

Single Inhaler Therapy – what is the evidence from our Cochrane Review?

“Combination formoterol and budesonide as maintenance and reliever therapy versus inhaled steroid maintenance for chronic asthma in adults and children”

Having a single inhaler to treat asthma is an attractive idea!

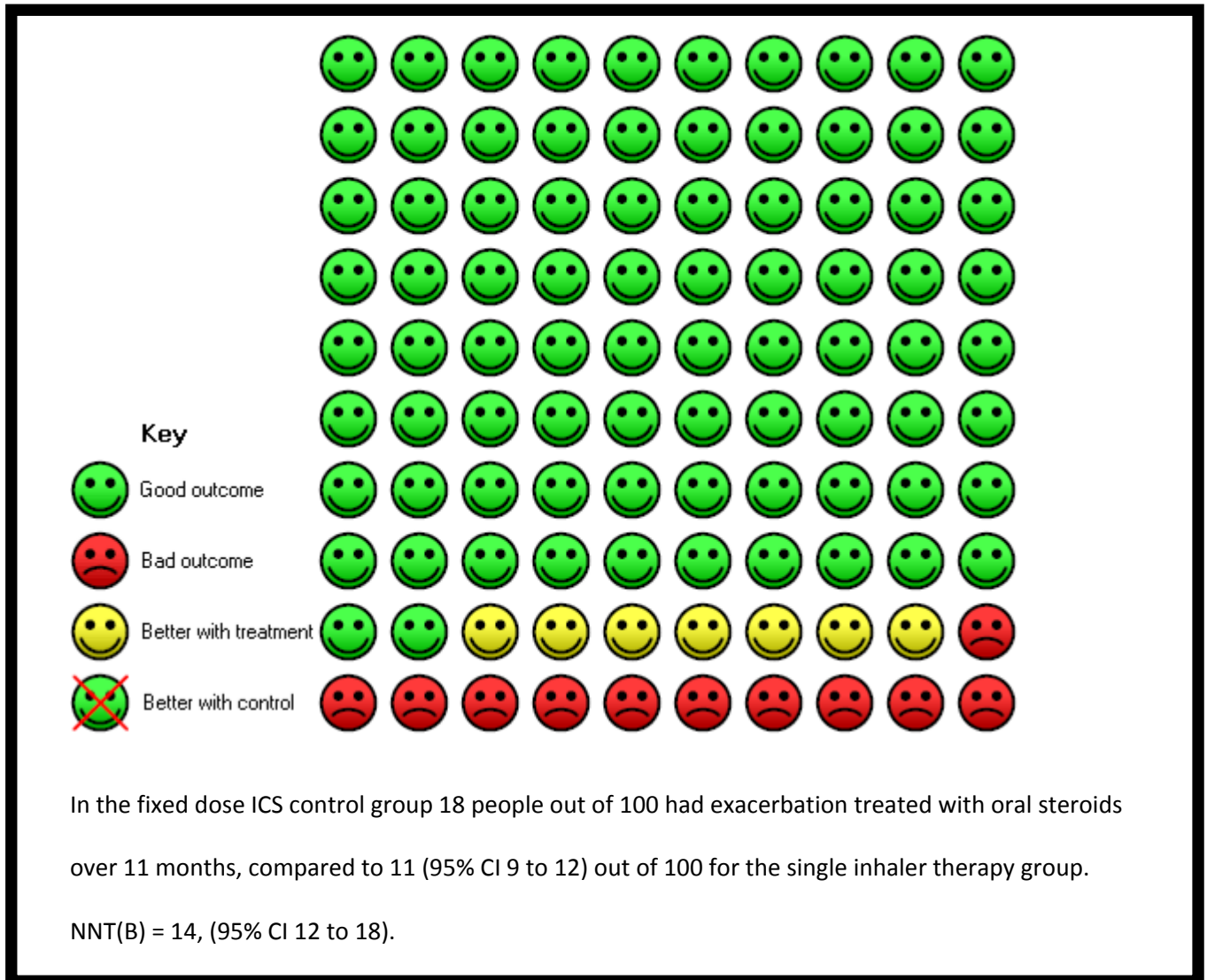
It is now possible to use the same inhaler for regular maintenance treatment and relief of symptoms by combining formoterol (which provides rapid relief of asthma symptoms), with budesonide (an inhaled corticosteroid that can be used regularly to reduce inflammation inside the airways) in one inhaler. The question is: how does this approach compare to traditional treatment with *separate* inhalers for maintenance and relief of asthma?

The early results from three large randomised controlled trials that compared Single Inhaler therapy with fixed dose inhaled corticosteroids for maintenance were encouraging. The Single Inhaler approach allowed a reduction in the overall amount of steroid treatment needed (both in terms of additional oral courses of steroids and the average daily dose of inhaled steroid), whilst at the same time lung function was better in the single inhaler group. The risk of a severe asthma exacerbation was reduced by roughly a half using the Single Inhaler Therapy, but there was not a significant reduction in the risk of being admitted to hospital with asthma.

So these trials indicated that the approach was quite successful, when tested on adults and adolescents who had been on quite high doses of inhaled steroids, and whose asthma had become uncontrolled before they started in the trials.

The figure below illustrates the impact of single inhaler therapy compared to fixed doses of inhaled steroids on the risk of suffering an asthma exacerbation that needs to be treated with steroid tablets. There would be no exacerbation in 82 of the 100 adults whichever treatment they are given (the green faces), and 11 would have an exacerbation with either treatment (the red faces). If all 100

adults were treated with single inhaler therapy, seven who would have had an exacerbation with inhaled steroids will avoid this (the yellow faces). This means that one adult will be saved an asthma exacerbation needing steroid tablets for every 14 treated with single inhaler therapy, see the picture below:



What about the subsequent trials comparing Single inhaler therapy with current best practice? Well, the results here were less dramatic. This time no significant reduction in the risk of an asthma exacerbation was found, nor in the need for a course of oral steroid tablets. What is more, although we got hold of results five trials that included around 5,000 people comparing Single Inhaler Therapy

with current best practice, there are still a further four and a half thousand people in other trials that have not yet had any results published. We need to know what the results are from these trials too.

The picture below shows that only one yellow face is present for 100 adults treated, so this time 70 would need to be treated to save one having an asthma exacerbation which needs steroid tablets, and we cannot actually be sure whether single inhaler therapy decreases or increases the risk of such an exacerbation compared to current best practice.



In the current best practice control group 9 people out of 100 had exacerbation treated with oral steroids over 6 months, compared to 8 (95% CI 6 to 9) out of 100 for the active treatment group.

$NNT(B) = 70$, (95% CI $NNT(B)$ 35 to $NNT(H)$ 401).

So Single Inhaler Therapy can work well in carefully selected people who are higher doses of maintenance inhaled corticosteroid treatment and who all had become unstable when they entered the trials, but comparison with current best practice has not confirmed these findings. Moreover the data in children and adolescents is extremely limited, and in the UK this approach is not licensed under the age of 18 years old.

Unanswered questions remain about the use of this approach, and we noted that all the trials have been carried out by the manufacturers of combined formoterol and budesonide inhalers. Perhaps we will know more when the outstanding trial results reach the public domain.

The podcast for this review can be heard [here](#)