

## ***Is Nephrotic Syndrome likely to recur?***

Approximately 70% of children with minimal change lesion have recurrences of oedema. This is more likely to occur at the same time as a common cold. The urine can be tested at home. The first sign of recurrence is an excessive amount of protein on the dip stick. Swelling does not occur until excessive protein has been present in the urine for some days. If either occurs the parent should contact their doctor and drug management can be started. When relapses become frequent the child may remain on prednisolone for some months or years depending on the recurrence rate. Side effects from the prednisolone can occur and include obesity, roundness in the face, a decrease in growth rate and small cataracts. The other medications listed above are given at certain times to prevent these complications. The majority of children who have relapses stop relapsing by the age of 16 years.

If the nephrotic syndrome does not respond to the prednisolone a renal biopsy is usually performed. A small percentage of children with other forms of nephrotic syndrome do not respond to drug therapy and they may develop kidney failure. In these patients medications that act on the kidney to increase urine output will decrease the amount of oedema. If high blood pressure is present then it is important that this be well controlled and smoking should be strongly discouraged.

## ***Summary***

Nephrotic syndrome in childhood is a condition that most children outgrow. Relapses are common and are more likely to occur with the common cold. Prednisolone is very effective in controlling the urine protein leak in the majority of cases. Every effort should be made so that the child continues to lead a normal school life.

# **NEPHROTIC SYNDROME in Children**



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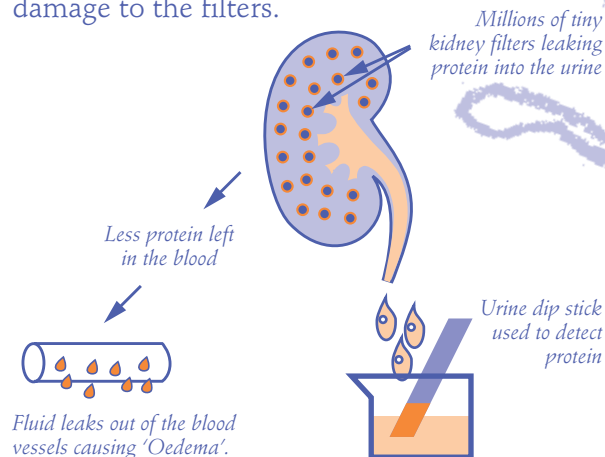


## What is Nephrotic Syndrome?

Nephrotic syndrome occurs when the filters in the kidney leak an excessive amount of protein. The level of protein in the blood then falls and this allows fluid to leak across very small blood vessels into the tissues. Swelling around the eyes, abdomen and legs is then noted. Protein in the body is normally made by the liver and the liver then responds by producing extra protein. Nephrotic syndrome is a combination of proteinuria (excessive protein in the urine), low blood protein and oedema (swelling in the tissues).

## What causes Nephrotic Syndrome?

Most cases of nephrotic syndrome are caused by changes in the immune system. Certain types of white cells produce a substance that acts on the filters in the kidney to produce a change in the filters. This allows protein to leak into the urine. Other forms of nephrotic syndrome are caused by swelling and increased cell numbers in the filters. In some instances this may result in permanent damage to the filters.



## Types of Nephrotic Syndrome

The commonest type of nephrotic syndrome in children is called "minimal change" and occurs in 80% of cases. In this type, the kidney function remains normal. A small percentage of children may have partial scarring involving some of their filters, while others may have

a significant increase in the number of cells in the filters.

A kidney biopsy is sometimes necessary to differentiate the particular type of nephrotic

syndrome, and this assists in

the type of treatment to be given and advice on the long-term outlook. If a minimal change lesion is suspected then renal biopsy is usually not necessary. A renal biopsy

is a procedure where a small needle is inserted into the kidney from the back and a small sample is taken. This procedure has little risk and is usually performed using ultrasound to locate the kidney. Sedation is given to younger children.

## Treatment

As the child is losing excessive protein in the urine a good diet is necessary. A normal or high protein diet is encouraged. Mild reduction of fluid intake will assist in preventing excess swelling of the tissues. Salt reduction should be encouraged by not adding salt to the food. Most children can continue with normal activities. The majority of children with nephrotic syndrome respond to drug therapy. Prednisolone (a steroid medication) is the initial drug used with "minimal change" nephrotic syndrome. The urine usually becomes clear of protein within 2-3 weeks. Prednisolone can cause a large appetite. When there is no response to prednisolone or when the nephrotic syndrome recurs frequently, other medications may be indicated from time to time, and these include cyclophosphamide, levamisole and cyclosporin.

## Are there any Complications?

Certain complications can arise while the child has swelling. Infections are infrequent but the child should see their doctor with any fevers or tummy pain. Clotting of a blood vessel is a rare complication, but should be suspected if a child develops severe tummy pain with frank blood in the urine. With the low blood protein, the circulating blood volume may become reduced and the kidneys respond by producing less urine. This is more likely to occur if a child becomes ill with vomiting or diarrhoea. This complication is easily treated by infusion of protein into a vein.

