

Malaria Management at St. Vincent's University Hospital: A 10-Year Retrospective Review

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Background

- Malaria is a tropical disease commonly imported into Ireland, which can be associated with significant mortality. ~75% of reported malaria cases in Ireland are caused by *Plasmodium falciparum* which is capable of invading a high proportion of red blood cells and rapidly leading to severe or life-threatening multi-organ disease.
- Patients treated for *P. falciparum* malaria should be admitted to hospital for at least 24 h as patients can deteriorate suddenly, especially early in the course of treatment.
- Outpatient treatment is considered with specific protocols in specialist units that see large numbers of cases, but this is not recommended in national or local guidelines in Ireland due to the low number of cases.
- Malaria management at SVUH has never been audited. Given the low incidence of this infection but high associated morbidity and mortality, awareness of appropriate timely management of this condition is necessary for any doctors working in emergency and acute medical care.
- Depends on awareness of the diagnosis and on performing the correct diagnostic tests: the diagnosis cannot be excluded until more than one blood specimen has been examined. Other travel related infections, especially viral haemorrhagic fevers, should also be considered.



Audit Standard:

HPSC Clinical Guidelines on the Management of Suspected Malaria 2017

Methods

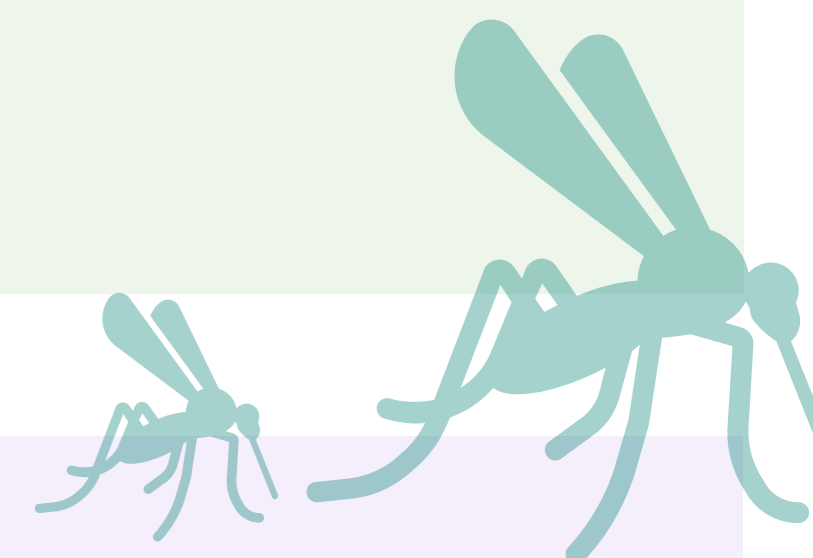
Population was chosen by compiling a list of all positive malaria blood films recorded in the SVUH Haematology laboratory during the period from 2013 to 2023.

41 positive blood films were identified from 2013 until 2023.

Management in the Emergency Department and follow-up during admission was audited against **HPSC Clinical Guidelines on Management of Suspected Malaria 2017**.

Severe Malaria was defined as any of the following:

- Parasitaemia:** $\geq 2\%$
- Impaired consciousness:** GCS <11 or impaired swallow
- Prostration:** Unable to sit/stand/walk without assistance
- Multiple convulsions:** ≥ 2 episodes in 24hrs
- Acidosis:** Lactate >5mmol/L or bicarb <15 mmol/L or pH <7.3
- Hypoglycaemia:** Glucose <2.2mmol/L
- Severe anaemia:** Hb <5g/dL
- Renal impairment:** Creatinine >265 μ mol/L or Urea >20mmol/L
- Jaundice:** Bilirubin >50 μ mol/L (with high parasitaemia)
- Pulmonary oedema:** Radiographically confirmed or O2 sats <92% on Room Air with RR >30/min
- Significant bleeding**
- Shock/hypovolaemia**



Results

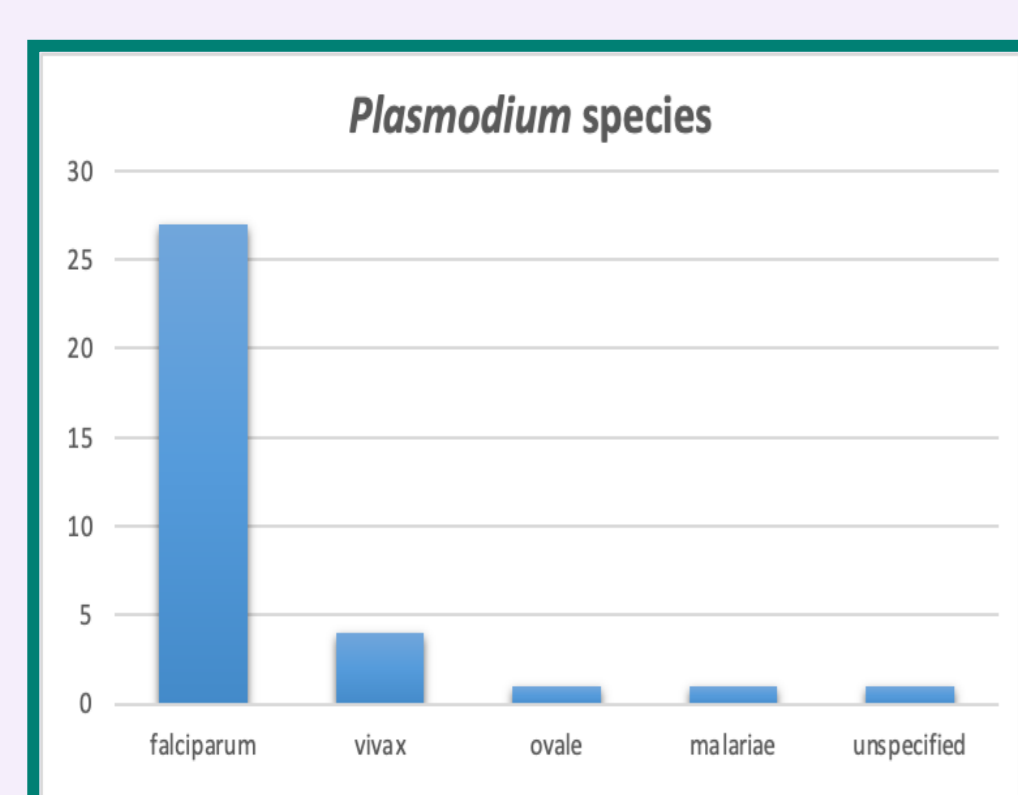


Figure 1: *Plasmodium* species by no. of cases
82% (n=27) were identified as *Plasmodium falciparum*

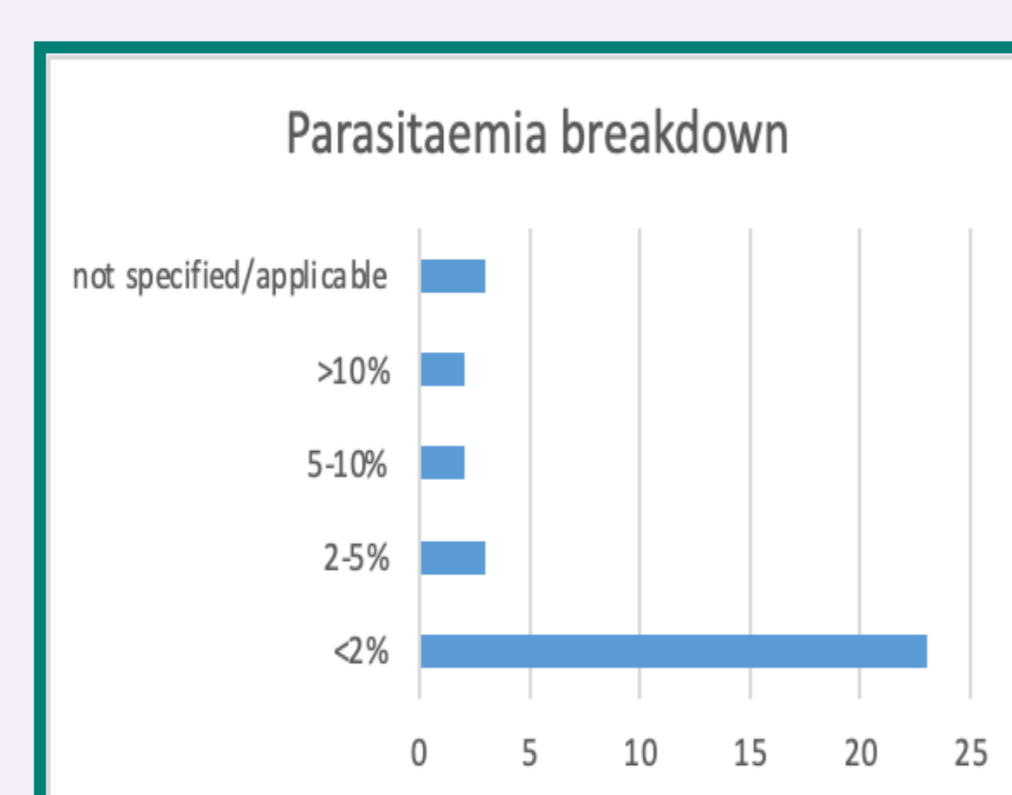


Figure 2: Parasitaemia breakdown
12% of *P. falciparum* cases had a parasitaemia count >5

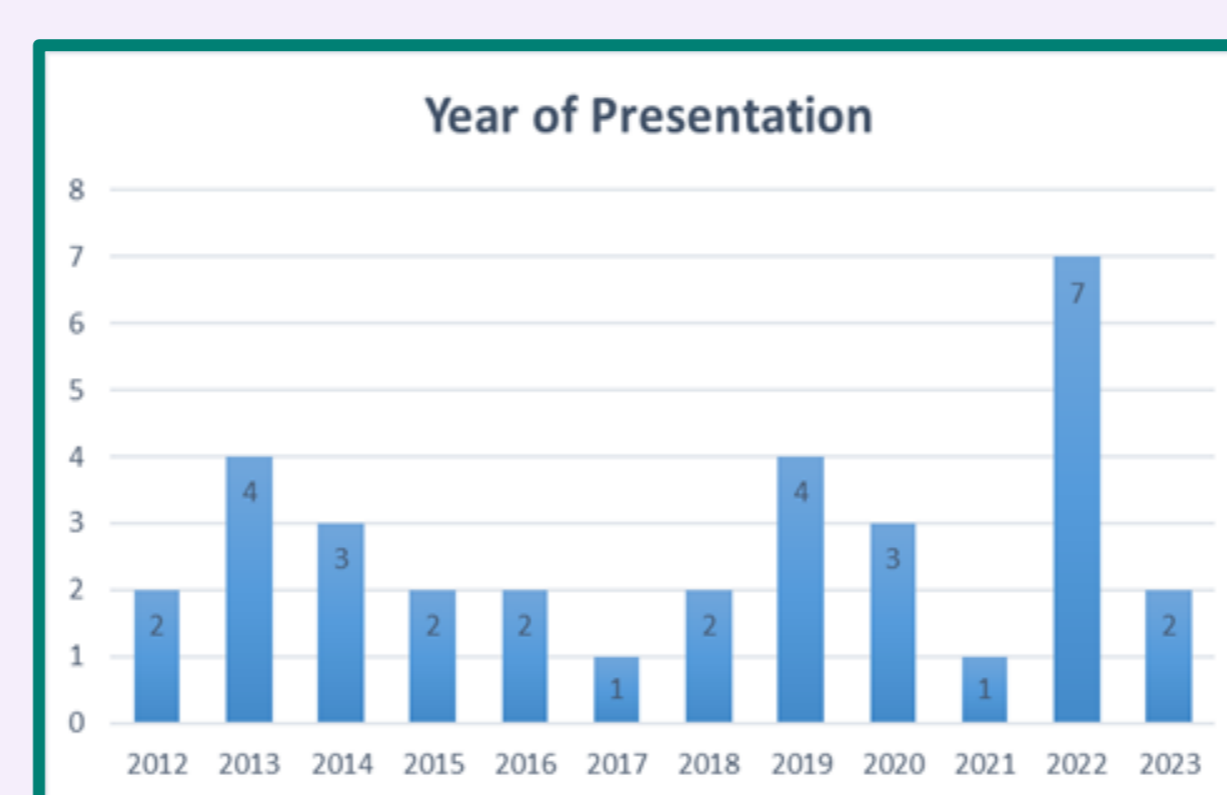


Figure 3: 10-year distribution of cases

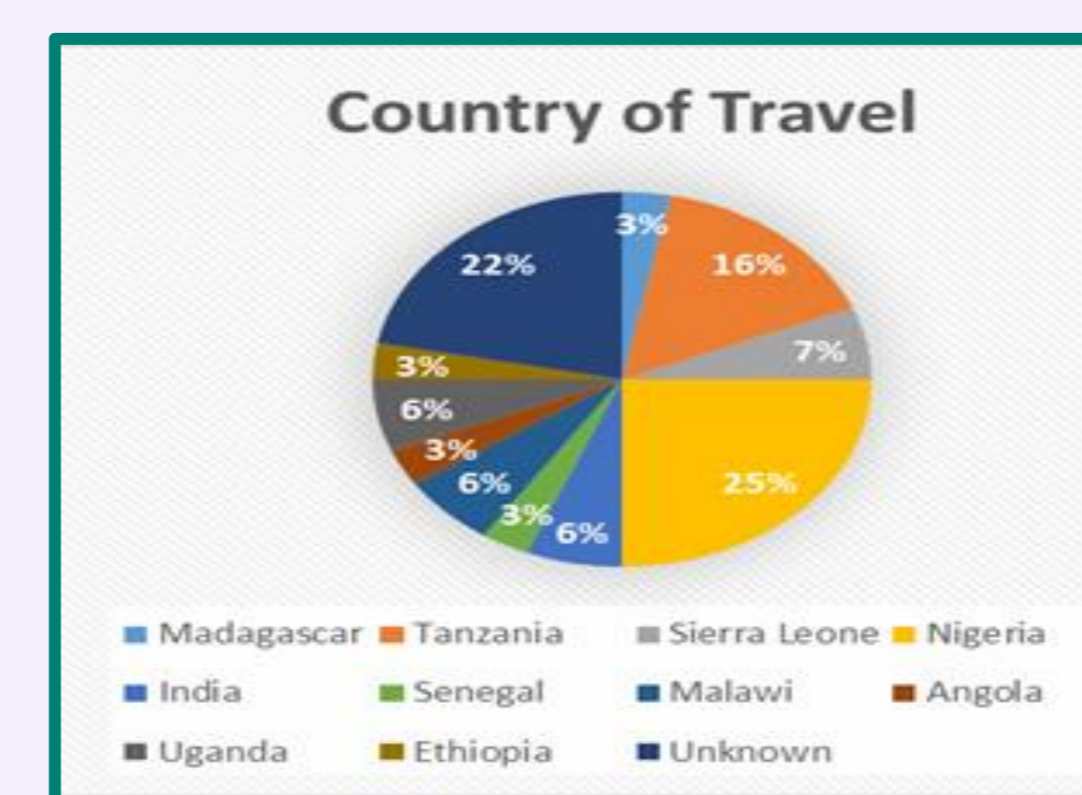


Figure 4: Country of travel
Travel history was documented in 73% of cases



Figure 5: Purpose of travel
15% were visiting friends and relatives a known risk factor for malaria

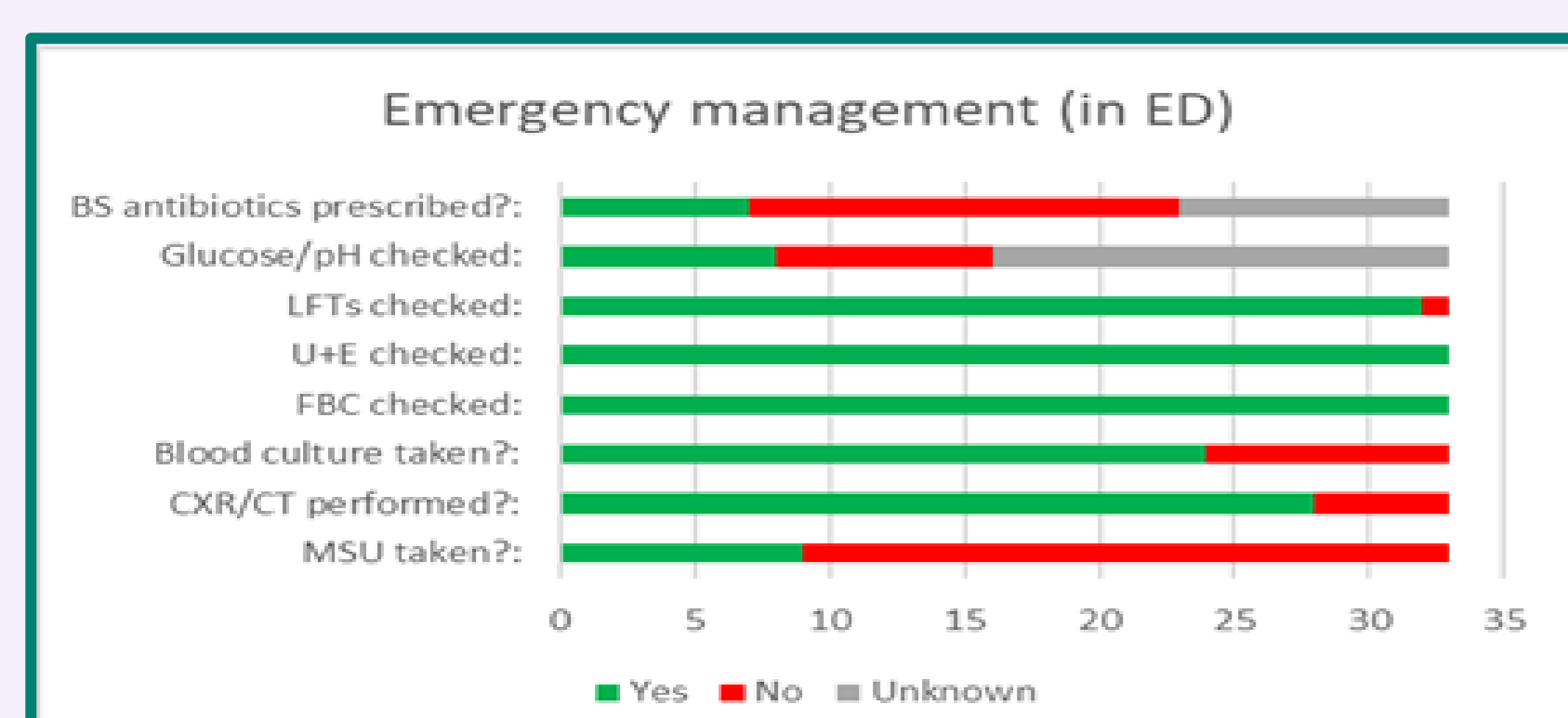


Figure 6: Emergency management

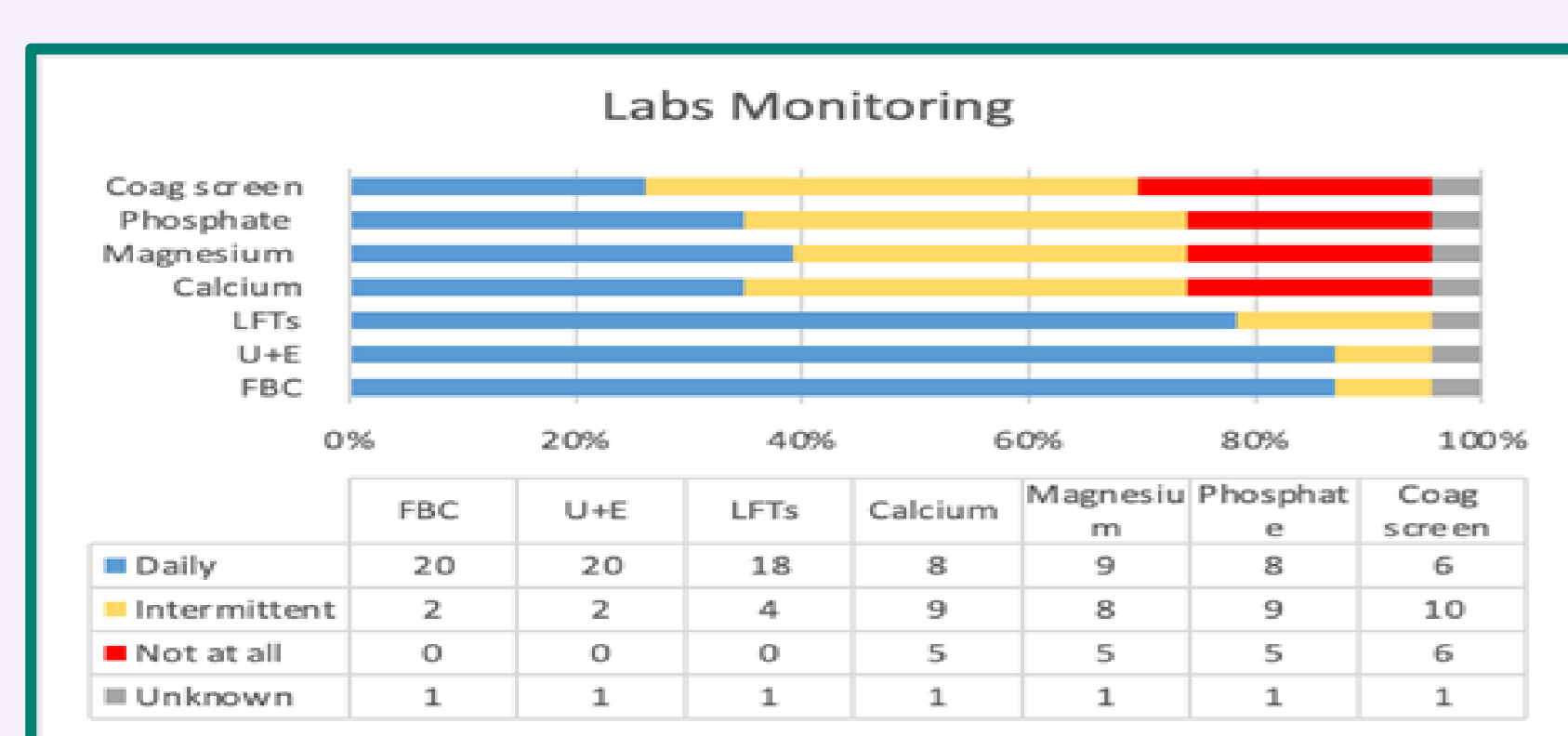


Figure 6: Adherence to recommended monitoring

Severe Malaria:

- Of 33 cases, 16 (48%) did not have sufficient information to clinically stratify as uncomplicated/complicated/severe malaria.
- Of the remaining 17 cases with sufficient information, **7 (41%) were classified as severe *P. falciparum* malaria**

Admissions:

- 70% of *Plasmodium falciparum* cases were admitted to hospital.
- Of 23 admissions, 35% (n=8) were admitted under care of the Infectious Diseases team. 80% of the rest received ID consult advice (n=12).
- 2 cases warranted ICU care. There was 1 death.
- Average length of stay was 5.1 days (1-17 days)

Treatment:

- Intravenous artesunate is recommended as first line for severe cases of *Plasmodium falciparum* malaria.
- For non-severe cases, there are several appropriate therapies incl. artemether-lumefantrine, quinine with doxycycline, and atovaquone-proguanil.
- Regarding initial treatment of 27 cases of *Plasmodium falciparum* malaria:
 - 39% (n=13) were prescribed IV artesunate despite 6 of these being deemed uncomplicated cases .
 - 46% (n=6) were treated with doxycycline as well as IV artesunate which is part of local guidelines and HPSC guidelines but not a part of updated WHO or UK guidelines.
- Stepdown therapy was appropriate in most cases.

Conclusions

- Malaria blood film results are being clearly and precisely recorded by the Haematology lab.
- Some uncomplicated cases were treated with IV artesunate therapy which is usually reserved for severe or complicated cases. However, decisions around patient's ability to take oral medications and the time to availability of % parasitaemia was not assessed, and it is preferable to overtreat with IV antimalarial rather than undertreat.
- Doxycycline is being used alongside artesunate despite not being indicated due to its inclusion in local SVUH and national guidelines .
- Stepdown treatment is appropriate in most cases.
- National and local guidelines say all cases of *P. falciparum* malaria should be admitted to hospital – this is not happening for all cases in our hospital.
- Overall, the management of malaria cases presenting to SVUH has been good.

Next Steps

- Review/Consensus on National Guidelines is needed as the current guidelines are based off outdated 2007 UK Guidelines which have since been updated:
- Local education sessions have been organised for Haematology and Emergency Medicine Teams
- Re-audit in 10 years

References

- Clinical guidelines on the management of suspected malaria. Health protection surveillance centre 2017. [HPSC Clinical Guidelines on the Management of Suspected Malaria Jul17web.pdf](https://www.hpsc.ie/ID/ID%20Guidelines/ID%20Guidelines%20on%20the%20Management%20of%20Suspected%20Malaria%20Jul17web.pdf)
- UK malaria treatment guidelines 2016. <https://doi.org/10.1016/j.jinf.2016.02.001>
- WHO guidelines for malaria 2023: <https://iris.who.int/bitstream/handle/10665/373339/WHO-UCN-GMP-2023.01-Rev.1-eng.pdf?sequence=1>