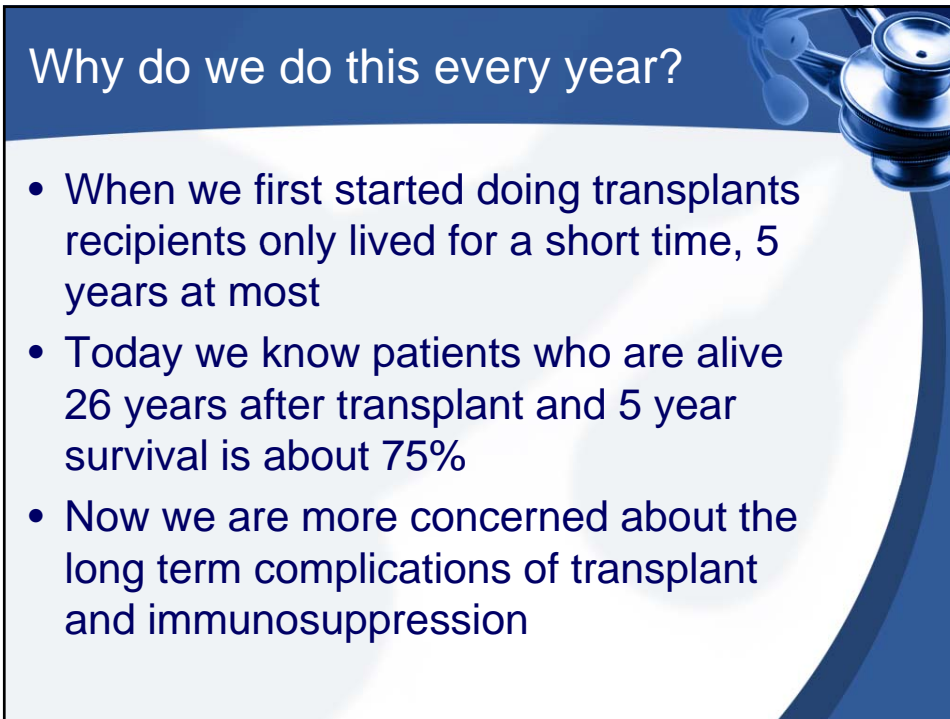
A blue-tinted image featuring a stethoscope in the upper left corner. The background is a light blue gradient with a faint, semi-transparent shadow of a human heart. A dark blue curved shape is visible on the right side of the frame.

## The Annual Visit

What is involved in your once a year total check up?

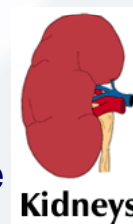
A blue-tinted image featuring a stethoscope in the upper right corner. The background is a light blue gradient with a faint, semi-transparent shadow of a human heart. A dark blue curved shape is visible on the right side of the frame.

## Why do we do this every year?

- When we first started doing transplants recipients only lived for a short time, 5 years at most
- Today we know patients who are alive 26 years after transplant and 5 year survival is about 75%
- Now we are more concerned about the long term complications of transplant and immunosuppression

## Renal Insufficiency

- 10% of organ transplant recipients have severe kidney disease, a great deal more have moderate renal insufficiency.
- Reducing Tacrolimus or Cyclosporine after symptoms does not change the outcome.
- GFR to look at renal flow, blood work that targets kidney function, urine tests



## What is a GFR?

- The test is used to show how well your child's kidneys are working. The test involves injecting a dye into a vein and taking blood samples to measure how well the kidneys' drainage tubes are filtering out the dye.
- The test starts when your child has the first blood sample taken.
  - Next a staff person will inject the dye
  - Three hours after the injection, another small blood sample
  - four hours after the injection, another small blood sample
  - To increase the accuracy of the test, the nurse will usually give the dye into one arm and take blood samples from the other

## Results

- In this case the lower the number the worse your renal function.
- Refer to nephrology for  $<90$
- Stage 2 is mild disease GFR 60-89
- Stage 3 moderate, GFR 30-59
- Stage 4 Severe, GFR 15-29
- Stage 5 = renal failure for GFR  $<15$
- Stage 2 and 3 have potential to get better
- If Normal or stable over 2 years, do every 2<sup>nd</sup> year

## How to improve renal function?

- Stay hydrated, important to drink plenty of fluids, especially when ill or hot outside
- Pay attention to blood pressure



## Growth Failure

- Many things contribute to growth failure: immunosuppression, renal insufficiency, poor nutrition, prolonged bed rest
- Risk of fracture due to bone loss is 60% at 15 years post transplant in kidney transplant vs 20% in "normal" adult population
- Use of calcium and Vitamin D can optimize bone health but studies show that anyone on more than 3 months of prednisone will probably benefit from more aggressive therapy.
- Our kids are on steroids for at least 3-6 months and then for every rejection episode.
- Bone density to measure bone loss. Bloodwork to assess levels of calcium and vitamin D

## What is a bone density?

- A series of X-rays that look at your wrist, spine and hip bone
- A specialized radiologist will compare your score with "normal" values and make recommendations about need for treatment or not
- Will tell us about osteopenia and osteoporosis
- May also do a bone age if concerns about height

## Results

- Could be within normal limits
- Or could be one or two standard deviations below normal
- May make recommendations about maximizing calcium or vitamin D
- Dietitian may phone about supplements
- If normal, do every 2<sup>nd</sup> year



## Diabetes

- immunosuppression causes insulin resistance like someone with type 2 diabetes, other risks include family history, ethnicity, obesity, activity, & high cholesterol
- Regular glucose done with every blood work but special testing done with annual to look at glucose over a 3 month period
- HgbA1C

## How do we measure Hgb A1C?

- This is a blood test
- It will be added to all the blood work you must do as part of the annual visit.
- If this is high more testing will be done to decide if medication is necessary



## High Blood Pressure - Hypertension

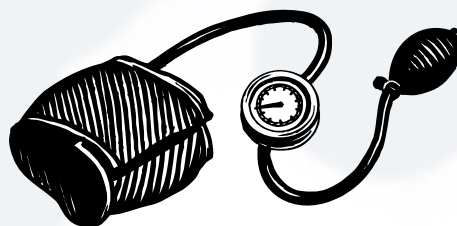
- immunosuppression, diabetes, renal insufficiency all contribute to hypertension or high blood pressure after transplant.
- In fact hypertension can be the first sign of renal insufficiency before changes in creatinine and GFR are seen.
- 24 hr BP monitoring

## What is Normal?

- That is a good question, because it changes as you grow and is a little different in girls and boys as they age
- 1 year old girl or boy 86/40 at the 50%
- 5 year old girl or boy 93/54
- 12 year old girl or boy 105-106/62
- 17 year old girl 111/66
- 17 year old boy 118/67
- Adult 120/80

## Trends in Blood Pressure

- Blood Pressure changes over the day
- In different situations, positions, limbs
- “white coat syndrome” means your blood pressure goes up when you visit the doctor



## Cancer



- the most common type of cancer after transplant in children is lymphoma.
- Palpation of lymph nodes in neck, arm pits and groins should be done at least annually.
- Physical exam

## Post Transplant Lymphoproliferative Disease (PTLD) (Transplant Lymphoma)



- PTLD is often found in the tonsils, adenoids, and gut.
- Can be anywhere
- Attention to blood work, unexplained fevers, weight loss and other symptoms help in surveillance.
- EBV PCR in those who have no history of infection before transplant can help to stop the progression of PTLD which is believed to be stimulated by the virus.
- EBV PCR surveillance



## Rejection

- this is almost a problem of the past in transplantation
- We still need to look for it in biopsy as there is no good way to tell from blood work although the echo and EKG will give us a big hint that further investigation needs to be done.
- Risk of Rejection after 5 years drops to 6% until adolescence
- Echo, EKG, Walk Test, Biopsy, MIBI

## How do you treat Rejection?

- A mild rejection is often just treated with increase in main immunosuppression
- A moderate rejection would be treated with steroids
- Will need to repeat biopsies to monitor treatment program and adjust as needed

## What about Coronary Artery Disease?

- In heart transplant there can be changes in the arteries similar to what is seen with coronary artery disease (CAD)
- This is called Coronary Artery Vasculopathy or CAV or TCAD
- A form of Chronic Rejection
  - Cause not well known
  - Non-adherence?

## Infection

- Continues to be the number one cause of death after transplant
- To monitor for infection we look at blood work and ask about fevers, perform a physical exam
- Blood tests monitor activity of the immune system and infection and immunization antibodies
- Serology

## CAUTION

- Sterilizing the environment is impossible
- You will drive your friends and spouse away
- You need to be careful not obsessed.



## What are we looking for?

- Check for Hepatitis B and C
- Look for immunity to Hepatitis B, MMR, VZ
- Check to see if has acquired CMV or EBV in the community
- Once positive, serology no longer required

## Immune Response to Donor

- Blood test called lymphocytotoxic antibody screen (LAS)
- Done every year to see how the recipients immune system reacts to the donor organ over time

## Questions?



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