Quality Standards

Diabetic Foot Ulcers

Care for Patients in All Settings

December 2016

Let's make our health system healthier

Ontario
Health Quality Ontario

Summary

This quality standard focuses on care for people who have developed or are at risk of developing a diabetic foot ulcer. The scope of the standard covers all settings, including primary care, home care, long-term care, and acute care. It also provides guidance on optimal care when a person transitions between these settings—for example, when someone is discharged from a hospital to their home or a long-term care home.

About Quality Standards

Health Quality Ontario, in collaboration with clinicians, patients, residents, and caregivers across the province, is developing quality standards for Ontario.

Quality standards are concise sets of statements that will:

- Help patients, residents, families, and caregivers know what to ask for in their care
- Help health care professionals know what care they should be offering, based on evidence and expert consensus
- Help health care organizations measure, assess, and improve their performance in caring for patients

The recommendations in this quality standard do not override the responsibility of health care professionals to make decisions with patients, after considering each patient's unique circumstances.

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How to Use Quality Standards

Quality standards inform clinicians and organizations about what high-quality health care looks like. They are based on the best available evidence.

They also include indicators to help clinicians and organizations assess the quality of care they are delivering, and to identify gaps and areas for improvement. These indicators measure process, structure, and outcomes.

In addition, tools and resources to support clinicians and organizations in their quality improvement efforts accompany each quality standard.

For more information on how to use quality standards, contact qualitystandards@hqontario.ca.

About Health Quality Ontario

Health Quality Ontario is the provincial advisor on the quality of health care. We are motivated by a single-minded purpose: **Better health for all Ontarians.**

Who We Are

We are a scientifically rigorous group with diverse areas of expertise. We strive for complete objectivity, and look at things from a vantage point that allows us to see the forest and the trees. We work in partnership with health care providers and organizations across the system, and engage with patients themselves, to help initiate substantial and sustainable change to the province's complex health system.

What We Do

We define the meaning of quality as it pertains to health care, and provide strategic advice so all the parts of the system can improve. We also analyze virtually all aspects of Ontario's health care. This includes looking at the overall health of Ontarians, how well different areas of the system are working together, and most importantly, patient experience. We then produce comprehensive, objective reports based on data, facts and the voice of patients, caregivers, and those who work each day in the health system. As well, we make recommendations on how to improve care using the best evidence. Finally, we support large scale quality improvements by working with our partners to facilitate ways for health care providers to learn from each other and share innovative approaches.

Why It Matters

We recognize that, as a system, we have much to be proud of, but also that it often falls short of being the best it can be. Plus certain vulnerable segments of the population are not receiving acceptable levels of attention. Our intent at Health Quality Ontario is to continuously improve the quality of health care in this province regardless of who you are or where you live. We are driven by the desire to make the system better, and by the inarguable fact that better has no limit.

About This Quality Standard

Scope of This Quality Standard

This quality standard focuses on care for people who have developed or are at risk of developing a diabetic foot ulcer. The scope of the standard covers all settings, including primary care, home care, long-term care, and acute care. It also provides guidance on care when a person transitions between these settings—for example, when someone is discharged from a hospital to their home or a long-term care home. It is one of three quality standards related to wound care; the other two are for pressure injuries and leg ulcers (venous and mixed venous/arterial).

Why This Quality Standard Is Needed

Diabetes is one of the most prevalent chronic diseases, with about 1 in 10 people in Ontario currently affected.[1] Diabetic foot ulcers are a serious and costly complication of diabetes that can lead to amputation and even death.[2] It is estimated that 15% to 25% of people with diabetes will develop a diabetic foot ulcer during their lifetime.[3] People with diabetic foot ulcers report poor overall health-related quality of life—particularly in terms of pain, discomfort, and loss of mobility.[4] For people with diabetes, a foot ulcer precedes the vast majority of lower-extremity amputations.[5] Diabetic foot ulcers are also the leading cause of all nontraumatic below-the-knee amputations in Canada.[6] The probability of death following a major amputation is estimated to be 50% within 2 years.[7]

Wound care represents a significant area of opportunity for quality improvement in Ontario. Across the province, there are important gaps and variations in access to services and in the quality of care received by people who have developed or are at risk of developing a diabetic foot ulcer. In 2014, the amputation rate in the LHIN with the highest rate was almost eight times that of the LHIN with the lowest rate (Discharge Abstract Database, IntelliHEALTH, 2016). Previous efforts to improve the coordination and delivery of wound care across the province have highlighted the inconsistent application of best practice guidelines, a lack of standardized documentation and tracking of wound outcome measures, and poor coordination of care.[8]

Based on the best available evidence and guided by expert consensus from health care professionals and people with lived experience, this quality standard addresses key areas with significant potential for quality improvement in the care of people who have developed or are at risk of developing a diabetic foot ulcer in Ontario. The 13 quality statements that make up this standard provide guidance on high-quality care, with accompanying indicators to help health care professionals and organizations measure their own quality of care. Each statement also includes details on how its successful delivery affects people who have developed or are at risk of developing a diabetic foot ulcer, their caregivers, health care professionals, and health care services at large.

Note: In this quality standard, the term patient *includes community care clients and residents of long-term care facilities.*

Principles Underpinning This Quality Standard

This quality standard is underpinned by the principles of respect and equity.

People who have developed or are at risk of developing a diabetic foot ulcer should receive services that are respectful of their rights and dignity and that promote self-determination.

A quality health system is one that provides good access, experience, and outcomes for all Ontarians, no matter where they live, what they have, or who they are.

People who have developed or are at risk of developing a diabetic foot ulcer are provided services that are respectful of their gender, sexual orientation, socioeconomic status, housing, age, background (including self-identified cultural, ethnic, and religious background), and disability.

How We Will Measure Our Success

Each quality statement within this quality standard is accompanied by one or more indicators to measure the successful implementation of the statement. In addition to indicators for specific statements, a small number of health outcome indicators have been selected to measure the success of the quality standard as a whole:

- Percentage of patients with a new diabetic foot ulcer in a 6-month period (incidence)
- Percentage of patients with a diabetic foot ulcer in a 6-month period (prevalence)
- Percentage of patients with a healed diabetic foot ulcer in a 12-week period
- Percentage of patients with a healed diabetic foot ulcer who were diagnosed with a secondary diabetic foot ulcer within 1 year (recurrence)
- Percentage of patients with a diabetic foot ulcer who had a lower-extremity amputation in a 6-month period
- Percentage of patients with a diabetic foot ulcer in a 12-month period who reported high satisfaction with the care provided

Quality Statements in Brief

[Quality Statements in Brief to be inserted once statements are finalized.]

Quality Statement 1: Risk Assessment

People with diabetes are assessed for their risk of developing a diabetic foot ulcer when they are diagnosed with diabetes and at least once a year thereafter. Patients at higher risk should be assessed more frequently.

Background

For people with diabetes, regular assessment is important for determining their risk of developing a diabetic foot ulcer. Risk factors for diabetic foot ulcers include peripheral neuropathy, foot abnormalities and deformities, peripheral arterial disease, and previous ulcers or amputations.[9] Assessments should be completed at least once a year,[9,10] but more frequently for people at higher risk: every 6 months for people with peripheral neuropathy; every 3 to 6 months for people with peripheral neuropathy plus peripheral arterial disease and/or a foot deformity; and every 1 to 3 months for people with peripheral neuropathy and a history of foot ulcers or lower-extremity amputation.[9]

People with an active diabetic foot ulcer should be referred to and treated immediately by health care professionals who provide specialized care (see Quality Statement 3).

Definitions Used Within This Quality Statement

Risk assessment
This includes, at a minimum, the following components:

- Examination of both feet for evidence of:
  - Neuropathy (e.g., using a 10-g monofilament)
  - Limb ischemia
  - Ulceration
  - Callus
  - Skin temperature
  - Infection and/or inflammation
  - Structural abnormalities and deformities
  - Gangrene
  - Charcot arthropathy
- Inquiries about previous foot ulcers and amputation
- Palpation of foot pulses
- Ankle-brachial pressure index testing at regular intervals to screen for peripheral arterial disease (calcified arteries may falsely elevate results in people with diabetes, so results should be interpreted carefully)

What This Quality Statement Means

For Patients
If you live with diabetes, you should be assessed for your risk of developing a diabetic foot ulcer. Based on the results of that risk assessment, your health care professional will decide how often your feet should be checked, which is at least once a year.

For Clinicians
Assess every person with diabetes for their risk of developing a diabetic foot ulcer. People should be assessed when they are diagnosed with diabetes and at least once a year thereafter

to determine if their risk level has changed. If they have risk factors for diabetic foot ulcers, they should be reassessed more frequently.

For Health Services
Ensure that health care professionals have access to risk-assessment tools and are knowledgeable about the frequency of diabetic foot ulcer risk assessment.

Quality Indicators

Process Indicator

Percentage of people with diabetes who have had a diabetic foot ulcer risk assessment in the previous 12 months

- Denominator: number of people with diabetes
- Numerator: number of people in the denominator who have had a diabetic foot ulcer risk assessment in the previous 12 months
- Data source: local data collection
- Potential stratification: risk level

Sources

- American Diabetes Association, 2016[11]
- Canadian Diabetes Association, 2013[12]
- Commonwealth of Australia, 2011[13]
- International Working Group on the Diabetic Foot, 2015[9]
- National Institute for Health and Care Excellence, 2015[10]
- Society for Vascular Surgery, 2016[14]

Quality Statement 2: Patient Education and Self-Management

People with diabetes and their families or caregivers are offered education about diabetic foot care and complications, including basic foot care; how to prevent and monitor for the signs and symptoms of foot complications; and who to contact in the event of a concerning change.

Background

Providing education to people who have developed or are at risk of developing a diabetic foot ulcer, as well as their families and caregivers, can enable them to play an active role in foot examination and care. People involved in self-management can help prevent an initial ulcer, detect the signs and symptoms of an ulcer early on, monitor existing ulcers to prevent complications, and prevent recurrent ulceration. Educational materials should be offered in both oral and written formats.[10] Written materials should also include pictures and diagrams to help people monitor for the signs and symptoms of foot complications and identify any concerning changes.

Definitions Used Within This Quality Statement

Education
This should be collaborative and interactive and includes the following topics.

- When diabetes is diagnosed and during assessments:
  - Self-management skills, including goal-setting and problem-solving
  - Basic foot care (nail care, including cutting toenails straight across; and skin care, including daily foot inspections and washing)
  - How to protect their feet and avoid foot trauma
  - Safe exercise
  - Properly fitting footwear
  - Individual risk of developing an ulcer
  - Monitoring for the signs and symptoms of ulcers
  - Diabetes information and blood glucose control
  - Who to contact in case of a concerning change
- When diabetic foot ulcers occur, as part of the individualized, integrated care plan:
  - Overview of the type of ulcer
  - How to care for the other foot
  - Pressure-redistribution devices
  - Wound care
  - Diabetes information and blood glucose control
  - Who to contact in case of a concerning change

Concerning changes
These include signs and symptoms of a foot ulcer or complication, such as skin colour change (redness), skin temperature change, foot pressure injury (damage to the skin and/or underlying soft tissue), change in pain or new pain, swelling, or odour.

What This Quality Statement Means

For Patients
If you have diabetes, you should be taught how to take care of your feet. You should be taught how to check for the signs and symptoms of foot problems such as foot ulcers. You should also be told who to contact for help.

For Clinicians
Offer people with diabetes and their families or caregivers education about diabetic foot care and complications, including basic foot care; how to prevent foot complications and monitor for the signs and symptoms of complications; and who to contact in the event of a concerning change.

For Health Services
Ensure the availability of educational materials on diabetic foot care and complications for people with diabetes and their families and caregivers.

Quality Indicators

Process Indicators

Percentage of people with diabetes who are offered education about basic foot care

- Denominator: number of people with diabetes
- Numerator: number of people in the denominator (or their caregivers) who are offered education about basic foot care
- Data source: local data collection

Percentage of people with diabetes and their caregivers who are offered education about how to prevent foot complications, how to monitor for the signs and symptoms of foot complications, and who to contact in the event of a concerning change

- Denominator: number of people with diabetes
- Numerator: number of people in the denominator who, along with their caregivers, are offered education about how to prevent foot complications, how to monitor for the signs and symptoms of foot complications, and who to contact in the event of a concerning change (includes signs and symptoms of a foot ulcer or complications, such as skin colour changes, swelling, or odour)
- Data source: local data collection

Structural Indicator

Availability of diabetes education programs or multidisciplinary primary care teams that provide foot care education for people with diabetes and their caregivers

- Data source: Regional and/or provincial data collection would need to be developed

Sources

- American Diabetes Association, 2016[11]
- Canadian Diabetes Association, 2013[12]
- Commonwealth of Australia, 2011[13]

- International Working Group on the Diabetic Foot, 2015[9]
- National Institute for Health and Care Excellence, 2015[10]
- Registered Nurses' Association of Ontario, 2013[15]
- Society for Vascular Surgery, 2016[14]

Quality Statement 3: Referral to Interprofessional Team

People with a diabetic foot ulcer and major complications are referred to and seen within 24 hours by one or more members of an interprofessional team that delivers ongoing, coordinated, integrated care.

Background

The effective management of diabetic foot ulcers to prevent recurrence and amputation requires coordinated and specialized interprofessional collaboration between care settings (primary care, inpatient, and outpatient). An integrated approach acknowledges that no one specialist possesses all of the skills and knowledge to effectively manage and treat people with diabetic foot ulcers.[13] The members of the team do not need to operate at a single location.[16] People will require access to different types and levels of care, depending on their level of risk. People who have peripheral neuropathy and a history of foot ulcers or amputation, as well as people who have an active diabetic foot ulcer or complication, require access to a team that specializes in diabetic foot care and includes experts from many disciplines working together.[9]

Definitions Used Within This Quality Statement

Interprofessional team
This includes the following:

- Most people with diabetic foot ulcers require access to a primary care practitioner, a podiatrist or chiropodist, and a diabetes nurse
- People with peripheral neuropathy, peripheral arterial disease, and/or a foot deformity may also require access to an endocrinologist, one or more surgeons (e.g., orthopedic, or vascular), and a radiologist

Major complications
These are limb- and/or life-threatening and include acute ischemia, signs and symptoms of deep/surrounding or systemic infection, osteomyelitis, and acute Charcot arthropathy.

What This Quality Statement Means

For Patients
You should receive care from a team of health care professionals who have been trained to care for people with diabetic foot ulcers or complications.

For Clinicians
Refer people with a diabetic foot ulcer and major complications and ensure they are seen within 24 hours by an interprofessional team that delivers ongoing, coordinated, integrated care.

For Health Services
Ensure that there are systems and procedures in place for the urgent referral of people with a diabetic foot ulcer and major complications so that they are seen within 24 hours by an interprofessional team that delivers ongoing, coordinated, integrated care.

Quality Indicators

Process Indicators

Percentage of people with a diabetic foot ulcer who are seen within 24 hours by one or more members of an interprofessional team

- Denominator: number of people with a diabetic foot ulcer
- Numerator: number of people in the denominator who are seen within 24 hours by one or more members of an interprofessional team
- Data source: local data collection

Percentage of people with a diabetic foot ulcer who are seen by an interprofessional team that delivers ongoing, coordinated, integrated care

- Denominator: number of people with a diabetic foot ulcer
- Numerator: number of people in the denominator who are seen by an interprofessional team that delivers ongoing, coordinated, integrated care
- Data source: local data collection

Sources

- American Diabetes Association, 2016[11]
- Canadian Diabetes Association, 2013[12]
- Commonwealth of Australia, 2011[13]
- National Institute for Health and Care Excellence, 2015[10]

Quality Statement 4: Comprehensive Assessment

People with a diabetic foot ulcer or complications undergo a comprehensive assessment that informs their individualized care plan and includes evaluation of vascular status, infection status, and pressure redistribution.

Background

A comprehensive assessment helps identify causative and contributing factors, supports accurate diagnosis, and informs treatment and management. The results of the assessment can help to determine the healability of the ulcer (ulcers are classified as healable, maintenance, or nonhealable) and develop a corresponding approach to optimal wound care and management.[17] Healable wounds have adequate blood supply and can be healed if the underlying cause is addressed. Maintenance wounds have healing potential, but barriers are present that may compromise healing (such as lack of access to appropriate treatments or poor adherence to treatment). Nonhealable wounds are not likely to heal because of irreversible causes or illnesses, such as critical ischemia or a nontreatable malignancy.[17] Comprehensive assessment also provides an opportunity to determine risk factors for recurrence, which is important for diabetic foot ulcers, given their high rate of recurrence. Depending on the care setting, the components of the assessment may be carried out by multiple members of an interprofessional team.

Definitions Used Within This Quality Statement

Complications
These include factors that may lead to soft-tissue breakdown and ulceration, such as dry skin, callus, blister, deformities, minor fractures, and subacute Charcot arthropathy.

Comprehensive assessment
This includes, at a minimum, the following components.

- A comprehensive health history, including history of presenting illness and ulcers, past medical history, glycemic control (hemoglobin A1c), nutritional status, allergies, medications, family history, and psychosocial history (including socioeconomic factors)
- A physical examination of the affected limb(s), including an assessment of:
  - Vascular status
  - Motion and functioning
  - Neuropathy
  - Signs and symptoms of infection
  - Charcot changes
  - Pressure and ability to offload or redistribute pressure
- Wound assessment:
  - Size, depth, and position
  - Presence and severity of pain
  - Exudate, odour, and condition of the tissue around the wound
- Grading and documenting the severity of the wound using a standardized system such as SINBAD (site, ischemia, neuropathy, bacterial infection, area, and depth) or the University of Texas classification system
- Factors that may impact wound healing and activities of daily living
- Individual concerns and preferences

What This Quality Statement Means

For Patients
If you have a diabetic foot ulcer or other foot problem, you should have a full assessment. An assessment means that your team of health care professionals will want to learn more about your health history, your concerns, and your preferences for care. They will also examine your legs and feet, including any wounds you have. This full assessment will allow them to work with you to figure out how best they can help.

For Clinicians
Carry out a comprehensive assessment (including evaluation of vascular status, infection status, and pressure redistribution) for people with a diabetic foot ulcer or complications. The results should inform their individualized care plan.

For Health Services
Ensure that tools, systems, processes, and resources are in place to help clinicians assess people with a diabetic foot ulcer or complications. This includes providing the time required for a full assessment and ensuring access to assessment tools.

Quality Indicators

Process Indicators

Percentage of people with a diabetic foot ulcer or complications who have a comprehensive assessment that informs their individualized care plan at first presentation and at transitions

- Denominator: number of people with a diabetic foot ulcer or complications
- Numerator: number of people in the denominator who have a comprehensive assessment that informs their individualized care plan, at first presentation and at transitions
- Data source: local data collection

Percentage of assessments that include evaluation of vascular status

- Denominator: number of diabetic foot assessments
- Numerator: number of assessments in the denominator that include evaluation of vascular status
- Data source: local data collection

Percentage of assessments that include evaluation of infection status

- Denominator: number of diabetic foot assessments
- Numerator: number of assessments in the denominator that include evaluation of infection status
- Data source: local data collection

Percentage of assessments that include evaluation of pressure redistribution

- Denominator: number of diabetic foot assessments

- Numerator: number of assessments in the denominator that include evaluation of pressure redistribution
- Data source: local data collection

Sources

- American Diabetes Association, 2016[11]
- Commonwealth of Australia, 2011[13]
- National Institute for Health and Care Excellence, 2015[10]
- Registered Nurses' Association of Ontario, 2013[15]

Quality Statement 5: Patient-Centred Concerns

People with a diabetic foot ulcer or complications have a conversation with their health care provider about their concerns and preferences. These concerns and preferences are incorporated into their goals of care and individualized care plan.

Background

When people with diabetic foot ulcers have conversations with their health care providers about their concerns and preferences, it encourages and supports the development of mutually agreed-upon goals of care. A shared decision-making approach should be used, involving collaboration between health care providers and patients, taking into consideration the clinical evidence and the patient's values and preferences.[18] This process ensures that the patient's perspective is heard when evaluating and weighing care options and recognizes that both the health care provider and the patient are experts with different forms of expertise.[19] It also supports provision of care that addresses the whole person as a unique individual, not just their condition.[20]

Definitions Used Within This Quality Statement

Complications
These include factors that may lead to soft-tissue breakdown and ulceration, such as dry skin, callus, blister, deformities, minor fractures, and subacute Charcot arthropathy.

Patient-centred concerns
These include pain management, optimizing activities of daily living, and psychosocial supports.

What This Quality Statement Means

For Patients
Your health care professional should develop, in partnership with you, a care plan that reflects your needs, concerns, and preferences. A care plan is a written document that you have agreed on with your health care professional. It describes the care you are to receive, who will provide it, and your goals for your care.

For Clinicians
Talk to people with a diabetic foot ulcer or complications about their concerns and preferences as part of comprehensive and ongoing assessment. Incorporate patients' concerns and preferences into their goals of care and individualized care plan.

For Health Services
Ensure that tools, systems, processes, and resources are in place to help clinicians discuss individual concerns and preferences with people who have a diabetic foot ulcer or complications, and incorporate those concerns and preferences into care plans.

Quality Indicators

Process Indicators

Percentage of people with a diabetic foot ulcer who have a conversation with their health care provider about their concerns and preferences as part of their comprehensive assessment and at each reassessment

- Denominator: number of people with a diabetic foot ulcer
- Numerator: number of people in the denominator who have a conversation with their health care provider about their concerns and preferences as part of their comprehensive assessment and at each reassessment
- Data source: local data collection

Percentage of people with a diabetic foot ulcer and documented evidence of screening for pain at admission to care

- Denominator: number of people with diabetic foot ulcer at admission to care
- Numerator: number of people in the denominator with documented evidence of screening for pain
- Data source: local data collection

Percentage of people with a diabetic foot ulcer and a documented discussion about activities of daily living and psychosocial supports at admission to care

- Denominator: number of people with a diabetic foot ulcer at admission to care
- Numerator: number of people in the denominator with a documented discussion about activities of daily living and psychosocial supports
- Data source: local data collection

Source

- Advisory committee consensus

Quality Statement 6: Individualized Care Plan

People with a diabetic foot ulcer or complications have an individualized care plan that guides their care, identifies mutually agreed-upon goals of care, and is reviewed and updated regularly.

Background

An individualized care plan guides effective, integrated coordination and delivery of care. Consideration of factors that may affect the healing potential of the wound (ulcers may be healable, maintenance, or nonhealable) is essential when developing an individualized care plan to optimize healing conditions. These factors include wound characteristics such as necrosis, infection, or vascular supply; individual characteristics such as comorbidities, adherence to the care plan, or cognitive impairment; and environmental or socioeconomic characteristics such as access to care or needed offloading devices (including the ability to pay for devices).[15]

The inclusion of mutually agreed-upon goals enables the health care team to review and monitor the person's progress over time and adjust treatment plans based on what is working well and what should be discontinued.[15] Regular review of the care plan also provides an opportunity to repeat aspects of the comprehensive assessment, revisit goals, review progress, and make adjustments based on the changing needs and preferences of the person receiving care.

Definitions Used Within This Quality Statement

Complications
These include factors that may lead to soft-tissue breakdown and ulceration, such as dry skin, callus, blister, deformities, minor fractures, and subacute Charcot arthropathy.

Individualized care plan
This includes:

- Results of the comprehensive assessment
- Mutually agreed-upon goals of care based on individual concerns and preferences, including pain management and activities of daily living
- A plan for local wound care based on the healing potential of the wound, which may include the following:
    - Pressure redistribution
    - Infection management (localized, deep/surrounding, and systemic infection)
    - Debridement
    - Dressings and moisture balance
- Strategies for preventing recurrence

Reviewed and updated regularly
The frequency may range from daily (during dressing changes and based on regular wound assessments) to every 3 to 6 months (for a full care plan review) and is based on the characteristics of the wound and the acuity of the foot problem. Reviewing the care plan may require a partial reassessment (repeating aspects of the comprehensive assessment) or a full reassessment, including revisiting the goals of care.

What This Quality Statement Means

For Patients
Your health care professional should develop, in partnership with you, a care plan that reflects your needs, concerns, and preferences. A care plan is a written document that you have agreed on with your health care professional. It describes the care you are to receive, who will provide it, and your goals for your care.

For Clinicians
Work with people who have a diabetic foot ulcer or complications to create an individualized care plan that documents the results of their assessments. The plan should include mutually agreed-upon goals of care, individual concerns and preferences (including pain management and activities of daily living), a plan for local wound care, and strategies for preventing recurrence. The plan should be reviewed and updated regularly.

For Health Services
Ensure that systems, processes, and resources are in place to support clinicians in developing individualized care plans for people with a diabetic foot ulcer or complications. This may include tools such as standardized care plan templates.

Quality Indicators

Process Indicators

Percentage of people with a diabetic foot ulcer who have an individualized care plan that guides their care

- Denominator: number of people with a diabetic foot ulcer
- Numerator: number of people in the denominator who have an individualized care plan that guides their care
- Data source: local data collection

Percentage of people with a diabetic foot ulcer who have had their care plan reviewed in the past 6 months

- Denominator: number of people with a diabetic foot ulcer
- Numerator: number of people in the denominator who have had their care plan reviewed in the past 6 months
- Data source: local data collection

Sources

- National Institute for Health and Care Excellence, 2015[10]
- Registered Nurses' Association of Ontario, 2013[15]

Quality Statement 7: Pressure Redistribution

People with a diabetic foot ulcer or complications are offered pressure-redistribution devices as part of their individualized care plan.

Background

A key component of treating diabetic foot ulcers and preventing recurrence is reducing pressure on the foot, which can be achieved by pressure redistribution and offloading. The combination of excessive direct pressure and shear, repetitive stress, and peripheral neuropathy (loss of sensation, numbness, or weakness) frequently causes diabetic foot ulcers.[2] There is a range of options for redistributing pressure on the feet, from therapeutic footwear and orthotics (which can be beneficial in preventing recurrent ulceration for people at high risk), to nonremovable total contact casts, which are the "gold standard" for diabetic foot ulcer treatment.[2,21]

Definitions Used Within This Quality Statement

Complications
These include factors that may lead to soft-tissue breakdown and ulceration, such as dry skin, callus, blister, deformities, minor fractures, and subacute Charcot arthropathy.

Pressure-redistribution devices
The type of device used depends on the person's needs (prevention of recurrence or treatment).

- Prevention of recurrence:
  - Custom therapeutic footwear and orthotics (for those with previous ulcers or amputations)
- Treatment:
  - Nonremovable total contact casting (in the absence of infection and peripheral arterial disease; for forefoot and midfoot ulcers)
  - Removable cast walker as an alternative to a total contact cast (for those who require frequent dressing changes, or for whom a nonremovable device cannot be tolerated), wheelchair, or crutches

What This Quality Statement Means

For Patients
You should be offered special boots or other devices that will take pressure off the ulcer so it can heal. Devices that help to redistribute pressure and take pressure off problem areas in your affected foot can also prevent future ulcers.

For Clinicians
Offer pressure-redistribution devices to people with a diabetic foot ulcer or complications, to treat and heal an existing diabetic foot ulcer or prevent recurrent ulceration.

For Health Services
Ensure access to pressure-redistribution devices for people with a diabetic foot ulcer or complications, to treat and heal an existing diabetic foot ulcer or prevent recurrent ulceration.

Quality Indicators

Process Indicators

Percentage of people with a diabetic foot ulcer who use pressure-redistribution devices

- Denominator: number of people with a diabetic foot ulcer
- Numerator: number of people in the denominator who use pressure-redistribution devices
- Data source: local data collection

Percentage of people who have had a diabetic foot ulcer in the past who use pressure-redistribution devices

- Denominator: number of people who have had a diabetic foot ulcer in the past
- Numerator: number of people in the denominator who use pressure-redistribution devices
- Data source: local data collection

Sources

- Canadian Diabetes Association, 2013[12]
- Commonwealth of Australia, 2011[13]
- International Working Group on the Diabetic Foot, 2015[9]
- National Institute for Health and Care Excellence, 2015[10]
- Registered Nurses' Association of Ontario, 2013[15]
- Society for Vascular Surgery, 2016[14]

Quality Statement 8: Wound Debridement

People with a diabetic foot ulcer have their wound debrided if it is determined as necessary in their assessment. Debridement is carried out by a trained health care professional using an appropriate method.

Background

The purpose of debridement is to remove nonviable, dead (slough and/or necrotic) tissue, callus, and foreign matter (debris) from the wound to reduce infection and promote healing. There are many methods of debridement, but the most common are sharp/surgical, mechanical, and autolytic.[15] The choice of method and frequency of debridement should be based on individual tolerance and preference; the time to complete debridement; the size of the wound and presence of infection; the type of exudate; and the amount and nature of foreign matter present.[15] Sharp debridement requires specialized wound management with specific knowledge and educational preparation.[22]

Definitions Used Within This Quality Statement

Appropriate method of debridement
Sharp/surgical debridement should be considered first, unless it is contraindicated (for example, limited vascular supply or the patient is receiving palliative care). The method may be active/aggressive (extensive and aggressive removal of tissue) or conservative (removal of loose, dead tissue without pain or bleeding). Other appropriate methods include mechanical and autolytic debridement.

Trained health care professional
The health care professional has training specific to the method of debridement being used.

What This Quality Statement Means

For Patients
To help your wound heal, you should have dead skin, callus, and debris removed (this is called debridement).

For Clinicians
Debride wounds for people with a diabetic foot ulcer using an appropriate method of debridement. Sharp/surgical debridement should be considered first, unless it is contraindicated.

For Health Services
Ensure that health care professionals across settings who are caring for people with diabetic foot ulcers are trained in appropriate methods of wound debridement. This includes providing access to training programs and materials.

Quality Indicators

Process Indicator

Percentage of people with a diabetic foot ulcer who have their wound debrided by a trained health care professional if it is determined as necessary in their assessment

- Denominator: number of people with a diabetic foot ulcer and wound debridement determined as necessary in their assessment
- Numerator: number of people in the denominator who have their wound appropriately debrided by a trained health care professional
- Data source: local data collection
- Potential stratification: patient group

Sources

- Canadian Diabetes Association, 2013[12]
- Commonwealth of Australia, 2011[13]
- International Working Group on the Diabetic Foot, 2015[9]
- National Institute for Health and Care Excellence, 2015[10]
- Registered Nurses' Association of Ontario, 2013[15]
- Society for Vascular Surgery, 2016[14]

Quality Statement 9: Local Infection Management

People with a diabetic foot ulcer and a local infection receive appropriate treatment, including appropriate antimicrobial and non-antimicrobial interventions.

Background

People with diabetes are more susceptible to infection (over half will develop a skin and soft-tissue infection), and older individuals with diabetes may be at even higher risk if they have comorbidities, which can mask the severity of the infection.[5,15] Local infection may be suspected when three or more of the following signs and symptoms are present: stalled healing (ulcer is not healing at the expected rate or is growing quickly); increased amount of exudate; red and bleeding tissue; increased amount of dead tissue; and foul odour.[15,23] The severity of diabetic foot infections can be classified as mild/localized (superficial or local to the skin and subcutaneous tissue), moderate/deep (deeper wound, such as an abscess, osteomyelitis, septic arthritis, or fasciitis), or severe/systemic (local infection with signs of systemic inflammatory response syndrome).[15,24]

Wounds without evidence of soft-tissue or bone infection do not require antibiotic therapy.[11] Antibiotics should be used in alignment with organizational policies and procedures for antimicrobial stewardship, taking into account local patterns of resistance.[10]

Definitions Used Within This Quality Statement

Local infection
This is characterized as superficial or local to the skin and subcutaneous tissue.

Treatment
For local infection, treatment may include antimicrobial and non-antimicrobial (debridement) interventions. Antimicrobial treatments are based on clinical assessment (signs and symptoms, severity, likely cause, and associated susceptibilities) and may be guided by properly conducted bacterial culture techniques. Initial treatment includes oral narrow-spectrum antibiotic therapy aimed at gram-positive organisms for up to 2 weeks and may include topical antiseptics.

What This Quality Statement Means

For Patients
If your wound is infected, you should have treatment with antibiotics.

For Clinicians
Provide appropriate treatment and/or dressings for people with an infected diabetic foot ulcer. Initial antimicrobial treatment includes oral narrow-spectrum antibiotic therapy aimed at gram-positive organisms for up to 2 weeks and may include topical antiseptics.

For Health Services
Ensure that systems, processes, and resources are in place to support clinicians in treating people with a diabetic foot ulcer and local infection.

Quality Indicators

Process Indicators

Percentage of people with a diabetic foot ulcer and a local infection who receive appropriate antimicrobial and non-antimicrobial (debridement) treatment

- Denominator: number of people with a diabetic foot ulcer and a local infection
- Numerator: number of people in the denominator who receive appropriate antimicrobial and non-antimicrobial (debridement) treatment
- Data source: local data collection

Percentage of people with a diabetic ulcer and a local infection who receive oral narrow-spectrum systemic antibiotic therapy aimed at gram-positive organisms for up to 2 weeks

- Denominator: number of people with a diabetic foot ulcer and a local infection identified within the past 2 weeks
- Numerator: number of people in the denominator who receive oral narrow-spectrum systemic antibiotic therapy aimed at gram-positive organisms
- Data source: local data collection

Sources

- International Working Group on the Diabetic Foot, 2015[9]
- National Institute for Health and Care Excellence, 2015[10]
- Registered Nurses' Association of Ontario, 2013[15]

Quality Statement 10: Deep/Surrounding Tissue Infection or Systemic Infection Management

People with a diabetic foot ulcer and suspected deep/surrounding tissue infection or systemic infection receive urgent assessment (within 24 hours) and systemic antimicrobial treatment.

Background

People with diabetes are more susceptible to infection (over half will develop a skin and soft-tissue infection), and older individuals with diabetes may be at an even higher risk if they have comorbidities, which can mask the severity of the infection.[5,15] Deep/surrounding or systemic infection may be suspected when three or more of the following signs and symptoms are present: increased ulcer size; elevated temperature in the peri-wound; ability to probe to bone or the presence of exposed bone; new areas of tissue breakdown; presence of red tissue and swelling or edema; increased exudate; and foul odour.[15,23] Pain is also a sign of deep infection. The severity of diabetic foot infections can be classified as mild/localized (superficial or local to the skin and subcutaneous tissue), moderate/deep (deeper wound, such as abscess, osteomyelitis, septic arthritis, or fasciitis), or severe/systemic (local infection with signs of systemic inflammatory response syndrome).[15,24]

Definitions Used Within This Quality Statement

Deep/surrounding tissue infection
This is characterized as a deeper wound, such as an abscess, osteomyelitis, septic arthritis, or fasciitis.

Systemic infection
This is characterized as a local infection with signs of systemic inflammatory response syndrome.

Systemic antimicrobial treatment
This treatment includes:

- Broad-spectrum therapy aimed at gram-positive, gram-negative, and anaerobic organisms
- For osteomyelitis, 6 weeks of antibiotic therapy should be initiated if the bone is not resected (1 week of therapy is generally sufficient if the bone is resected)

What This Quality Statement Means

For Patients
If your wound is infected, you should have treatment with antibiotics.

For Clinicians
Carry out an urgent assessment and provide systemic antimicrobial treatment for people with a diabetic foot ulcer and suspected deep/surrounding tissue infection or systemic infection.

For Health Services
Ensure that systems, processes, and resources are in place to support clinicians in treating people with a diabetic foot ulcer and suspected deep/surrounding tissue infection or systemic infection.

Quality Indicators

Process Indicators

Percentage of people with a diabetic foot ulcer and suspected deep/surrounding tissue infection or systemic infection who receive an assessment within 24 hours

- Denominator: number of people with a diabetic foot ulcer and suspected deep/surrounding tissue infection or systemic infection
- Numerator: number of people in the denominator who receive an assessment within 24 hours
- Data source: local data collection

Percentage of people with a diabetic foot ulcer and confirmed deep/surrounding tissue infection or systemic infection who receive systemic antimicrobial treatment

- Denominator: number of people with a diabetic foot ulcer and confirmed deep/surrounding tissue infection or systemic infection
- Numerator: number of people in the denominator who receive systemic antimicrobial treatment
- Data source: local data collection

Sources

- International Working Group on the Diabetic Foot, 2015[9]
- National Institute for Health and Care Excellence, 2015[10]
- Registered Nurses' Association of Ontario, 2013[15]

Quality Statement 11: Wound Moisture Management

People with a diabetic foot ulcer receive wound care that maintains the appropriate moisture balance or moisture reduction in the wound bed.

Background

Wound care that maintains moisture balance to promote healing includes cleansing of the wound and selection of a dressing that promotes a moist wound healing environment. Cleansing the wound promotes healing by improved wound assessment, increased comfort when adherent dressings are removed, and possible rehydration of the wound.[17] There are many options for wound cleansers and dressings. Selection of these products should be based on clinical assessment of the wound; patient preference; pain management considerations; and ability to maintain a moist wound bed, control exudate, and avoid breakdown of the surrounding skin.[10,14,17]

Definitions Used Within This Quality Statement

Moisture management
This is specific to the type of wound:

- Moisture balance and a moist wound environment for healable ulcers (ulcers that have adequate blood supply and can be healed if the underlying cause is addressed) and non-ischemic ulcers
- Moisture reduction for maintenance ulcers (ulcers that have healing potential, but barriers are present that may compromise healing, such as lack of access to appropriate treatments and poor adherence to treatment), nonhealing ulcers (ulcers that are not likely to heal because of irreversible causes or illnesses, such as critical ischemia or a nontreatable malignancy),[17] and ischemic ulcers

What This Quality Statement Means

For Patients
To help your wound heal, you should have a dressing that keeps the wound moist.

For Clinicians
For people with a diabetic foot ulcer, provide wound care that maintains the appropriate moisture balance or moisture reduction in the wound bed. A moist wound environment is appropriate for healable, non-ischemic ulcers. Moisture reduction is appropriate for maintenance, nonhealing, and ischemic ulcers.

For Health Services
Ensure that systems, procedures (protocols), and resources are in place to support clinicians in providing wound care that maintains the appropriate moisture balance or moisture reduction in the wound bed.

Quality Indicators

Process Indicators

Percentage of people with a healable diabetic foot ulcer who receive wound care that maintains the appropriate moisture balance in the wound bed

- Denominator: number of people with a healable diabetic foot ulcer
- Numerator: number of people in the denominator who receive wound care that maintains the appropriate moisture balance in the wound bed
- Data source: local data collection

Percentage of people with a maintenance or nonhealing diabetic foot ulcer who receive wound care that maintains the appropriate moisture reduction in the wound bed

- Denominator: number of people with a maintenance or nonhealing diabetic foot ulcer
- Numerator: number of people in the denominator who receive wound care that maintains the appropriate moisture reduction in the wound bed
- Data source: local data collection

Sources

- Canadian Diabetes Association, 2013[12]
- Commonwealth of Australia, 2011[13]
- International Working Group on the Diabetic Foot, 2015[9]
- National Institute for Health and Care Excellence, 2015[10]
- Registered Nurses' Association of Ontario, 2013[15]
- Society for Vascular Surgery, 2016[14]

Quality Statement 12: Health Care Provider Training and Education

People who have developed or are at risk of developing a diabetic foot ulcer or complications receive care from health care providers with training and education in the assessment and management of diabetic foot ulcers and complications.

Background

People with a diabetic foot ulcer benefit from individualized care by health care providers with comprehensive training and education in diabetic foot ulcers and how to assess and manage them. Training and education materials or programs should be tailored to providers' roles and responsibilities and the type of care they provide. This may range from screening and referral to provision of ongoing wound care, application of compression therapy, and working with an interprofessional team to conduct comprehensive assessments and interventional procedures.

Definitions Used Within This Quality Statement

Complications
These include factors that may lead to soft-tissue breakdown and ulceration, such as dry skin, callus, blister, deformities, minor fractures, and subacute Charcot arthropathy.

Provider training and education
These should include the following skills and information, at a minimum:

- Comprehensive assessment
- Local wound care, including debridement, infection management, and moisture balance
- Pressure-redistribution devices

What This Quality Statement Means

For Patients
If you have a diabetic foot ulcer with other serious issues (for example, an infection or a broken bone), you should be seen by a health care professional or a team within 24 hours.

For Clinicians
Ensure that you have the training and education required to effectively provide care (including assessments and treatments) for people who have developed or are at risk of developing a diabetic foot ulcer or complications, in accordance with your professional role.

For Health Services
Ensure that health care providers caring for people who have developed or are at risk of developing a diabetic foot ulcer or complications have training and education in how to carry out comprehensive assessments and provide appropriate treatments, including local wound care and pressure-redistribution devices.

Quality Indicators

Structural Indicator

Local availability of providers with access to training and education in the assessment and management of diabetic foot ulcers and complications

- Data source: Regional and/or provincial data collection would need to be developed

Source

- Registered Nurses' Association of Ontario, 2013[15]

Quality Statement 13: Transitions in Care

People with a diabetic foot ulcer or complications who transition between care settings have a team or provider who is accountable for coordination and communication related to their care.

Background

Transitions in care involve changes in providers or locations (within and between care settings)[25] and can increase the risk of errors and miscommunication related to a person's care. To support safe and effective coordination and continuity of care, transition planning should be a collaborative process that involves the person with the diabetic foot ulcer, their family, and their caregiver(s), so that their unique needs and preferences are supported.[25] To support the transfer of accurate information, all providers must document the most up-to-date information in the individualized care plan. A provider or team should be accountable for ensuring the accurate and timely transfer of information on an ongoing basis to the proper recipients as part of seamless, coordinated transitions.

Definitions Used Within This Quality Statement

Complications
These include factors that may lead to soft-tissue breakdown and ulceration, such as dry skin, callus, blister, deformities, minor fractures, and subacute Charcot arthropathy.

Team or provider
This is the provider or team of providers who have an ongoing role in the coordination and delivery of health care services for the person who has developed a diabetic foot ulcer. Where possible, this should be a primary care provider or primary care team. Alternatively, an individual at the regional level who is responsible for care coordination could fill this role.

What This Quality Statement Means

For Patients
When you change health care settings (for example, you return home after being cared for in a hospital), your health care team or health care professional should work with you to make sure that important information is transferred with you, and that you are connected to the supports you need.

For Clinicians
Ensure that people moving between providers or care settings have a person or team responsible for coordinating their care and transferring information.

For Health Services
Ensure that systems, processes, and resources are in place to enable smooth transitions between care settings for people with a diabetic foot ulcer or complications.

Quality Indicators

Process Indicators

Percentage of people with a diabetic foot ulcer who transition between care settings and have a team or provider who is accountable for coordination and communication related to their care

- Denominator: number of people with a diabetic foot ulcer who transition between care settings
- Numerator: number of people in the denominator who have a team or provider who is accountable for coordination and communication related to their care
- Data source: local data collection

Percentage of people with a diabetic foot ulcer who transition between care settings and report that their provider knew about their medical history

- Denominator: number of people with a diabetic foot ulcer who transition between care settings and answer the question, “During your most recent visit, did this provider seem to know about your medical history?”
- Numerator: number of people in the denominator who answer “Yes”
- Data source: local data collection

Percentage of people with a diabetic foot ulcer who transition between care settings and report that there was good communication between their care providers

- Denominator: number of people with a diabetic foot ulcer who transition between care settings and answer the question, “Do you feel that there was good communication about your care between doctors, nurses, and other staff?”
- Numerator: number of people in the denominator who answer “Usually” or “Always”
- Data source: local data collection

Source

- Advisory committee consensus

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