THE RENAL PATIENT:
ORAL CONSIDERATIONS
OBJECTIVES

- TO BECOME FAMILIAR WITH HOW CHRONIC RENAL DISEASE EFFECTS ORAL HEALTH; WITH WHAT THE DENTAL PROFESSIONAL MIGHT FIND ON ORAL EXAMINATION

- TO BECOME FAMILIAR WITH THE STRATEGIES USED BY DENTAL PROFESSIONALS TO IMPROVE ORAL HEALTH IN THE ESRD POPULATION

- TO BE ABLE TO COUNSEL THE RENAL PATIENT/DIALYSIS PATIENT RE: NECESSARY CHANGES NEEDED IN DIET/ ORAL CARE TO IMPROVE ORAL HEALTH
THREE THINGS I KNOW:

1. The kidney is the most efficient “Waste treatment plant” created, until it no longer functions.
2. Eating wisely does not guarantee long life but eating unwisely will likely facilitate a shortened life – especially in ESRD / CKD
3. The oral cavity is a good indicator for both.
#1
OVERVIEW: KIDNEY

ANATOMY-
2 bean shaped organs
Fist – size
4 to 6 ounces
OVERVIEW: KIDNEY

FUNCTION -
- Produce urine – 40 to 60 oz. per day
- Filter blood – 12 x per hour
  - 2 gallons per hour
  - 200 quarts per day
- Balance fluid contents
- Balance electrolytes
  - Phosphorus
  - Potassium
  - Sodium
OVERVIEW: KIDNEY

FUNCTION-

- Produce RENIN – controls blood pressure
- Produce ERYTHROPOIETIN – signals marrow to produce red blood cells
- Activate VITAMIN D – bone health
When kidneys no longer clean toxins and waste product from the blood and perform their functions to full capacity . . .

Toxic Waste accumulates
Toxic waste affecting all systems -

- BONES
- STONES
- ABDOMINAL GROANS
- PSYCHIC MOANS
- FATIGUE OVERTONES
RESULT-

- CHEMICAL IMBALANCES
  - BONE CHANGES
  - MUSCLE WEAKNESS
  - GASTROINTESTINAL PROBLEMS

- FLUID OVERLOAD
  - ↑BLOOD PRESSURE / HEART FAILURE
  - NAUSEA/ VOMITING

- ↓ RED CELL PRODUCTION
  - ANEMIA
  - FATIGUE

- POOR NUTRITION
- IMMUNO COMPROMISE
NUTRITION -

1992 – USDA CENTER FOR NUTRITION POLICY AND PROMOTION
2005 Dietary Guidelines for Americans

GRAINS
VEGETABLES
FRUITS
DAIRY
MEAT AND BEANS
OILS
DIETARY GUIDELINES with CKD?

GRAINS
VEGETABLES
FRUITS
DAIRY
MEAT AND BEANS
OILS
DIETARY GUIDELINES AND CKD

- **GRAINS – PHOSPHORUS**
  - WHOLE GRAINS
- **VEGETABLES – PHOSPHORUS**
  - POTATOES
- **FRUITS – POTASSIUM**
  - AVOCADO, BANANAS
- **DAIRY – POTASSIUM & PHOSPHORUS**
  - MILK, YOGURT
- **MEAT AND BEANS – POTASSIUM & PHOSPHORUS**
  - DRIED PEAS, NUTS, SEEDS, PROCESSED MEATS
- **CHOCOLATE, COLA – CONTAIN BOTH**
Just what do those who have CKD eat?
SUPPLEMENTAL MEDICATIONS

- PHOSPHATE BINDERS
- ERYTHROPOIETIN
- B VITAMINS AND FOLATE
- VITAMIN D
PORTAL OF ENTRY
PREVENTION
ORAL DISEASE

TEETH
• CARIES

SOFT TISSUE
• PERIODONTAL DISEASE

BONES
• ALVEOLAR BONE LOSS
ORAL DISEASE

TEETH
- Caries
- Enamel defects
- Enamel hypoplasia
- Enamel wear – Abrasion, attrition and erosion

SOFT TISSUE
- Periodontal disease
- Mucosal disease
- Herpes, candidiasis

BONES
- Alveolar bone loss
- Dystrophic changes
- Osteoporosis, osteodystrophy
FORMULA FOR DENTAL CARIES

- Teeth
- Step Mutans
- Sucrose
STRATEGY FOR TREATMENT OF CARIES

- CARIES REMOVAL
  - EXTRACTION VS. ENDODONTICS (ROOT CANAL)
    - AGGRESSIVE APPROACH TO ELIMINATE INFECTION
    - CARIES EXCAVATION AND RESTORATION
  - PREVENTION
    - FLUORIDE APPLICATION
    - DIET COUNSELING
      - CONCENTRATION ON ELIMINATION OF SUGARS
        - SODAS, MINTS, LOZENGES, ADDED SUGARS

- PATIENT EDUCATION
  - BRUSHING, FLOSSING
  - DAILY FLUORIDE APPLICATION @ HOME
    - PRESCRIPTION GELs AND PASTES
FORMULA FOR PERIODONTAL DISEASE

- SOFT TISSUES
- BACTERIAL TOXINS
- ORAL FLUIDS
STRATEGY FOR TREATMENT OF PERIODONTAL DISEASE

- EXTRACTION OF TEETH WITH POOR PROGNOSIS

- PERIODONTAL THERAPY/ DEBRIDEMENT
  - REMOVAL OF BACTERIAL DEBRIS
  - ELIMINATION OF SOURCE OF INFECTION ABOVE AND BELOW THE GINGIVAL TISSUES
  - FREQUENT RECALL EXAMS AND CLEANING

- PATIENT EDUCATION
  - DISEASE EDUCATION
  - BRUSHING, FLOSSING
  - USE OF DISINFECTANT RINSES
SEVERE PERIODONTITIS WITH FURCATION INVOLVEMENT NONRESTORABLE CARIOUS TEETH
RENAL PATIENT

- CHEMICAL IMBALANCES
  - BONE CHANGES
  - MUSCLE WEAKNESS
  - GASTROINTESTINAL PROBLEMS

- FLUID OVERLOAD
  - ↑ BLOOD PRESSURE / HEART FAILURE
  - NAUSEA/ VOMITING

- ↓ RED CELL PRODUCTION
  - ANEMIA
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- POOR NUTRITION
- IMMUNO COMPROMISE
PERIODONTAL DISEASE
CARIES
IMMUNE COMPROMISE
INFECTION
CONSIDERATIONS FOR THOSE WITH KIDNEY DISEASE

- The Journal of Clinical Periodontology reported that
  . . . “people with kidney disease and those on dialysis are more likely to have periodontal disease and other oral health problems than the general population.”
Because people with kidney disease have weakened immune systems, they are more susceptible to infections.

The inflammation caused by periodontal disease is a risk factor for cardiovascular disease.
CASE #1

- 27 YEAR OLD AA FEMALE
- PMH:
  - JUVENILE POLYSYSTIC KIDNEY DISEASE
  - SEIZURE D/O
  - HTN
  - ASTHMA
  - ACID REFLUX
- PE:
  - BP 138/81
  - P 83 RAS
CASE #1

- ORAL FINDINGS:
  - GENERALIZED GINGIVAL ENLARGEMENT
  - GENERALIZED GINGIVAL ERYTHEMA
  - MILD TO MODERATE PLAQUE ACCUMULATION
  - GENERALIZED GINGIVAL BLEEDING WITH PROBING
  - GENERALIZED ENAMEL HYPOPLASIA
GINGIVAL ENLARGEMENT

GINGIVAL ERYTHEMA

ENAMEL HYPOPLASIA
ENAMEL HYPOPLASIA

CHRONIC RENAL DISEASE IN THE FIRST YEAR OF LIFE IS ASSOCIATED WITH DEVELOPMENTAL DEFECTS OF ENAMEL IN THE PERMANENT DENTITION

ENAMEL HYPOPLASIA STRIA CONINCIDE WITH TIME OF RENAL EPISODE
CASE #2

- 54 YEAR OLD MALE
  - ESRD - 2° TYPE 1 DM / HTN
  - HISTORY OF STROKE WITH R HEMIPARESIS
  - CAD
  - HYPERCHOLESTEROLEMIA
  - HYPOTHYROIDIDSM
  - GLAUCOMA / RETINOPATHY
CASE #2

- ORAL FINDINGS:
  - EXTRAORAL: PALLOR WITH HYPERPIGMENTED SKIN
  - HAIRY TONGUE
  - INTRAORAL:
    - GENERALIZED GINGIVAL RECESSION
    - SIGNIFICANT TOOTH WEAR DUE TO ATTRITION, ABRASION, EROSION
    - MISSING TEETH
GINGIVAL RECESSION

HAIRY TONGUE

PALE ORAL TISSUES

SIGNIFICANT LOSS OF ENAMEL
CASE #3

- 52 YEAR OLD AA FEMALE
- PMH:
  - ESRD ON HEMODIALYSIS
  - HTN
  - DM
  - CATARRACT L EYE
  - HX OF TRIPLE BYPASS WITH STENT
  - HX OF GASTRIC ULCERS
  - HYPOTHYROIDISM
  - PERIPHERAL NEUROPATHY
  - DEPRESSION
  - DVT L LEG
CASE #3

- ORAL FINDINGS:
  - EXTRAORAL – NO SWELLING APPARENT
    - SWELLING IN PAST ON L SIDE
  - INTRAORAL –
    - UPPER DENTURE / NATURAL LOWER TEETH IN POOR REPAIR
    - EVIDENCE OF PERIODONTAL DISEASE
    - EVIDENCE OF CARIES
ROLLED GINGIVAL MARGINS
RESULT OF PERIODONTAL INFECTION

TREATMENT:
EXTRCTIONS
PERIODONTAL SCALING
CARIES REMOVAL
UPPER DENTURE / LOWER PARTIAL

CARIES
PERIAPICAL INFECTION
DENTAL MANAGEMENT CONSIDERATIONS

- LABS
- BLOOD PRESSURES
- BLOOD SUGAR
- PROPHYLACTIC ANTIBIOTIC COVERAGE
  - Infection is a frequent cause of morbidity/mortality in patients receiving hemodialysis therapy
- Treat on days in between dialysis
- Agressively eliminate sources of intraoral infection
  - Periodontal and carious
CASE #4

- 41 YEAR OLD CAUCASIAN FEMALE
- PMH:
  - HYPOPLASTIC KIDNEYS – TRANSPLANT
  - HTN
  - STEROID INDUCED DM
  - PARATHYROIDECTOMY
  - BILATERAL HIP REPLACEMENT
CASE #4

- ORAL FINDINGS:
  - GENERALIZED INTRINSIC STAINING
  - GENERALIZED ENAMEL HYPOPLASIA
  - LOCALIZED MILD GINGIVAL HYPERPLASIA
  - SCALLOPING OF TONGUE
ENAMEL HYPOPLASIA
GINGIVAL HYPERPLASIA
RENAL OSTEODYSTROPHY
CASE #5

- 43 YEAR OLD CAUCASIAN MALE
- ESRD; TRANSPLANTED IN 1993
- TYPE 1 DM
- HTN
- CABG 2000
- HYPERCHOLESTEROLEMIA
- RETINOPATHY – R EYE ENUCLEATION
- HX OF SKIN CANCER – MULTIPLE AREAS
- LYMPHOMA OF COLON W/ RESECTION
  - 1° DIAGNOSIS MADE WITH ORAL BIOPSY
- IMMUNOSUPPRESSED
CASE #5

- ORAL FINDINGS –
  - LOCALIZED GINGIVAL ERYTHEMA SECONDARY TO CALCULUS ACCUMULATION
  - GENERALIZED SEVERE ENAMEL EROSION
  - RADIOGRAPHIC BONE LOSS
GINGIVAL RECESSION DUE TO BACTERIAL ACCUMULATION

SEVERE ENAMEL EROSION
ENAMEL EROSION

- **SIGNIFICANT ISSUE RE: ORAL MORBIDITY-**
  - TOOTH LOSS
  - SENSITIVITY
  - VERTICAL DIMENSION
  - CARIES

- **AFFECTS >90% OF CKD PATIENTS**

- **RELATED TO CHRONIC EMESIS**
  - GERD
  - GASTROPARESIS
  - NAUSEA RELATED TO DIALYSIS
  - CHEMICAL IMBALANCE

- **SEEMS NOT TO BE IMPROVED WITH MEDICATION**
TREATMENT?

- ADDRESS NAUSEA
- SEEK TO DECREASE LOSS OF ENAMEL
  - DO NOT BRUSH RIGHT AFTER EPISODE
  - RINSE WITH BICARBONATE SOLUTION TO NEUTRALIZE ACID ENVIRONMENT
  - DO NOT USE ABRASIVE TOOTHPASTES
    - TARTAR CONTROL
    - WHITENING
“... gnashing of teeth.”

- Teeth are mentioned 41 times in the Bible
  “gnashing of teeth” 9 times in the New Testament
“Something is always going wrong with our teeth. They don't last anything like a lifetime, usually. What chain of events in evolution should we thank for our *mouthfuls of rotting crockery*? “

-Kurt Vonnegut,