tratamento

Disparities in Access to Cystic Fibrosis Therapy Across Countries

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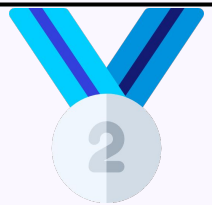
Tratamento Ideal

Off-Label



Ex.:
Gentamicina EV nebulizada
Fisioterapia

Consequências

Disparities in Access to Cystic Fibrosis Therapy Across Countries

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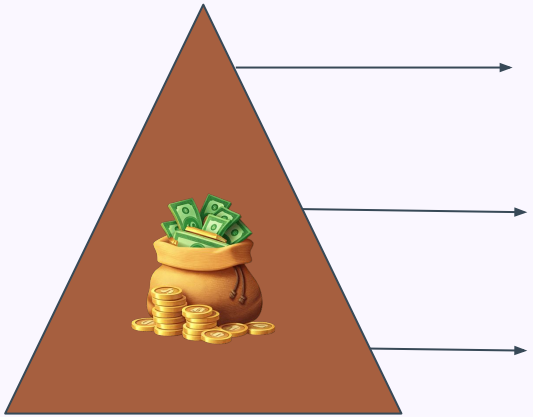
Expectativa de Vida



Desenvolvidos: 60 anos

Em desenvolvimento: 25 anos

Subdesenvolvidos: 10 - 15 anos

Conclusão

Disparities in Access to Cystic Fibrosis Therapy Across Countries

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- Melhorar a equidade nos cuidados de FC requer uma acção coordenada em termos de diagnóstico, infra-estruturas, preços e políticas.
- Os avanços no tratamento da FC devem beneficiar os pacientes, independentemente de onde nasceram ou dos recursos do seu sistema de saúde.

05

LETTER

Pediatric Provider Experiences With Single Maintenance and Reliever Therapy (SMART)

Michelle K. Trivedi[1,2,3] | Michelle Spano[1] | Deicy Mejia Agudelo[1] | Stephanie Simms[1] | Christine Frisard[2] | Grace W. Ryan[2] | Melissa Goulding[2] | James G. Krings[4] | Stephenie Lemon[2] | Nancy Byatt[2,5,6] | Jerry A. Krishnan[7] | Sybil Crawford[8] | Lori Pbert[2]

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Introdução

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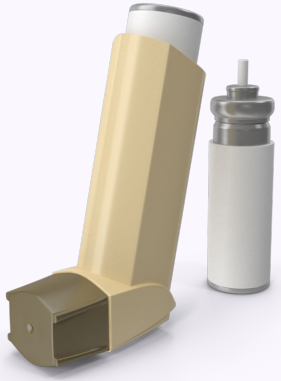

Terapia SMART

- Recomendação EUA (2020) para crianças > 4 anos.
- Esquema preferencial para manejo da crise aguda com evidência robusta em adultos e justa em crianças

Baixa prescrição

Métodos

Pediatric Provider Experiences With Single Maintenance and Reliever Therapy (SMART)

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- Maio a outubro de 2025
- Profissionais de saúde da atenção primária
- Região central de Massachesetts
- Questionário elaborado com base no Consolidated Framework for Implementation Research (CFIR) 2.0 respondido por e-mail.

Métodos

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Inovação	SMART como uma abordagem baseada em evidências
Processo	Etapas necessárias para a implementação
Indivíduos	Profissionais de saúde e pacientes
Ambiente Interno	Ambiente Clínico
Ambiente Externo	Influências externas no uso do SMART

Resultados

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Participantes

Setenta e sete médicos de atenção primária pediátrica (taxa de resposta = 75%) concluíram a pesquisa

Experiência

Mediana de 16 anos de prática (variação de 1 a 34 anos)

Pacientes

Atendiam 51 a 100 crianças com asma anualmente.
A maioria (> 65%) de pacientes de baixa renda e com seguro público.

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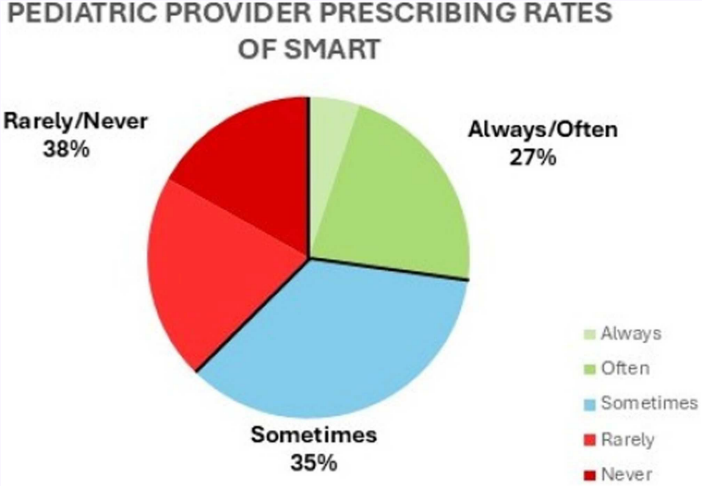
1. Prática de Prescrição



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2. Percepção de Benefício

CFIR domain	Survey item	Response[a] *n* (%)
Perceived Benefits of SMART (Facilitators to Implementation)		
Innovation	*SMART offers a **simpler one-inhaler regimen** for my patients*	69 (90%)
	*SMART has been **shown to reduce asthma exacerbations** and I think it could help my patients*	49 (64%)
Process	*SMART **could help my patients with their daily medication adherence***	46 (60%)
Individuals	*SMART is **more in line with what my patients are actually doing** (using their daily inhaler only when they are sick/symptomatic)*	34 (45%)
	*A potential change to SMART **offers an opportunity for shared decision making** with my patients/families*	23 (31%)

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3. Barreiras para Adoção

Barriers to SMART Adoption (Barriers to Implementation)

Innovation	*I have **not received clear guidance on how to use SMART** within my practice*	29 (38%)
	I do not want to change what my patient is already taking	20 (26%)
	*I am **not yet comfortable prescribing SMART** for my patients*	12 (16%)
	I am concerned SMART would not work in an acute asthma attack	3 (4%)
	I am not convinced by the current evidence for SMART in children 5–11	0 (0%)
	I am not convinced by the current evidence for SMART in children 12 +	0 (0%)
Process	*I am **unsure of when to switch** my patients to SMART*	33 (44%)
	*I am **unsure of which age groups can use** SMART*	23 (30%)
	I do not have time to explain such a big shift in asthma care to patients/families	13 (17%)
Individuals	*I **am concerned my patients will keep using their albuterol** (and not understand to stop using albuterol for quick-relief)*	47 (62%)
	My patients prefer a nebulizer for rescue	29 (38%)
Inner setting	*I have **concerns about my patients being able to use SMART** in other locations (e.g., school, ER, hospital, urgent care)*	20 (26%)
	*I am **concerned that schools will not be able to implement** SMART for my patients*	18 (23%)
Outer setting	*I am **concerned that insurance may not cover 2 inhalers** so my patient can bring one to school*	36 (47%)
	I am concerned about FDA labeling for inhaled corticosteroid/formoterol for rescue use	5 (6%)

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4. Recursos Necessários

Resources Needed for SMART Adoption

Individuals	*I would **appreciate having more communication with schools** to ensure they are able to implement SMART for my patients if/when I prescribe it*	46 (60%)
Inner setting	*I would **appreciate a brief (< 45 min) SMART training** or education on how and when to prescribe SMART to my patients with asthma*	57 (74%)
	*I **need help with creating updated SMART Asthma Action Plans** for patients and schools*	50 (65%)
	*I would **appreciate a brief (< 30 min) SMART training for an existing staff** in my practice so they can become and "asthma champion" in our practice with knowledge on SMART use*	54 (70%)
	*I want **access to brief, online videos** to help my patients understand SMART*	41 (53%)
	*I would **want a brief (< 45 min) in-person education** for providers and staff*	43 (56%)
	*I would **want a brief video-based education** for providers and staff*	40 (52%)
	*I want an **online repository of SMART resources** for myself and my patients*	40 (52%)
	I want other SMART resources (e.g., handouts for providers and patients)	7 (9%)

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Pediatric Provider Experiences With Single Maintenance and Reliever Therapy (SMART)

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5. Interesse em Ensaios Clínico

Interest in a Real-World Clinical Trial

I would like to see a real-world clinical trial in the United States that examines whether SMART is better at improving asthma outcomes for children, compared to the two-inhaler approach.	56 (73%)

Discussão

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Ambiente Interno + Externo

- Prescrições arraigadas;
- Protocolos de iniciação pouco claros;
- Dificuldade de integração do fluxo de trabalho;
- Preocupação das faíliares continuarem usando B2 isolado;
- Barreiras de coordenação em ambientes de cuidados;
- Cobertura de saúde inconsistentes;

06

IMAGE CORRESPONDENCE

Contralateral Pneumothorax With Severe Pneumomediastinum and Right Upper Lobe Atelectasis in Pediatric Influenza

Hiroyuki Nagao | Kazuhiro Yamamoto | Tadashi Shinomoto | Satoshi Onishi | Yo Okizuka

Department of Pediatrics, Takatsuki General Hospital, Osaka, Japan

Introdução

Contralateral Pneumothorax With Severe Pneumomediastinum and Right Upper Lobe Atelectasis in Pediatric Influenza

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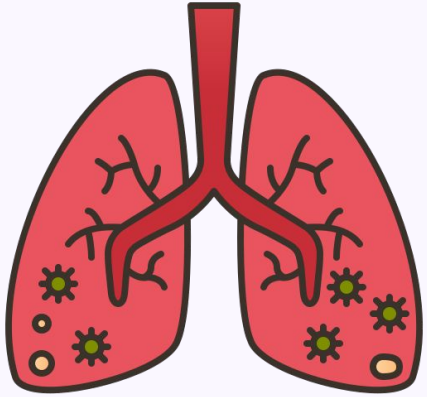
Caso Radiológico:

- Dois pacientes com SRAG por Influenza A, incluindo um A/H3.
- Padrão radiográfico surpreendentemente semelhante e incomum



Casos Clínicos

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6 anos

Asmático

11 anos

Não asmático
Necessitou de SABA

Atelectasia acentuada do lobo superior direito (LSD) acompanhada de pneumotórax paradoxal contralateral à esquerda e pneumomediastino proeminente

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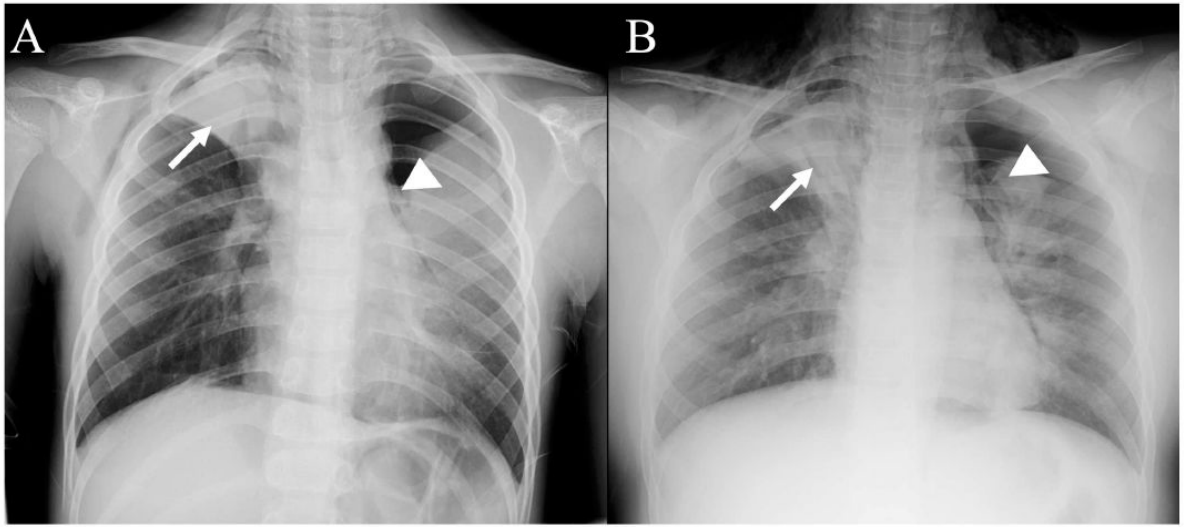

FIGURE 1 | Chest radiographs. Chest radiographs of two pediatric patients with influenza infection in different seasons. (A) Case 1 (6-year-old with asthma). (B) Case 2 (11-year-old without history of asthma) demonstrates marked right upper lobe atelectasis (arrows). A contralateral left-sided pneumothorax is also visible (arrowheads). Diffuse haziness involving both lung fields is also observed, suggestive of diffuse lung involvement.

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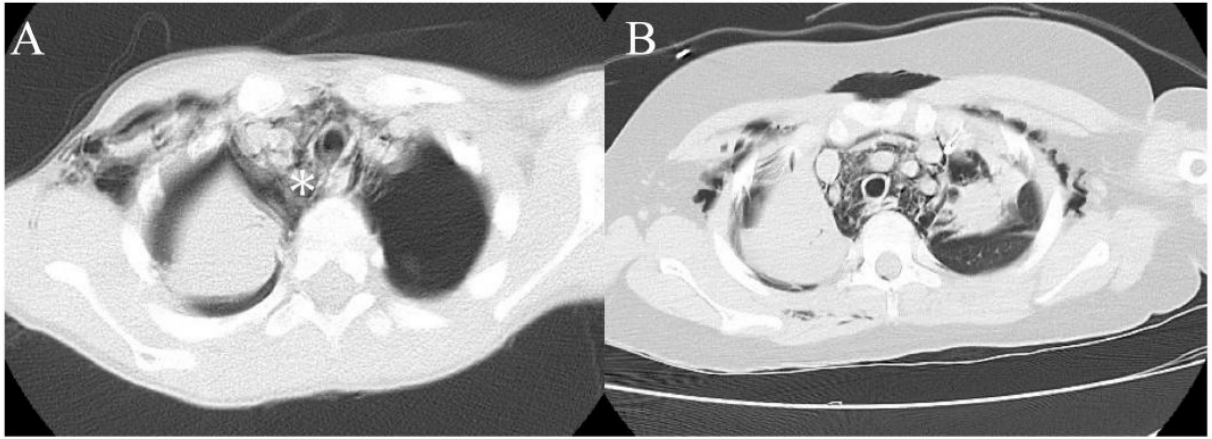

FIGURE 2 | Chest CT. (A) Axial chest CT image of Case 1 showing severe pneumomediastinum (asterisks) with air tracking along the bronchovascular bundles and associated subcutaneous emphysema in the chest wall. (B) Axial chest CT image of Case 2 demonstrating similar findings, including severe pneumomediastinum.

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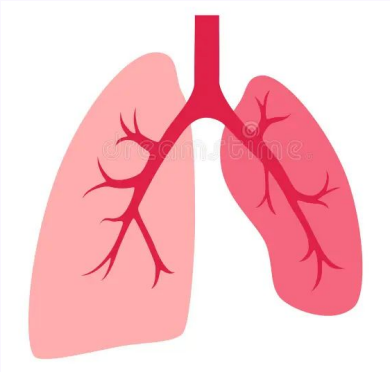
- A atelectasia do LSD tem sido relatada como um achado comum em exames de imagem na pneumonia por influenza pediátrica.
- Foi observado em aproximadamente um terço dos pacientes.



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01 Perda aguda de volume no LSD

02 Rápida hiperinsuflação compensatória do pulmão contralateral esquerdo

03 Fragilidade alveolar induzida pela gripe e à tosse paroxística

04 Ruptura alveolar com dissecção de ar ao longo das bainhas broncovasculares

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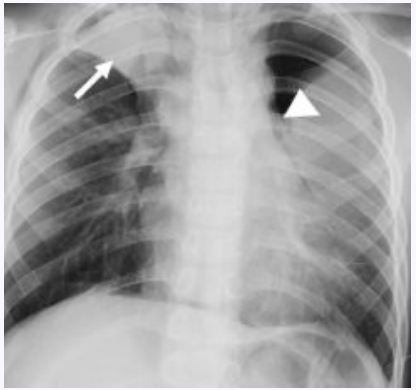
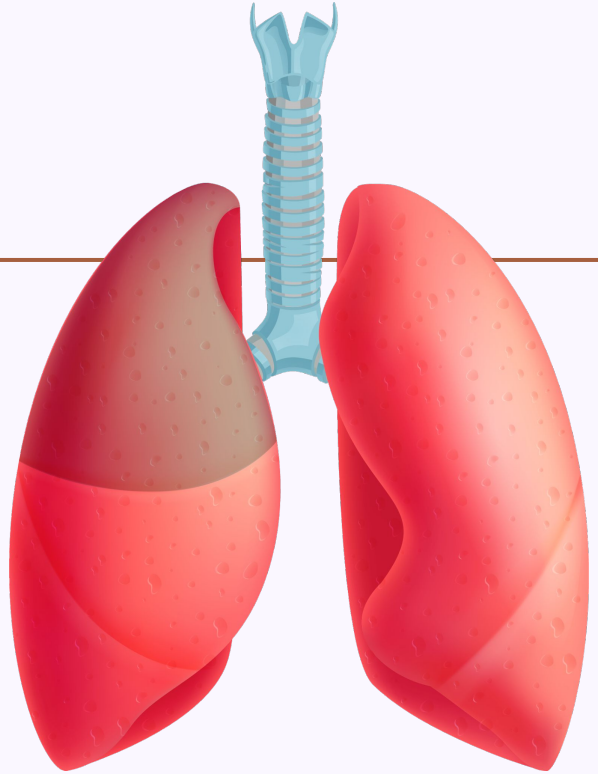
Na gripe pediátrica, a atelectasia focal, particularmente aquela que envolve o lobo superior direito, não deve ser considerada um achado benigno ou isolado. Em vez disso, pode servir como um sinal de alerta para vazamentos de ar contralaterais iminentes, independentemente do diagnóstico prévio de asma.





Obrigada!