

Publication, Part of [National Diabetes Footcare Audit](#)

NDFA Interval Review: July 2014-March 2021

Audit

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Geographic Coverage:

England, Wales

Geographical Granularity:

Hospital and Community Health Services, Clinical Commissioning Groups, Strategic Health Authorities, NHS Trusts, Hospital Trusts, Community health services, Independent Sector Health Care Providers

Date Range:

14 Jul 2014 to 31 Mar 2021

Current Chapter

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Summary

The National Diabetes Foot Care Audit (NDFA) Interval Review is the 6th NDFA report. The NDFA is a continuous audit of diabetic foot disease in England and Wales. The audit enables all diabetes foot care services to measure their performance against the National Institute for Health and Care Excellence (NICE) clinical guidelines and peer units, and to monitor adverse outcomes for people with diabetes who develop diabetic foot disease. All organisations which provide a diabetic foot ulcer treatment service are eligible for inclusion in the audit. The audit reports on the following:

- Structures: are the nationally recommended care structures in place for the management of diabetic foot disease?
- Processes: does the treatment of active diabetic foot disease comply with nationally recommended guidance?
- Outcomes: are the outcomes of diabetic foot disease optimised?



The NDFA is part of the National Diabetes Audit (NDA) portfolio within the National Clinical Audit and Patient Outcomes Programme (NCAPOP), commissioned by the Healthcare Quality Improvement Partnership (HQIP).

Key Facts

The NDFA Interval Review has found:

**An increase in the proportion of referrals
seen by a specialist foot care team
within 13 days**

From 43% in 2014-15 to 46% in 2020-21

**A linked reduction in the proportion of
ulcers that are graded as severe at first
expert assessment (FEA)**

From 48% in 2014-15 to 43% in 2020-21

**A linked reduction in the proportion of
ulcers still active (not healed) at 12
weeks after FEA**

From 49% in 2014-15 to 40% in 2020-21

To help guide service improvement, the NDFA has identified recommendations that aim to further improve foot care provision and outcomes. Full details of the NDFA findings and recommendations are published in subsequent chapters of the report.

Resources

NDFA Interval Review 2014-21: Main Report (Powerpoint)

PPT 2 MB

NDFA Interval Review 2014-21: Main Report (PDF)

PDF 939 KB

NDFA Interval Review 2014-21: Appendix 5.12 (PPT)

PPT 1 MB

NDFA Interval Review 2014-21: Appendix 5.12 (PDF)

PDF 273 KB

NDFA Interval Review 2014-21: Open Data (CSV)

CSV 262 KB

NDFA Interval Review 2014-21: Open Data field list (CSV)

CSV 544 BYTES

NDFA Interval Review 2014-21: Data Quality Statement (PDF)

PDF 249 KB

NDFA Interval Review 2014-21: ISS 2021 Responses (Excel)

XLS 177 KB

NDFA Interval Review 2014-21: Audit Participation (Excel)

XLS 186 KB

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1. Executive summary

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1. Executive summary

This report has identified important trends in foot care processes and outcomes in England and Wales since the start of the National Diabetes Foot Care Audit (NDFA) in July 2014.

1.1. Key findings

The NDFA has found that the proportion of referrals seen by a specialist foot care team within 13 days has increased from 43% in 2014-15 to 46% in 2020-21 (see **Chart 4a**). We have also seen a linked reduction in the proportion of ulcers that are severe at first expert assessment (FEA) (from 48% to 43%, **Chart 4a**) and the subsequent decrease in the proportion of ulcers still active (not healed) at 12 weeks (from 49% to 40%, see **Summary chart 1**, below). This suggests that the NDFA focus on prompt referral to the specialist team has been effective.

Download the data for this chart Summary chart 1: Active (unhealed) ulcers 12 weeks after FEA

There is still much work to do. Variations in 12 week outcomes persist (**Appendix 5.7**); there are gaps in service provision, particularly in multi-disciplinary foot care service (MDFS) integration with renal services (**Table 1**); and it is notable that almost 1 in 5 people (18%) presenting with a severe ulcer are dead or have undergone major amputation within 1 year (**Chart 8**).

1.2. Recommendations

To help guide service improvement, the NDFA has listed recommendations that aim to further improve foot care provision and outcomes. The NDFA also supports the recommendations in the 2020 Getting It Right First Time (GIRFT) diabetes review (2020), National Institute for Health and Care Excellence (NICE) NG19 guidance and the NHS Long Term Plan (2019). To support foot care services, the NDFA has undertaken Quality Improvement Collaboratives (QIC) with healthcare professionals (HCP) across England and Wales.

Recommendations for healthcare providers and healthcare professionals (HCPs):

Including NHS trusts, local health boards (LHBs) and independent healthcare providers (IHPs); podiatrists, diabetes specialist nurses, diabetes consultants and any HCP that works with people with diabetes.

Recommendation 1: Ensure that HCPs arrange early expert assessment of all new foot ulcer episodes.

Why? The NDFA has shown that faster referral to the specialist foot care service leads to: 1) Fewer severe ulcers (see **Chart 2**); and 2) Better 12 week outcomes (**Chart 3**).

Recommendation 2: Ensure that healthcare providers and HCPs review NDFA measures for their organisations, including time to FEA, ulcer severity at FEA and 12 week outcomes.

Why? Internal review of NDFA outcomes will help healthcare providers and HCPs identify gaps in service provision and potential areas for improvement, leading to improved care processes and better outcomes for people with diabetes.

Recommendations for healthcare commissioners:

Including the NHS Commissioning Board, integrated care systems, clinical commissioning groups (CCGs) and LHBs.

Recommendation 3: Ensure that specialist clinical services which care for foot ulcers in diabetes are accessible everywhere.

Why? GIRFT recommendation 11 (2) states that: All trusts should have a dedicated multi-disciplinary footcare service (MDFS) as stated in the NHS Long Term Plan (3) and NICE NG19 (4).

Recommendation 4: Ensure that healthcare providers and HCPs have effective integration between different clinical groups: in the community and with different specialist expertise.

Why? The NDFA has identified a lack of integration between different services: For example only 33% of healthcare providers confirmed that the MDFS was integrated with renal services and dialysis units (Table 1).

Recommendation 5: Healthcare commissioners should ensure that diabetic foot care training and education is available to all HCPs who provide services to people with diabetes and is available across all healthcare settings and services.

Why? Only 76% of providers confirmed that regular training was provided to ensure that people at increased risk of foot ulceration are both identified and have access to appropriate protective surveillance (Table 1).

Notes: (1) NICE NG19 Recommendation 1.4.2. (2) GIRFT Programme National Specialty Report: Diabetes (2020) Recommendation 11, p.11. (3) NHS Long Term Plan (2019), 3.81. (4) NICE NG19 Recommendation 1.2.1.

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[2. Introduction](#)

2. Introduction

2. Introduction

2.1. Aims and background

Ulceration of the foot in diabetes presents significant challenges to people with diabetes, including emotional, physical and financial costs, and is associated with increased risk of both

amputation and of death. It affects between 1 and 2% of all people with diabetes each year (1) (2) and its management accounts for approximately 1% of the total NHS budget (3).

The National Diabetes Foot Care Audit (NDFA)

The NDFA was established in July 2014 as part of the family of audits conducted under the umbrella of the National Diabetes Audit (NDA) of England and Wales (4).

The overall aim of the NDFA is to measure factors associated with increased risk of ulcer onset and adverse ulcer outcomes, for use by service providers, local commissioners and national policy makers. It aims to share information relating to best clinical practice, and to enable the highest quality of care of diabetic foot ulcers in England and Wales.

2.2. Data collection

The NDFA invites all services providing specialist care for the management of diabetic foot ulcers to register simple details at the time of presentation of each ulcer episode, as well as details of the outcome 12 weeks later.

Findings

- A total of 108,450 ulcer episodes in 76,310 people with diabetes have been registered with the NDFA over 7 audit years (April to March) (5).
- There has been a steady increase in ulcer episodes each audit year, from about 5,000 to about 25,000, with over 21,000 in each of the last 3 years (see **Chart 1**).
- There was a decrease in ulcer episodes registered in 2020-21 (13% fewer than 2019-20), coinciding with the COVID-19 pandemic (**Chart 1**).
- Overall, there is considerable variation in the rate of ulcer registrations between clinical commissioning groups (CCGs) and local health boards (LHBs) in England and Wales (see **Appendix 5.1**), ranging from 0.0 to 1.9 per 100 person years.

Download the data for this chart Chart 1: Number of ulcer episodes and people with diabetes (6) submitted to the NDFA, England and Wales, 2014-21

Notes: (1) Chamberlain et al (2021). (2) Abbott et al 2002. (3) Kerr et al 2019. (4) [NDA homepage](#). (5) The 1st NDFA audit year 2014-15 is shorter than subsequent audit years because data collection started on 14 July 2014. (6) A single person may have more than 1 ulcer episode.

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3. Findings

3. Findings

3.1. Associations: Time to FEA and 12-week outcome

Since data collection started in 2014, the National Diabetes Foot Care Audit (NDFA) has consistently found that faster referral to the specialist foot care service is associated with fewer severe ulcers (see **Chart 2**) and better 12-week outcomes (**Chart 3**).

[Download the data for this chart Chart 2: Percentage of ulcers graded as severe at first expert assessment \(FEA\), by time to FEA, England and Wales, 2014-21](#)

[Download the data for this chart Chart 3: Percentage of people alive and ulcer-free at 12 weeks after FEA, by time to FEA, England and Wales, 2014-21](#)

3.2. Changes over time: Time to FEA and ulcer severity

Data from 108,450 ulcer episodes from 2014 to 2021 demonstrate that there has been a rise in the proportion of new ulcer episodes assessed by a specialist foot care service within 13 days of first presentation to any healthcare professional (HCP): from 43% to 46% (**Chart 4a**). The improvement is even more marked when self-referrals (with no interval collected) are excluded from the denominator: from 61% to 69% (**Chart 4b**).

Over the same period there has been a steady fall in the percentage of new ulcer episodes graded as severe at FEA (from 48% to 43%, **Chart 4a**, or 52% to 48% where self-referrals are excluded, **Chart 4b**).

[Download the data for this chart Chart 4a: FEA within 13 days of presentation; and severe ulceration at FEA: All ulcers, England and Wales, 2014-21](#)

[Download the data for this chart Chart 4b: FEA within 13 days of presentation; and severe ulceration at FEA: Referred from HCP \(excludes self-referral\) \(1\), England and Wales, 2014-21](#)

Notes: (1) The proportion having a FEA within 13 days is higher in **Chart 4b** because the denominator is lower (with self-referrals excluded). The proportion having a severe ulcer at FEA is also higher in **Chart 4b** because the excluded group (self-referrals) are less likely to have severe ulcers at FEA (see **Chart 2**).

3.3. Changes over time: Ulcer healing and co-morbidities

In parallel with the reduction in ulcer severity at FEA, there has been a decrease in the percentage of ulcers which are active (unhealed) at 12 weeks: from 49% to 40% (see **Chart 5a**).

The proportion of unknown outcomes (missing or lost to follow-up) has risen during this period: from 4% to 13% (**Chart 5a**). Nonetheless, a fall in active ulcers is still evident when unknown outcomes are excluded (**Chart 5b**): from 50% to 45%.

The increase in 12-week mortality from 2% to 6% (**Chart 5b**) is likely to reflect greater co-morbidity at presentation (**Appendix 5.6**).

[Download the data for this chart Chart 5a: Ulcer status at 12 weeks after FEA: All ulcers, England and Wales, 2014-21](#)

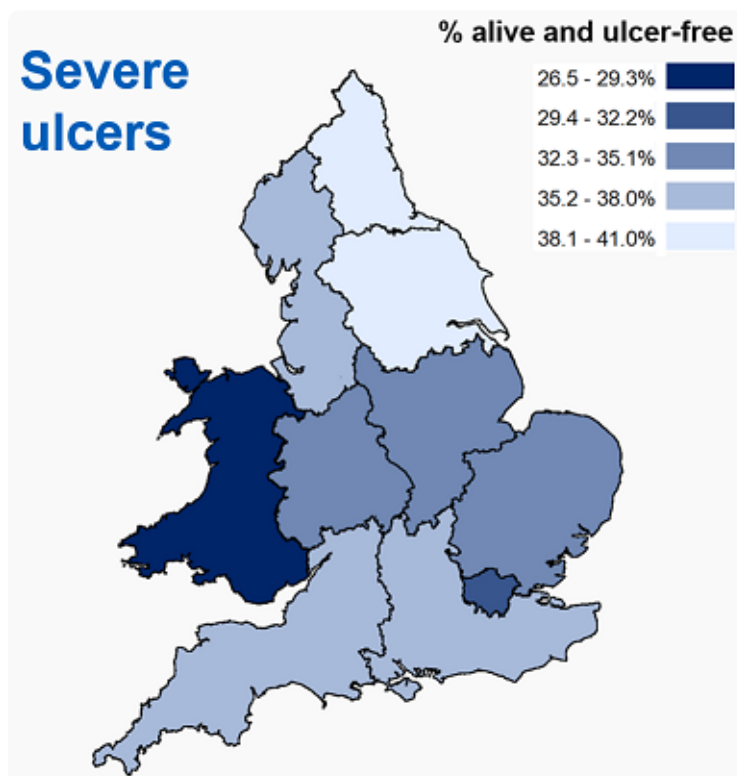
Download the data for this chart Chart 5b: Ulcer status at 12 weeks after FEA:
Known outcomes, England and Wales, 2014-21

3.4. Regional variation: Alive and ulcer-free at 12 weeks

Although there have been improvements in ulcer healing at a national level (England and Wales combined), the data collected from 2014 to 2021 provides evidence of marked variation between regions in the mean percentage of ulcers healed by 12 weeks (see **Appendix 5.7**), from 48% to 68% for less severe ulcers and 27% to 41% for severe ulcers (**Chart 6** and **Appendix 5.7**), where the 12-week outcome is known.

There is also evidence of variation in outcome (healing by 12 weeks) when expressed by service providers, with 13 of 127 providers (10%) having a lower rate of healing than expected (**Appendix 5.8**), compared to <0.2% that would be found due to normal variation. Although data in this report is unadjusted, variation between providers has been found in previous reports where case-mix adjustment has been applied (see NDFA 2019, p.52).

Chart 6: Percentage of people alive and ulcer-free at 12 weeks after FEA, by region: Severe ulcers, excluding unknown outcomes, England and Wales, 2014-21



3.5. Changes over time: Major amputation within 6 months

Despite the overall improvement in ulcer healing outcomes by 12 weeks, there has been no change in the incidence of major amputation (which is an uncommon event) within 6 months of FEA (see **Chart 7** and **Appendix 5.9**), which remains around 0.6% for less severe ulcers and around 2.7% for severe ulcers.

There is little regional variation in the incidence of major amputation within 6 months throughout England and Wales, even though the incidence appears lower in London than other regions (1.8% for severe ulcers, **Appendix 5.10**).

The use of a new NDFA outcome measure for assessing long-term response to intervention: the state of being 'alive and major amputation-free at 1 year' is demonstrated in **Charts 8a** and **8b** and **Appendix 5.11**. **Charts 8a** and **8b** show that 90% presenting with less severe ulcers were alive and major amputation-free at 1 year, compared with 82% of those with severe ulcers. Whilst encouraging, it is still notable that almost 1 in 5 people (18%) who present with a severe ulcer are either dead (15%) or have undergone major amputation within 1 year (3%).

[Download the data for this chart Chart 7: Percentage of people having major amputation within 6 months of FEA, England and Wales, 2014-21](#)

[Download the data for this chart Chart 8a: Was the person alive and major amputation-free 1 year after FEA?, Less severe ulcers, England and Wales, 2014-21](#)

[Download the data for this chart Chart 8b: Was the person alive and major amputation-free 1 year after FEA? Severe ulcers, England and Wales, 2014-21](#)

3.6. Care structures survey

The NDFA also measures the provision of foot care services using the National Diabetes Audit (NDA) Integrated Specialist Services Structures Survey (ISSSS, abbreviated to ISS), a questionnaire based on National Institute for Health and Care Excellence (NICE) and Getting It Right First Time (GIRFT)-recommended structures and systems for delivery of care to people with diabetes (1) (2). The survey was distributed to healthcare providers in England and Wales in October 2021.

The foot care section of the questionnaire comprised 11 questions on aspects of care delivery which were selected by clinical members of the NDFA Advisory Group. The questions and survey results are shown on the following slide.

Survey results

96 providers responded to the questionnaire: 92 NHS trusts, 3 local health boards (LHBs) and 1 independent healthcare provider (IHP). For comparison, there are 223 NHS trusts and LHBs in England and Wales, although some (e.g. mental health or ambulance trusts) would not be expected to contribute to the ISS. Of those that responded:

- Overall service provision was high, with an average of 8.8 out of 11 services provided.
- From a total of 11 questions, 4 questions received affirmative answers from over 90% of providers. 3 questions received 80-89% and 3 received 70-79% (see **Table 1**).
- However, only 33% reported that foot care services were integrated with renal services. People with renal disease in diabetes have a high incidence of foot disease (3).

Table 1: Results of the 2021 ISS, England and Wales, October 2021

Table 1: Results of the 2021 ISS, England and Wales, October 2021

No	Question	Resp
1	Does your provider have a dedicated multi-disciplinary foot care service (MDFS)?	90%
1.1	Is the MDFS well integrated with a community foot care protection service (FPS)?	80%
1.2	Is the MDFS integrated with renal services and dialysis units?	33%
2	Is there regular training to ensure that people at increased risk of foot ulceration are both identified and have access to appropriate protective surveillance?	90%
3	Is there a designated pathway by which a person with any form of diabetic foot disease can get rapid access to specialist (MDFS) assessment?	90%
3.1	Is the pathway designed to ensure that all people with diabetes newly presenting with active foot disease can be assessed with appropriate urgency (14 days maximum)?	90%
3.2	Is the pathway regularly promoted to both healthcare professionals and to people with diabetes?	90%
4	If the person with a foot care emergency has evidence of vascular impairment, is it possible for them to be assessed by a specialist vascular surgeon on the same day?	90%

5	Can everyone with a foot care emergency that might require admission be assessed the same or next working day by a member of the MDFS?	
6	At the time of their first expert assessment, will the patient be provided for the immediate care of their foot problem with medications (e.g. antibiotics) and/or dressings (even if this is a prescription for a local pharmacy) without needing to be seen elsewhere?	
7	Is there a system in place to coordinate referrals and transfers between different components of the care service – such as between different hospitals and between hospital and community services?	

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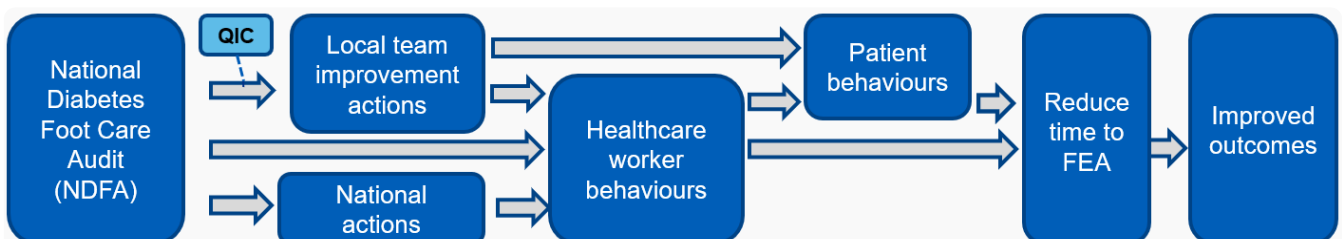
4. NDFA Quality Improvement Collaborative

4. NDFA Quality Improvement Collaborative

4.1. Background

Since it was established in 2014, the NDFA has consistently found that having severe ulcers (SINBAD score ≥ 3) is strongly linked with poorer outcomes. This includes rates of healing, rates of major amputations and risk of death. Time to first expert assessment (FEA) is also linked to severity. Consultation among people with diabetes, healthcare professionals (HCPs) and policy-makers prioritised reducing time to FEA, and ulcer severity. The NDFA Quality Improvement Collaborative (QIC) sought to support teams to achieve this aim.

Figure 1: NDFA QIC workflow



The QIC was delivered by Diabetes UK through a face-to-face workshop and teleconferences. This supported teams to:

- Develop a local improvement team and engage stakeholders;
- Set local aims; Identify actions to meet these aims;
- Measure progress against these aims;
- Share lessons with other members of the collaborative.

20 teams from England and Wales took part in the collaboratives. You can read more about the teams and their work here: [NDFA QIC \(diabetes.org.uk\)](https://diabetes.org.uk)

4.2. Lessons

- The first available appointment might not be convenient to patients. Giving options and information about importance when making the appointment can be helpful.
- Education, telephone triage and a closer working relationships with health and social care staff who first see ulcers can be helpful.
- Reducing time to FEA results, initially, in more people attending; consideration of how to address capacity is required.
- Improving NDFA data capture helped identify issues and monitor improvement.
- Time, and support, to improve is important.
- Linking the NDFA improvement work to other local priorities, Getting it right first time (GIRFT) recommendations and wider funding is helpful.
- Teams described the impact on their data. Further work to evaluate the overall cost effectiveness of the QIC would be helpful.

4.3. Improvement actions

Improvement actions aiming to change patient behaviour so as to reduce time to FEA:

- Patient evening information sessions.
- Make self-referral.
- Patient information posters and leaflets.

Improvement actions aiming to change healthcare worker behaviour so as to reduce time to FEA:

- Seek funding for additional training, e.g. for care home staff and non-registered practitioners.
- Provide face-to-face and online training for health staff, e.g. to support identification and use of assessment tools.
- Provide open access appointments.
- Implement root cause analysis informed actions to address the reasons for delays.
- Work to increase capacity and develop closer working (including through engagement and pathway development).

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5. Appendices

5.1. Variation in NDFA ulcer registration: 2018-2021 by commissioner

Background

There are 106 clinical commissioning groups (CCGs) in England and 7 local health boards (LHBs) in Wales. NDFA data have been provided by a total of 138 NHS trusts, 6 LHBs and 16 independent healthcare providers (IHPs).

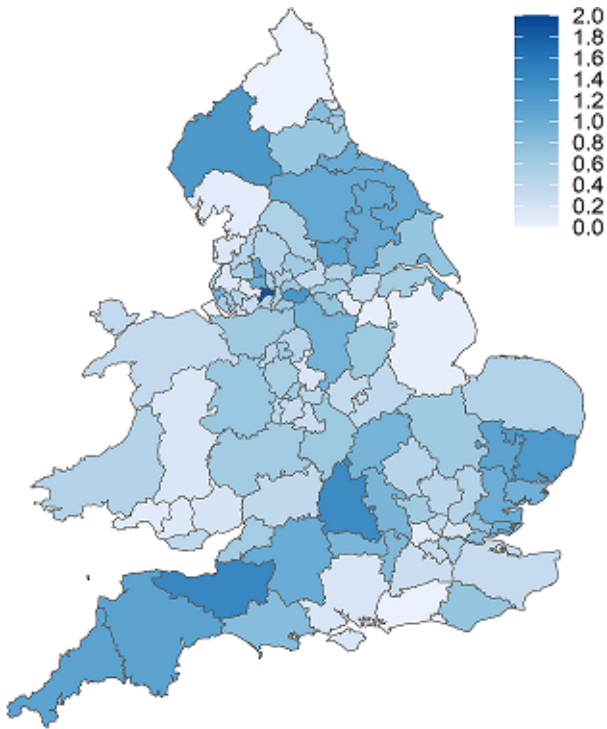
Incidence of new ulcer episodes

The number of new foot ulcers in people with diabetes in England and Wales is not certain. Data from Lancashire in 2002 suggested that the incidence was just over 2 per 100 person years (Abbott et al, 2002) but more recent data from Scotland (Chamberlain et al, 2021) suggested that the current figure may be closer to 1 per 100 person years.

Findings

NDFA data between April 2018 and March 2021 show wide ranging registration rates by CCG/LHB from 0.0 to 1.9 per 100 person years (see **Appendix 5.1**, below). These data suggest that while many CCG/LHBs were gathering information on nearly all new foot ulcers over the 3 year period, many others were not.

Appendix 5.1: NDFA ulcer registration rates per 100 person years for people with diabetes, by commissioner, England and Wales, 2018-21



5.2. Time series 2014-21: Time to FEA

Findings

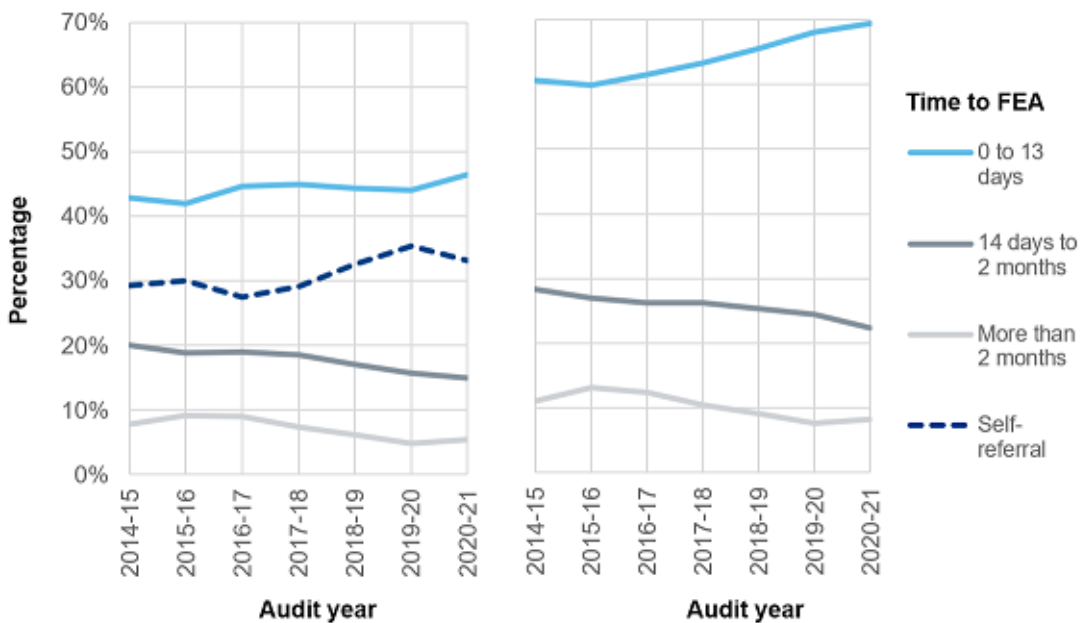
Since 2014-15 the proportion of ulcer episodes that are self-referred has increased from 30% to 35% in 2019-20, before reducing slightly to 33% in 2020-21 (see **Appendix 5.2a**, below).

The proportion of ulcer episodes seen within 13 days has increased from 43% to 46% (**Appendix 5.2a**) and from 61% to 69% where self-referrals are excluded (**Appendix 5.2b**).

Appendix 5.2: Time to FEA, England and Wales, 2014-21

Appendix 5.2a. All ulcers

Appendix 5.2b. Referred from healthcare professional (HCP) (excludes self-referral)



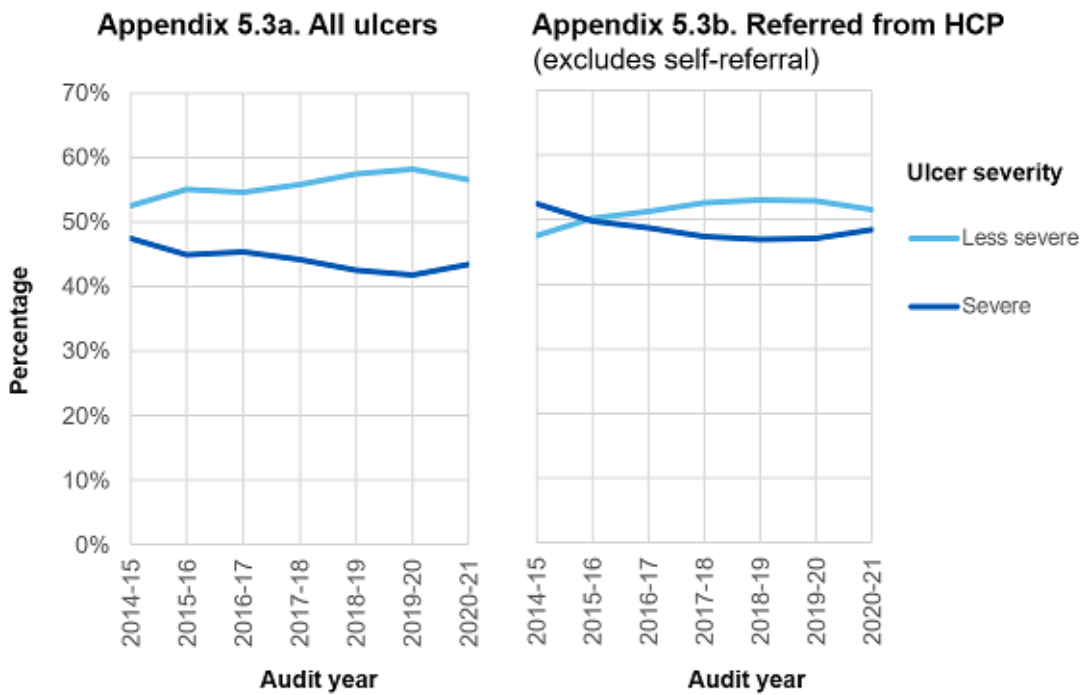
5.3. Time series 2014-21: Ulcer severity

Findings

Since 2014-15: The percentage of severe ulcers fell steadily from 48% in 2014-15 to 42% in 2019-20. There was a small rise to 43% in 2020-21 possibly related to the COVID-19 pandemic (see Appendix 5.3a, below).

Similar trends are evident when self-referrals are excluded from the denominator (Appendix 5.3b), with severe ulcers falling from 52% to 48%.

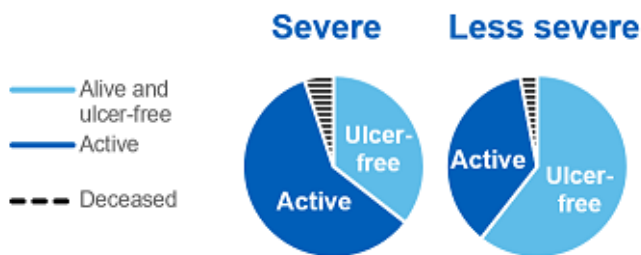
Appendix 5.3: Ulcer severity at FEA, England and Wales, 2014-21



5.4. Time series 2014-21: 12-week outcome by severity

Findings

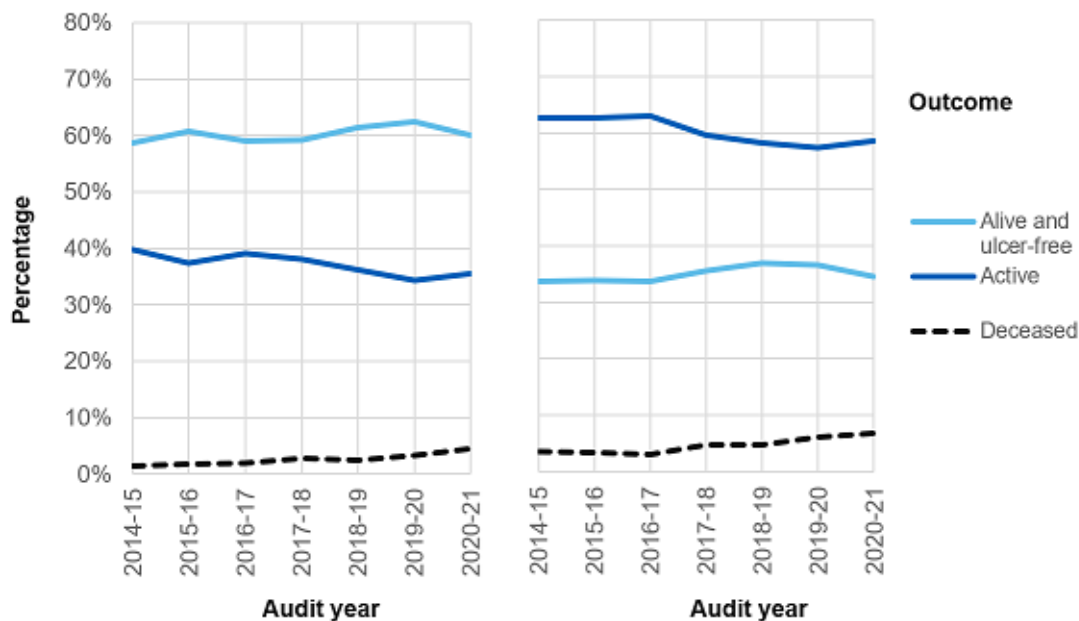
Severe ulcers are less likely to be healed at 12 weeks: 35% alive and ulcer-free (severe) vs 61% (less severe). Both severe and less severe ulcers show improvements in healing up to 2019-20: 59% to 61% (less severe), 34% to 37% (severe). There was a small drop in healing in 2020-21 (2 percentage points), coinciding with the COVID-19 pandemic.



Appendix 5.4: Ulcer status at 12 weeks after FEA (excludes unknown outcomes), England and Wales, 2014-21

Appendix 5.4a. Less severe

Appendix 5.4b. Severe



5.5. Time series 2014-21: Severe ulceration by time to FEA

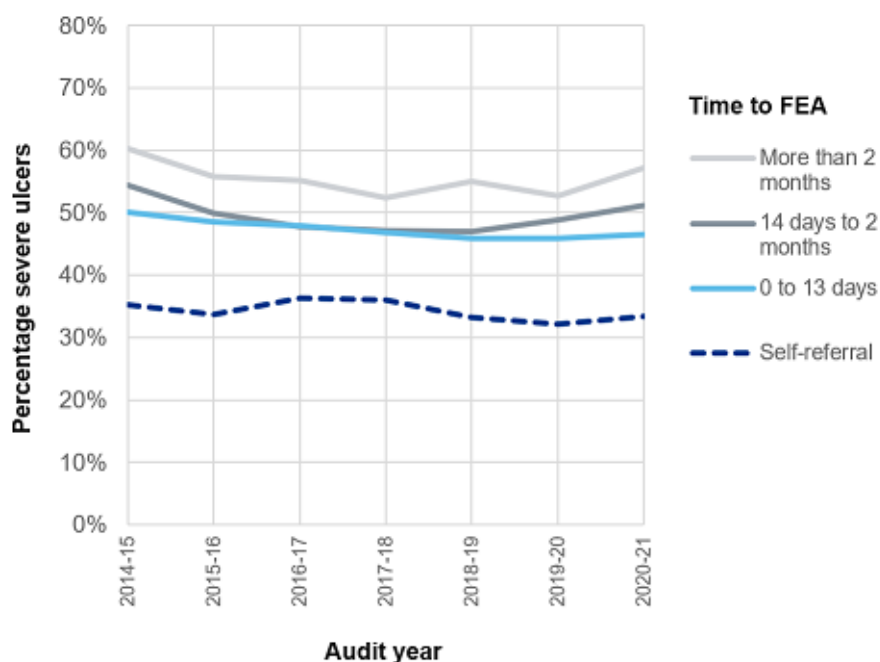
Findings

The NDFA has consistently found that:

- i. Individuals who self-refer have a lower incidence of severe ulceration.
- ii. The proportion of severe ulcers is higher in individuals whose ulcer is not assessed for more than 2 months.

There has been no major change over time in the relationship between the 4 groups.

Appendix 5.5: Percentage severe ulceration at FEA, by time to FEA, England and Wales, 2014-21



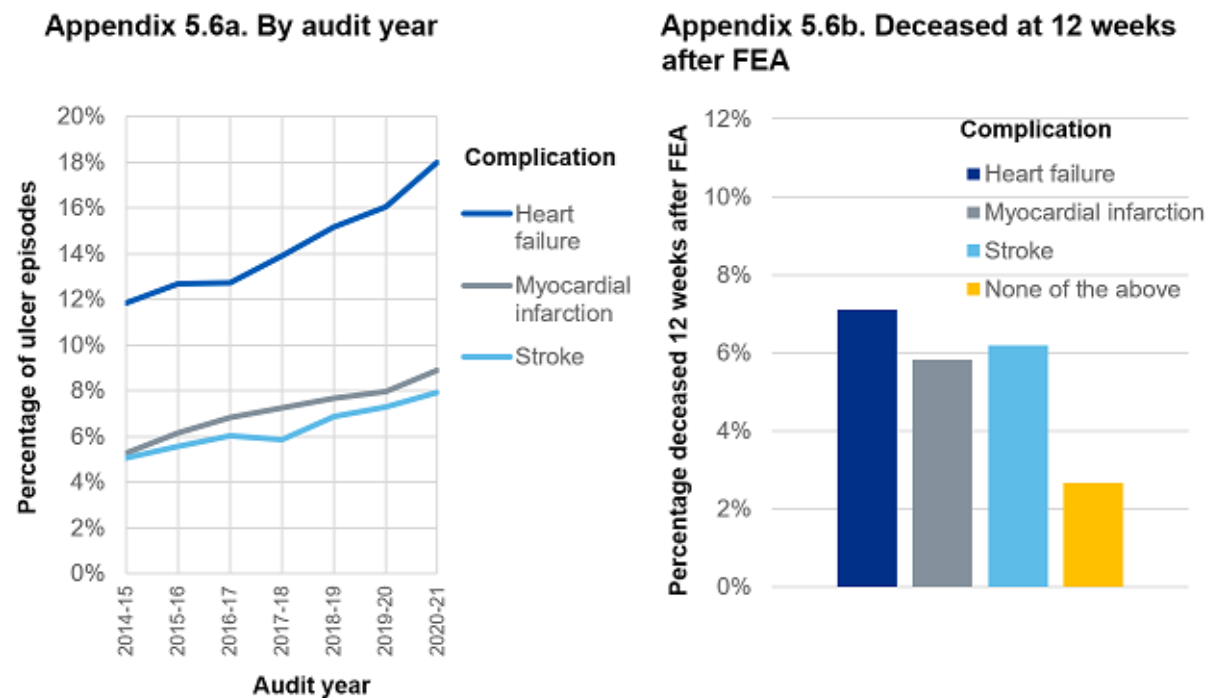
5.6. Time series 2014-21: Comorbidities

Findings

There has been a steady increase in co-morbidities in the population registered with the NDFA – as reflected in hospital admissions for vascular diseases recorded in the year before ulcer presentation (Appendix 5.6a, below).

All 3 conditions are associated with 12-week mortality (see NDFA 2019, p.47, 77-79 and Appendix 5.6b, below), particularly heart failure. Each will have an impact on the recorded incidence of ulcer healing at 12 weeks.

Appendix 5.6: Hospital admissions in year prior to FEA, England and Wales, 2014-21



5.7. Provider variation: 12-week outcome by region

Background

Providers have been grouped into 9 English regions, plus Wales as a whole.

The percentage of people reported as alive and ulcer-free at 12 weeks is shown by region, split by ulcer severity.

Findings

12-week healing rates vary across regions, from 48% to 68% for less severe ulcers and 27% to 41% for severe ulcers.

Appendix 5.7: Percentage of people alive and ulcer-free at 12 weeks after FEA, by region (excludes unknown outcomes), England and Wales, 2014-21

Region	Alive and ulcer-free at 12 weeks	
	Less severe ulcer	Severe ulcer
East Midlands	58%	34%
East Of England	62%	34%
London	61%	32%
North East	68%	41%
North West	61%	36%
South East	63%	38%
South West	59%	37%
West Midlands	55%	34%
Yorkshire and The Humber	62%	39%
England	61%	36%
Wales	48%	26%
England and Wales	61%	35%

5.8. Provider variation: 12-week outcome by provider (severe ulcers)

Background

For each provider (NHS trust, LHB or IHP), the expected number of severe ulcer episodes to be healed at 12 weeks was calculated using the England and Wales average. Expected numbers were then compared to the actual numbers, to produce a healing ratio (HR) where 100 = exactly as expected.

Control limits (2 and 3 standard deviations, SD) were used to assess whether the HR for a provider is within an expected range above or below 100.

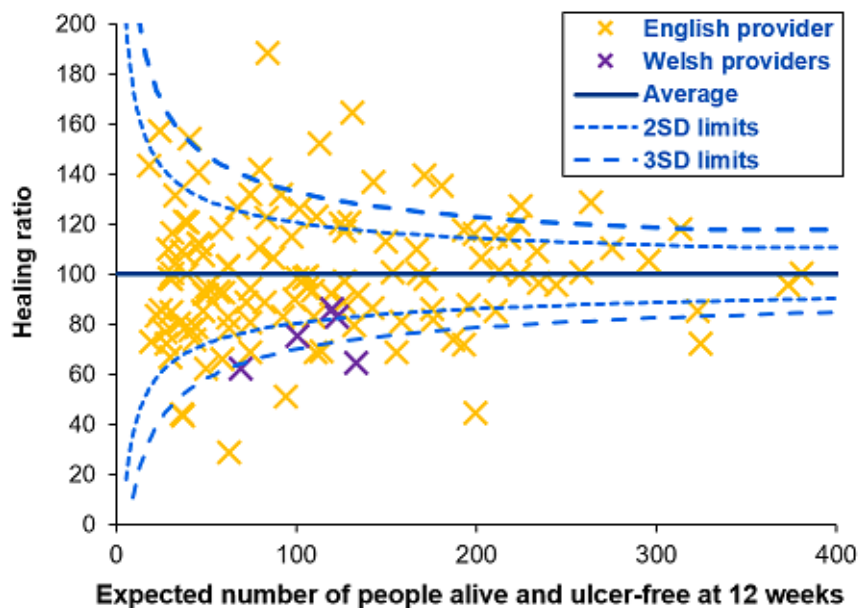
Findings

10 of 127 (8%) providers have higher than expected unadjusted healing rates for severe

ulcers (above 3SD).

13 of 127 (10%) have lower than expected healing rates for severe ulcers (below 3SD).

Appendix 5.8: Unadjusted healing ratios: Alive and ulcer-free at 12 weeks after FEA: Severe ulcers by provider, (excludes unknown outcomes), England and Wales, 2014-21



5.9. Time series 2014-21: Major amputation within 6 months of FEA

Background

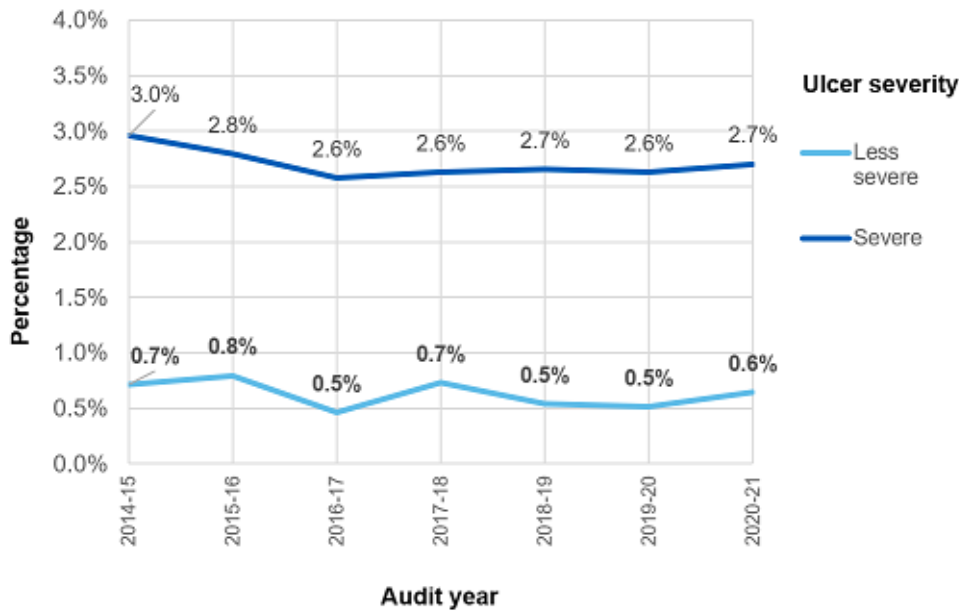
Lower limb amputation is the surgical excision of bone and soft tissue of the foot or leg. Major amputation (above the ankle) is carried out when it is judged that the lower leg cannot be saved.

Findings

Overall, this time series reveals no change in the incidence of major amputation observed within 6 months of FEA – which remains around 0.6% for less severe ulcers and around 2.7% for severe ulcers.

The 4th NDFA report (2019) identified severe ischaemia, involvement of the heel, older age, smoking and renal disease as particular risk factors for major amputation (1).

Appendix 5.9: Percentage of people having major amputation within 6 months of FEA, England and Wales, 2014-21



Notes: (1) NDFA (2019) p.46, 73-75.

5.10. Provider variation: Major amputation within 6 months of FEA, by region

Background

Providers in England and Wales have been grouped by region.

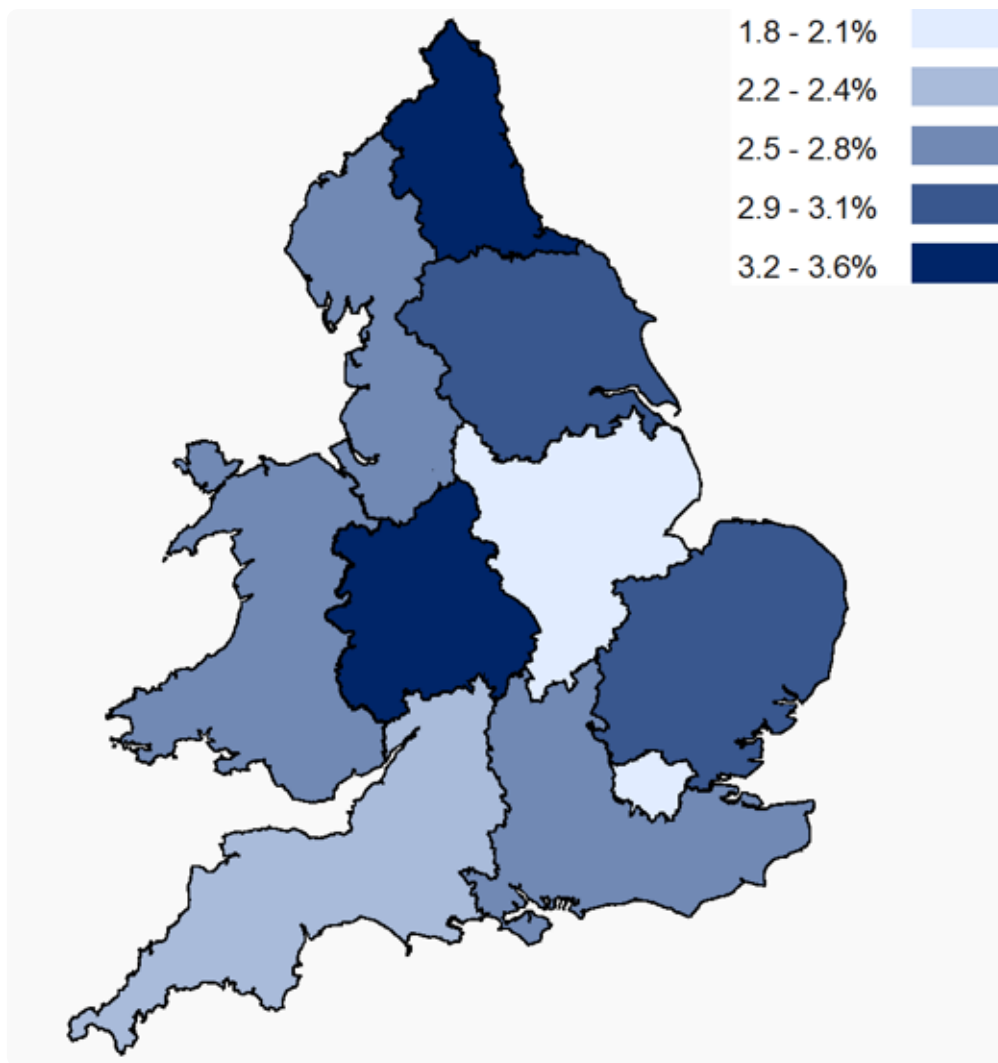
The percentage of severe ulcer episodes where major amputation was undertaken within 6 months of FEA is shown by region.

Findings

Regionally, major amputation rates at 6 months in people presenting with severe ulcers vary from 1.8% to 3.6%.

Regional trends over time are shown in **Appendix 5.12**, uploaded as a separate document.

Appendix 5.10: Percentage of people having major amputation within 6 months of FEA: Severe ulcers, by region, England and Wales, 2014-21



5.11. Time series 2018-20: Major amputation-free survival at 1 year

Background

A new, alternative NDFA outcome measure is major amputation-free survival. This is assessed at 1 year after FEA.

Equivalent data for earlier years are not available. Audit year 2020-21 is excluded because the data for the full year follow-up period was not available when the analysis was prepared.

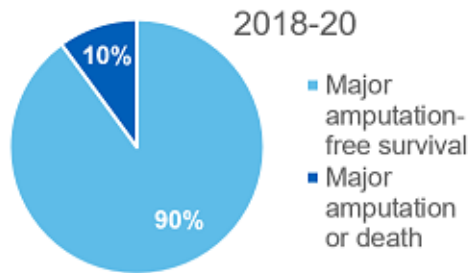
Findings

90% of those presenting with less severe ulcers were alive and major amputation-free at 1 year (**Appendix 5.11a**), compared with 82% of those with severe ulcers (**Appendix 5.11b**).

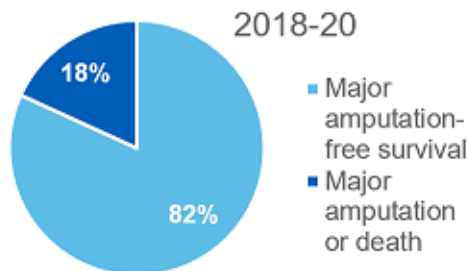
87% of cases where major amputation-free survival was not achieved were a result of death within 1 year. The remainder (13%) were the result of major amputation within 1 year.

Appendix 5.11: 1 year major amputation-free survival: Less severe ulcers, Severe ulcers, England and Wales, 2018-20

Audit year	Major amputation-free survival?			Major amputation
	Yes	No	Deceased	
2018-19	91%	9%	8%	1%
2019-20	89%	11%	10%	1%
Total	90%	10%	9%	1%



Audit year	Major amputation-free survival?			Major amputation
	Yes	No	Deceased	
2018-19	83%	17%	14%	3%
2019-20	81%	19%	16%	3%
Total	82%	18%	15%	3%



Notes: (1) 1 year from FEA.

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6. Glossary

Ulcer episode: The NDFA collects information on diabetic foot ulcers (DFUs). An **ulcer episode** refers to the period during which a person has 1 or more DFUs. A person may have more than 1 ulcer episode if separated by a period of being ulcer-free, no matter how short.

First expert assessment: The first expert assessment (FEA) of the ulcer is that undertaken by a member of the team registering the ulcer episode. **Time to FEA** is the interval between first presentation to any health professional (e.g. a GP or in A&E) and first assessment by the clinician with a specialist interest. People with foot ulcers may also self-refer to a specialist foot care service (**self-referral**).

Ulcer severity is documented by the specialist foot care service at the FEA. It is defined using the **SINBAD** classification (Ince et al. 2008) which scores an ulcer between 0 and 6 depending on how many of the 6 SINBAD adverse elements are present: Site (on hindfoot), Ischaemia, Neuropathy, Bacterial infection, Area ($\geq 1\text{cm}^2$), Depth (to tendon or bone). Ulcers with a

score of 0 to 2 are defined as **less severe**; scores of 3 to 6 are defined as **severe**. If a person has more than 1 ulcer at FEA, 1 (usually the most severe or clinically significant) is selected as the **index ulcer** for the purpose of classification.

Healing is documented at 12 weeks following the FEA¹ and is said to have occurred if the person is **alive and ulcer-free** (i.e. all ulcers present during the ulcer episode have fully **healed**). Being ulcer-free also includes those who have had surgery – including **minor amputation** (below the ankle) and **major amputation** (above the ankle) – provided all wounds have healed. The ulcer episode is still active if any ulcers persist unhealed. **Active ulcers** are ulcers that have not healed. The ulcer episode is still regarded as active if the original index ulcer has healed but if other foot ulcers remain active.

Healthcare providers are the parent organisations of the specialist foot care services. This is typically an **NHS trust** in England or a local health board (**LHB**) in Wales. It may also be an independent healthcare provider (**IHP**).

The National Institute for Health and Care Excellence (**NICE**) produces guidelines for the treatment of diabetic foot problems². Getting It Right First Time (**GIRFT**) is a national programme designed to improve the treatment and care of patients, including those with diabetes³.

Results in this report are split by **audit year**, which run from April to March (e.g. 2019-20 is from 1 April 2019 to 31 March 2020). The 1st NDFA audit year 2014-15 is shorter than subsequent audit years because data collection started on 14 July 2014.

Notes: 1. Defined as between 10 weeks (70 days) and 14 weeks (98 days) but as close as possible to 12 weeks (84 days). 2. NICE NG19. 3. GIRFT Programme National Specialty Report: Diabetes (2020).

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7.2. Acknowledgements

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Development and delivery of the NDFA is guided by a multi-professional advisory group of clinicians and patient representatives, chaired by Professor William Jeffcoate. The NDFA Advisory Group members include:

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Andrew Askey	Clinical Advisor in Diabetes, Walsall CCG
Alex Berry	Head of Involvement and Healthcare Engagement, Diabetes UK
Sue Brown	Expert by Experience
Sheila Burston	Expert by Experience
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Prepared in collaboration with:

The Healthcare Quality Improvement Partnership (HQIP). The National Diabetes Foot Care Audit (NDFA) is commissioned by the Healthcare Quality Improvement Partnership (HQIP) as part of the National Clinical Audit and Patient Outcomes Programme (NCAPOP). HQIP is led by a consortium of the Academy of Medical Royal Colleges, the Royal College of Nursing, and National Voices. Its aim is to promote quality improvement in patient outcomes, and in particular, to increase the impact that clinical audit, outcome review programmes and registries have on healthcare quality in England and Wales. HQIP holds the contract to commission, manage, and develop the National Clinical Audit and Patient Outcomes Programme (NCAPOP), comprising around 40 projects covering care provided to people with a wide range of medical, surgical and mental health conditions. The programme is funded by NHS England, the Welsh Government and, with some individual projects, other devolved administrations and crown dependencies www.hqip.org.uk/national-programmes.

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Diabetes UK is the largest organisation in the UK working for people with diabetes, funding research, campaigning and helping people live with the condition.

The **National Cardiovascular Intelligence Network (NCVIN)** is a partnership of leading national cardiovascular organisations which analyses information and data and turns it into meaningful timely health intelligence for commissioners, policy makers, clinicians and health professionals to improve services and outcomes.

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