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Foot Problems in the Older Patient Diagnostic and Therapeutic Considerations Podogeriatrics for Geriatricians

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Introduction

Foot problems in the elderly are common and are major factors in podalgia, limitation of mobility, developmental functional disability, impairment, ambulatory dysfunction, gait imbalance, increasing pain and discomfort. Foot impairments, changes, and deformities also present as risk factors for the development many significant complications of multiple systemic diseases and the potential for lower extremity amputation. Through the course of one's lifetime, the foot undergoes a great deal of trauma, use, misuse, and neglect. The stress of normal activity, changes associated with the aging process, systemic diseases, focal impairment, and environmental factors associated with ambulation create discomfort which can change the patient's ability to function as an independent member of society and generate additional psychological correlates.

Podiatric Assessment

The assessment, evaluation and examination of the elderly patient in relation to their podiatric or foot health concerns involves more than the clinical knowledge of the foot and its demonstrated symptoms and signs. It is important to recognize the patient's concerns and needs in relation to pain, limitation of walking. And a special concern for comfort. Attention to primary goals, i.e., to relieve pain, restore the patient to a maximum level of individual function, and maintain that function once achieved, provides the primary focus for care. The practitioner must anticipate projected changes that relate to ambulation and foot care needs and provide an assurance of individual dignity.

Foot complaints and/or conditions need to be related to both activities of daily living ambulation, dressing, grooming, bathing, etc) and to those independent activities of daily living (shopping, housekeeping, transportation, etc.). The initial element of the assessment should include the demographic data of the patient. The patient's living conditions should also be included as a part of this initial review.

The chief complaint of the patient should be explored in the patient's own terms. There should be a review of the perception of the patient's own condition and how his or her foot problems effect their daily lives and activities. Footwear should be assessed in relation to fit, function, use, and compatibility with foot type and ambulatory use. The present condition should be noted as to duration, location, severity, prior treatment, and results and in relation to other general medical conditions.

A systems review should be completed along with notation of other practitioners of record. Current medications and responses should be identified in relation to existing and past therapeutic programs. The past medical history should include infections, operations, fractures, injuries, and drug sensitivities, and allergies. In addition, a review should be noted of those problems and diseases that have pedal complications and/or effect care and ambulation. Examples such risk conditions as delineated in Medicare Regulations include as examples:

i. Diabetes Mellitus
ii. Arteriosclerosis
iii. Ischemia
iv. Burger's Disease
v. Chronic Thrombophlebitis
vi. Venous Stasis
vii. Peripheral Neuropathies
viii. Malnutrition
ix. Alcohol Abuse
x. Chemical/Substance Abuse
xi. Malabsorption

xii. Pernicious Anemia

xiii. Anemia

xiv. Hemophilia

xv. Cancer

xvi. Drug Interactions

xvii. Toxic States

xviii. Multiple Sclerosis

xix. Uremia

xx. Renal Dialysis

xxi. Chronic and End Stage Renal Disease

xxii. Chronic Obstructive Pulmonary Disease

xxiii. Coronary Artery Disease

xxiv. Congestive Heart Failure

xxv. Hypertension

xxvi. Edema

xxvii. Post-Trauma

xxviii. Leprosy

xxix. Neurosyphilis

xxx. Hereditary Disorders/Diseases

xxxi. Mental Illness

xxxii. Mental Retardation

xxxiii. Cerebral Vascular Accidents/Stroke

xxxiv. Transient Ischemic Attacks

xxxv. Thyroid Disease

xxxvi. Milroy's Disease

xxxvii. Patients on Anticoagulants

xxxviii. Hemiparesis or Quadriparesis

xxxix. Ventilator Dependence

xl. Rayland's Disease/Syndrome

xli. Vitamin Deficiencies

xlii. Osteoarthritis

xliii. Rheumatoid Arthritis

xliv. Gout

xlv. Obesity

xlvi. Psoriasis

xlvii. Urticaria

xlviii. Atopic Dermatitis

xlix. Pruritus

l. Hyperhidrosis

li. Localized Neurodermatitis

lii. Hysterical Paralysis

liii. Psychogenic Tremors

liv. Parkinson's Disease or Any Medical Condition Associated with Tremors

lv. Functional Disability

lvi. Ambulatory Dysfunction

lvii. Organ Transplantation

lviii. Immunosuppression

lix. Hemorrhagic/Bleeding Conditions

lx. History of Artificial Joints, Heart Valves, or Blood Vessels

lxi. Chemotherapy

lxii. Antibiotic Prophylaxis

lxiii. HIV/AIDS

lxiv. Impaired Vision – Legally Blind

lxv. Inability to See, Bend, and/or Reach the Patient's Own Deet

lxvi. Living Alone

lxvii. Mentally Challenged or Retardation

lxviii. History of Stroke, Spinal Cord Injury, or Brain Injury

A review of the patient's past podiatric history and foot care history should be noted as well as elements of self-care and the use of commercial foot care products. The past occupational history should be explored and include foot/work related activities, exposure, military service, geographic location, percentage of weight bearing, flooring and footwear should be noted. The social history should include the use of tea, alcohol, coffee, tobacco, sleeping habits, sedative and/or hypnotic use, narcotics and other drugs and the reaction of the patient to his or her own illness or condition. The subjective symptoms should be clearly noted as described by the patient and should attempt to focus on, the following, as examples:

Dermatologic

a) Exquisitely painful or painless lesions

b) Slow healing or non-healing wounds or necrosis

c) Skin color changes such as cyanosis or redness

d) Chronic itching, scaling or dry feet

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e) Recurrent infections such as paronychia, athlete's feet, fungal toenails, etc.

Peripheral Vascular

a) Cold feet

b) Intermittent claudication involving the calf or foot

c) Pain at rest, especially nocturnal, relieved by dependency

Musculoskeletal

a) Gradual change in foot shape

b) Change in shoe size

c) Painless change in foot shape

d) Ambulatory dysfunction

e) Joint changes and deformity

Neurologic

a) Sensory change

b) Burning

c) Tingling

d) Clawing sensation

e) Motor changes

f) Weakness

g) Foot drop

h) Autonomic, such as diminished sweating

Clinical findings of hyperkeratosis, onychial, and dermatologic lesions should be recorded as signs of disease, deformity, and/or a disorder. Examples include the following:

a) Dryness of the skin

b) Xerosis

c) Chronic tinea pedis

d) Keratotic lesions

e) Subkeratotic hemorrhage (plantar and digital)

Trophic ulcerations

a) Pressure ulcerations

b) Diminished or absent hair growth

c) Trophic nail changes (onychopathy)

d) Onychogryphosis (Ram's Horn nail)

e) Onychauxis (hypertrophic and thickened nails)

f) Onychomycosis (fungal nails)

g) Onychophosis (calloused nail grooves)

h) Hypertrophic deformity

i) Subungual hemorrhage

j) Ulceration (disease complication)

k) Abscess

l) Ingrown toe nail (onychocryptosis)

m) Onychia (inflammation)

n) Paronychia (infection and inflammation)

o) Incurvated or involuted toenails

p) Foot type

q) Gait

r) Postural deformities

s) Palpation of pain

t) Range of motion

u) Angulation

v) Frank deformities (cavus feet, drop foot, hallux valgus, digiti flexus (hammertoes)

w) Arthropathy

The pedal vasculature and related structures should be evaluated. Those findings and/or conditions, which allow Medicare to provide payment for primary foot care, should be identified. These basic elements include:

A. Class A - Nontraumatic amputation of the foot or an integral skeletal portion thereof.

B. Class B - Absent posterior tibial pulse

a) Absent dorsalis pedis pulse

b) Advanced trophic changes

c) Hair growth - decrease or absent

d) Nail changes - thickening

e) Pigmentary changes - discoloration

f) Skin texture - thin and shiny

g) Skin color - rubor or cyanosis

C. Class C - Claudication

a) Temperature changes, e.g., cold feet

b) Paresthesias, e.g., abnormal spontaneous sensations in the feet

c) Burning

d) Edema

Absent popliteal or femoral pulses, bruits, dependent rubor with plantar pallor on elevation, and prolonged capillary

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filling time (above 3-4 seconds). Arterial skin temperature and blood pressure should be noted. Doppler studies, pulse volume recordings, and oscillometric readings, may also be useful. Radiographic studies should be obtained as indicated and may include weight and non-weight bearing comparisons. The neurologic elements should include gait review, reflexes (patellar, Achilles, and superficial plantar), ankle clonus, vibratory sense, weakness, sensory deficits (proprioception, pain and temperature perception), hyperesthesia and autonomic dysfunction).

The drug history should focus on but not be limited to antihypertensives, antidiabetics, cortisone, sedatives, topicals, antibiotics, antiarthritics, and other related medications utilized for and by the elderly. The use of over-the-counter foot care remedies including caustic foot keratotic applications should be explored. Some of the conditions, which precipitate pain and discomfort in the elderly and are related to functional imbalance and dysfunction include as examples:

a) Pes Planus

b) Pes Valgo Planus

c) Plantar Imbalance

d) Prolapsed Metatarsal Heads

e) Fasciitis

f) Myofasciitis

g) Tendonitis

h) Myositis

i) Hallux Valgus

j) Hallux Abducto Valgus

k) Digiti Flexus

l) Digital and Phalangeal Rotational Deformities

Hyperostosis

a) Exostosis

b) Spur Formation

c) Calcaneal Spurs

d) Bursitis

e) Fibrositis

f) Neuritis

g) Neuroma

h) Morton's Syndrome

i) Soft Tissue Atrophy

j) Enthesopathy

k) Hallux Limitus

l) Hallux Rigidus

m) Varus and Valgus Deformities of both the anterior and posterior segments of the foot

The pedal manifestations of diabetes mellitus in the older person, as an example, involve multiple systems and are associated with a variety of symptoms and signs. Examples of such problems include:

Paresthesia

a) Sensory Impairment

b) Motor Weakness

c) Reflex Loss

d) Neurotrophic Arthropathy

e) Muscle Atrophy

f) Dermopathy

g) Onychopathy

h) Absent Pedal Pulses

i) Ischemia

j) Trophic Changes

k) Neurotrophic Ulceration

l) Angiopathy

m) Neuropathy

n) Infection

o) Necrosis and Gangrene

Peripheral arterial insufficiency is present to some degree in many older persons. Overt indications of decreased arterial supply include, as examples:

Muscle Fatigue

a) Cramps

b) Claudication

c) Pain

d) Coldness

e) Pallor

f) Paresthesia

g) Burning

h) Atrophy of Soft Tissue

i) Muscle Wasting

j) Trophic Skin Changes

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k) Dryness

l) Hair Loss

m) Absent Pedal Pulses

n) Calcification Noted Radiographically

o) Edema

An example of an outline for the examination and recording of foot health date includes the following, as an example:

Vascular

a) Posterior tibial pulse

b) Dorsalis pedis pulse

c) Popliteal pulse

d) Femoral pulse

e) Doppler studies

f) Edema

g) Calf tenderness

Integument

a) Skin

b) Color

c) Moisture

d) Temperature

e) Texture

f) Interspaces

g) Fissures

h) Ulcers

i) Tinea

j) Tyloma

Heloma

a) Xerosis

b) Dermopathy

c) Atrophy

A. Toe Nails

b) Onychauxis

c) Hypertrophy

d) Onychogryphosis

e) Incurvation

f) Deformity

g) Onychocryptosis

h) Onychophosis

i) Onychomycosis

j) Onycholysis

k) Onychomadesis

l) Onychopathy

Onychia

a) Paronychia

b) Subungual heloma

c) Onychorrhexis

Neurologic

a) Achilles reflex

b) Patellar reflex

c) Superficial plantar reflex

d) Vibratory

e) Proprioception

f) Pain

g) Temperature

Musculoskeletal

A) Strength

a) Dorsiflexors

b) Plantarflexors

c) Invertors

d) Evertors

B) Atrophy

a) Foot

b) Leg

C) Deformities

a) Hallux valgus

D) Hammertoes

a) Spurs

b) Rotations

c) Varus and valgus deformities

d) Neurotrophic arthropathy

E) Gait evaluation

a) Foot type

b) Heel to toe

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F) Eversion

a) Inversion

b) Foot structural change

c) Ambulation aids

Long Term Care

The Standards for Long Term Care as developed by the Joint Commission on Accreditation of Healthcare Organizations includes foot health and care as a quality assurance issue. A similar component is currently being instituted for the current revision to the Medicare and Medicaid, Conditions of Participation for Long Term Care. These documents suggest as a basic consideration, administrative projections to assure foot health and care for patient per the following Guidelines:

Long Term Care Guidelines

a) Foot care and/or podiatric services are organized and staffed in a manner designed to meet the foot health needs of patient/residents.

b) The facility's foot health services should be provided by a podiatrist or appropriately licensed practitioner with a consultant podiatric practitioner as a consultant.

c) A foot health program should be an integral part of the facility's total health care program.

d) Written policies and procedures should be developed to serve as a guide to the provision so podiatric/foot care services.

e) The consulting or supervising podiatrist participates in patient/resident care management as appropriate.

f) The quality and appropriateness of podiatric services are monitored as an integral part of the overall quality assurance program, consistent with other practitioner/professional services.

Continuing Professional Education

A program of professional, in-service, and patient education should form a part of a total geriatric program. A projected outline for such an educational includes as an example, the following:

A. Relationship of foot problems to the total Geriatric Patient.

a) Needs

b) Ambulation and Independence

c) Risk Diseases

d) Factors which modify foot care in society and health care

B. Medicare and Medicaid

e) Mental health considerations

f) Long term care

g) Rehabilitation

C. Primary Foot Care

a) Assessment and examination

b) Nail disorders

c) Skin disorders

d) Hyperkeratotic disorders

e) Foot orthopedic and biomechanical

f) (pathomechanical) changes

g) Foot deformities associated with aging

D. Risk diseases

a) Diabetes Mellitus

b) Arthritis

c) Gout

d) Vascular insufficiency

e) Other

f) Management

g) Interdisciplinary considerations

h) Foot Health Education

i) 1. Professional and interdisciplinary

j) 2. Patient

E. Care Delivery

a) Ambulatory care

b) Acute hospital considerations

c) Rehabilitation

d) Long term care

e) Home care

f) Mental health and retardation

g) Interdisciplinary Education

h) Footwear and Related Considerations

6. Summary

The 1981 White House Conference on Aging, in its final Report, stated the following: "Recommendation Number 148: "Comprehensive foot care be provided for the elderly in a manner equal to care provided for other parts of the human body, to

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permit patients to remain ambulatory: Implementation: Remove current Medicare exclusions which preclude comprehensive foot care." The ability to ambulate requires appropriate foot health, as a catalyst. Keeping patients walking is a goal that needs to be met if older persons are to maintain a high degree of quality for their lives.

Other important factors that also need to also be considered include:

a) Mobility

b) Multi-Morbidity

c) Impairment

d) Functional Parameters

e) Walking – Ambulatory Speed

f) Stability

g) Physical Function

h) Deficits

Given the high prevalence and incidence of foot problems in the elderly, especially in those patients with chronic diseases and mental health problems, foot care needs are essential. Foot health, care, and foot health promotion should be part of comprehensive health care for older Americans. The ability to remain active and ambulatory is one means of assuring dignity and self-esteem for the elderly.

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