Multiple Amputations
Compiled by:
Lori Hinton, DrPH, RN, CLCP

Definitions

**Amputation:**
Loss of a limb or extremity

**Multiple Amputation:**
Loss of more than one limb or extremity
Does not refer to multiple amputation procedures to same extremity

Types of Multiple Amputations

- **Bilateral lower limb amputations** – both lower limbs
- **Bilateral upper limb amputations** - both upper limbs
- **Hemi-lateral amputations**- one upper and one lower limb
- **Triple amputations** – unilateral upper and bilateral lower or bilateral upper and unilateral lower limb
- **Quadruple amputations**- bilateral upper and lower limbs
Prevalence of Amputation

• Prevalence:
  7 per 1000 (NHIS95: excludes toes/fingers)

• Prevalence Rate:
  1 in 142 or 1.9 million people in USA

• Prevalence of Multiple Amputations:
  Rare
  Rate unknown

Prevalence of Multiple Amputations

• Uncommon occurrence
• Bilateral amputation of upper extremities – frequently due to war or work injury
• Amputation of both upper and lower extremities – vary rare
• Bilateral amputation of lower extremities
  more common than arms by 3:1 ratio
• More common to have bilateral leg amputations than amputations of upper and lower extremity

Prevalence of Multiple Amputations

• Bilateral leg amputations more common in 6th and 7th decades of life
• Reasons:
  Occlusive arterial vascular disease
  Diabetes
  Infections
  Disease process effect both extremities equally
Causes of Multiple Amputations

- Trauma
- MVA
- Electrocution
- Mechanical accidents
- Infections – septicemia
- Suicide
- Alcoholism
- Disease – diabetes, PAD

Factors Contributing to Incidence

- Risk taking behaviors – trauma, MVA
- Excessive alcohol/drug use
- Industrial/occupational hazards
- Disease conditions – diabetes, infections, peripheral artery disease
- Depression – suicide attempts (railroads, car)
- Accidents – electrocution, other

Literature

- Significant literature on single amputation
- Little on multiple amputations
- Some on bilateral upper limbs
- Less on than lower limb amputations
- Very little on amputations of both upper and lower limbs
- Most are case studies
### Psychological Factors
- Emotionally traumatic experience
- Physical changes permanent
- Changes frequently occur suddenly
- Affects social, emotional, psychological aspects of life
- Family dynamics
- More difficult to deal with social issues than physical
- Multiple amputation exaggerates above

### Adjustment Issues
- Loss of sense of wholeness
- Vocational
- Interpersonal relationships
- Sexual
- Family
- Post traumatic stress
- Social isolation
- Reaction similar to grief- shock, denial, anger, depression, anxiety, fear

### Premorbid Personality
- Drug/alcohol abuse
- Depression/suicide
- Mental illness
- Socio-cultural bias
- Cognitive disorders
- Personality disorders
Cognitive Distortions

Pronounced with multiple amputations

• Unfounded assumption about ability to function
• Initiate or sustain relationships
• Achieve prosthetic function
• Fear of social rejection due to altered appearance
• Fixate on minor aspects of rehab process

Cognitive Distortions

• Ascribe significant meaning to any perceived flaws
• Selective negative attention to imperfections
• Overwhelmed with adjustment to community
• Downplay skill development
• Reject prosthetic use
• Polarization of experience – all or none
• Set unrealistic skill level expectations

Body Image Adjustment

• Body alteration
• Sudden and readily apparent
• Less able to minimize apparent losses with prosthetics and clothing
• Assumptions about ability to deal with social situations
Phases of Multiple Amputation Rehabilitation

- Preoperative
- Amputation surgery
- Acute post-operative
- Prosthetic
- Prosthetic fabrication
- Prosthetic training
- Community reintegration
- Vocational rehabilitation
- Follow up

Differences in Rehabilitation Process

- Depends of sites of multiple amputation
- Lower limb amputations
  rehab starts when wound heals
  usually in 7-14 days
  ambulation far more challenging
- Upper limb
  prosthetic fitting occurs early
  if bilateral upper limb, unable to don prosthesis
  if one upper limb and one or more lower limb, need for assistance
  with prosthesis
- Burned skin from electrocution
  may take months to heal
  scar tissue, contracture issues

Long Term Management Issues

1. Ambulation
2. Independence
3. Psychological
4. Social
5. Community intragration
6. Vocational
7. Energy expenditures
8. Follow up
Implications for Life Care Plan

**Psychological**
- Bereavement counseling – cope with loss
- Disability adjustment counseling – life stressor events and changes
- Goals – reduce anxiety, challenge distorted thoughts, reduce pain, increase coping
- Support system
- Psychological needs of family/significant others
- Issues vary over lifetime
- Effects of aging

Implications for Life Care Plan

**Counseling Needs**
- Cope with loss
- Preparation for changes in major aspects of life
- Techniques to deal with phantom pain
- Cultural issues
- Identification of personal and community resources
- Body image
- Sexual function issues
- Mobility and independence

Implications for Life Care Plan

**Counseling**
- Individualize to client immediate and future needs
- Major life events as potential stressors
  - Initial adjustment to disability
  - Vocational decisions, training, return to work
  - Dating, marriage
  - Having and raising children
  - Mid life changes
  - Aging
  - Coping with other health problems
Implications for Life Care Plan

Evaluations
- Physical
- Home environment
- Prosthetics
- Psychological
- Mobility
- Transportation
- Functional status
- Equipment
- Assistance with ADL’s
- Community resources and integration
- Recreation

Energy Expenditure
- Increased for any limb amputation
- More increased for lower limb than upper limb
- Below knee increased by 9% to 20%
- Above knee increased by 45% to 70%
- Bilateral above knee up to 300%
- Results in increased nutrition issues, fatigue, and oxygen and CVS needs

Energy Expenditure
- Nutrition assessment and counseling
- Internal medicine
- Personal attendant care needs and changes over time
  - ADL’s
  - Homemaking, shopping
  - Home maintenance
  - Transportation
  - Work related
### Implications for Life Care Plan

#### Equipment
- Prosthetics
- Vehicle adaptations
- Adaptive equipment for upper limbs relating to ADL – eating, dressing, grooming
- Wheelchair: manual, power
- Ramps
- Bathing – shower chair, handheld shower, lifts, other
- Maintenance of equipment
- Home furnishings
- Recreational and exercise equipment
- Home furnishings
- Safety – security system, ECU, phone service
- Communication – computer, internet, voice activation software

### Implications for Life Care Plan

#### Preservation of Strength and Range of Motion
- Initial and periodic physical therapy
- Physical therapy goals
  - Increase circulation
  - Reduce edema
  - Preserve posture and spinal mobility
  - Prevent scoliosis
  - Prevent contractures
  - Promote trunk balance and agility
  - Reduce hip contractures

### Implications for Life Care Plan

#### Occupational Therapy/Functional Assessment
- ADL assessment, therapy and equipment aids
- Home assessment
- Home modification
- Upper limb: one or both amputation
- Dominance – may take two years or more to change dominance
Implications for Life Care Plan

**Personal Care**
- Assistance needed depends on limbs amputated, age, complications, co-morbidities, adjustment
- Bilateral loss of upper limbs – greater difficulty with ADL’s
- Bilateral loss of lower limbs – greater difficulty with mobility

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Implications for Life Care Plan

**Potential Personal Care Needs**
- Activities of daily living (ADL’s) – toileting, dressing, grooming, drinking, eating, hygiene, teeth brushing, transferring, bathing, etc.
- Housekeeping – cooking, clean up after meal, clean dishes, dusting, grocery management, ironing, maintain clothing, laundry, making beds, mopping floors, sweeping, etc.
- Home and yard maintenance – taking out garbage, garden management, lawn mowing, leaf blowing, changing light bulb, outdoor repair, watering, raking, etc.

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Implications for Life Care Plan

**Potential Personal Care Needs**
- Transportation – medical appointments, running errands, community activities, recreation, children/family related activities, bank, church, school, work
- Work/Education – test taking, typing reports, carry books, work, supplies, note taking, transcribing, homework, fax, copy, sort, file, work/school related lifting, work/school preparation
- Leisure Activities – camping, exercise/gym related activities, church/community activities, hobbies, internet access/email
- Health – home based physical therapy program, nutrition, safety, exercise
Implications for Life Care Plan

Potential Personal Care Needs
• Most expensive item of Life Care Plan
• Must individualize plan of care
• Consider effect of changes over time and aging
• Effect of co-morbidities