Non-invasive versus invasive respiratory support in preterm infants in the delivery room: systematic review and meta-analysis

Georg M Schmölzer,[1 2 3] Manoj Kumar,[1 2] Gerhard Pichler,[1 2 3] Khalid Aziz,[1 2] Megan O'Reilly,[1 2] Po-Yin Cheung[1 2]

[1]Department of Pediatrics, University of Alberta, Edmonton, Canada
[2]Neonatal Research Unit, Royal Alexandra Hospital, Edmonton, Canada
[3]Division of Neonatology, Department of Pediatrics, Medical University, Graz, Austria
Correspondence to: G M Schmölzer
georg.schmoelzer@me.com

Cite this as: *BMJ* 2013;347:f5980
doi: 10.1136/bmj.f5980

This is a summary of a paper that was published on bmj.com as *BMJ* 2013;347:f5980

bmj.com
Research: Effectiveness of antenatal corticosteroids in reducing respiratory disorders in late preterm infants (*BMJ* 2011;342:d1696)

STUDY QUESTION

Does nasal continuous positive airway pressure (CPAP) compared with intubation at birth prevent death and bronchopulmonary dysplasia (BPD) in very preterm infants?

SUMMARY ANSWER

One additional infant could survive to 36 weeks without BPD for every 25 babies treated with nasal CPAP in the delivery room rather than being intubated.

WHAT IS KNOWN AND WHAT THIS PAPER ADDS

Providing nasal CPAP at birth has been advocated for avoiding endotracheal intubation and mechanical ventilation, which has the potential to reduce the incidence of BPD. This review found that preterm infants should be supported with nasal CPAP immediately after birth to improve survival to 36 weeks without BPD.

Selection criteria for studies

We searched PubMed, Embase, and the Cochrane Central Register of Controlled Trials using a predefined algorithm, reviewed abstracts from annual meetings of the Pediatric Academic Society (2000–12), and performed a manual search of references in narrative and systematic reviews. Search terms included "infant", "newborn", "resuscitation", "continuous positive airway pressure", and "sustained inflation". We included randomised controlled trials that evaluated the effect of nasal CPAP compared with intubation and mechanical ventilation in preterm infants born at <32 weeks' gestation and presented the outcomes of death or BPD, or both (defined as the need for oxygen support or mechanical ventilation at 36 weeks' corrected gestation), during hospital stay.

Primary outcome

Our primary outcome measure was death or BPD, or both, in a preterm population <32 weeks' gestation.

Main results and role of chance

Four randomised controlled trials met the inclusion criteria (1296 infants in the nasal CPAP group and 1486 in the intubation group). All the trials reported BPD independently at 36 weeks' corrected gestation, with borderline significance in favour of the nasal CPAP group. No difference in death was observed. Pooled analysis showed a significant benefit for the combined outcome of death or BPD, or both, at 36 weeks' corrected gestation for babies treated with nasal CPAP, with a number needed to treat of 25.

Bias, confounding, and other reasons for caution

All the studies described adequate randomisation. We assessed all studies as being at high risk of bias for blinding of participants and caregivers, as it was not feasible to do so for the type of interventions being compared. However, all the studies provided objective criteria for defining their primary outcome and failure of treatment. All the studies provided inhospital outcome data for all randomised participants, and infants in all the studies were analysed by intention to treat.

Study funding/potential competing interests

GMS is a recipient of a Banting postdoctoral fellowship, Canadian Institutes of Health Research, and an Alberta Innovates—Health Solutions clinical fellowship. The sponsor of the study had no role in the study design; data collection, analysis, and interpretation; or writing of the report. We have no competing interests.

Results of primary outcomes

Outcomes at 36 weeks, corrected gestation	Nasal CPAP group	Intubation group	Relative risk (95% CI)	Risk difference (95% CI)	Number needed to treat
Death	145/1296	180/1486	0.88 (0.68 to 1.14)	−0.02 (−0.04 to 0.01)	—
BPD	383/1182	461/1354	0.91 (0.82 to 1.01)	−0.03 (−0.07 to 0.01)	—
Death or BPD, or both	532/1296	641/1486	0.91 (0.84 to 0.99)	−0.04 (−0.07 to −0.00)	25

CPAP=continuous positive airway pressure; BPD=bronchopulmonary dysplasia.

Specialist geriatric medical assessment for patients discharged from hospital acute assessment units: randomised controlled trial

Judi Edmans,[1] Lucy Bradshaw,[1] Matthew Franklin,[2] John Gladman,[1] Simon Conroy[3]

[1]University of Nottingham, Division of Rehabilitation and Ageing, Medical School, Queen's Medical Centre, Nottingham NG7 2UH, UK
[2]University of Nottingham, Division for Social Research in Medicines and Health, Medical School, Queen's Medical Centre, Nottingham NG7 2UH, UK
[3]University Hospitals of Leicester, Room 034, Level 5, Windsor Building, Leicester Royal Infirmary, Leicester LE1 5WW, UK
Correspondence to: S Conroy
spc3@le.ac.uk

Cite this as: *BMJ* 2013;347:f5874
doi: 10.1136/bmj.f5874

This is a summary of a paper that was published on bmj.com as *BMJ* 2013;347:f5874

bmj.com

- Research: Comprehensive geriatric assessment for older adults admitted to hospital (*BMJ* 2011;343:d6553)
- Research: Effectiveness of acute geriatric units on functional decline, living at home, and case fatality among older patients admitted to hospital for acute medical disorders (*BMJ* 2009;338:b50)

STUDY QUESTION

What is the effect of specialist geriatric medical management on the outcomes of at risk older people discharged from acute medical units?

SUMMARY ANSWER

This intervention applied to an at risk population of older people discharged from acute medical units had no effect on patient level outcomes or subsequent use of secondary care or long term care.

WHAT IS KNOWN AND WHAT THIS PAPER ADDS

Poor outcomes and high resource use are common in older people discharged to the community from acute medical units. Improving the outcomes of frail older people discharged from acute medical units is likely to require a more sophisticated, integrated intervention that enables the delivery of the comprehensive geriatric assessment process.

Design

This was an individual patient randomised controlled trial comparing intervention with usual care. The intervention comprised assessment made on the acute medical unit and further outpatient management by specialist physicians in geriatric medicine, including advice and support to primary care services. The control was usual care on the acute medical unit without assessment and follow-up by a geriatrician.

Outcomes at 90 days

Outcome	Control (n=217)	Intervention (n=216)	Intervention effect adjusted for centre
No (%) included in analysis at 90 days	212 (98)	205 (95)	—
Mean (SD) days at home	80.2 (21.5)	79.7 (21.3)	−0.5 (−4.6 to 3.6); P=0.31
No (%) died (HR)	12 (6)	14 (7)	1.22 (0.57 to 2.65); P=0.61
No (%) institutionalisation (OR)	4/156 (3)	5/153 (3)	1.31 (0.34 to 4.97); P=0.69
Mean (SD) hospital presentations (RR)	0.94 (1.58)	1.20 (2.14)	1.32 (1.01 to 1.74); P=0.05
No (%) Barthel ADL ≥17 (OR)	67/157 (43)	75/156 (48)	1.25 (0.72 to 2.17); P=0.42
Geometric mean GHQ12 (ANCOVA)	12.4 (n=132)	12.0 (n=135)	0.96 (0.87 to 1.06); P=0.44
Mean (SD) EQ-5D (ANCOVA)	0.45 (0.32); (n=139)	0.45 (0.32); (n=146)	−0.01 (−0.08 to 0.06); P=0.80
No (%) ICECAP-O ≥0.81 (OR)	54/120 (45)	72/131 (55)	1.38 (0.80 to 2.40); P=0.25
No (%) self reported fall during follow-up (OR)	66/155 (43)	64/156 (41)	0.94 (0.60 to 1.48); P=0.79

ADL=activities of daily living; ANCOVA=analysis of covariance; GHQ12=General Health Questionnaire 12; HR=hazard ratio; ICECAP-O= ICEpop CAPability measure for older people; OR=odds ratio; RR=rate ratio.

Participants and setting

Participants were 433 patients aged 70 or over, discharged within 72 hours of attending one of two acute medical units, and at risk of decline as indicated by a score of at least 2 on the Identification of Seniors At Risk tool.

Primary outcome

The primary outcome was the number of days spent at home (for those admitted from home) or days spent in the same care home (if admitted from a care home) in the 90 days after randomisation. Days spent being readmitted to hospital, days spent in a new care home placement, or death during follow-up were reflected in this composite outcome.

Main results and the role of chance

The mean number of days at home over 90 days' follow-up were 80.2 in the control group and 79.7 in the intervention group. The 95% confidence interval for the difference in means was −4.6 to 3.6 days (P=0.31). No significant differences were found for any secondary outcomes.

Harms

No harms were reported.

Bias, confounding, and other reasons for caution

The results are unbiased, as the groups were well balanced and the outcome was ascertained and analysed blind to allocation. Despite concerns that the primary outcome may be insensitive, no benefits were seen in any of the secondary outcomes, which included mortality, institutionalisation, dependency, mental wellbeing, quality of life, and health and social care resource use.

Generalisability to other populations

This study found no benefit of a liaison model of specialist geriatric medical input to patients on acute medical units in a study population at increased risk of readmission. The findings do not apply to more comprehensive service models with greater integration with community teams.

Study funding/potential competing interests

The study was funded by a NIHR Programme Grant for Applied Research (RP-PG-0407-10147).

Trial registration number

Current Controlled Trials ISRCTN21800480.

Interventions for non-metastatic squamous cell carcinoma of the skin: systematic review and pooled analysis of observational studies

Louise Lansbury,[1] Fiona Bath-Hextall,[1 2] William Perkins,[3] Wendy Stanton,[4] Jo Leonardi-Bee[5]

[1]Centre of Evidence Based Dermatology, University of Nottingham, Nottingham NG7 2NR, UK
[2]School of Health Sciences, University of Nottingham, Nottingham, UK
[3]Department of Dermatology, Nottingham University Hospitals NHS Trust, Queen's Medical Centre, Nottingham, UK
[4]Greenfield Medical Library, Nottingham Education Centre, University of Nottingham, UK
[5]Division of Epidemiology and Public Health, University of Nottingham, Nottingham City Hospital, Nottingham, UK
Correspondence to: L Lansbury
Louise.Lansbury@nottingham.ac.uk

Cite this as: *BMJ* 2013;347:f6153
doi: 10.1136/bmj.f6153

This is a summary of a paper that was published on bmj.com as *BMJ* 2013;347:f6153

STUDY QUESTION

How effective are the treatments used in the management of non-metastatic squamous cell carcinoma (SCC) of the skin?

SUMMARY ANSWER

Recurrence of SCC after treatment is low.

WHAT IS KNOWN AND WHAT THIS PAPER ADDS

Evidence for the effectiveness of different treatments for SCC is generally of low quality and predominantly derived from case series. Accurate comparisons of estimates of treatment effects were not possible from the current evidence, and the significance of apparent differences between treatments should be interpreted cautiously.

Selection criteria for studies

We identified observational studies of all interventions for primary, non-metastatic, invasive SCC of the skin by an electronic literature search of Medline from 1948 and Embase from 1980 to 31 December 2012. Articles were restricted to those published in English.

Outcomes

Main outcomes were recurrence of SCC after treatment, and patient quality of life. Other outcomes were initial response to treatment, death attributable to SCC, cosmetic appearance, and adverse events associated with treatment.

Main results and role of chance

We included 118 non-comparative studies in the review covering seven treatments. Pooled recurrence was lowest after cryotherapy (0.8%, 95% confidence interval 0.1% to 2.2%) and after curettage and electrodesiccation (1.7%, 0.5% to 3.4%), but most treated SCCs were small, low risk lesions. After Mohs micrographic surgery, the pooled estimate of local recurrence during variable follow-up periods from 10 studies was non-significantly lower than the pooled estimate of local recurrence after standard surgical excision (12 studies) and after external radiotherapy (seven studies). After an apparently successful initial response to photodynamic therapy, the pooled estimate of recurrence (based on eight studies) was significantly high compared with other treatments. Evidence was limited for laser treatment and topical and systemic treatments. Duration of follow-up was variable and often poorly reported. Where possible, we conducted a subgroup analysis to compare outcomes between studies with specified periods of mean follow-up (<2 years, 2-5 years, and >5 years). The only significant difference in this subgroup analysis was an increased number of deaths attributable to SCC after surgical excision over five years' follow-up, compared with deaths for studies with a shorter follow-up (8.6% (4.7% to 13.6%; two studies) *v* 0.8% (0.07% to 2.4%; three studies)).

Bias, confounding, and other reasons for caution

The studies in our analysis were uncontrolled case series with no comparator group; therefore, they were methodologically limited and prone to inherent biases, with variable patient mixes in terms of prognostic factors and overall disease severity. In 85% of studies, treatment was selected according to tumour or patient characteristics, and it was not possible to compare the effectiveness of different treatments directly. Losses to follow-up were also poorly reported in 41% of studies. Unlike randomised controlled trials, there is no requirement to register a protocol for the types of study we included in the review, thus publication bias was an additional concern when interpreting the results.

Study funding/potential competing interests

All authors have completed the ICMJE uniform disclosure form at www.icmje.org/coi_disclosure.pdf and declare: LL, FBH, WP, and JLB received support from the National Institute for Health Research for the submitted work; all authors declare no financial relationships with any organisations that might have an interest in the submitted work in the previous three years; no other relationships or activities that could appear to have influenced the submitted work.

Study outcomes

Intervention	Local recurrence (%)	Regional recurrence (%)	Unspecified recurrence (%)	Death attributable to SCC (%)
Surgical excision	5.4 (2.5 to 9.1); 12 studies, n=1144	4.4 (2.4 to 6.9); 8 studies, n=786	5.4 (0.7 to 27.6); 2 studies, n=113	4.1 (1.7 to 7.6); 8 studies, n=485
Mohs micrographic surgery	3.0 (2.2 to 3.9); 10 studies, n=1572	4.2 (2.3 to 6.6); 6 studies, n=1162	4.7 (0.7 to 11.7); 5 studies, n=766	1.1 (0.2 to 2.6); 4 studies, n=941
External radiotherapy	6.4 (3.0 to 11.0); 7 studies, n=76	2.6 (0.04 to 8.9); 3 studies, n=272	4.8 (0.6 to 12.8); 6 studies, n=220	9.1 (1.4 to 22.8); 5 studies, n=191
Brachytherapy	5.2 (1.6 to 10.5); 6 studies, n=88	—	—	—
Adjuvant radiotherapy				
Perineural invasion	18.2 (3.8 to 39.8); 5 studies, n=22	8.3 (1.1 to 21.4); 5 studies, n=22	—	11.1 (0.4 to 33.1); 4 studies, n=20
No perineural invasion	11.1 (2.4 to 25.0); 4 studies, n=47	8.5 (2.5 to 17.6); 4 studies, n=47	—	14 (0.04 to 50.2); 3 studies, n=21
Cryotherapy	—	—	0.8 (0.1 to 2.2); 8 studies, n=273	—
Curettage and electrodesiccation	—	—	1.7 (0.5 to 3.4); 7 studies, n=1131	—
Photodynamic therapy	—	—	26.4 (12.3 to 43.7);8 studies, n=119	—

Overall and income specific effect on prevalence of overweight and obesity of 20% sugar sweetened drink tax in UK: econometric and comparative risk assessment modelling study

Adam D M Briggs,[1] Oliver T Mytton,[1 2] Ariane Kehlbacher,[3] Richard Tiffin,[3] Mike Rayner,[1] Peter Scarborough[1]

EDITORIAL by Block

[1]British Heart Foundation Health Promotion Research Group, Nuffield Department of Population Health, University of Oxford, Oxford OX3 7LF, UK
[2]UK Health Forum, Victoria House, Southampton Row, London WC1B 4AD, UK
[3]Centre for Food Security, University of Reading, PO Box 237, Whiteknights, Reading RG6 6AR, UK
Correspondence to: M Rayner
mike.rayner@dph.ox.ac.uk

Cite this as: *BMJ* 2013;347:f6189
doi: 10.1136/bmj.f6189

This is a summary of a paper that was published on bmj.com as *BMJ* 2013;347:f6189

bmj.com
Research: Dietary sugars and body weight (*BMJ* 2013;346:e7492)

STUDY QUESTION

What is the likely effect on obesity of a 20% tax on sugar sweetened drinks in the United Kingdom?

SUMMARY ANSWER

A 20% tax on sugar sweetened drinks is estimated to reduce the number of obese adults in the UK by 180 000, or 1.3%, with similar effects seen across all income groups.

WHAT IS KNOWN AND WHAT THIS PAPER ADDS

Regular consumption of sugar sweetened drinks increases the risk of obesity, and some UK health organisations have called for a tax to reduce their intake. A 20% tax on sugar sweetened drinks is predicted to significantly reduce both their consumption and the number of obese adults in the UK.

Main results

A 20% tax is estimated to reduce consumption of concentrated sugar sweetened drinks by 16.0% and non-concentrated drinks by 14.8%. The net effect on energy intake (after allowance for substitution of other drinks) is a mean reduction of 16.7 kJ per person per day. This varies markedly by age from a reduction of 56.3 kJ for people aged 16-29 years to a non-significant change for those aged 50 and over. The change in energy intake would lead to an estimated change in the UK obese adult population (body mass index ≥30) of −180 000 (95% credible interval −247 000 to −110 000) people or −1.3% (−1.7% to −0.8%) and the overweight adult population (body mass index ≥25) of −285 000 (−364 000 to −201 000) people or −0.9% (−1.1% to −0.6%). The magnitude of the health effects is similar across thirds of income. The change in number of obese adults is greatest among people aged 16-29 years (−7.6% (−8.6% to −6.4%), compared with −1.3% (−1.7% to −0.8%) among 30-49 year olds and 0.2% (−0.2% to 0.5%) among over 50 year olds). The estimated increases in total expenditure on drinks for income thirds 1 (lowest), 2, and 3 (highest) are 2.1% (1.4% to 3.0%), 1.7% (1.2% to 2.2%), and 0.8% (0.4% to 1.2%).

Change in obese and overweight population by thirds of income

	Change in percentage (95% CI)	
Income third	BMI≥30	BMI≥25
1 (lowest)	−1.3 (−2.0 to −0.3)	−0.9 (−1.3 to −0.4)
2	−0.9 (−1.6 to −0.1)	−0.7 (−1.0 to −0.3)
3 (highest)	−2.1 (−2.9 to −1.3)	−1.2 (−1.6 to −0.8)
Overall	−1.3 (−1.7 to −0.8)	−0.9 (−1.1 to −0.6)

BMI=body mass index; CI=credible interval.

Design

We used UK household survey data to estimate the effect of a 20% tax on sugar sweetened drinks on purchases and consumption of sugar sweetened drinks. We used the estimates generated to derive the change in energy intake. Using equations based on the principles of conservation of energy, we then modelled the effect on average body weight and the prevalence of obesity in the UK. We chose to focus on body weight because good evidence (from both trials and epidemiological studies) links regular consumption of sugar sweetened drinks to weight gain. We used Markov Chain Monte Carlo analyses to calculate the 95% credible intervals.

Data sources

Data on price and purchasing of drinks came from the Living Costs and Food Survey (2010). We derived data on drink consumption (including energy intake) from the National Diet and Nutrition Survey (2008-10). Estimates of the prevalence of obesity came from the Health Survey for England (2010) and the Scottish Health Survey (2010).

Limitations and important assumptions

We have assumed that 100% of the tax is passed on to consumers. Substitution by other drinks has been modelled, but we have assumed no substitution by food. Other health effects beyond obesity (such as dental caries, diabetes, and cardiovascular disease) have not been considered.

Study funding /potential competing interests

No explicit funding for this work was sought. MR and PS are funded by the British Heart Foundation. ADMB and OTM are National Institute for Health Research funded academic clinical fellows in public health.