to adoption. Patients if the UK and throughout Europe will soon be receiving written information with their prescriptions.

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Ensuring compliance in children

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There are many reasons why the asthmatic condition in children is often unsatisfactorily controlled. One of these is poor compliance. Patient compliance is one of the weakest links in the chain of events leading from prescription of a drug to its arrival in appropriate quantities at the target cells in the airways. Therefore, there is a substantial incentive to develop strategies to improve/ensure compliance in children with asthma. That is not easy, however, because very little is known about the reasons why children do not take their asthma medication as prescribed. So instead of recommending fixed rigid guidelines the present paper will briefly discuss some of the problems that in the day to day clinical situation may impede good compliance in children with asthma.

Communication problems

The precondition of a good compliance is that the patient and the parents have actually understood what their physician wants them to do! Providing each child and its family with the right amount of information at the right time and in a way that is easily understood is difficult. The physician not only has to communicate with the child but also with the rest of the family (and sometimes also with the school or kindergarten) when the disease and its treatment are explained. That is difficult and time consuming, but if it is not done compliance is bound to become poor. Often the patient's capability to understand and remember the information given is overestimated.

We evaluated the capability of children and their parents to understand and carry out a sequence of different messages which is often given in an asthma clinic: 1) measure PEF for 1 week. 2) reduce the dose of inhaled corticosteroids. 3) after 2 weeks on reduced dose resume PEF measurements for another 2 weeks. 4) if PEF has fallen >20% increase inhaled corticosteroid to pre-reduction level. 5) if the asthma gets worse contact the clinic.

A total of 75 families were studied. They were not told that we evaluated compliance. The same physician informed/instructed all families. All children suffered from asthma requiring inhaled corticosteroids to maintain control and therefore were supposed to be familiar with the asthma disease and its treatment. The families were split into 3 groups: 25 families (Group A) were told to perform the instructions without any further information. The physician made sure that the information had been understood. 25 families (Group B) were asked to perform the instructions and in addition were told that the purpose was to evaluate whether asthma control could be maintained on a lower dose of inhaled corticosteroids. They were also informed that the reason why they should not resume PEF measurements until 14 days after the reduction in dose was that in an optimally controlled child it would often take some time for a deterioration to occur. Again the physician made sure that the information had been understood. 25 families (Group C) were instructed as group B but in addition received written instructions.

When the families returned to the clinic 5 weeks later with their home recordings it was found that 11/25 families in group A, 18/25 in group B and 24/25 in group C had been compliant *i.e.* performed everything correctly. Even though the families were used to home monitoring and they all appeared to understand the message at the clinic, less than half were actually able to carry out the instructions at home. This finding strongly supports the use of thorough verbal and written information to obtain a good compliance.

Correct timing of the information is also important. Often there is a disproportion between the expectations and priority of the children and its parents and the plans of the physician. The family often has a lot of

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unanswered questions (can we keep the cat, should father stop smoking, is the bedroom/house all right, is there a cure, is it contagious, is there anything we can do to reduce symptoms so that regular therapy is not needed etc.). This is highly individual but generally the physician should be aware of the opinions and questions which the patient finds relevant and discuss them thoroughly before initiating any therapy, otherwise the family may not be ready to accept the proposal of the physician. When information/instructions are given it should also be remembered that the average patient will only be able to understand and remember a limited amount of information/instructions at a time. Otherwise the most important message may be lost. Finally, physicians often forget that a child may perceive a message in a different way than we expect.

Table 1 gives two examples of writing the same message to a child. Many children will be disappointed by letter A because they find that it implies that they have not taken enough pains to perform the measurements. They feel guilty. They feel that the measurements are low because they have not been compliant. That is discouraging if they really have tried to do everything correctly. Letter B is more positive. It clearly says that it is the mutual "enemy" (the asthma) and not the child that presents a problem.

Table 1. – Two examples of a letter from the physician to a child with asthma

Letter A
Dear Peter, Thank you for sending me your PEF measurements. I see that you have not been able to produce so high values this time . . . . .
Letter B
Dear Peter, You certainly kept your diary very well this time. I think that you are good at it now. It seems that your asthma is difficult to control at the moment . . . . .

Importance of acceptance and responsibility

Making sure that a child understands what he/she is told to do is not a guarantee of a long term success, however. Patients do not do what they are told to unless they also agree with the things they are told to do. It is of no use to start a child with asthma on inhaled corticosteroids if the parents/grandparents/patients' friends or school teachers are afraid of side effects or disagree with continuous regular use of drugs in children. Most parents do not like their children to have to use drugs regularly for months or years. Therefore, it is important to discuss this issue openly with the child and its parents and explain why long term continuous prophylactic treatment is important. Initiating a treatment should never be something that the physician does. It should be something that the physician, the child and its family decide upon together after a mutual evaluation of the pros and cons. In doing this, it is important to remind the parents that it is much easier to be reluctant toward a therapy when it is not themselves that will be denied the therapy.

The role of pamphlets, booklets and videos

Pamphlets and booklets are often used at this stage to make it easier for all concerned. However, many informative booklets provide too much information in a way that is not easily understood. Thus we found that less than 25% of the booklets handed out to our children were actually read. Furthermore, those that were read were poorly understood or only partially read. Therefore we have now produced new easily read, problem-oriented booklets for children and their parents. Our surveys indicate that about 70% of these booklets are actually read (increasing if we repeatedly ask for it) and more than 90% of our families have understood what they have read. Though difficult to assess, it is our impression that this has contributed to an improved compliance in our patients. It must be remembered, however, that pamphlets, booklets and videos - no matter how good and instructive - cannot replace physicians and nurses, they can only help them! [1].

The role of treatment regimen and self monitoring

Once therapy is decided, it is important to choose simple effective treatment regimens without side effects. The occurence of side effects - no matter how trivial - is likely to reduce compliance because it increases the parents' prejudice against regular use of medicine and it reduces the child's willingness to comply. Since inhaled therapy is associated with far less side effects than oral treatment, inhaled therapy is preferable in all age groups.

Simple therapy means as few daily administrations of the medicine as possible, preferably not more than morning and evening and the use of the best inhaler. Choosing the best inhalation device requires a certain knowledge from the physician about the various inhalers but again it is important also to respect the patient's preference. The simplest inhalation technique which is effective should be used. Often unnecessarily complicated guidelines for inhaler use are recommended [2].

The effectiveness of the treatment is also important. If a child does everything right and yet does not benefit sufficiently from the treatment an initially good compliance is likely to become poor. The same is the case if the treatment is built up in a stepwise way, starting with one drug and adding others at regular intervals if the first is not sufficient. In this way several months may pass before an optimal result is achieved and the child may lose its faith in the treatment. Therefore, it may be better to start with a very effective treatment such as high dose inhaled corticosteroids to create confidence and then

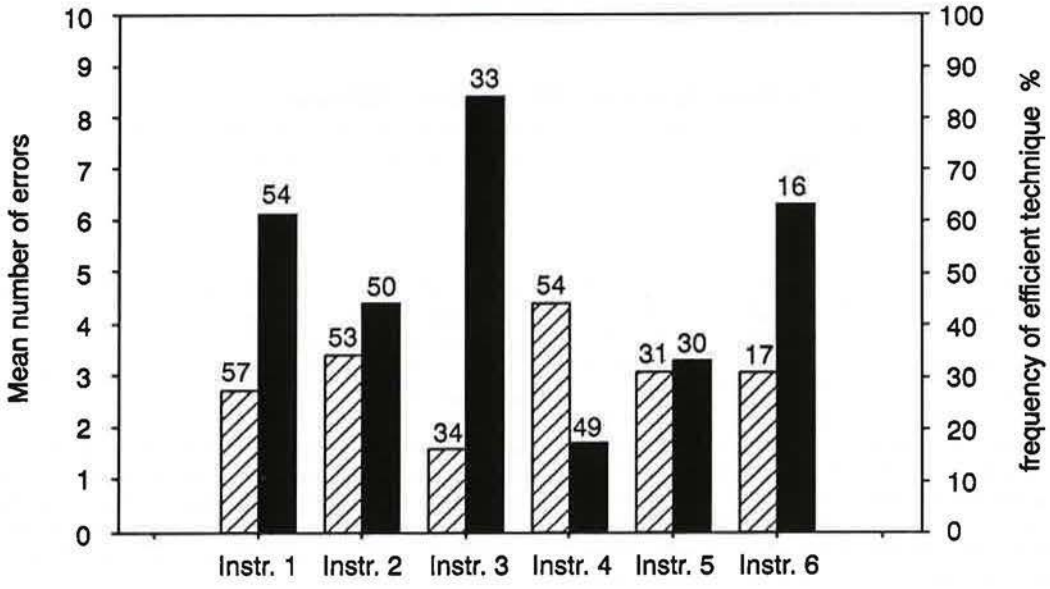

Fig. 1. – Inhalation problems in 256 children showing influence of instructor. ▨: mean number of errors in inhalation technique; ■: frequency of efficient inhaler use in asthmatic children >5 years, who were taught inhaler use by 6 different instructors (instr.).

gradually reduce the treatment to the lowest level capable of maintaining control. Judicious use of diaries with recordings of symptoms and PEF may be an important motivating factor in many children at this stage and later on when compliance is going to be maintained.

Maintaining compliance

Once good compliance has been achieved it is important to maintain it. Little is known about how that is done. Regular control, encouragement and self monitoring are probably useful tools. It is also important that the physician is open and involves the child and its parents in decisions. The family should be told that the asthma control is their and not the physician's responsibility. The physician possesses knowledge and expertise which they can benefit from in their management of the disease. Much too often physicians try to take away this responsibility from the families. This reduces motivation and encourages "cheating" by the child who gets the impression that he/she is doing something because he/she is told to, rather than for their own sake.

Most of the problems discussed in the present paper are quite trivial. Nevertheless it is important to emphasize that while sophisticated electronic built-in equipment in inhalers and peak flow meters is superior to everything else in assessing compliance, it does not ensure compliance. Simple medical art and knowledge in combination with cooperation with the child and its parents are prerequisites of a good compliance and contribute to it. That the role of the physician is indeed of paramount importance for a good patient compliance is supported by our findings in an earlier study (fig. 1) [3].

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