THE ROYAL VICTORIA INFIRMARY
Queen Victoria Road, Newcastle upon Tyne, NE1 4LP
Children's Kidney Unit
Telephone: (0191) 2325131, ext 25378
Fax: (0191) 261 5881

APPENDIX

RENAL TRANSPLANT PROTOCOL

Jan. 1998

Patient's Name: .....

Contents

Page 2:	•	Urgent On Call Team's Duties, 10 Point Plan
Page 4:	•	Additional Pre-Operative Notes
Page 5:	•	Immediate Post-Operative Care
Page 6:	•	Post-Operative Bloods
	•	Maintaining Normal Electrolytes
Page 8:	•	Post-Operative Imaging
	•	Further Notes On Transplant Drugs
Page 9:	•	Living Related Donor Transplantation
Page 10:	•	Subsequent Post-Operative Care
	•	Immunisations
Page 11:	•	Post-Operative Fever
Page 12:	•	Second Line Immunosuppressant Agents
Page 15:	•	Body Surface Area Chart
Page 16:	•	Paediatric Creatinine Chart
Page 17:	•	Age Specific BP Centile Charts

RENAL TRANSPLANT PROTOCOL

URGENT ON CALL TEAM'S DUTIES, A 10 POINT PLAN

Once the patient has arrived undertake the following without delay:

1. **Insert largest possible cannula. Take pre-operative bloods.** All results are required urgently.

PRE-OPERATIVE BLOODS

- **FBC (0.5 ml in EDTA bottle)**
- **Clotting screen (2 ml Citrate)**
- **Ionised calcium, magnesium, SMAC (2 ml Brown Vacutainer)**
- **X-match 2 units if < 30 Kg or 3 units if > 30 Kg. (1 ml EDTA to RVI Blood Bank). CMV negative blood is required for CMV negative transplant recipients.**
- **Cytotoxic X- match, FACS (20 ml Li-hep, 10 ml clotted and 5ml EDTA to Tissue Typing, Regional Blood Transfusion Service)**
- **Viral Screen: HBsAg, HIV, CMV, Hep C, EBV (2 ml clotted to Virology, NGH - extn 22801 or on-call Virologist)**

2. **Give po dose of cyclosporin A 300mg/m^2 and azathioprine 60mg/m^2.** (See chart for body surface area calculation on p.15). **Give calcium heparin 75 units/Kg sc.** Administer these as soon as possible after the patient's arrival. (**Tacrolimus** and **mycophenolate mofetil** are alternative drugs used in selected patients - see "Further notes on transplant drugs" p.8).

3. **Commence pre-operative hydration with iv fluid.** Give the patient's measured daily urine output (volume is recorded in patient's notes on blue flow sheet) plus another 25% (i.e. estimated output = 100%, total fluid required = 125%). Give fluid as 0.45% NaCl. Divide total by 24 to give the hourly rate required. Administer for a minimum of 6 hours pre-operatively. **Also, ensure 100 ml/Kg of 4.5% HAS is ordered (using a Blood Bank form) and taken to the recovery room for use in the immediate post-operative phase.**

4. **Microscope the patient's urine and dialysis fluid.**

5. **Clerk and examine the patient.** Check for evidence of PD catheter exit site infection. Document your findings clearly in the notes.

6. **Write up the pre- and post-operative drug charts.** Drugs should be prescribed on separate "Pre-operative" and "Post-operative Drug Charts". Once the patient has returned from theatre cross out and file the pre-operative chart.

** CHECK THE DOSE OF PRE- & POST-OPERATIVE DRUGS WITH THE CONSULTANT BEFORE ADMINISTRATION **

7. **Write up the pre-operative drugs**

PRE-OPERATIVE DRUGS

- **Cyclosporin A 300 mg/m^2 po and azathioprine 60mg/m^2 po (or tacrolimus and mycophenolate mofetil)** as soon as possible after the patient's arrival. (See 2. above.)
- **Amoxycillin 30 mg/Kg iv, flucloxacillin 30 mg/Kg iv and ceftazidime 15 mg/Kg iv.** Give all antibiotics immediately before going to theatre. If the donor died of infection e.g. meningococcaemia, then continue appropriate ones iv for 10 days
- **Methyl prednisolone 300 mg/m^2 iv** at the time of the arterial anastamosis Send drug to theatre with patient. It will be administered by the anaesthetist.
- **Calcium heparin 75 units/Kg sc**. Give as soon as possible after the patient's arrival. (See 2. above)
- **Acyclovir 10 mg/Kg po.** Necessary only if the recipient is CMV negative and donor is CMV positive. Give as near to 6 hours pre-operatively as possible.

8. **Write up the post-operative drugs**.

POST-OPERATIVE DRUGS

- **Calcium heparin 75 units/Kg sc.** Give bd for 7 days (in those >30Kg) or 10 days (if <30Kg).
- **Methyl prednisolone 300 mg/m^2 iv. Single dose.** Give 24 hours after returning from theatre.
- **Prednisolone 5 mg/m^2 po bd.** Start on day 1 post-op.
- **Cyclosporin A 300 mg/m^2 po bd for 48 hours. Give the first dose 12 hours post-op.** Give the second 300 mg/m^2 dose at 0800 or 2000, whichever is the closest to 12 hours after the first 300mg/m^2 dose. CyA levels are performed after the third post-operative dose. **After 48 hours change to cyclosporin A po 150 mg/m^2 bd.**
- **Azathioprine 60 mg/m^2 po od.**
- **Co-trimoxazole 12 mg/Kg po od.**
- **Acyclovir 10 mg/Kg po if required.** The dose interval is as follows:
  - If on dialysis (PD or HD) give ***twice a week.***
  - If off dialysis and GFR <10 ml/min/1.73 m^2 give ***od.***
  - If off dialysis and GFR =10-25 ml/min/1.73 m^2 give ***tds*** and if GFR >25 ml/min/1.73 m^2 give ***qds.***

  GFR is calculated using the "Paediatric Creatinine Chart" on p.16.
- **Morphine infusion.** 1 mg/Kg morphine made up to 50ml of 5% Dextrose. Infuse at 1 ml/hour. Reduce dose when possible. Older patients may need a PCA. This is usually prescribed by the anaesthetic team.

**** CHECK THE DOSE OF PRE- & POST-OPERATIVE DRUGS WITH THE CONSULTANT BEFORE ADMINISTRATION ****

9. **Write up the post-operative fluids.**

POST-OPERATIVE FLUIDS

1. **0.45% NaCl & 5% Dextrose at 300ml/m^2/day = 12.5ml/m^2/hour. This is to replace the patient's insensible losses.**
2. **0.45% NaCl & 5% Dextrose to replace the patient's urine output ml per ml each hour.**

- The crystalloid used may change depending on the plasma and urine electrolytes.
- **Additional fluid in the form of colloid may be required to maintain an appropriate intravascular volume - see p.5.**

Children are maintained on this post-operative fluid schedule until they are able to tolerate significant volumes of oral fluid. This is usually day 3 or 4 post-op.

10. **Contact the anaesthetic staff on call.** They should be reminded that the standard paediatric transplant protocol is to be followed. This entails the peri-operative

administration of methyl prednisolone and a radial arterial and central venous line being sited. The CVP is to be maintained between 7 and 15 cm of water during the operative procedure using colloid boluses (see p.5).

The central venous line will be sent to theatre with the child. This is either a **15** or **20 Vas-cath "Vasaccess single lumen catheter with Y".** The type of catheter depends on the patient's size and will be organised by either the consultant or renal nurse.

ADDITIONAL PRE-OPERATIVE NOTES

The family will be contacted at home by the consultant Paediatric Nephrologist on call. They will be told to bring in the child promptly with EMLA cream applied and, if being dialysed at the time of the call, a sample of dialysis fluid.

The Transplant Co-ordinators inform the Renal Team of kidneys from donors of at least 15Kg, with an age gap between donor and recipient of no greater than 40 years. No more than a total of 2 mismatches on the B and DR loci is acceptable. The decision to accept the kidney is taken jointly by the nephrologist, transplant co-ordinator, specialist renal nurse and transplant surgeon.

Most children having peritoneal dialysis do not need to have any changes made in their dialysis prescription prior to theatre. If the child is being haemodialysed, a session may be required pre-transplantation. This will be organised by the consultant and the specialist renal nurse.

IMMEDIATE POST-OPERATIVE CARE

The children are met from theatre by the consultant paediatric nephrologist and the specialist renal nurse on call and a member of the ward nursing staff. Junior doctors are always welcome.

In Recovery the patient is assessed and standard post operative fluids commenced. The patient's CVP will be measured promptly in the recovery room as will the blood pressure via the arterial line. Additional colloid is given in order to maintain an appropriate intravascular volume (see "**Maintaining an adequate circulating volume**" below).

Plasma & urinary electrolytes and a FBC should be taken as soon as possible in the recovery room. The results are required urgently.

Once the patient has been stabilised they will return to the ward.

ON RETURN TO THE WARD ....

Maintaining an adequate circulating volume.

This is essential and in the context of post renal transplantation care is defined as

- **a CVP between 7 and 15 cm of water**
- **a toe-core gap of less than 1.5 ℃.**
- **and a systolic blood pressure between the 50th and 95th centiles for age (See chart on p.17).**

These findings should be interpreted in conjunction with a clinical assessment of the patient.

If the child appears **hypovolaemic** by virtue of a low CVP, a wide toe core gap, hypotension or clinical judgement then **5 ml/Kg of 4.5% human albumin solution should be administered over 5 minutes**. This should be repeated if the patient remains under-filled. Packed red cells would only normally be given if the patient's haemoglobin was below 6 g/dl. The patient would also need to be normokalaemic. The use of blood **must** be discussed with the consultant on call.

In the presence of an **appropriate intravascular volume** the patient's **urine output should be in excess of 2 ml/Kg/hour**. If the urine output falls and there is evidence of hypovolaemia then colloid should be administered. If the urine output falls and the child is adequately filled then a single intravenous dose of **frusemide (2mg/Kg)** should be administered. If there is no response, the consultant on call should be contacted.

If a patient is **over-filled** they may develop a degree of pulmonary oedema. Pulse oximetry is thus always continued for the first 2 post operative days and a CXR should be performed if pulmonary oedema is suspected. Frusemide is the usual first line treatment (2mg/Kg iv).

Hypertension, defined as a systolic blood pressure greater than the 95th centile for sex and age, and its treatment is to be discussed with the consultant on call.

POST-OPERATIVE BLOODS

Biochemistry

- *Blood and urine* biochemistry (including plasma glucose) is required promptly 4 hourly for the first 24 hours. This is reduced to 6 hourly on day 2. Thereafter the frequency will be determined by the Renal Team depending on the child's progress.

Full blood count

- This should be performed with the biochemical tests above on days 1 and 2. Thereafter a daily full blood count is required unless there are untoward circumstances.

Cyclosporin level

- This should be performed after the 3rd post-operative dose and then daily until discharge. A strict 12 hour trough level is required prior to the 0800 dose.

  Send 0.5ml EDTA to Biochemistry, FRH - extn 26437 or 31017. The specimen must be sent in a taxi arranged from Peacock Hall to arrive in the lab before 10am. Routine assays are performed Monday to Saturday. Inform the lab of levels required on a Sunday as far in advance as possible.

Plasma magnesium

- This should be checked every third day beginning on day 2.

Cytotoxic antibody screen

- This should be undertaken routinely on day 14 post graft. (If the patient is to receive ATG or ALG (see p.12) a screen is also required *before* starting the course. The results of cytotoxic antibody screening are not interpretable for 6 weeks after a course of ATG/ALG and testing should not be undertaken during this period.)

  NB. Further routine serum samples for cytotoxic antibody screens are required at 3 and 6 months post graft.

CMV

- If negative pre-operatively, the patient's CMV status should be assessed fortnightly by PCR and antigenaemia tests. (7ml Li-hep to Virology, NGH - extn 22801)

MAINTAINING NORMAL ELECTROLYTES

- The type of intravenous fluid needed post-operatively to maintain normal sodium, potassium and bicarbonate will depend on the concentrations of these being lost in the urine, and is adjusted according to urine and blood biochemistry.

Sodium

- Use the urine biochemistry as the initial guide to the best intravenous fluid to use. Select the standard fluid bag with the sodium concentration nearest to that in the urine to replace the urine volume.

- Standard bags are as follows:

Normal saline	= 0.9% NaCl	= 150 mmol/l
Half normal	= 0.45% NaCl	= 75 mmol/l
One fifth normal	= 0.18% NaCl	= 30 mmol/l

- Use the blood biochemistry to monitor how well this system is working.

- If the plasma sodium is on the high side, use a fluid replacement bag with a sodium concentration below that of the urine sodium, and vice versa.

Bicarbonate

- If the plasma bicarbonate is low, **some** of the intravenous sodium can be given as sodium bicarbonate. Calculate the hourly bicarbonate infusion rate as:

  (required rise in concentration (mmol) X body weight (Kg)) / 40 = rate in mmol per hour.

- This will correct the deficit in about 12 hours. To calculate the concentration needed in the infusion bags, use this value and the approximate infusion rate being used at the time. Add the bicarbonate as an 8.4 % solution which has 1 mmol of sodium and 1 mmol of bicarbonate per ml. Do not assume that this formula will give a precise correction, but check progress every four hours.

Potassium

- This is seldom needed in immediate post-transplant infusions, but a rapidly functioning new transplant may lose a lot of potassium into the urine which will need replacement. Adjustment is by the same principal as for sodium - measure the potassium concentration in the urine and infuse with a fluid containing a similar potassium concentration. Standard pre-mixed bags contain 20 or 40 mmol/l. Extra may be added as "Strong Potassium Chloride" (2 mmol/ml) which must be mixed thoroughly after addition. Monitor the results of this by looking at the blood potassium achieved.

Phosphate

- There may also be large tubular losses of both phosphate and magnesium in the post-graft period.

- Hypophosphataemia is usually treated with po Phosphate Sandoz (Starting dose: 1 soluble tablet tds if < 5 years of age, 2 tablets tds if > 5 years. Each tablet contains 16 mmol phosphate, 20 mmol sodium and 3 mmol potassium). If parenteral phosphate is required use Neutral Sodium Phosphate Injection (1 mmol phosphate/ml and 1.8 mmol sodium/ml). Give 0.15-0.33 mmol/Kg phosphate over 6 hours. Maximum infusion rate is 0.05 mmol/Kg/hr. Dilute 1 in 10 with 5% Dextrose or 0.9% NaCl. Adjust the treatment according to response.

Magnesium

- Hypomagnesaemia is almost always corrected with oral magnesium supplementation. If the plasma magnesium is <0.4 mmol/l give magnesium chloride 0.15 mmol/Kg/dose qds. Each MgCl (Slo-Mag) tablet contains 2.5 mmol magnesium.

- Convulsions associated with hypomagnesaemia are the only indication for iv magnesium treatment. Give 20-40 mg/Kg iv magnesium sulphate 20% solution (20 mg in 0.1 ml) at a rate no greater than 150 mg/min. Dilute *at least* 1 in 2 with 5% Dextrose. This can be repeated 4-6 hourly if necessary.

POST-OPERATIVE IMAGING

Renal ultrasound scan with Doppler assessment

- A baseline ultrasound of the renal tract is required once any perinephric drains have been removed.
- A scan should be undertaken the day following the transplant if there is primary non-function.
- An ultrasound scan is mandatory if rejection is suspected (see below).

DMSA

- A baseline DMSA is required around the 10th post-operative day. Undertake earlier if there is a suspicion of a perfusion defect.

FURTHER NOTES ON TRANSPLANT DRUGS

Cyclosporin A (Neoral).

- After the initial cyclosporin A level these are to be performed daily. Cyclosporin should be administered at 0800 and 2000 the level is taken as close to 12 hours after the previous dose as possible.
- *Intravenous cyclosporin A* is seldom used. If oral administration is not possible, give iv cyclosporin A 12 hourly as an infusion over 4 hours. *The iv dose is a third of the po dose.*
- Acceptable cyclosporin A levels are as follows:

M'ths Post Tx	CyA Level (ng/ml)
0-3	200-250
3-6	150-200

M'ths Post Tx	CyA Level (ng/ml)
6-12	100-150
>12	100-125

Prednisolone

- The initial dose of 5 mg/m^2 bd po is given for 1 month. This is reduced to 5 mg/m^2 od for the next month and then to 5 mg/m^2 on alternate days thereafter.

Azathioprine

- The dose of 60 mg/m^2 od does not change.

Co-trimoxazole (Septrin)

- This is given for the first 6 months post transplant at a dose of 12 mg/Kg od, or while cyclosporin A levels are being maintained at >150 ng/ml.

Acyclovir

- If indicated, po acyclovir is continued for 12 weeks post transplantation. The dose is adjusted as the patient's GFR changes. This occurs most rapidly in the first few days after the transplant.

Tacrolimus (Prograf or FK506)

- This is a macrolide immunosuppressant with a similar mode of action and adverse effects to cyclosporin A. It is occasionally used instead of cyclosporin A. The starting dose is 0.15mg/Kg bd po. Give 2 hours after food at 1000 and 2200. Tacrolimus levels need to be checked as a trough, 12 hours after the previous dose. Send by taxi 0.5ml EDTA to *Microbiology*, FRH - extn 26291. Routine assays are at 1400 Monday to Friday and 0930 Saturday and Sunday.

- Trough tacrolimus levels should be 5-10ng/ml at all times post graft.

Mycophenolate mofetil (CellCept)

- This is a cytotoxic immunosuppressant closely related to azathioprine. It is used in selected cases as an alternative to azathioprine. Give 600mg/m^2 bd po immediately after food. This can be changed to 300mg/m^2 qds po if diarrhoea, a common adverse effect, is troublesome.

LIVING RELATED DONOR TRANSPLANTATION (LRD)

This is an elective procedure. The recipient is usually admitted 2 days before the operation date.

The only deviations from the standard **pre-operative** protocol are given below. **The post-operative management is unaltered.**

Pre-transplant drugs and fluids

The recipient will **already** be taking po cyclosporin A and po azathioprine. The pre-operative hydration iv fluids should be commenced the night before the graft.

Bloods

Bloods are to be taken as per the "10 Point Plan" on the day of arrival.

The **donor** should also be bled at this time for cytotoxic X-match and FACS - 60ml Li-hep (*note* larger volume than for recipients), 10ml clotted and 5ml EDTA. The X-match result is required as soon as possible in order to cancel the procedure in good time if the result is positive.

A **recipient cyclosporin A level** should also be checked on the morning of admission and the morning of the transplant. A level of 200-250ng/ml is desired.

Donor

The donor is admitted by the transplant surgeons the day before the procedure. Apart from the X-match bloods the donor is under their *exclusive* care.

SUBSEQUENT POST-OPERATIVE CARE

Mobilisation

- Patients are encouraged to sit out and mobilise as soon as is practical post operatively.

Temporary Central Venous Line

- This usually remains in situ until after the patient's discharge.

PD catheter or permanent haemodialysis line

- These are usually removed surgically 3 months post graft. Typically **this procedure is combined with the removal of the ureteric stent.**

Urinary catheters

- Children return from theatre with either a urethral or suprapubic catheter. Catheter urine should be microscoped on a daily basis.
- The urethral catheter is usually removed on day 5. A suprapubic catheter is clamped on day 7 and removed on day 21 (often after discharge).

IMMUNISATIONS

After renal transplantation the following live vaccines are contraindicated :

- BCG
- Measles, mumps and rubella (MMR)
- Oral poliomyelitis, live (Sabin)

The following inactivated/detoxified exotoxin vaccines can be given:

- Diphtheria, Pertussis, Tetanus (Triple vaccine)
- Diphtheria and Tetanus (Booster)
- Haemophilus influenzae type b (Hib)
- Influenza - but this is **not necessary** for children after transplantation

POST-OPERATIVE FEVER

Infection and rejection are the main diagnoses to be considered. Discuss a post-operative pyrexia with the Paediatric Nephrology Consultant on call.

Investigations

In all febrile patients perform the following urgently:

- plasma creatinine (unless measured within the last 8 hours)
- FBC
- microscope the urine
- if a Tenckhoff catheter is in situ, even if they are not dialysed, microscope the dialysate
- venous blood cultures should be taken from the central line
- other investigations such as a chest x-ray, wounds swabs etc. need to be considered
- USS of the renal tract*
- check CMV status urgently*
- if recipient CMV negative and check cytotoxic cross match*

* Can be deferred until the following morning if the episode occurs after 1700.

Diagnosis

If a focus of *infection* is acutely found, a diagnosis of infection can be made. Infection, however, can trigger rejection.

Rejection is typically seen between days 5 and 10. It is usually diagnosed on 2 or more of the following:

- rising creatinine
- reduced urine output
- fever
- hypertension
- graft tenderness

In some patients it may be impossible to distinguish between infection and rejection and treatment with both antibiotics and increased immunosuppression is required

Treatment

- **Treatment of infection**

If the patient is unwell and blind antibiotic treatment is necessary, use

Augmentin 30 mg/Kg/dose qds iv for 5 days **or ceftazidime 25 mg/Kg bd iv** for 5 days (give 25 mg/Kg od iv if GFR 15-30 ml/min/1.73 m^2 or 4.5 mg/Kg iv od if GFR less than 15 ml/min/1.73 m^2).

Treatment continued

- **Treatment of rejection**

First episode of acute rejection occurring within 6 weeks of transplantation: treat with *3 days of iv methyl prednisolone 300 mg/m²* (This may be extended to 5 days on the judgement of the renal team). If the creatinine has not returned to baseline after this course, the following "tail" of oral prednisolone may be used: *3 days of 2 mg/Kg po prednisolone then 3 days of 1.5 mg/Kg, then 3 days of 1 mg/Kg.,* then return to standard maintenance prednisolone dose.

Second acute rejection episode within the first 6 post-operative weeks: treat in the same manner.

Rejection episodes occurring greater than 6 weeks post operatively: treat with *3 days of 3 mg/Kg of po prednisolone.* The same indications for "tail" applies.

A **transplant biopsy** will be considered if the creatinine does not a return to baseline with glucocorticoid therapy **or** if it is the 3rd episode of acute rejection.

NB **During episodes of rejection it is essential that daily cyclosporin A levels are monitored to ensure they are within the therapeutic range.**

SECOND LINE IMMUNOSUPPRESSANT AGENTS

These are occasionally used in the treatment of rejection resistant to intravenous steroids. They include ATG, ALG and OKT3.

Second line therapy is initiated by consultants only.

Anti-Thymocyte Globulin (ATG) (Merieux) 25mg in 5ml.

Anti-thymocyte globulin is an anti-T cell preparation. Periodically the availability of this product changes and its sister compound Anti-Lymphocyte Globulin (ALG) is employed.

Take blood for cytotoxic cross match before the initial dose.

Dose:

- 80mg/m² for 10 days, occasionally extended to 14 days. Must be given via a *central venous line.* Dilute each 1mg of ATG in at least 2ml of 0.9% NaCl. Infuse over 8 hours. The first dose should be given during the day as allergic reactions are not uncommon and consist of fevers, rigors and malaise. For this reason the initial infusion is to be given when a larger number of medical/nursing staff are available.
- Treat allergic responses with 0.2mg/Kg Chlorpheniramine iv (maximum dose 10mg) and 8mg/Kg of Hydrocortisone iv (maximum dose 200mg). These doses can be used prophylactically for future infusions.
- After the first infusion, ATG is usually administered overnight.

Anti-Thymocyte Globulin (ATG) Continued

Side Effects:

- See allergic reactions above.

Monitoring:

- The absolute T cell count needs to be measured each day. This involves sending a 0.5ml EDTA sample to Haematology for a FBC and differential and a 2 ml Li-Hep. sample to the Department of Surgery FACS lab (extension 24368) for T cell subsets.
- From the differential and subset counts the absolute number of T cells can be calculated. If the T cell count is less than 0.05×10^9/l ATG should not be administered that day. The count should obviously be repeated the following day.
- Quite often children only require ATG on alternate days during their course.

Other drugs:

- Cyclosporin A is *discontinued* during the ATG course and recommenced at the previous dose 3 days before the end of ATG. Prednisolone and azathioprine are continued throughout.
- If not already on co-trimoxazole, start 12 mg/Kg po od and continue for 2 months after completing the course of ATG. This is as prophylaxis against *pneumocystis carinii.*

Anti-Lymphocyte Globulin (ALG) (Merieux) 100mg in 5ml.

NB. The dose of ALG is four times that of ATG.

Dose:

- 240mg/m^2 for 10 days.

Other than the dose, all of the above applies equally for ALG.

OKT3 (Janssen-Cilag) 5mg in 5ml

This is a CD3 murine monoclonal antibody. It can be given through a peripheral cannula. A central venous line is not required. The patient must be normovolaemic and have a normal chest x-ray prior to treatment, as pulmonary oedema is a recognised but rare acute adverse reaction.

Dose

- 5mg/Kg iv for 10 days, occasionally extended to 14 days. Give as a fast bolus.
- Do **not** administer if patient's temperature exceeds 37.8℃.

Side Effects

- Usually seen with 30 minutes to 6 hours of the *first* dose. Include: chills, fever, dyspnoea, nausea, vomiting, pulmonary oedema (see above - treat with prompt IPPV) and wheezing.

OKT3 Continued

Monitoring

- Samples as for ATG/ALG. Within a day the CD3, CD4 and CD8 counts will fall.

  The CD4 and CD8 counts increase between days 2 and 7, but the CD3 count remains low.

Other drugs

- Give methyl prednisolone 1mg/Kg iv before each of the first 3 doses of OKT3. Give hydrocortisone 100mg po 30 minutes after the first 3 doses. No further steroid doses are required after day 3 in the absence of adverse reactions.

- Cyclosporin A is *discontinued* during the OKT3 course and recommenced at the previous dose 3 days before the end of OKT3. The dose of prednisolone is reduced to 0.5mg/Kg od po and the dose of azathioprine is halved.

- If not already on co-trimoxazole, start 12 mg/Kg po od and continue for 2 months after completing the course of OKT3. This is as prophylaxis against *pneumocystis carinii.*

CHART TO ESTIMATE SURFACE AREA FROM BODY WEIGHT

weight (kg)	BSA (m^2)	weight (kg)	BSA (m^2)	weight (kg)	BSA (m^2)
0.4	0.049	8	0.422	40	1.27
0.5	0.058	9	0.458	42	1.32
0.6	0.066	10	0.493	44	1.36
0.7	0.074	11	0.526	46	1.40
0.8	0.082	12	0.559	48	1.44
0.9	0.089	13	0.591	50	1.48
1	0.096	14	0.622	52	1.52
1.2	0.110	15	0.652	54	1.56
1.4	0.123	16	0.681	56	1.60
1.6	0.135	17	0.710	58	1.63
1.8	0.147	18	0.739	60	1.67
2	0.159	19	0.767	62	1.71
2.2	0.170	20	0.794	64	1.75
2.4	0.181	21	0.821	66	1.78
2.6	0.191	22	0.848	68	1.82
2.8	0.201	23	0.874	70	1.85
3	0.212	24	0.900	72	1.89
3.2	0.222	25	0.925	74	1.92
3.4	0.231	26	0.950	76	1.96
3.6	0.241	27	0.975	78	1.99
3.8	0.250	28	0.999	80	2.03
4	0.259	29	1.02	82	2.06
4.5	0.282	30	1.05	84	2.09
5	0.304	32	1.09	88	2.16
5.5	0.325	34	1.14	92	2.22
6	0.345	36	1.19	96	2.29
7	0.384	38	1.23	100	2.35