

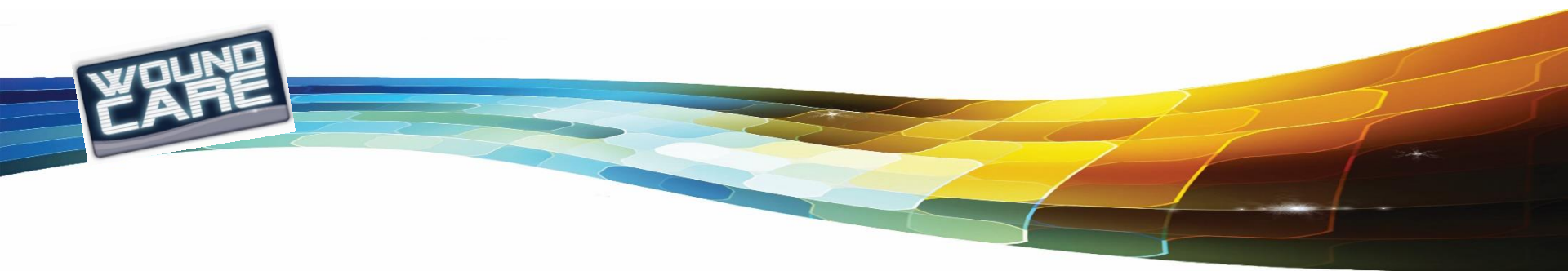


Winnipeg Regional  
Health Authority  
*Caring for Health*

Office régional de la  
santé de Winnipeg  
*À l'écoute de notre santé*

# The Diabetic Foot:

## First Line Defense for Saving Limbs



# Presenter Disclosure

## Presenters:

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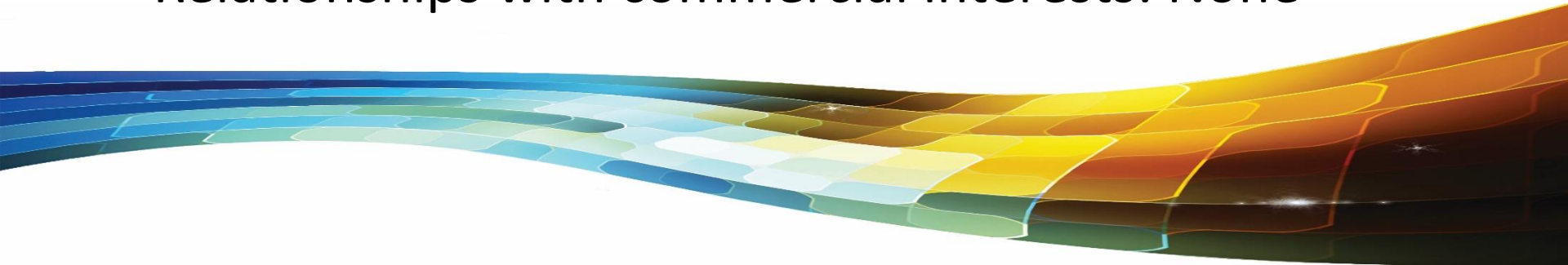
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- Relationships with commercial interests: None



# Conflict of Interest

- Potential for conflict(s) of interest: None

# Mitigating Potential Bias

- N/A

# Objectives

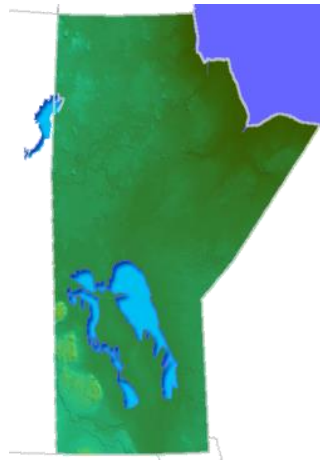
1. Determine etiology of diabetic foot ulcers (DFUs) recognizing neuropathies, infection & vascular impairment
2. Treat acute Charcot foot as a medical emergency
3. Use 60 second foot screen to assess risk for DFUs & implement prevention strategies
4. Understand role of wound debridement & foot offloading
5. Manage DFUs in collaboration with specialist & local resources

# Diabetic Foot Ulcer



# Diabetic Foot Ulcer

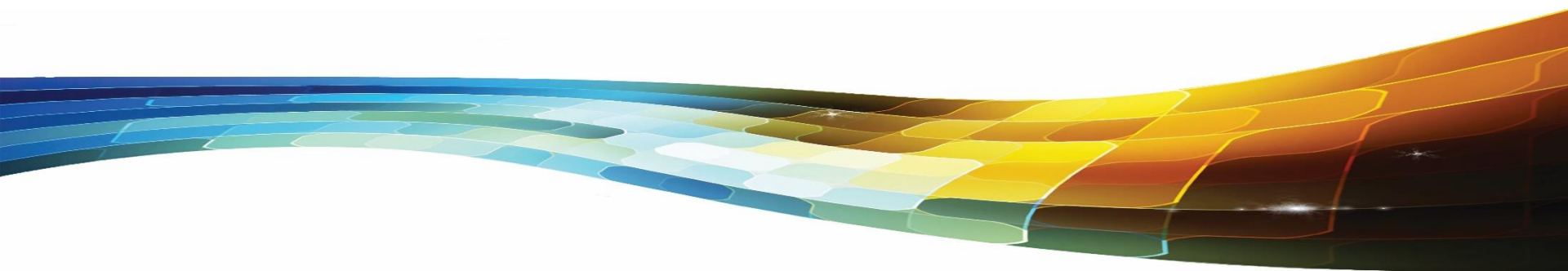




# Manitoba

- 126,000 have diabetes
- Up to 2,400 have a diabetic foot ulcer
- Estimated increase in diabetes prevalence from 2016 to 2026 = 37%

Canadian Diabetes Association ; Wounds Canada (2018)





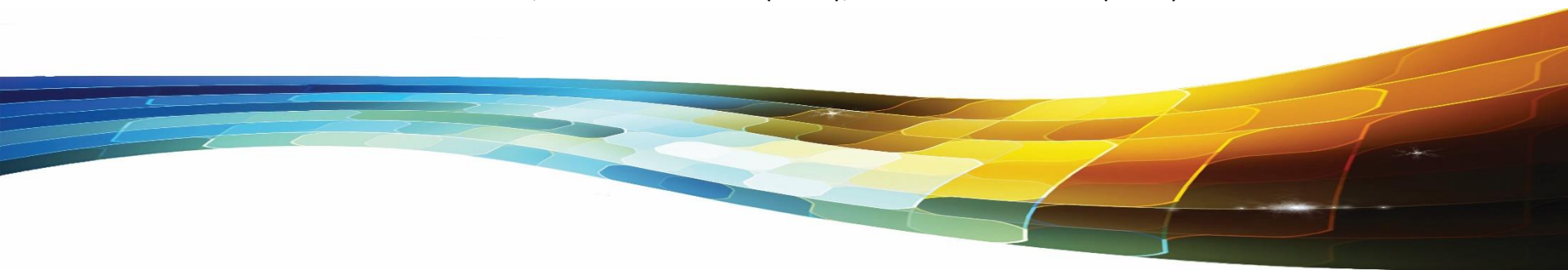


# Which Leads To...

270 amputations per year

- DFUs precede 85% of non-traumatic amputations
- Patients suffer stress, pain, lost productivity
- \$70,000 per amputation

Canadian Diabetes Association ; Wounds Canada (2018); Palumbo & Melton (1995)



# Causes of Diabetic Foot Ulcers

- 35% Peripheral Neuropathy (Sensory, Autonomic, Motor)
- 15% Vascular Disease
- 50% Combination of Neuropathy and Vascular Disease
- 55% Pivotal event, pressure or trauma

# Neuropathy

Sensory, Autonomic, Motor



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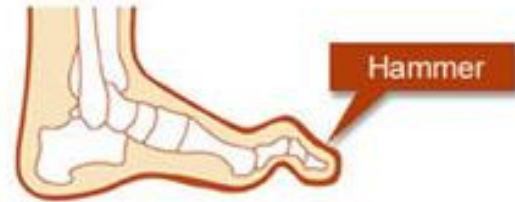
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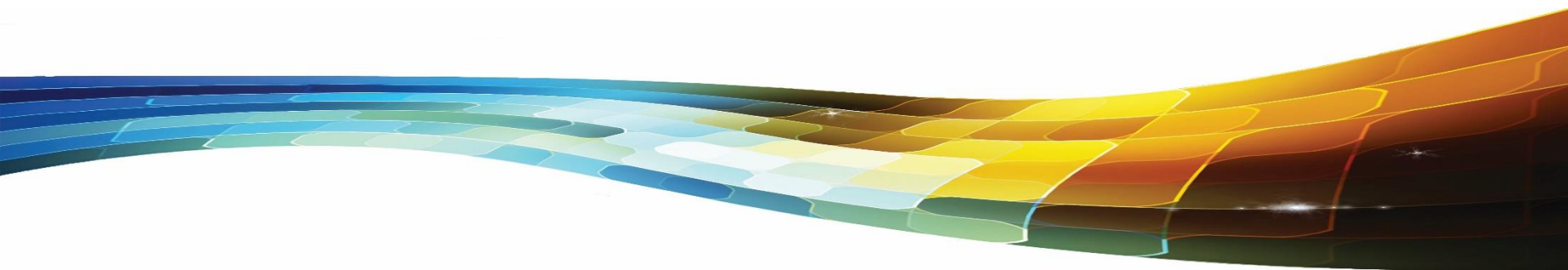




# Acute & Chronic Charcot Foot

# Triad of Neuropathy → Charcot Foot

- Small muscle wasting
- Decreased sensation
- Abnormal distribution of weight when standing
- Fractures occur spontaneously/with minimal stress
- Progressive bone disorganization with an increased risk of secondary ulceration



# Acute Charcot Foot



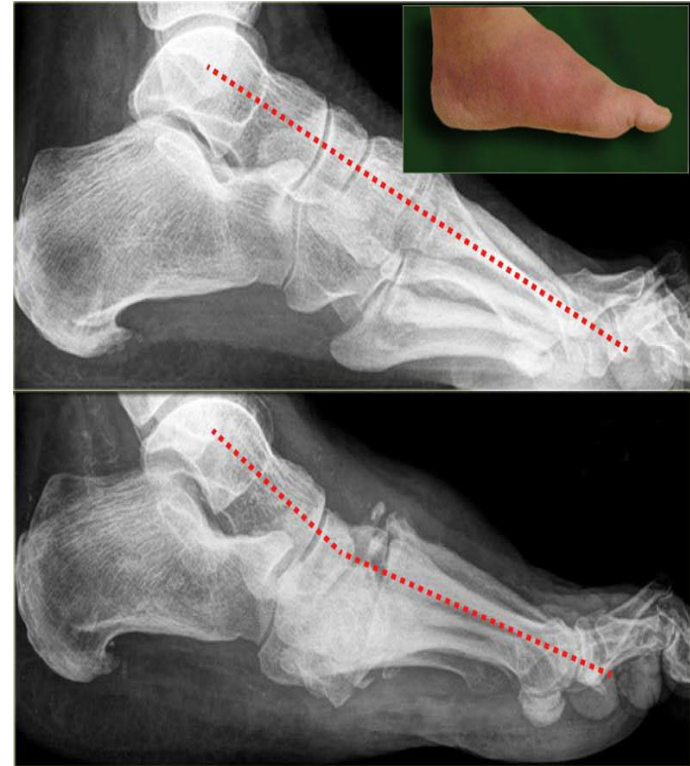
# Acute Charcot Foot \*Medical emergency



Tarsometatarsal joint    Calcaneous

Image: Ivo Schoots, Mario Maas & Robin Smithuis  
<http://www.radiologyassistant.nl>

Top x-ray is 4 months prior to bottom x-ray



# Management of Acute Charcot Foot

- Refer to immediately for offloading and casting.
- Plain radiographs may be normal in the early stages of the disease
- MRI should be considered with suspicion of Acute Charcot foot.

# Chronic Charcot Foot



# Management of Chronic Charcot Foot

- Help Jason!



# Infection

Limb threatening vs.  
Non-limb threatening

## Non-limb threatening

## Limb-threatening

### Superficial infection (NERDS)

- Non-healing
- Exudate increased
- Red, friable granulation tissue, bleeds easily
- Debris in wound
- Smell

### Deep wound infection (STONEES)

- Size increased
- Temp of wound increased
- Os: Probes to bone
- New satellite areas
- Exudate increased
- Erythema >2cm wound margin
- Edema
- Smell

### PLUS

- Pain
- Flu-like symptoms
- Erratic glucose control

### Systemic Infection

### Deep wound infection PLUS

- Fever
- Rigour
- Chills
- Hypotension
- Multi-organ failure

# Challenges to Identifying Infection

- Normal immune response to infection in a person with diabetes is dampened
- May not have fever, chills, an increased WBC count or erythema
- Infection may present as hyperglycemia

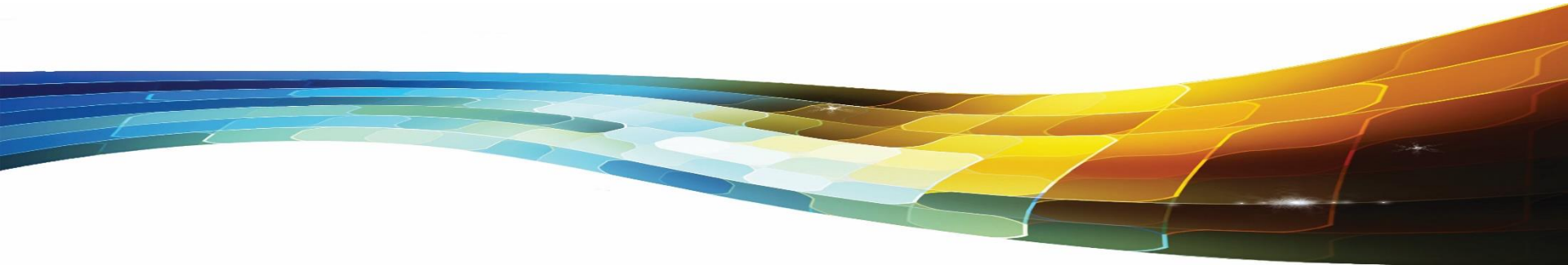
# Emergency Signs & Symptoms of Deep Tissue Infection in DFU

## THE BIG 3

1. Pain in the neuropathic foot
2. Erratic glucose control
3. Flu-like symptoms



# Onychomycosis- is it a big deal?



# Temperature Changes

Acute Charcot Foot  
Deep wound infection

# Infrared Thermometry: Acute Charcot

- Those with diabetes and a high-risk foot take infrared temperature of the plantar aspect of the foot daily to detect localized temperature increases, restrict ambulation, and decrease the incidence of repetitive trauma–initiated neurotropic foot ulcers.
- A high temperature elevation (4°F–15° F) over the mirror image on the opposite foot in a person with diabetes without a foot ulcer may indicate an acute Charcot foot

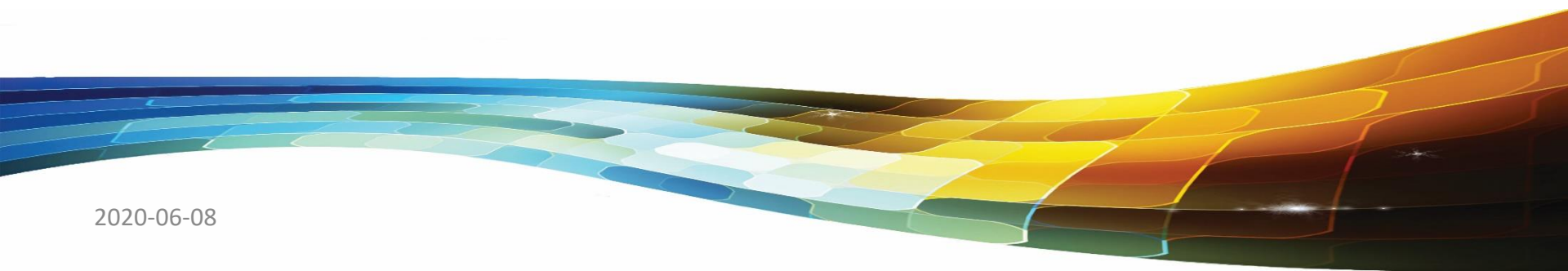
# Infrared Thermometry: Infection

- A temperature difference of greater than 3°-F between a wound and mirror anatomical site, with 2 or more other clinical signs, is highly suggestive of deep infection



# Vascular Assessment

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# Clues to Vascular Disease

## Perfusion

- Dependent rubor/pallor on elevation
- Cool temperature
- Ischemic rest pain: improved when legs dependent
- Intermittent claudication
- Gangrene

## Skin changes

- Hair loss/nail changes
- Shiny, taut, thin, dry skin

# Skills Stations

- Foot assessment
- 60 second foot screen
- Wound assessment
- Wound treatment
- Offloading

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