

Save Lives! Organ Transplantation & Subsequent Dental Considerations

Karen Davis, RDH, BSDH

Resources

www.organtissuedonation.ca - Donate life

www.canada.ca > Blood, Organ and Tissue Donation

www.blood.ca > **Canadian Blood Services** > Organs and Tissues for Life > National non-for-profit charitable organization that manages blood, organ, and tissue donation through all provinces in Canada

Canadian Transplant Registry operated by **Canadian Blood Services** is the national registry for linking potential waitlist recipients to actual donors throughout all provinces. **1-888-2 DONATE**

Kidney Paired Donation Program – Living kidney donation pairing/matches

Highly Sensitized Patients - Patients with highly sensitized immune systems in need of deceased kidney

National Organ Waitlist – Non-renal organ transplant lists patients in need of heart, lungs, liver, pancreas, small bowel and multi-organs transplants

www.crntp.ca **Canadian National Transplant Research Program (CNTRP)** – national network focused on increasing organ and tissue donation in CA and enhancing survival and quality of life of transplant recipients. For more information > Year 4 Scientific Progress Report.

www.canadiantransplant.com **Canadian Transplant Association** - The CTA encourages and motivates transplant recipients to maintain a healthy lifestyle by supporting athletic and other awareness events. The Transplant Games held every 2 years. Next event: 2020.

www.Cantransplant.ca - **Canadian Society of Transplantation** – professional organization for physicians, surgeons, scientists and allied health professionals dedicated to the field of transplantation.

www.cihi.ca - **Canadian Institute for Health Information** > Canadian Organ Replacement Register (CORR) – information system reporting statistics on organ transplantation annually.

www.TheOrganProject.net -non-profit organization focused on ending the organ transplant wait lists. Founded 2016 by Eugene Melnyk, liver transplant recipient. Facebook: The Organ Project

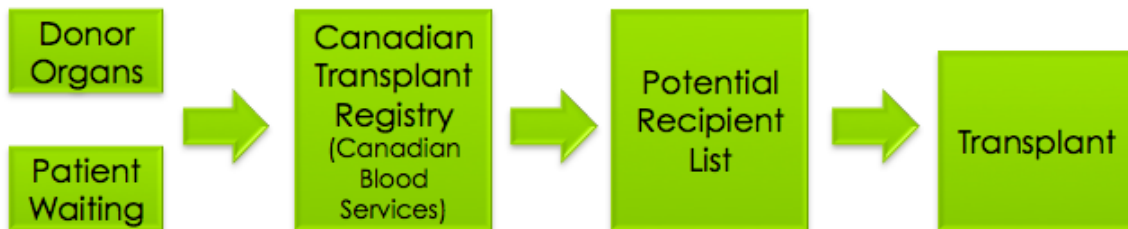
www.transplant.bc.ca - BC Transplant –oversees all aspects of organ donation and transplant across British Columbia and manages the BC Organ Transplant Registry.

Donation after Neurological Death (NDD) - brain has permanently lost all function and a diagnosis of death using neurological criteria has been determined.

Donation after Cardio-Circulatory Death (DCD) an option for patients with severe brain injuries once a decision has been made to remove all life-sustaining treatments. When a person’s heart permanently stops beating, they have experienced Cardio-Circulatory Death.

Death must be determined by 2 doctors

Organ Donation Process



Non-Living Organ Donation

All major religions in the world view organ donation as an act of charity or make it clear that it is a decision left up to the individual or family

Non-Living Organ Donation

- No age restrictions
- Exclusions: Active cancer, Systemic infection, HIV?

Principles guiding optimal organ eligibility and allocation in CA:

- Medical Need - access to ensure health and life
- Utility - optimal use of a limited resource
- Justice - equitable access to a limited resource
- Balance - for competing principles
- Transparency
- Accountability

Organ Allocation Factors:

- Age
- Blood type
- Medical urgency
- Waiting time
- Geographic distance between donor and recipient
- Size of the donor organ in relation to the recipient
- Type of organ needed
- MELD score - liver

Ethics of Allocation

- Alcoholic liver disease
- Single versus multiple organ transplantation

Blood Type Compatibility

Recipient Blood Type	Donor Blood Type(s)
A	A or O
AB (Universal Recipient)	A, AB, B or O
B	B or O
O (Universal Donor)	O

Living Donation Options

- Kidney
- Lobe of a Lung
- Partial liver, pancreas or intestine
- Stem Cell / Bone marrow

Living Donation

- Related – blood relative
- Non-Related – spouses, in-laws, friends
- Non-Directed – Not known by recipient
- Paired Donation – 2 kidney donor/recipient pairs with incompatible blood types, but trade donors for compatibility
- HLA-incompatible – Recipient is positive for antibodies against the organ to be transplanted. A process called desensitization removes antibodies in the blood and incompatible matches can be transplanted. (Recent data confirms better outcomes than not receiving kidney transplant. NEJM 2016)

Living Donation Resources in BC

- BC Children's Hospital 604-875-2000
- St. Paul's Hospital 604-806-9027
- Vancouver General Hospital 604-875-5182
- www.BCTransplant.com for more information

Conditions Associated With Chronic Kidney Disease – 90% have oral manifestations

- Palatal/lingual erosion due to vomiting
- Diminished salivary flow
- Ammonia-odor of saliva
- Candidiasis, stomatitis, glossitis
- Gingival hyperplasia / periodontitis
- Enamel hypoplasia
- Loss of lamina dura
- Increased risk of bone fracture with extraction

Bidirectional relationship between Chronic Kidney Disease & Periodontal Disease?

Patients with CKD have higher prevalence of periodontal diseases.
Periodontal therapy indicated to decrease systemic burden in patients with CKD, especially those undergoing dialysis.

Pakistan Journal of Medical Science 2013

Third National Health and Nutritional Examination Survey (NHANESIII) found strong association between periodontitis and **increased mortality** in patients with CKD

Journal of Clinical Periodontology 2015

Association between periodontal disease and mortality in people with CKD?

Meta Analysis: 8 studies / 5477 people with CKD

Periodontal disease was associated with an increased risk of all-cause death in people with CKD.

BMC Nephrology 2017

Considerations For Patients With Chronic Kidney Disease & End Stage Renal Disease

- Consultation with Nephrologist
- Blood count & coagulation tests prior to invasive treatment
- Eliminate any infections ASAP
- Monitor blood pressure during procedures
- Avoid tetracycline
- Prolong penicillin, clindamycin & cyclosporine
- Avoid NSAIDs and aspirin
- Increased risk of bleeding for hemodialysis patients
- Increased risk of pneumonia
- Dietary modifications
- Nutritional deficiencies

Vitamin	Function	Oral Symptoms of Deficiency
B Vitamins	Energy production, DNA, RNA synthesis	Angular cheilitis, bald tongue, apthous ulcers, glossitis, pale or scarlet tongue
Vitamin C	Antioxidant, iron absorption, collagen synthesis, reduction of inflammation	Bleeding gums, gingivitis, tooth loss
Iron	Carries oxygen, energy levels	Pale lips/tongue, filiform atrophy, scarlet tongue
Zinc	Immune function, wound healing, taste	Extraoral dermatitis, peeling lips, angular cheilitis, poor taste acuity

End-Stage Kidney Disease

- >30% increase in past decade in CA
- Annual cost for patient on dialysis: \$56 – 107K
- Infections second leading cause of death
- Options for ESKD:
 - Hemodialysis – machine assisted waste removal. Treatments 3-4 times/wk
 - Peritoneal dialysis – fluid flushed into peritoneum to dissolve wastes / continuous cycle while sleeping
 - Kidney transplantation
 - Non-dialysis supportive/palliative care

Managing Oral Health While Waiting For Transplantation

- Collaboration with Physician, Dietician, etc.
- Scheduling considerations (Dialysis, energy levels)
- Medications & Side Effects
- Renal Failure
- Premedication
- Oral Infection
- Excessive Bleeding
- Daily Biofilm Management
- Extract Non-Restorable Teeth
- Manage Anxiety

Manage Oral Health Post Transplantation

- Collaboration with Physician, other healthcare specialists
- Avoid Dental Treatment 3 Months Post Transplant
- Risk of Infections Increased – Check with MD for Premedication
- Slower Healing Due to Immunosuppression
- Steroids
- Antimicrobial pre-rinse
- Check BP
- Assess Bleeding Potential
- Saliva Substitutes & Fluorides for dry mouth
- CAMBRA
- Treat all Infections Aggressively
- Signs of Adrenal Insufficiency: Hypertensive, Weak, Nauseated, Feverish
- Consult with Physician for Prescribing Rx

**80% of transplant patients develop at least one infection post-transplant
40% of deaths for transplant recipients are due to complications of infections,
or infections following rejection**

55% bacterial

30% viral

15% fungal

Dental Research Journal 2015

Does long-term immunosuppression impact periodontal risk or outcomes?

- 167 Transplant patients / Ave. immunosuppression: 7 yrs.
- 5 immunosuppression drugs/combinations
- Assessments: Periodontal parameters/pathogens
- Classical high-risk periodontal pathogens (Pg, Tf, Fn) were reduced in prevalence over time but did not correlate to a decrease in periodontitis.
- 17% zero – mild periodontitis, 56% moderate periodontitis, 27% severe periodontitis.
- 5% have gingival overgrowth.
- Cyclosporine: worse periodontal outcomes and severity

Medicina Oral Patologia Oral y Cirugia Bucal 2018

Potential Side Effects of Immunosuppression

- Diabetes / worsening diabetes
- Bacterial Infections
- Candidiasis
- Herpes Simplex
- Hairy Leukoplakia
- Aphthous ulcers

- Progressive Periodontal Disease
- Delayed Wound Healing
- Excessive Hemorrhage
- Mucositis

VisualDx.com – online library of oral lesions

World Health Organization Scale for Oral Mucositis

- Grade 0 = No oral mucositis
- Grade 1 = Erythema and soreness
- Grade 2 = Ulcers, able to eat solids
- Grade 3 = Ulcers, requires liquid diet (due to mucositis)
- Grade 4 = Ulcers, alimentation not possible (due to mucositis)

National Cancer Institute Criteria for Adverse Events

- Grade 1 = Asymptomatic or mild symptoms; intervention not indicated.
- Grade 2 = Moderate pain; not interfering with oral intake; modified diet indicated
- Grade 3 = Severe pain; interfering with oral intake
- Grade 4 = Life-threatening consequences; urgent intervention indicated
- Grade 5 = Death

Oral Mucositis Guidelines – Annals of Oncology 2011

- Frequent use of non-medicated oral rinses, i.e. saline rinses 4 – 6 times daily
- Avoid alcohol-based & chlorhexidine rinses
- Soft or extra soft bristle brushes (Power brush on gentle vibration)
- Pain controlled analgesia with morphine
- Screen for evidence of malnutrition (glossy tissue)
- OTC Topical anesthetics may provide temporary relief

Cytomegalovirus Infection – Transmitted via saliva, urine, blood transfusions and organ transplantation. May remain dormant for a lifetime but can reactivate during immunosuppression

Graft Versus Host Disease – Higher incidence with stem cell transplantation than solid organ transplantation. Skin rash initial presentation. Can have oral presentation. High mortality with solid organ transplantation (75%). No standardized treatment although often treated with steroids and increased immunosuppression drugs.

Sample Products for Ulceration Relief, Xerostomia, Mucositis, Sensitivity and Plaque Control

- Gelclair- bioadherent oral rinse
- Rincinol- bioadherent oral rinse with aloe vera
- NeutraSal / Caphosol Rx - supersaturated calcium phosphate oral rinse
- Sooth & Cure patch
- PeriActive anti-inflammatory mouthrinse
- Periosciences - Topical antioxidant gel (anti-inflammatory & anti-bacterial)
- Triamcinolone Rx – cream for oral ulcerations
- Magic Mouthwash Rx – oral rinse with various formulations
 - Diphenhydramine (12.5 mg per 5 mL)
 - Antacid (Maalox liquid)
 - Lidocaine 2% viscous solution
 - Mixed in equal proportions 1:1:1
- Xylimelts – slow-release Xylitol oral lozenges for Xerostomia
- Basic Bites – calcium carbonate & arginine chews to increase pH and salivary flow
- Moisyn – mouthrinse and oral spray with arginine for Xerostomia
- Biotene – gum, mints, rinse for Xerostomia
- Forever Mints – slow dissolving Xylitol mints for Xerostomia
- Shield Force Plus – Light cured resin-based coating for dentinal sensitivity and protection
- Sonicare® Gentle Mode / Oral B Braun® – Sensitive Mode
- Tess® Oral Health – Post surgery/oncology toothbrush
- Low level laser – pain relief

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