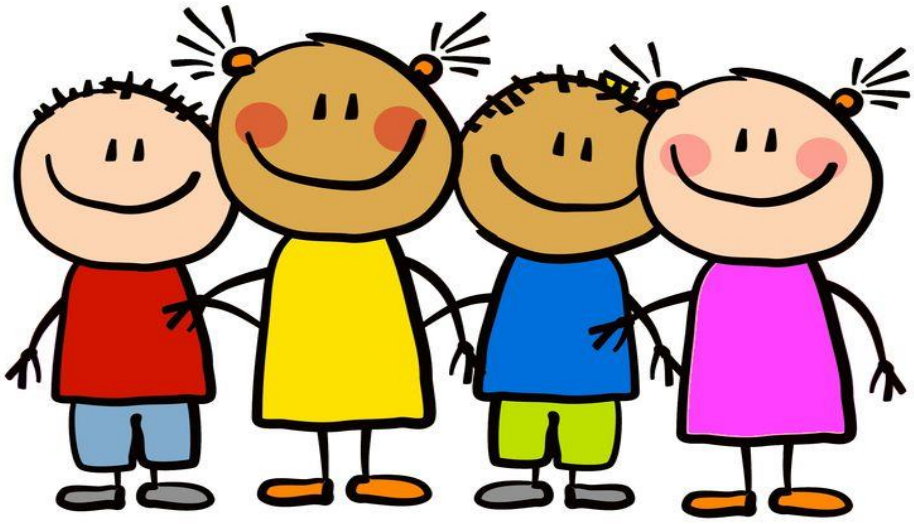
University Hospitals Bristol NHS
NHS Foundation Trust

General Paediatrics

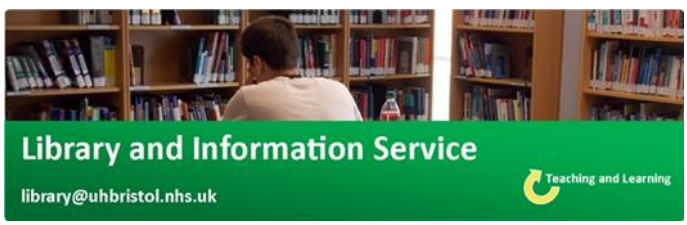
Evidence Update

May 2018

(Bimonthly)



Respecting everyone
Embracing change
Recognising success
Working together
Our hospitals.



Training Calendar 2018

***All sessions are one** hour*

May (13.00-14.00)

14th (Mon) **Literature Searching**

22nd (Tue) **Critical Appraisal**

30th (Wed) **Statistics**

June (12.00-13.00)

7th (Thu) **Literature Searching**

11th (Mon) **Critical Appraisal**

20th (Wed) **Statistics**

28th (Thu) **Literature Searching**

Your Outreach Librarian – Helen Pullen

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Literature searching: We provide a literature searching service for any library member. For those embarking on their own research it is advisable to book some time with one of the librarians for a one-to-one session where we can guide you through the process of creating a well-focused literature research. Please email requests to library@uhbristol.nhs.uk

Key Papers

If you would like any of the papers in full text then please email the library: library@uhbristol.nhs.uk

PLoS Med. 2018 Feb 28;15(2):e1002507. doi: 10.1371/journal.pmed.1002507. eCollection 2018 Feb.

Diet during pregnancy and infancy and risk of allergic or autoimmune disease: A systematic review and meta-analysis.

Garcia-Larsen V1,2, Ierodiakonou D2,3, Jarrold K3, Cunha S2, Chivinge J3, Robinson Z3, Geoghegan N3, Ruparelia A3, Devani P3, Trivella M4, Leonardi-Bee J5, Boyle RJ3,6.

Author information

Abstract

BACKGROUND:

There is uncertainty about the influence of diet during pregnancy and infancy on a child's immune development. We assessed whether variations in maternal or infant diet can influence risk of allergic or autoimmune disease.

METHODS AND FINDINGS:

Two authors selected studies, extracted data, and assessed risk of bias. Grading of Recommendations Assessment, Development and Evaluation (GRADE) was used to assess certainty of findings. We searched Medical Literature Analysis and Retrieval System Online (MEDLINE), Excerpta Medica dataBASE (EMBASE), Web of Science, Central Register of Controlled Trials (CENTRAL), and Literatura Latino Americana em Ciências da Saúde (LILACS) between January 1946 and July 2013 for observational studies and until December 2017 for intervention studies that evaluated the relationship between diet during pregnancy, lactation, or the first year of life and future risk of allergic or autoimmune disease. We identified 260 original studies (964,143 participants) of milk feeding, including 1 intervention trial of breastfeeding promotion, and 173 original studies (542,672 participants) of other maternal or infant dietary exposures, including 80 trials of maternal (n = 26), infant (n = 32), or combined (n = 22) interventions. Risk of bias was high in 125 (48%) milk feeding studies and 44 (25%) studies of other dietary exposures. Evidence from 19 intervention trials suggests that oral supplementation with nonpathogenic micro-organisms (probiotics) during late pregnancy and lactation may reduce risk of eczema (Risk Ratio [RR] 0.78; 95% CI 0.68-0.90; I2 = 61%; Absolute Risk Reduction 44 cases per 1,000; 95% CI 20-64), and 6 trials suggest that fish oil supplementation during pregnancy and lactation may reduce risk of allergic sensitisation to egg (RR 0.69, 95% CI 0.53-0.90; I2 = 15%; Absolute Risk Reduction 31 cases per 1,000; 95% CI 10-47). GRADE certainty of these findings was moderate. We found weaker support for the hypotheses that breastfeeding promotion reduces risk of eczema during infancy (1

intervention trial), that longer exclusive breastfeeding is associated with reduced type 1 diabetes mellitus (28 observational studies), and that probiotics reduce risk of allergic sensitisation to cow's milk (9 intervention trials), where GRADE certainty of findings was low. We did not find that other dietary exposures-including prebiotic supplements, maternal allergenic food avoidance, and vitamin, mineral, fruit, and vegetable intake-influence risk of allergic or autoimmune disease. For many dietary exposures, data were inconclusive or inconsistent, such that we were unable to exclude the possibility of important beneficial or harmful effects. In this comprehensive systematic review, we were not able to include more recent observational studies or verify data via direct contact with authors, and we did not evaluate measures of food diversity during infancy.

CONCLUSIONS:

Our findings support a relationship between maternal diet and risk of immune-mediated diseases in the child. Maternal probiotic and fish oil supplementation may reduce risk of eczema and allergic sensitisation to food, respectively.

Eur Respir J. 2018 Feb 7;51(2). pii: 1701579. doi: 10.1183/13993003.01579-2017. Print 2018 Feb.

Intravenous magnesium sulfate for acute wheezing in young children: a randomised double-blindtrial.

Pruikkonen H1, Tapiainen T2,3, Kallio M2,3, Dunder T2,3, Pokka T2,3, Uhari M2,3, Renko M2,3.

Author information

Abstract

Magnesium sulfate has been shown to be an effective treatment in older children with asthma exacerbations, but it has not been investigated in acute severe virus-induced wheezing in young children.The study enrolled 61 children aged 6 months to 4 years. Inclusion criteria were severe wheezing, classified as a score of ≥6 points as assessed by the Respiratory Distress Assessment Instrument (RDAI) after initial treatment with salbutamol, and the symptoms of acute viral infection. The children were randomly allocated to receive either an infusion of magnesium sulfate (40 mg·kg-1) or 0.9% sodium chloride as a placebo infusion for 20 min. Primary outcome measure was mean change in RDAI scores from baseline to 6 h after the treatment.Change in the severity of wheezing from baseline to 6 h after the treatment, as measured by mean±sd RDAI scores, was 4.7±2.6 in the magnesium sulfate group and 4.2±4.2 in the placebo group (difference 0.5, 95% CI -1.3 to 2.3, p=0.594).Intravenous magnesium sulfate was ineffective in treating acute severe virus-induced wheezing in young children, in contrast to the previous efficacy demonstrated in older children.

N Engl J Med. 2018 Mar 8;378(10):891-901. doi: 10.1056/NEJMoa1710988. Epub 2018 Mar 3.

Quintupling Inhaled Glucocorticoids to Prevent Childhood Asthma Exacerbations.

Jackson DJ1, et al

BACKGROUND:

Asthma exacerbations occur frequently despite the regular use of asthma-controller therapies, such as inhaledglucocorticoids. Clinicians commonly increase the doses of inhaled glucocorticoids at early signs of loss of asthma control. However, data on the safety and efficacy of this strategy in children are limited.

METHODS:

We studied 254 children, 5 to 11 years of age, who had mild-to-moderate persistent asthma and had had at least one asthmaexacerbation treated with systemic glucocorticoids in the previous year. Children were treated for 48 weeks with maintenance low-dose inhaled glucocorticoids (fluticasone propionate at a dose of 44 µg per inhalation, two inhalations twice daily) and were randomly assigned to either continue the same dose (low-dose group) or use a quintupled dose (high-dose group; fluticasone at a dose of 220 µg per inhalation, two inhalations twice daily) for 7 days at the early signs of loss of asthma control ("yellow zone"). Treatment was provided in a double-blind fashion. The primary outcome was the rate of severe asthma exacerbations treated with systemic glucocorticoids.

RESULTS:

The rate of severe asthma exacerbations treated with systemic glucocorticoids did not differ significantly between groups (0.48 exacerbations per year in the high-dose group and 0.37 exacerbations per year in the low-dose group; relative rate, 1.3; 95% confidence interval, 0.8 to 2.1; P=0.30). The time to the first exacerbation, the rate of treatment failure, symptom scores, and albuterol use during yellow-zone episodes did not differ significantly between groups. The total glucocorticoid exposure was 16% higher in the high-dose group than in the low-dose group. The difference in linear growth between the high-dose group and the low-dose group was -0.23 cm per year (P=0.06).

CONCLUSIONS:

In children with mild-to-moderate persistent asthma treated with daily inhaled glucocorticoids, quintupling the dose at the early signs of loss of asthma control did not reduce the rate of severe asthma exacerbations or improve other asthma outcomes and may be associated with diminished linear growth. (Funded by the National Heart, Lung, and Blood Institute; STICS ClinicalTrials.gov number, NCT02066129 .).

JAMA. 2018 Mar 13;319(10):1002-1012. doi: 10.1001/jama.2018.0948.

Effect of a Pediatric Early Warning System on All-Cause Mortality in Hospitalized PediatricPatients: The EPOCH Randomized Clinical Trial.

Parshuram CS, et al

IMPORTANCE:

There is limited evidence that the use of severity of illness scores in pediatric patients can facilitate timely admission to the intensive care unit or improve patient outcomes.

OBJECTIVE:

To determine the effect of the Bedside Paediatric Early Warning System (BedsidePEWS) on all-cause hospital mortality and late admission to the intensive care unit (ICU), cardiac arrest, and ICU resource use.

DESIGN, SETTING, AND PARTICIPANTS:

A multicenter cluster randomized trial of 21 hospitals located in 7 countries (Belgium, Canada, England, Ireland, Italy, New Zealand, and the Netherlands) that provided inpatient pediatric care for infants (gestational age ≥37 weeks) to teenagers (aged ≤18 years). Participating hospitals had continuous physician staffing and subspecialized pediatric services. Patient enrollment began on February 28, 2011, and ended on June 21, 2015. Follow-up ended on July 19, 2015.

INTERVENTIONS:

The BedsidePEWS intervention (10 hospitals) was compared with usual care (no severity of illness score; 11 hospitals).

MAIN OUTCOMES AND MEASURES:

The primary outcome was all-cause hospital mortality. The secondary outcome was a significant clinical deterioration event, which was defined as a composite outcome reflecting late ICU admission. Regression analyses accounted for hospital-level clustering and baseline rates.

RESULTS:

Among 144 539 patient discharges at 21 randomized hospitals, there were 559 443 patient-days and 144 539 patients (100%) completed the trial. All-cause hospital mortality was 1.93 per 1000 patient discharges at hospitals with BedsidePEWS and 1.56 per 1000 patient discharges at hospitals with usual care (adjusted between-group rate difference, 0.01 [95% CI, -0.80 to 0.81 per 1000 patient discharges]; adjusted odds ratio, 1.01 [95% CI, 0.61 to 1.69]; P = .96). Significant clinical deterioration events occurred during 0.50 per 1000 patient-days at hospitals with BedsidePEWS vs 0.84 per 1000 patient-days at hospitals with usual care (adjusted between-group rate difference, -0.34 [95% CI, -0.73 to 0.05 per 1000 patient-days]; adjusted rate ratio, 0.77 [95% CI, 0.61 to 0.97]; P = .03).

CONCLUSIONS AND RELEVANCE:

Implementation of the Bedside Paediatric Early Warning System compared with usual care did not significantly decrease all-cause mortality among hospitalized pediatric patients. These findings do not support the use of this system to reduce mortality.

TRIAL REGISTRATION:

clinicaltrials.gov Identifier: NCT01260831.

Pediatrics. 2018 Feb;141(2). pii: e20173068. doi: 10.1542/peds.2017-3068. Epub 2018 Jan 16.

Accuracy of the Urinalysis for Urinary Tract Infections in Febrile Infants 60 Days and Younger.

Tzimenatos L1,et al

OBJECTIVES:

Reports of the test accuracy of the urinalysis for diagnosing urinary tract infections (UTIs) in young febrile infants have been variable. We evaluated the test characteristics of the urinalysis for diagnosing UTIs, with and without associated bacteremia, in young febrileinfants.

METHODS:

We performed a planned secondary analysis of data from a prospective study of febrile infants ≤60 days old at 26 emergency departments in the Pediatric Emergency Care Applied Research Network. We evaluated the test characteristics of the urinalysis for diagnosing UTIs, with and without associated bacteremia, by using 2 definitions of UTI: growth of ≥50 000 or ≥10 000 colony-forming units (CFUs) per mL of a uropathogen. We defined a positive urinalysis by the presence of any leukocyte esterase, nitrite, or pyuria (>5 white blood cells per high-power field).

RESULTS:

Of 4147 infants analyzed, 289 (7.0%) had UTIs with colony counts ≥50 000 CFUs/mL, including 27 (9.3%) with bacteremia. For these UTIs, a positive urinalysis exhibited sensitivities of 0.94 (95% confidence interval [CI]: 0.91-0.97), regardless of bacteremia; 1.00 (95% CI: 0.87-1.00) with bacteremia; and 0.94 (95% CI: 0.90-0.96) without bacteremia. Specificity was 0.91 (95% CI: 0.90-0.91) in all groups. For UTIs with colony counts ≥10 000 CFUs/mL, the sensitivity of the urinalysis was 0.87 (95% CI: 0.83-0.90), and specificity was 0.91 (95% CI: 0.90-0.92).

CONCLUSIONS:

The urinalysis is highly sensitive and specific for diagnosing UTIs, especially with ≥50 000 CFUs/mL, in febrile infants ≤60days old, and particularly for UTIs with associated bacteremia.

N Engl J Med. 2018 Mar 22;378(12):1121-1131. doi: 10.1056/NEJMoa1714855.

A Randomized Trial of High-Flow Oxygen Therapy in Infants with Bronchiolitis.

Franklin D1, et al

BACKGROUND:

High-flow oxygen therapy through a nasal cannula has been increasingly used in infants with bronchiolitis, despite limited high-quality evidence of its efficacy. The efficacy of high-flow oxygen therapy through a nasal cannula in settings other than intensive care units (ICUs) is unclear.

METHODS:

In this multicenter, randomized, controlled trial, we assigned infants younger than 12 months of age who had bronchiolitis and a need for supplemental oxygen therapy to receive either high-flow oxygen therapy (high-flow group) or standard oxygen therapy (standard-therapy group). Infants in the standard-therapy group could receive rescue high-flow oxygen therapy if their condition met criteria for treatment failure. The primary outcome was escalation of care due to treatment failure (defined as meeting ≥3 of 4 clinical criteria: persistent tachycardia, tachypnea, hypoxemia, and medical review triggered by a hospital early-warning tool). Secondary outcomes included duration of hospital stay, duration of oxygen therapy, and rates of transfer to a tertiary hospital, ICU admission, intubation, and adverse events.

RESULTS:

The analyses included 1472 patients. The percentage of infants receiving escalation of care was 12% (87 of 739 infants) in the high-flow group, as compared with 23% (167 of 733) in the standard-therapy group (risk difference, -11 percentage points; 95% confidence interval, -15 to -7; P<0.001). No significant differences were observed in the duration of hospital stay or the duration of oxygen therapy. In each group, one case of pneumothorax (<1% of infants) occurred. Among the 167 infants in the standard-therapy group who had treatment failure, 102 (61%) had a response to high-flow rescue therapy.

CONCLUSIONS:

Among infants with bronchiolitis who were treated outside an ICU, those who received high-flow oxygen therapy had significantly lower rates of escalation of care due to treatment failure than those in the group that received standard oxygen therapy. (Funded by the National Health and Medical Research Council and others; Australian and New Zealand Clinical Trials Registry number, ACTRN12613000388718

Departmental News

News, Research, Conferences, Training etc
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June 6th: **Terrace (Level 4, Education Centre)** *12.00-14.00*

June 19th: **Welcome Centre, BRI** *10.00-16.00*

July 3rd: **Welcome Centre, BRI** *10.00-16.00*

July 4th: **Canteen (Level 9, BRI)** *12.00-14.00*

August 8th: **Foyer, Education Centre** *12.00-14.00*

August 29th: **Foyer, St Michael's Hospital** *12.00-14.00*

September 5th: **Canteen (Level 9, BRI)** *12.00-14.00*

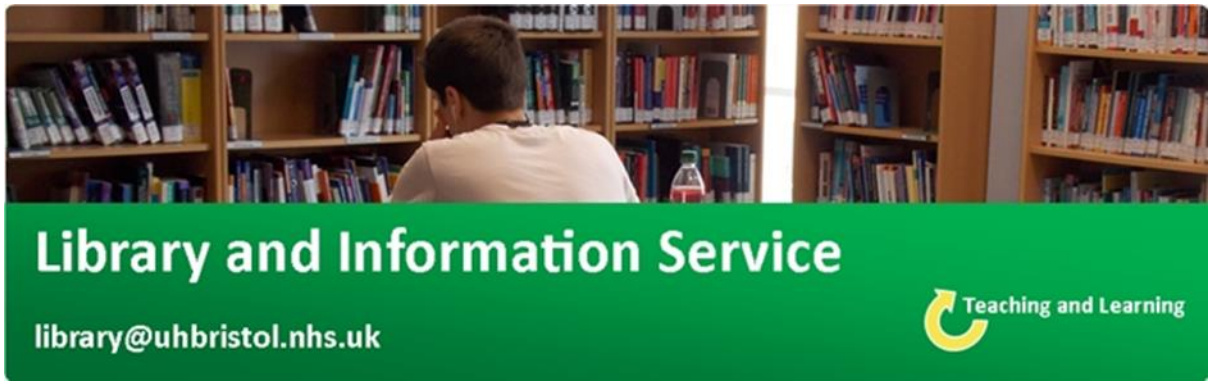
September 11th: **Welcome Centre, BRI** *10.00-16.00*

October 3rd: **Terrace (Level 4, Education Centre)** *12.00-14.00*

November 7th: **Canteen (Level 9, BRI)** *12.00-14.00*

December 5th: **Foyer, Education Centre** *12.00-14.00*

December 11th: **Welcome Centre, BRI** *10.00-16.00*



Library Opening Times

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Level Five, Education and Research Centre

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