NHS
West Hertfordshire Hospitals
NHS Trust

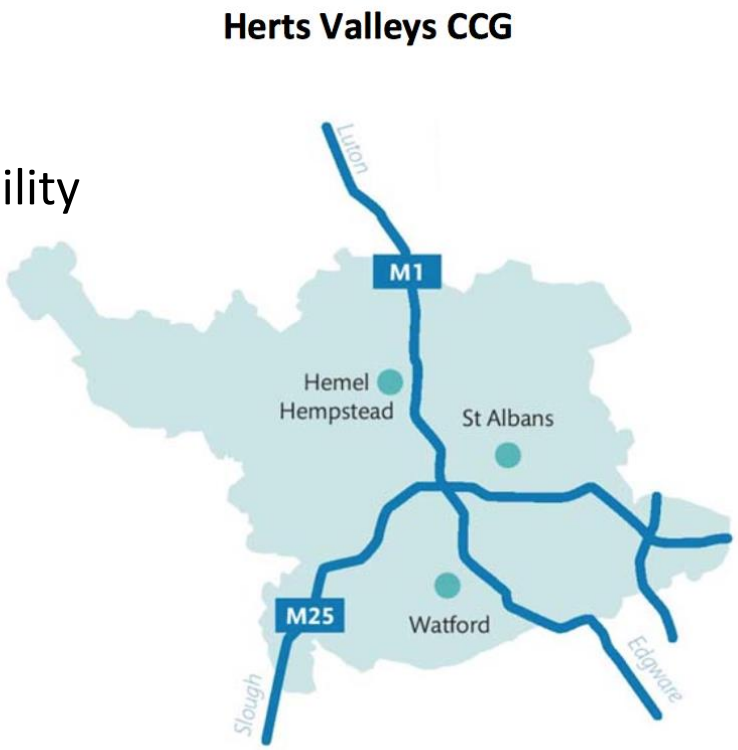
Evaluating the process of care for the inpatient management of the acute Diabetic foot.

Evidence for the role of a fully integrated inpatient foot MDT?

DCD Hope, H Wang, R Anders, P Villa, C Kong

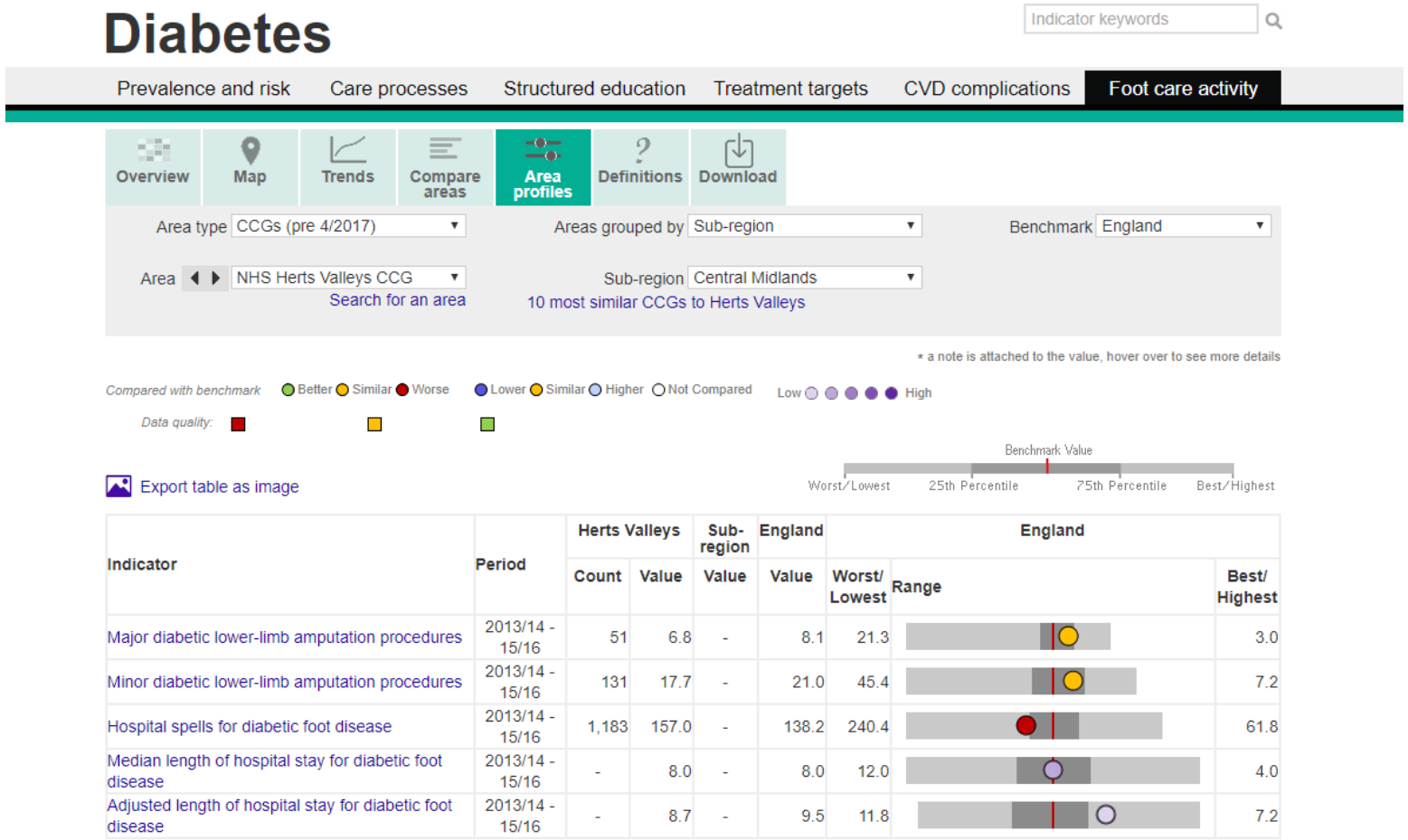
Background

- Diabetic foot disease - neuropathy, deformity, ischemia, increased susceptibility to infection
- ¼ diabetic patients will have a foot complication. More than 60,000 people with diabetes in England are thought to have foot ulcers at any given time
- Following amputation mortality is 50-75% at 5 years.
- In 2014-15 the annual cost of diabetic foot disease to the NHS in England was estimated at £1 billion.
- Foot complications are a significant caseload of diabetes team referrals



1. *NWL STP 2016*
2. *Public Health England*

Foot care activity profile for HVCCG (Public Health England)



Diabetes

Indicator keywords

Prevalence and risk | Care processes | Structured education | Treatment targets | CVD complications | Foot care activity

Overview | Map | Trends | Compare areas | Area profiles | Definitions | Download

Area type: CCGs (pre 4/2017) — Areas grouped by: Sub-region — Benchmark: England

Area: NHS Herts Valleys CCG — Sub-region: Central Midlands

Search for an area — 10 most similar CCGs to Herts Valleys

* a note is attached to the value, hover over to see more details

Compared with benchmark: Better | Similar | Worse — Lower | Similar | Higher | Not Compared — Low … High

Data quality:

Benchmark Value: Worst/Lowest | 25th Percentile | 75th Percentile | Best/Highest

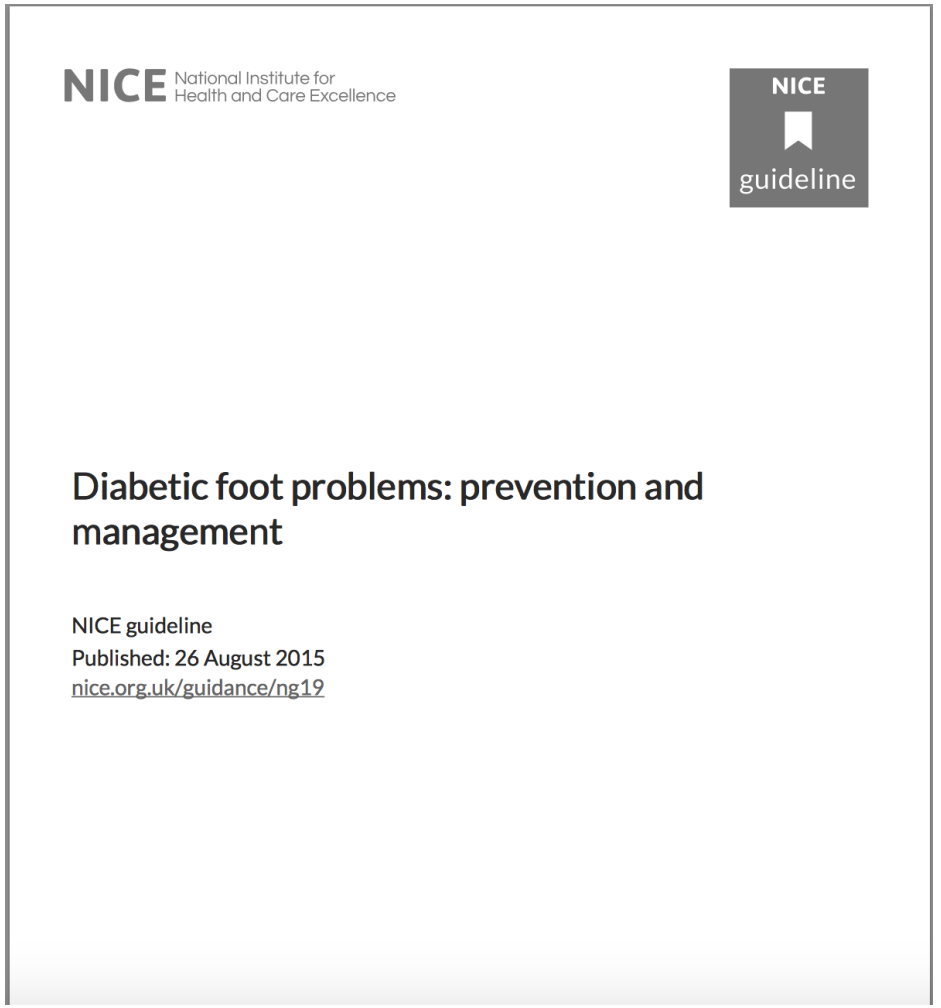
Export table as image

Indicator	Period	Herts Valleys		Sub-region	England	England		
		Count	Value	Value	Value	Worst/ Lowest	Range	Best/ Highest
Major diabetic lower-limb amputation procedures	2013/14 - 15/16	51	6.8	-	8.1	21.3		3.0
Minor diabetic lower-limb amputation procedures	2013/14 - 15/16	131	17.7	-	21.0	45.4		7.2
Hospital spells for diabetic foot disease	2013/14 - 15/16	1,183	157.0	-	138.2	240.4		61.8
Median length of hospital stay for diabetic foot disease	2013/14 - 15/16	-	8.0	-	8.0	12.0		4.0
Adjusted length of hospital stay for diabetic foot disease	2013/14 - 15/16	-	8.7	-	9.5	11.8		7.2

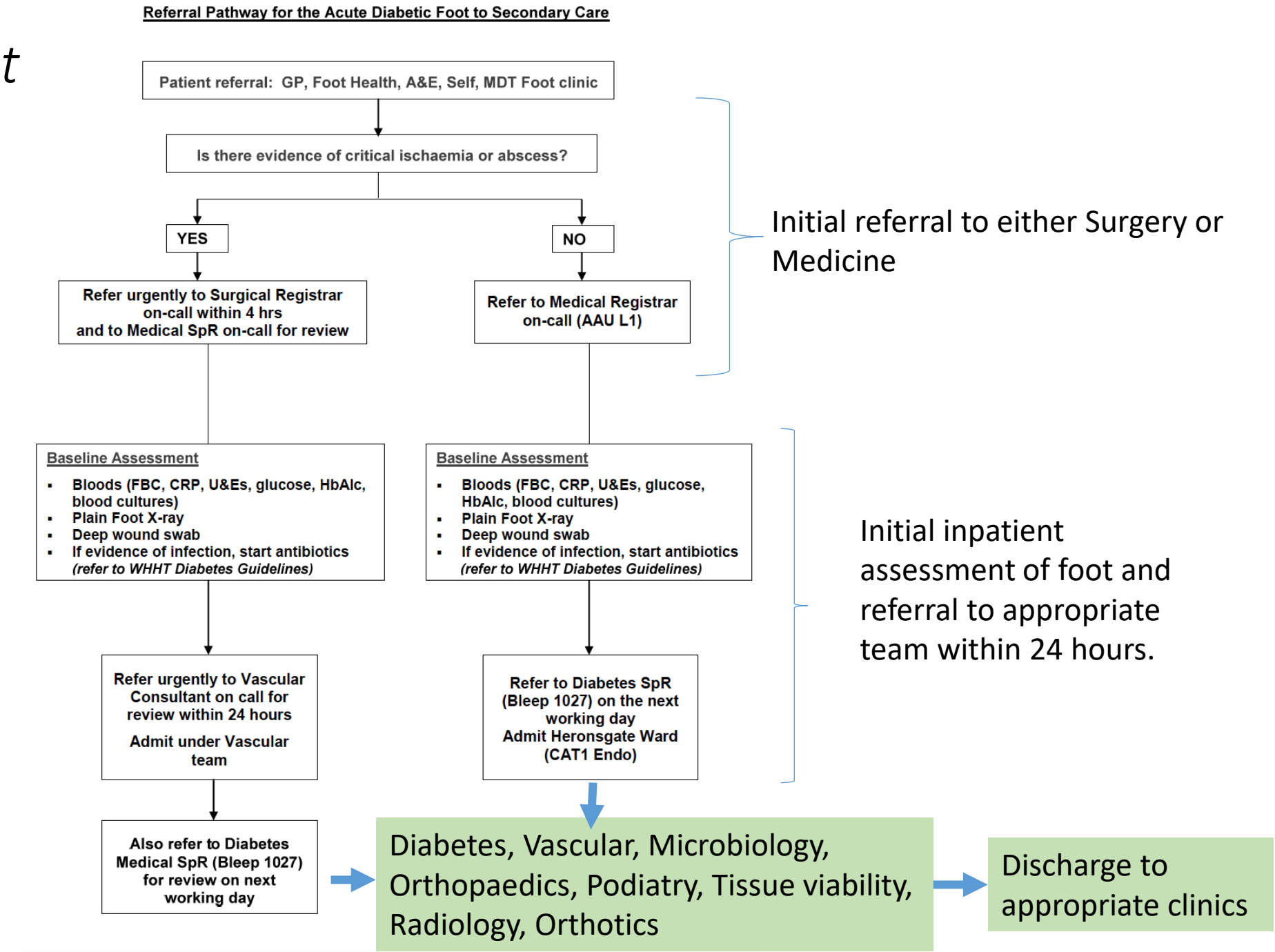
https://www.gov.uk/guidance/cardiovascular-disease-data-and-analysis-a-guide-for-health-professionals

NICE standards of inpatient foot care (2015).

- ***Guidance:*** Each hospital should have a **care pathway** for people with diabetic foot problems who need inpatient care.
- ***Guidance:*** Use a standardised system to **document the severity** of the foot ulcer, such as the SINBAD (Site, Ischaemia, Neuropathy, Bacterial Infection, Area and Depth) or the University of Texas classification system.
- ***Guidance:*** Send a wound **swab**
- ***Guidance:*** Consider an **plain film** of the person's affected foot
- ***Guidance:*** Start **antibiotic treatment** for suspected diabetic foot infection as soon as possible. Take cultures and sample.
- ***Guidance:*** **Refer** the person to the **multidisciplinary foot care service** (Diabetes and Vascular) **within 24 hours** of the initial examination of the person's feet.



Patient pathway at WGH…



Initial referral to either Surgery or Medicine

Initial inpatient assessment of foot and referral to appropriate team within 24 hours.

Clerking proforma…

Appendix 5

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DIABETIC FOOT INPATIENT ASSESSMENT PROFORMA

(place patient label OR complete the following:

Name:.....

D.O.B:.....

Hospital no:.....

STEP 1: **Document ulcer size, ulcer depth, deformity (e.g. Charcot), cellulitis, gangrene.**

STEP 2: **Assess neurovascular status**

	Right Foot	Left Foot
Posterior Tibial	Present ☐ Absent ☐	Present ☐ Absent ☐
Dorsalis Pedis	Present ☐ Absent ☐	Present ☐ Absent ☐
Sensation	Normal ☐ Impaired ☐ see next step Level:_____	Normal ☐ Impaired ☐ see next step Level:_____

STEP 3: **Consider likely aetiology**

Venous ☐ Neuropathic ☐ Ischaemic ☐ Neuroischaemic ☐ Pressure ☐ Osteomyelitis ☐

Acute Charcot ☐ Chronic Charcot ☐

STEP 4: **Check for previous swab results**

DATE __/__/____ **Growth:** _____

DATE __/__/____ **Growth:** _____

DATE __/__/____ **Growth:** _____

Q: ***Has the patient been on antibiotics for a diabetic foot problem pre-admission?*** **Y / N**
Q: ***If yes, please state type of antibiotic(s) and duration:*** _____

WITHIN 4 HOURS

1. Blood tests: FBC, U+E, eGFR, LFT, CRP, Blood cultures (if pyrexial) ☐
2. Repeat HbA1c (only if not done within prior 2 months), Lipid profile and Urine Albumin:Creatinine Ratio (ACR) ☐
3. Deep swab ulcer ☐
4. Antibiotics – as per Diabetic Foot Care guidelines and consult Microbiology http://wghintra01/uploads/out/Foot_Care_Guidelines_Feb2011_v1.pdf ☐
5. X-ray of foot / feet - ?osteomyelitis ☐
6. Monitor BM (QDS pre meals) – target BM 4-9 mmol/L. ☐
   - If BM >9mmol/L, monitor BMs and uptitrate regular medication if possible
   - If BM consistently > 15mmol/L during working hours, contact DSNs
   - If BM consistently > 15mmol/L during oncall hours, consider 4 units s/c Actrapid and repeat BM in 1 hour and review subsequent BMs
7. Analgesia if required ☐
8. Referral to Diabetes team ☐
   - Referrals SpR – bleep 1027
   - DSN extension – 3385
9. Referral to Tissue Viability Nurse (TVN) for pressure-relieving dressings – bleep 1051/2973 or ext 7722 and fax form to 7896 ☐
10. If critical ischaemia, refer to Vascular Team urgently ☐

URGENT (WITHIN 24 HOURS)

1. Admit Heronsgate Ward **(CAT1 ENDO)** – extension 7516 unless foot critically ischaemic
2. Consider arterial dopplers for lower limbs (if pulses diminished/absent) ☐
3. Referral to vascular surgeons (if ischaemic) for consideration of revascularisation / debridement ☐
4. Referral to Orthotics (appropriate footwear) ☐
   a. Document Consultant in charge here _____
   b. Photocopy this assessment proforma
   c. Deliver to Orthotics office (between orthopaedics reception desk and A&E on PMOK Level 1)

Aims – Audit against NICE guidance

Primary aim: To audit inpatient initial assessment by Medical team and onward referral (NICE guidance)

Secondary aim: audit key steps of the inpatient care pathway

Initial assessment

-Clinical examination

-wound swabs, x-ray imaging and antimicrobial therapy commenced

-referral to Diabetes team within 24 hours (aiming 100%)

-referral to Vascular team within 24 hours (if concern of ischemia)

MDT

-proportion of vascular imaging requested by Vascular team, time to review of imaging

-time to microbiology discussion/advice

Discharge

-Appropriate referral to Diabetes Foot Clinic and community Podiatry on discharge

Methods

- Patients included with Diabetic Foot Complication referred to Medicine, between October 2016 – March 2017 (identified from SpR Referrals, Home ward admission)

- Retrospective analysis of patient's paper notes.

- Retrospective analysis of electronic patient system for investigation requests (ie xray, swab)

- Entry of data into comprehensive spreadsheet with separate themes

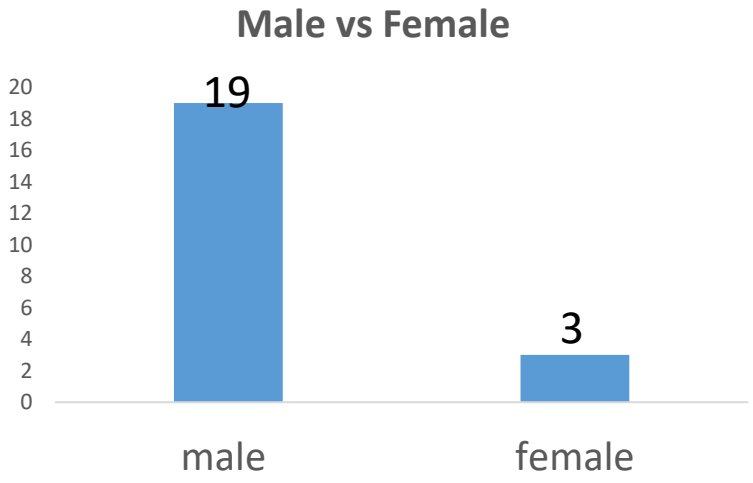
    1) Initial assessment

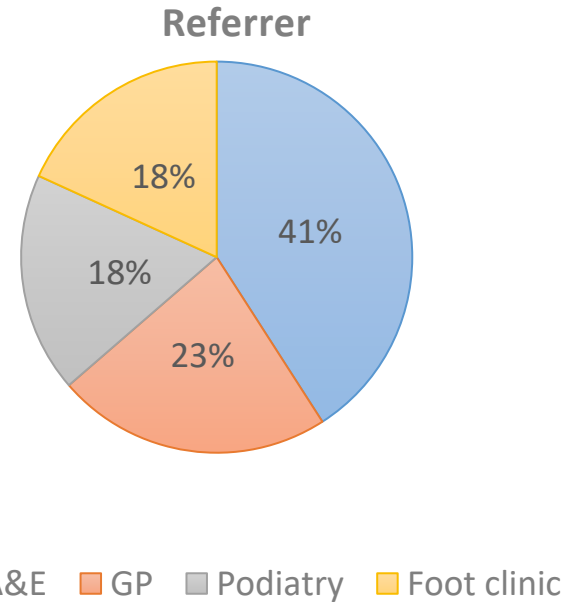
    2) MDT involvement (Vascular team, Microbiology)

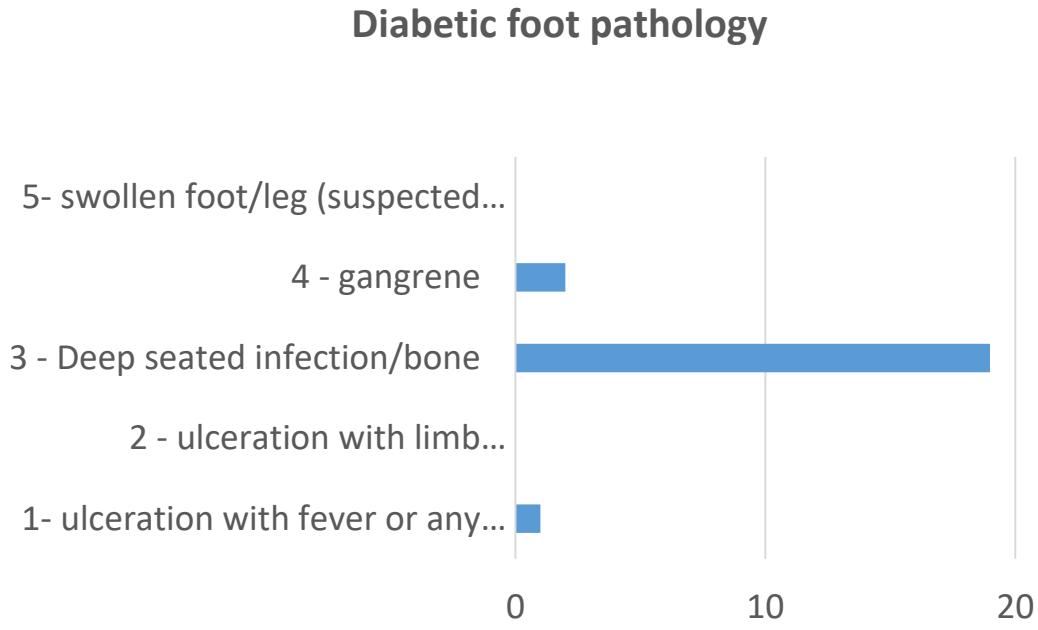
    3) Referral to clinics on discharge

Intervention/QI based on above audit data

Results – Diabetic foot population represented

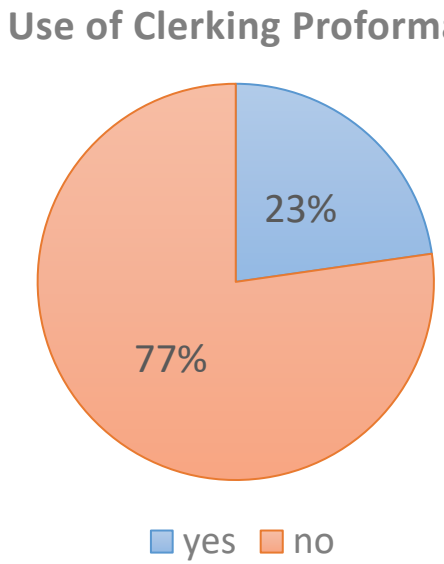


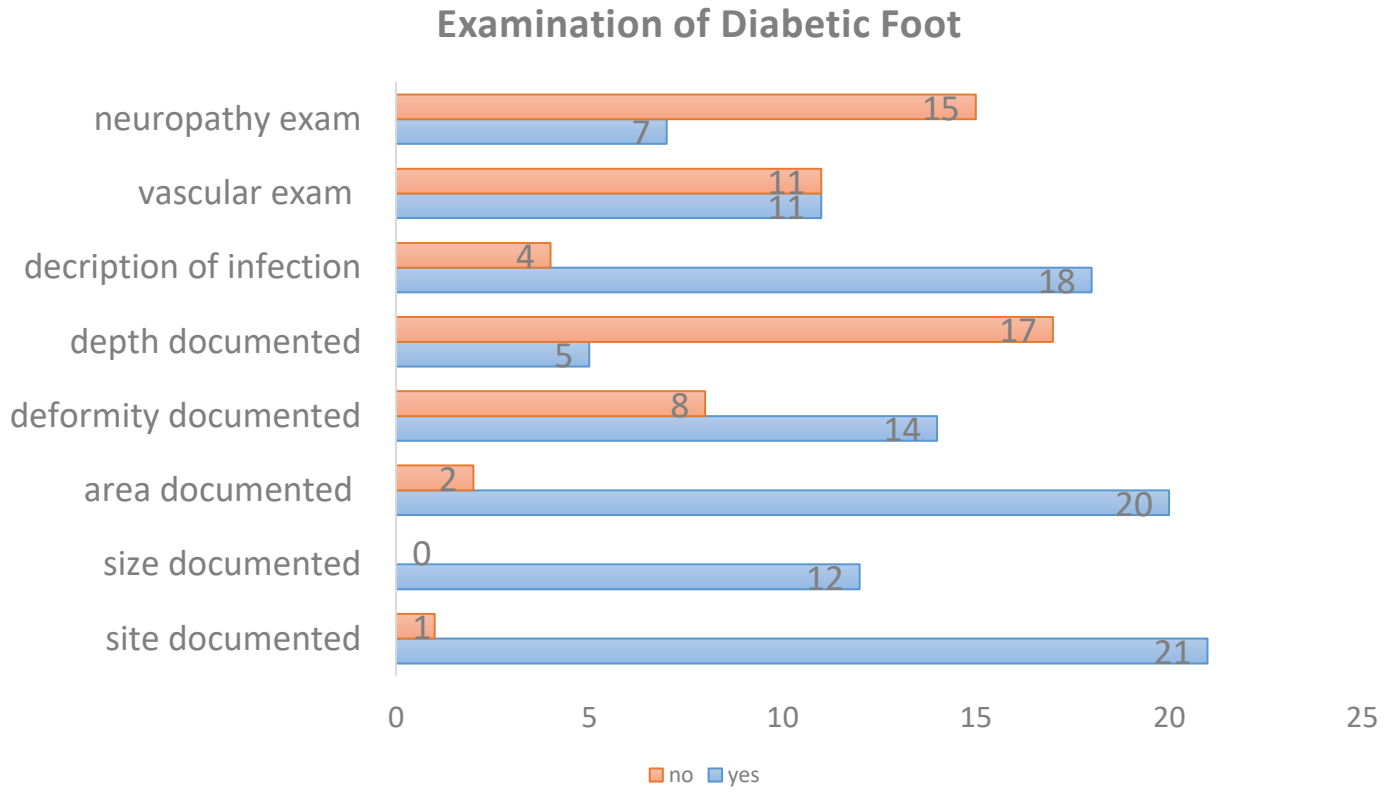




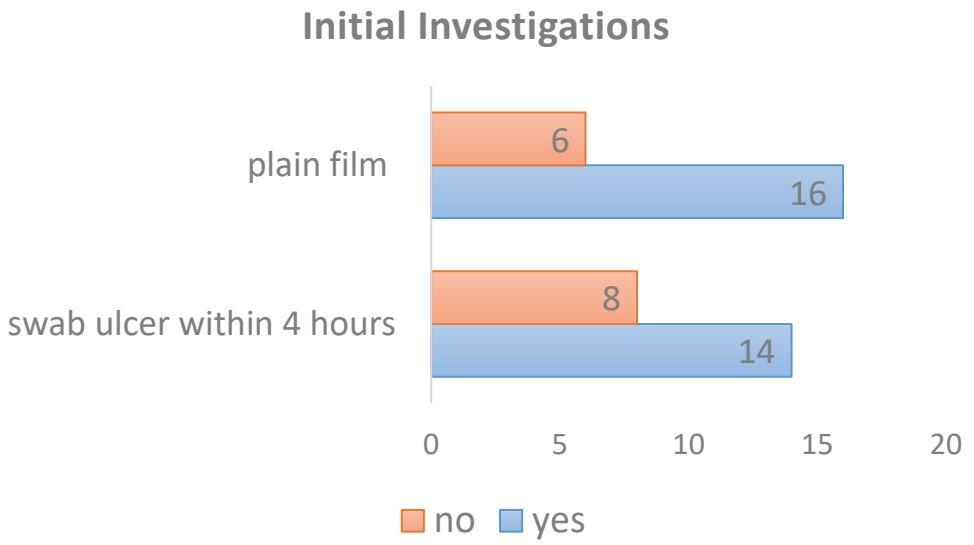
Average age=64

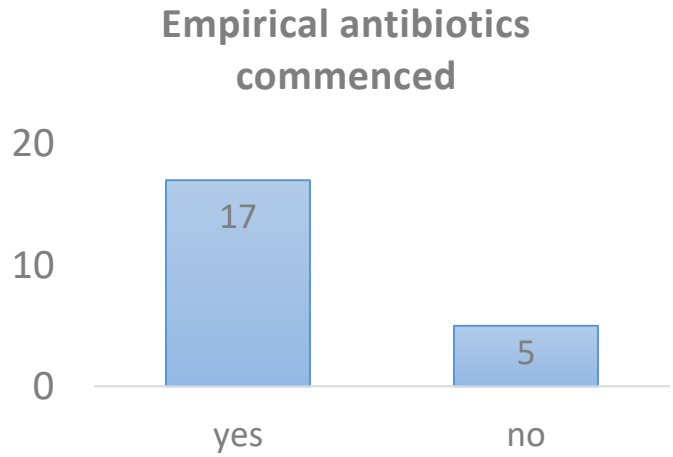
Results – Initial Assessment(1)

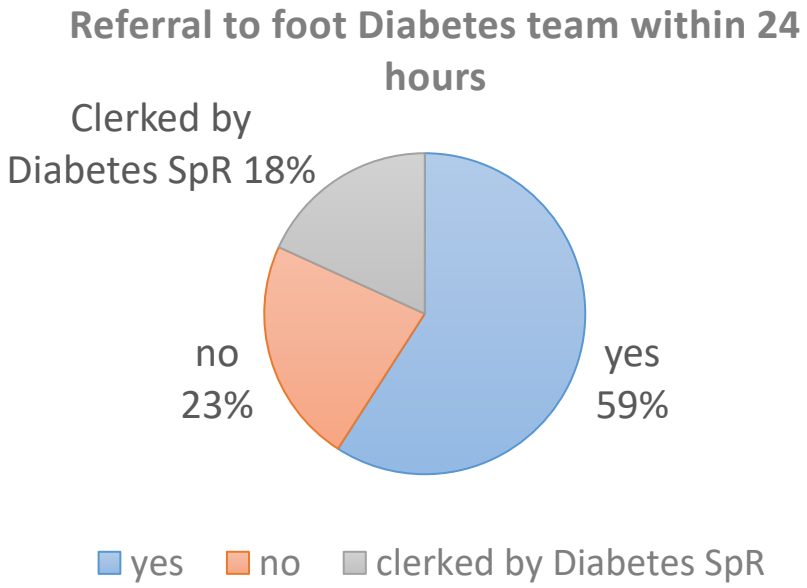


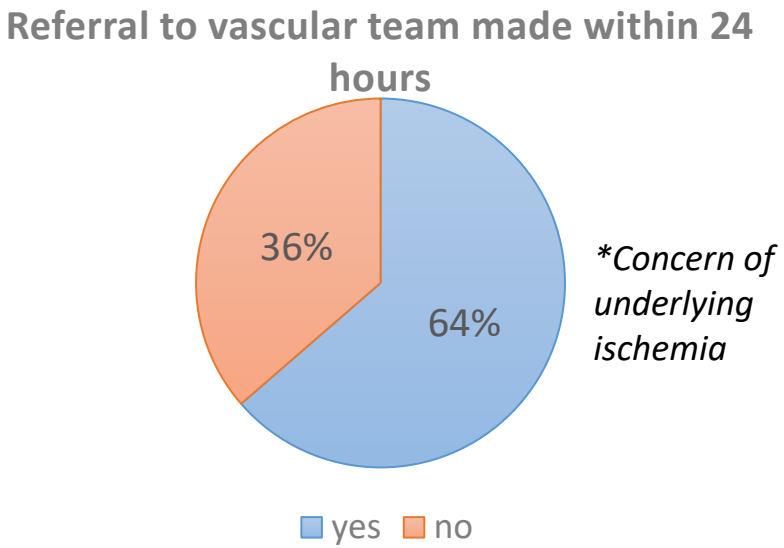


Results – Initial Assessment(2)



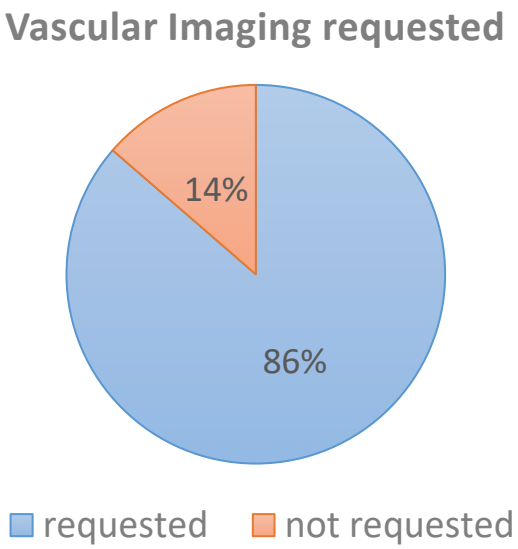


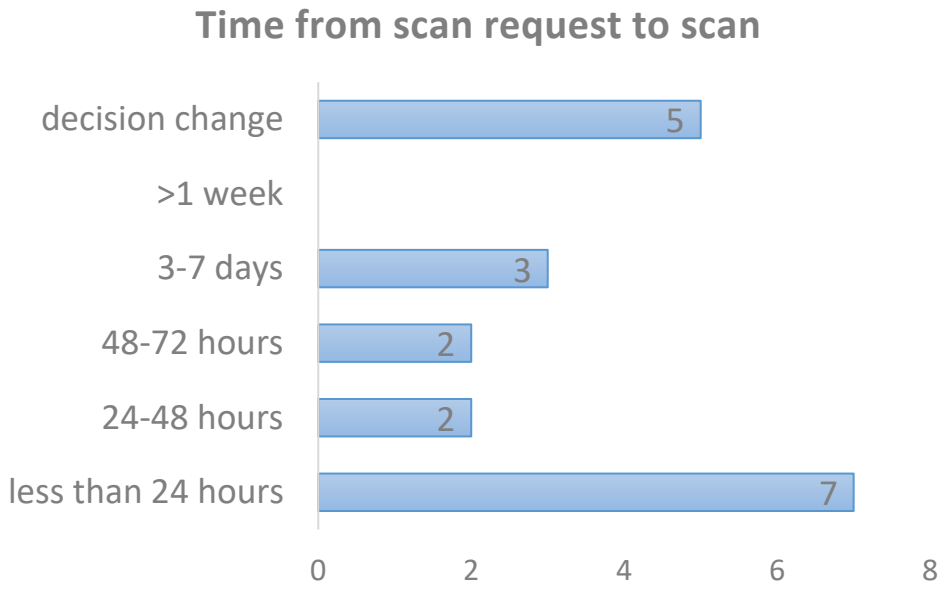


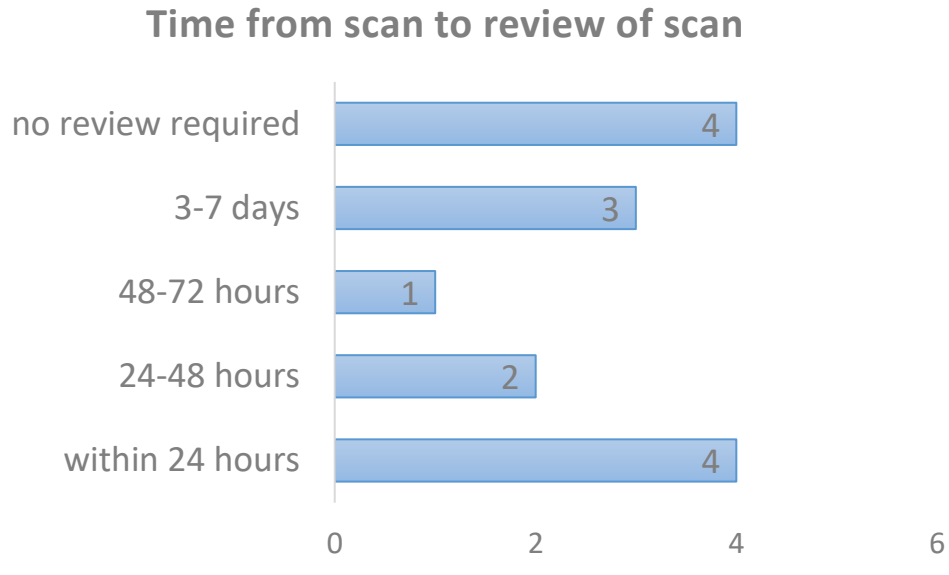


**Concern of underlying ischemia*

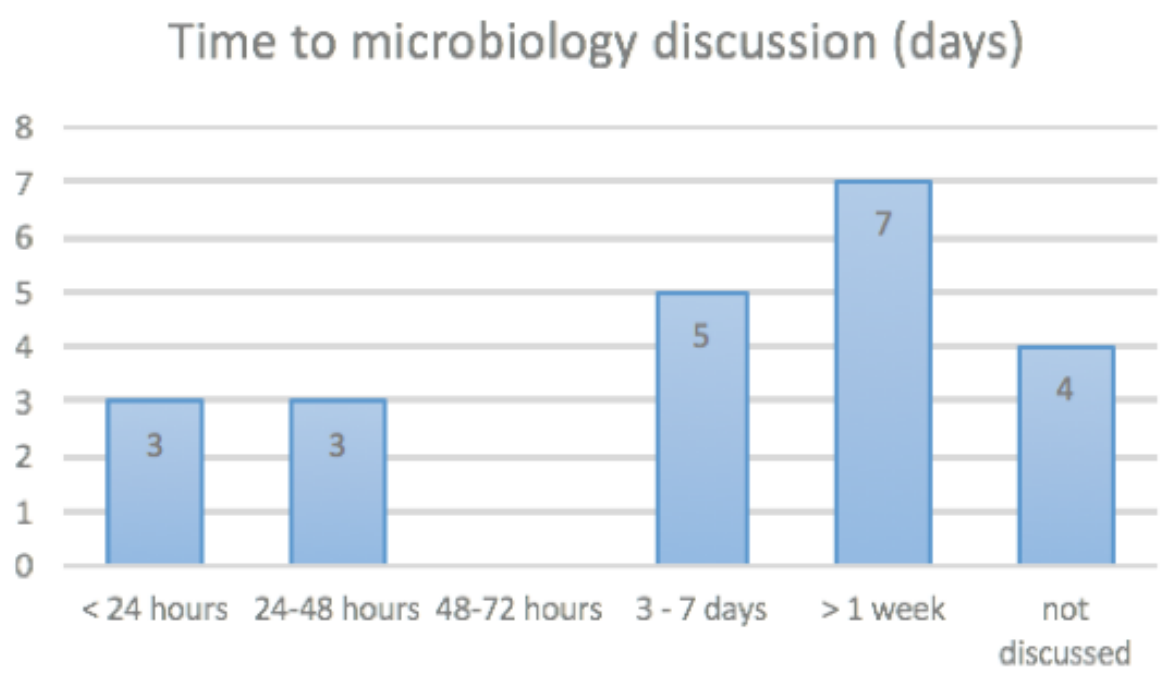
Results – MDT - Vascular team

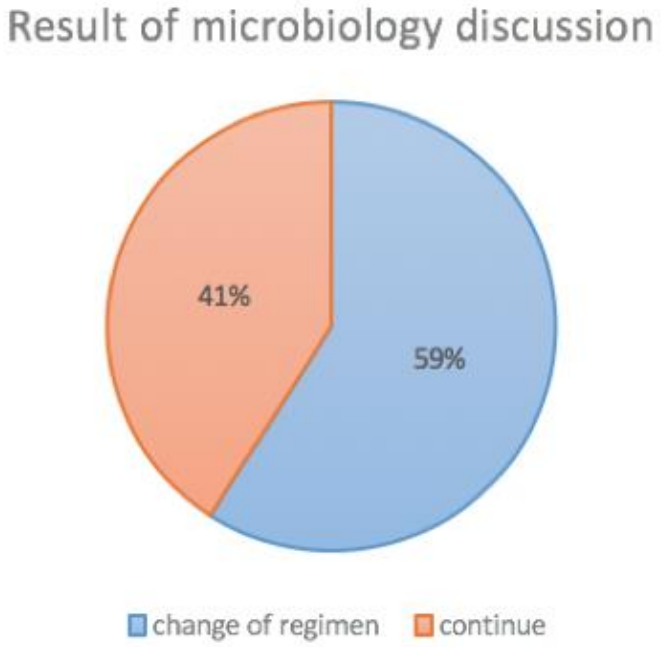




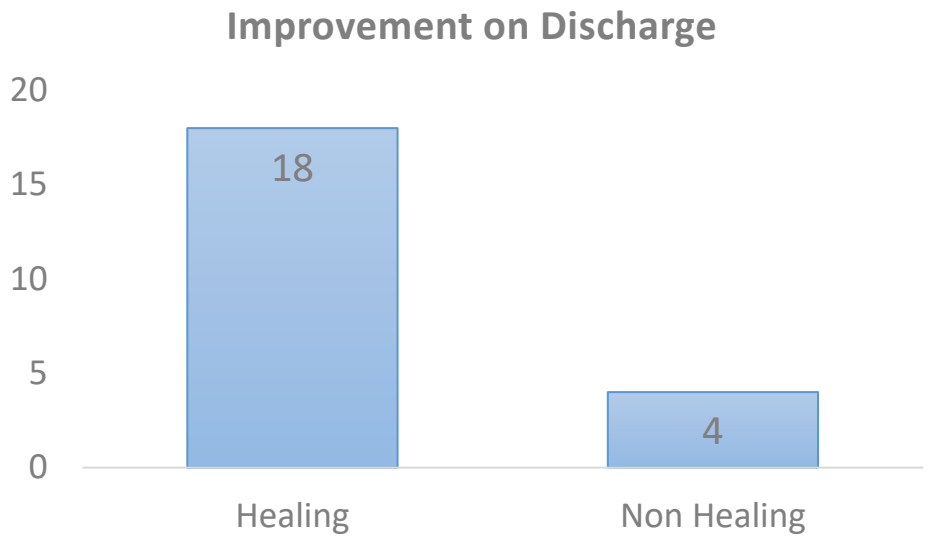


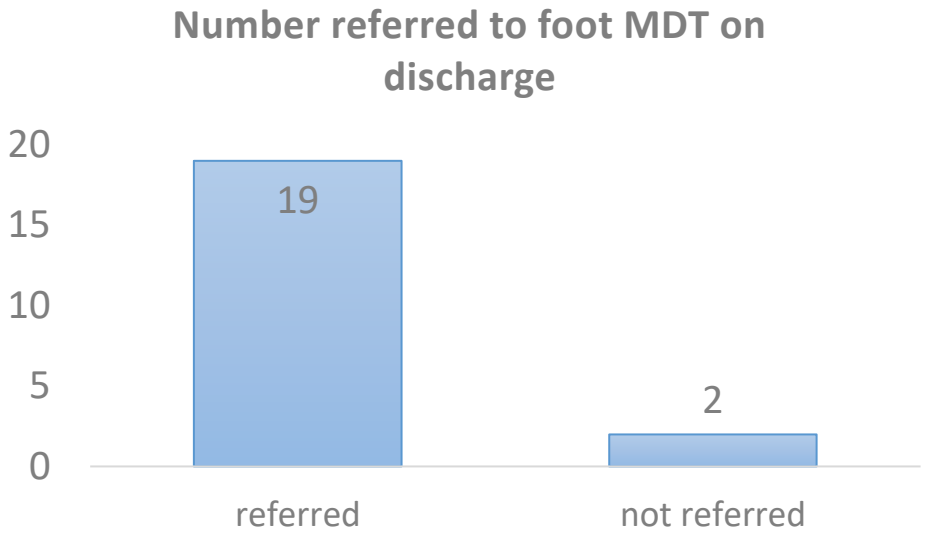
Results – MDT - Microbiology

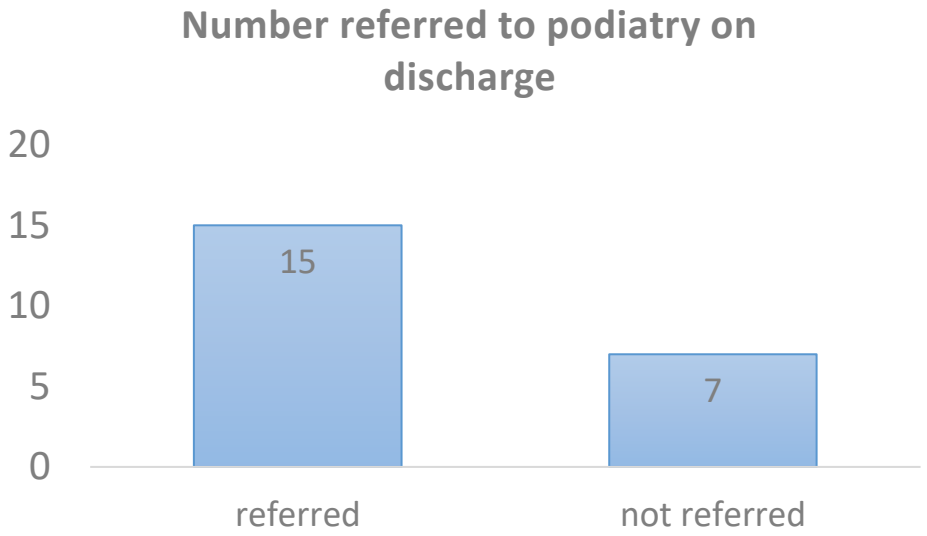




Results – Discharge Process







What do audit results show?

Initial assessment

-appropriate clinical examination

-wound swabs, x-ray imaging and antimicrobial therapy commenced

-referral to diabetes team within 24 hours

-referral to vascular team within 24 hours

High proportion of patients without adequate assessment of Diabetic foot ulcers – in particular depth (severity) and vascular examination. - ***? affects investigation and referral.***

Initial investigations, x-ray and swabs identified as a problem.

23% (5/22) not referred to Diabetes team within 24 hours (aiming for 100% referral within 24 hours)

64% (14./22) referred to Vascular team within 24 hours (due to concern of underlying ischemia)

MDT

-proportion of vascular imaging requested by Vascular team, time to review of imaging

-time to microbiology discussion/advice

Time from vascular scan to review of scan variable.; ?due to weekly MDT

Significant time to microbiology discussion? Antibiotic inertia

Discharge

-referral to diabetes foot clinic and community podiatry on discharge

Patients not referred to community podiatry; ?difficult to access intranet referral form.

Interventions suggested?

Initial assessment

-appropriate clinical examination

-wound swabs, x-ray imaging and antimicrobial therapy commenced

-referral to diabetes team within 24 hours

-referral to vascular team within 24 hours

High proportion of patients without adequate assessment of Diabetic foot ulcers – in particular depth (severity) and vascular examination. - ***? affects investigation and referral.***

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23% (5/22) not referred to Diabetes team within 24 hours (aiming for 100% referral within 24 hours)

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'Diabetic foot Proforma' – make more accessible to clerking team – ***attaching to standard proforma***

Aiming to improve initial examination and investigations, therefore onward referral.

MDT

-proportion of vascular imaging requested by Vascular team, time to review of imaging

-time to microbiology discussion/advice

Time from vascular scan to review of scan variable.; ?due to weekly MDT

Significant time to microbiology discussion? Antibiotic inertia

Ongoing work required to establish integrated foot MDT

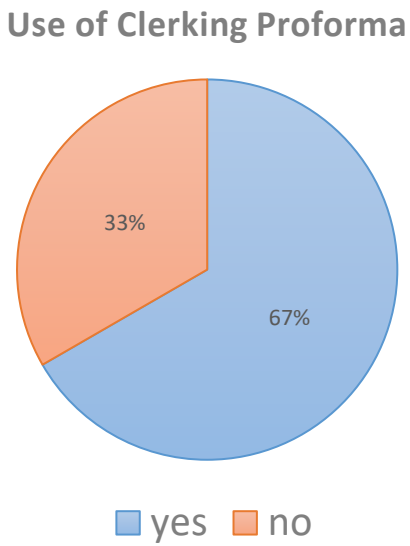
Discharge

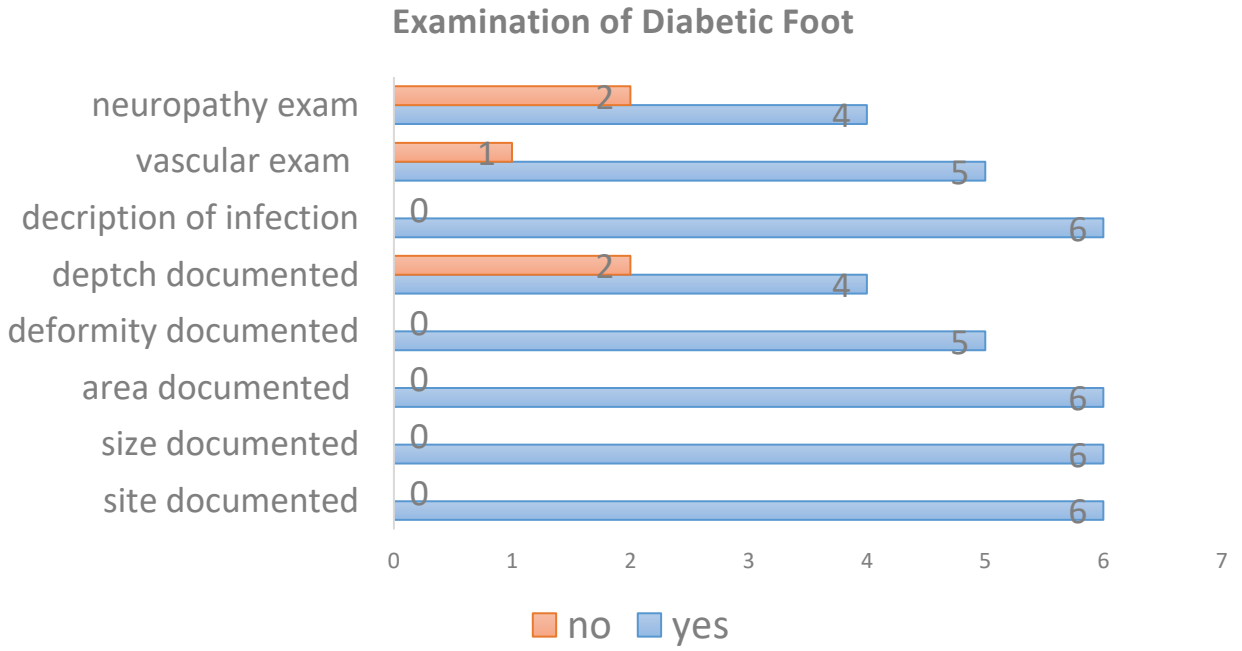
-referral to diabetes foot clinic and community podiatry on discharge

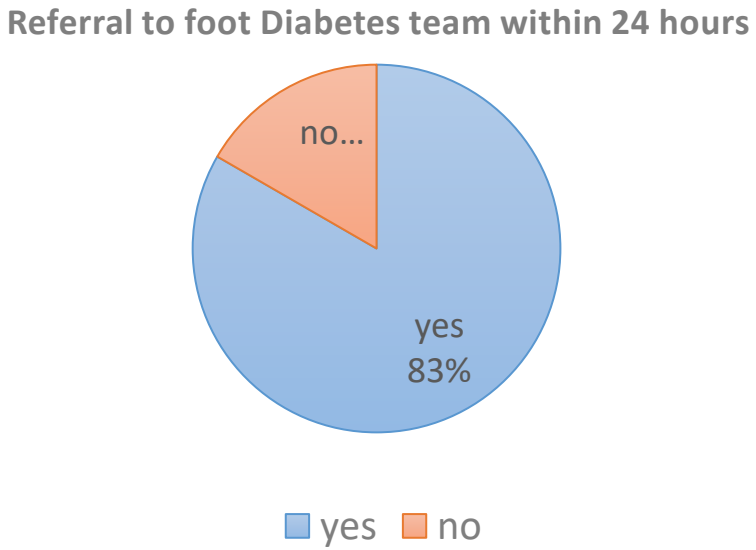
Patients not referred to community podiatry; ?difficult to access intranet referral form.

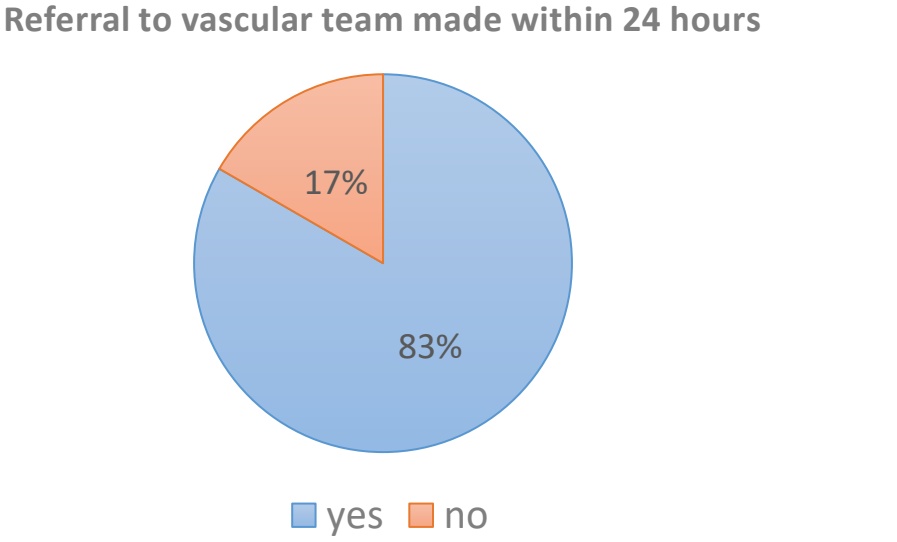
Easier access to community podiatry referral form.

Re-audit results.. Initial assessment

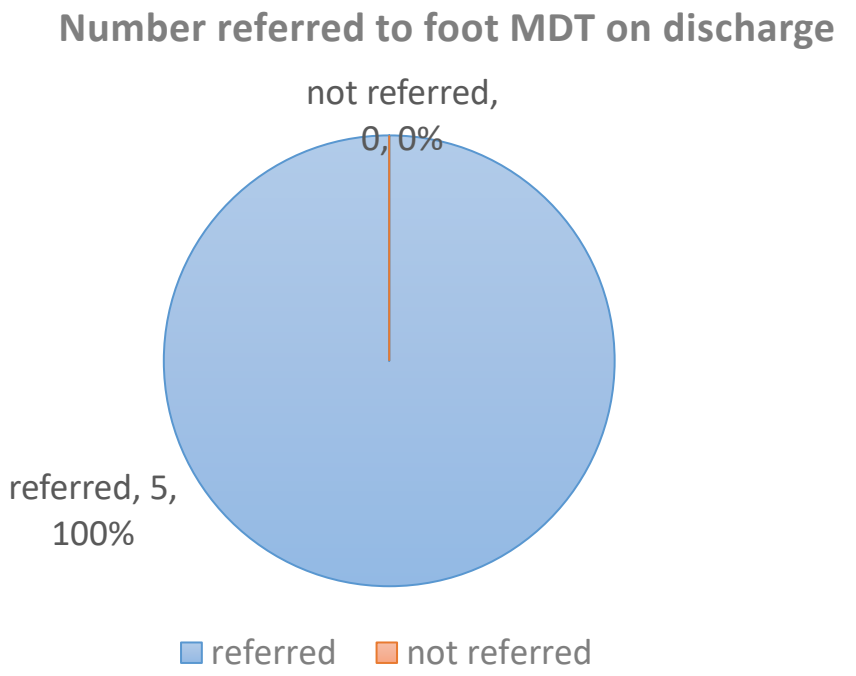


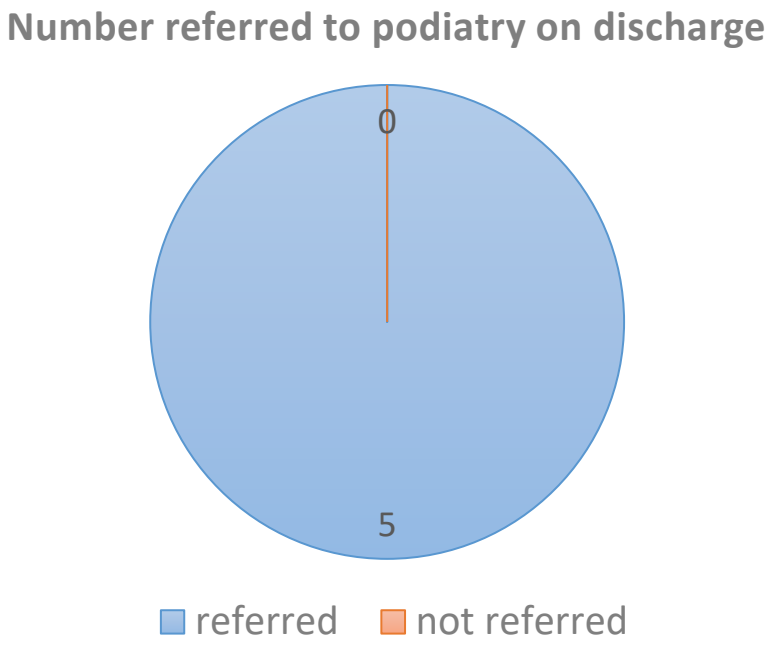






Re-audit results.. Discharge process





Summary

- We looked at process of care of Diabetic Foot management – snapshot of areas of concern within pathway

- ***Identified poor initial examination of the Diabetic foot***, in particular depth(severity) and vascular examination

  -This directs initial investigations (swab, x-ray) and onward referral to Diabetes and Vascular teams.

- Identified ***suboptimal review time of Vascular imaging and time-to-Microbiology discussion***; however reflection on system setup.

- *Combination of suboptimal initial examination and delay in vascular scan review and microbiology discussion,* ***potentially has significant effect on outcome.***

- ***Focused QI on initial assessment*** of the Diabetic foot as this is the rate limiting step affecting investigation and referral.

- Identified ***issues with discharge process*** and implemented change. – potential effect on outcome

Conclusions

- There is a need for properly commissioned inpatient Specialist Diabetes Foot Service
- Dedicated MDT footcare team pivotal to the effective management of the acute diabetic foot from referral to discharge to ongoing community care.
- Need dedicated commissioned/frequent timely input from vascular, microbiology & radiology to optimise and streamline patients' foot management
- Inpatient podiatry essential member of the MDFT – foot assessment assessment, wound debridement, tracking of patients beyond discharge

Strengths

- Identified multiple areas for improvement.

- looked at care pathway from assessment to discharge.

-Identifying issues with initial assessment at rate limiting step, may potenti

Limitations

-Far reaching audit, therefore less focused…

-Some patients not included (ie direct referrals to Surgery)

-Resulted in low n= .

-not powered to look at outcomes based on our interventions

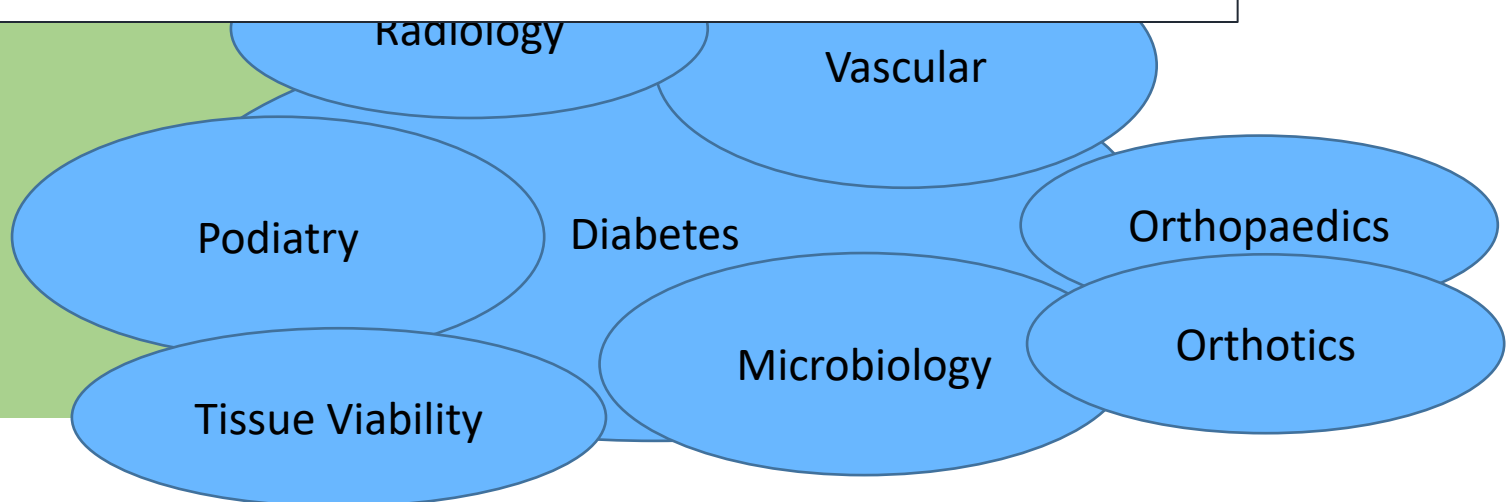
Good news! - March 2017 - successful bid awarded from NHS England from the Diabetes Treatment and Care Programme Transformation Funding to HVCCG/WHHT/HCT for footcare project (expanded multidisciplinary footcare teams) – so watch the space!

Future

- Optimise current MDT approach

- Work towards integrated ward based MDT.

- Show this has positive effect on Diabetic Foot outcomes



Thank you

Acknowledgements:-

-Dr C. Kong

-Diabetes & Endocrinology Department, Watford Hospital

-Audit Department, Watford Hospital

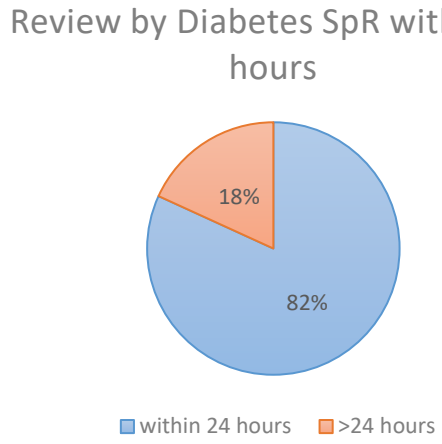
References:

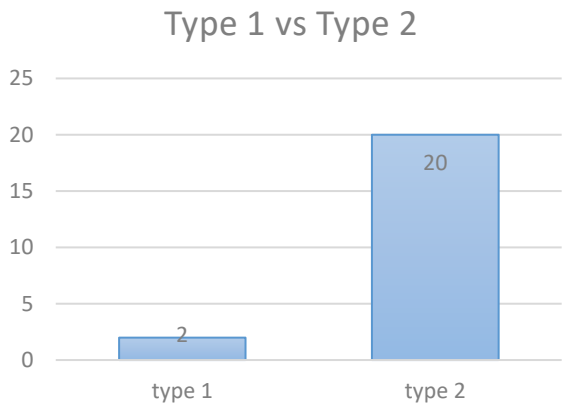
-The Diabetic Foot: The Importance of Coordinated Care. Semin Intervent Radiol. 2014 Dec

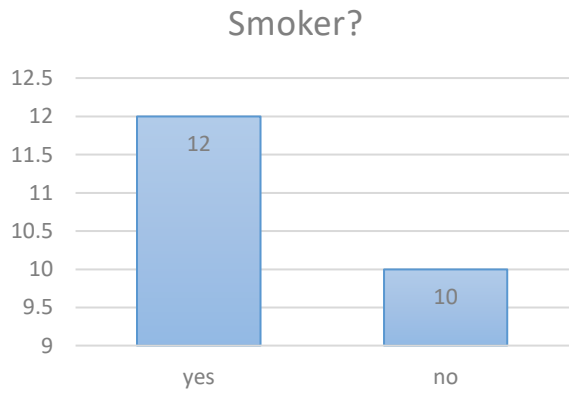
-NICE guidance NG19

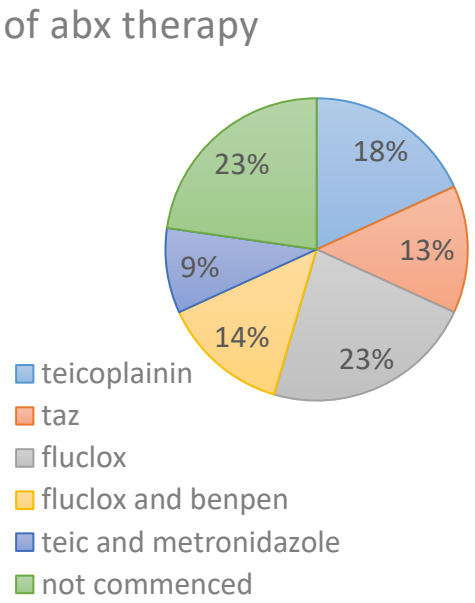
EXTRA SLIDES

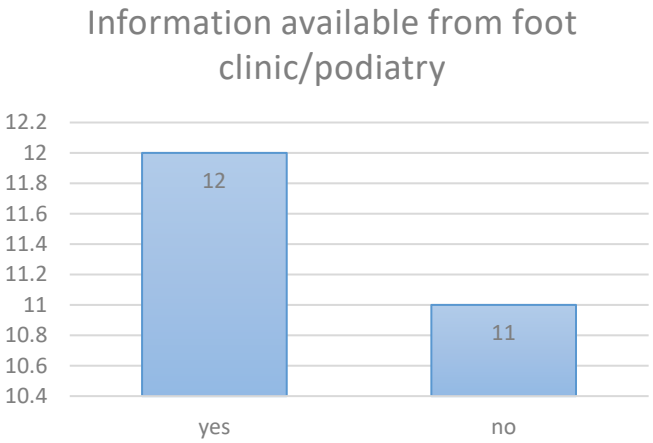
Results – MDT involvement; Diabetes

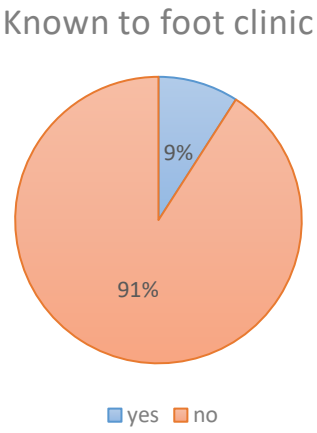


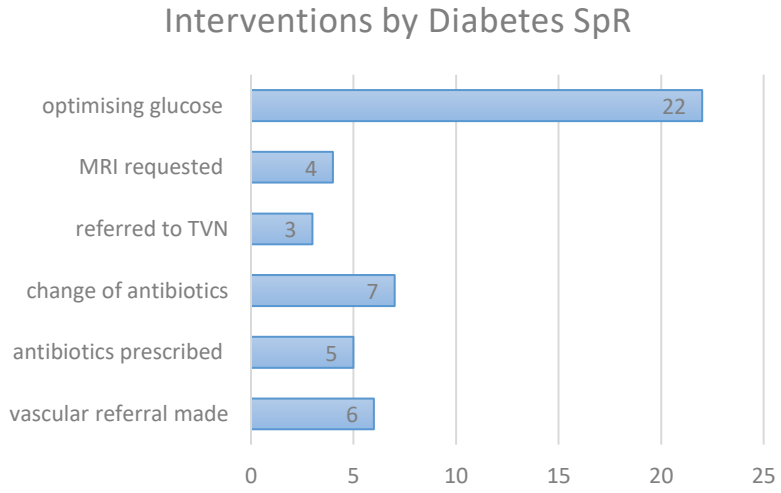












National priority

- £44 million Diabetes transformation fund available via STP's by CCG's. Funds available for:-

  increasing uptake of structured education

  improving achievement of the NICE recommended treatment targets (HbA1c, blood pressure and cholesterol for adults, HbA1c only for children)

  reducing the number of amputations by improving access to multi-disciplinary foot care teams

  reducing lengths of hospital stays by improving access to specialist inpatient support.