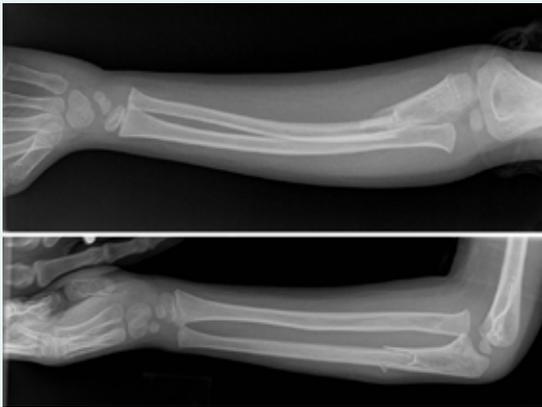


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PICTURE QUIZ

Forearm injury in a 5 year old boy

A 5 year old right hand dominant boy was brought to the emergency department by his mother because of a painful and deformed left forearm. After slipping in the snow he had landed on his outstretched left hand. He had no relevant medical history. On examination, he was stable and the deformed arm was an isolated injury. There were no symptoms of neurovascular compromise and no evidence of skin compromise or breach.

Plain radiographs were obtained (figure).

- 1 What abnormality do the radiographs show?
- 2 What lines should be viewed when assessing forearm radiographs?
- 3 What are the important parts of the examination?
- 4 What are the options for managing this patient?

Submitted by R Coomber, G Cuffolo, Y Kalairajah, S Burt, and R Bhumbra
Cite this as: *BMJ* 2013;346:f3192

CASE REPORT

Metabolic alkalosis in a patient with dyspnoea

A 56 year old woman with poorly controlled asthma was admitted to hospital with a suspected lower respiratory tract infection, having become increasingly anxious and short of breath over the past 24 hours. She had been unwell for the past week, and her general practitioner had started her on amoxicillin and oral steroids. She was a never smoker, had a history of ischaemic heart disease and atrial fibrillation, and had a high body mass index. This was not the first time she had been admitted to hospital with an exacerbation of her asthma, having been admitted several times previously. Her regular drugs included fluticasone, salbutamol, furosemide, omeprazole, simvastatin, and diltiazem.

On examination she had a normal temperature, a respiratory rate of 26 breaths/min, sparse crackles at her left lung base, together with widespread expiratory wheeze. The table details her initial arterial blood gases on air and other blood test results.

Initial arterial blood gases on air and other blood test results

| Variable | Result (reference range) |
|--|------------------------------------|
| pH | 7.506 (7.36-7.47) |
| Arterial carbon dioxide pressure (kPa) | 5.25 (4.6-6.4) |
| Arterial oxygen tension (kPa) | 8.48 (10.6-14.6) |
| Potassium (mmol/L) | 3.89 (3.6-5.0; 1 mmol/L=1 mEq/L) |
| Lactate (mmol/L) | 2.0 (0.7-2.1; 1 mmol/L=9.01 mg/dL) |
| Bicarbonate (mmol/L) | 31.5 (22-30; 1 mmol/L=1 mEq/L) |
| Base excess (mmol/L) | 8.2 (-2 to 2; 1 mmol/L=1 mEq/L) |
| Haemoglobin (g/L) | 121 (120-150) |

- 1 What is the likely cause of this patient's metabolic alkalosis?
- 2 Which of the drugs that she was taking on admission can also cause metabolic alkalosis?
- 3 Does this alkalosis require therapeutic correction?

Submitted by Richard Windsor and Will Petchev
Cite this as: *BMJ* 2013;346:f2710

STATISTICAL QUESTION What is per protocol analysis?

Researchers evaluated the efficacy of 4% dimeticone lotion for the treatment of head louse infestation. A randomised controlled trial was performed. Control treatment was 0.5% phenothrin liquid, the standard treatment. Treatments were applied twice, seven days apart, with dimeticone lotion for eight hours or overnight and phenothrin liquid for 12 hours or overnight. One of the main outcome measures was cure of infestation after the second application, regardless of whether

reinfestation occurred later.

Participants were 214 young people (aged 4-18 years) and 39 adults with active head louse infestation; 127 were allocated to 4% dimeticone lotion and 125 to 0.5% phenothrin liquid. Per protocol analysis indicated that a greater proportion of patients were cured with phenothrin—84 of 121 (69%) participants were cured with dimeticone versus 90 of 116 (78%) with phenothrin, a difference of -8% (95% confidence interval -19% to 3%).

Which of the following, if any, would result in a trial participant being included in the per protocol analysis?

- a) Withdrew from trial after informed consent and treatment allocation, but before starting treatment
- b) Withdrew from trial having started the allocated treatment
- c) Started the allocated treatment, but did not adhere to treatment protocol
- d) Completed the protocol for the treatment originally allocated
- e) Changed to alternative treatment to one originally allocated and adhered to treatment protocol

Submitted by Philip Sedgwick
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