**Understanding the accuracy of body temperature measurements in patient triage during cancer treatment: a single-site retrospective audit**


## Abstract

Elevated temperature can be the first sign of infection and neutropenic sepsis for patients undergoing chemotherapy or radiotherapy. Most cancer patients are treated as outpatients and are educated to take their temperatures regularly during treatment. Patients who notice a fever (>37.5°C) or other concerning symptoms at home are advised to contact the hospital Triage Unit, who use home-measured temperature, along with other clinical information to decide whether to admit the patient for assessment and treatment. Following concerns from triage nurses in a regional cancer centre that home measured temperatures were not accurately reported, we carried out a retrospective audit to quantify differences between reported body temperature at home and on arrival at the triage unit. We found that although temperature measurement is correctly used to identify patients needing further assessment, it is often missing when patients call the triage line and/or measured inaccurately. Improvements in temperature measurement, particularly in the home environment, is likely to optimise patient care in this vulnerable cohort.



## Keywords

Body Temperature, Thermometry, Infection, Sepsis, Febrile Neutropenia, Chemotherapy, Radiotherapy, Triage


## Background

The Academy of Medical Royal Colleges defines sepsis as “a complication of infection in which a dysregulated host response is associated with organ dysfunction and increased risk of death”. Sepsis is an acute and serious medical emergency responsible

for 918,000 hospital admissions and resulting in the deaths of more than 66,000 people annually (ACRC, 2022). However, if identified and treated early some of these deaths are preventable (Kochanek et al, 2019).

One subtype of sepsis is neutropenic sepsis, the presence of systemic infection on a background of a deranged neutrophil count, as defined by NICE as $\leq 0.5 \times 10^9$/l (NICE 2020). Neutrophils are the most common white blood cells, essential to adequate immune response to infection. The myelosuppressive nature of some anti-cancer treatments, including cytotoxic chemotherapy and radiotherapy puts the cancer population at risk of neutropenic sepsis (NICE, 2020). This can be further compounded in a subpopulation of cancer/haematology patients, whereby malignancy-driven bone marrow infiltration may result in a depleted white cell count and an impaired immune response, either in combination or in isolation of anti-cancer treatment (NICE 2020). Neutropenic sepsis in the cancer population is not only immediately life-threatening but also disrupts the patients' treatment pathway potentially resulting in poorer clinical outcomes (Warnock et al, 2018).

Considered an oncological and haematological emergency neutropenic sepsis causes over 1 in 500 deaths of cancer patients and is the most common treatment complication of anti-cancer patients (NICE, 2020). 80% of leukaemia patients, and up to 50% of patients with solid tumours will experience neutropenic sepsis (UKONS, 2023). An early clinical warning sign of the presence of neutropenic sepsis is a temperature of above 37.5°c or below 36.0°c in the at-risk population (NICE, 2020, UKONS, 2023). Antibiotic treatment is the front-line defence against neutropenic sepsis, with a recommendation that they are given within1 hour of presentation for assessment (NICE, 2020). Due to the potential severity of the condition, antibiotics are

advised to be given before confirmation of neutropenia, often based on body temperature alone (NICE 2020, UKONS, 2023).

Patients receiving anti-cancer treatment, or with a diagnosis which leads to myelosuppression receive education and information about the importance of monitoring their temperature and contacting relevant healthcare professionals or services when their temperature is deranged (UKONS, 2023). Healthcare professionals rely on accurate temperature measurement as a method to escalate when their patients have suspected neutropenic sepsis (NICE, 2020).

Nursing staff in a regional Oncology/Haematology Triage Unit raised at staff meetings that they often found that patients' home temperature measurements varied significantly from subsequent hospital measurements. The discrepancy between home and hospital measurements creates a challenging treatment decision. We wanted to know how often there was a difference in home reported temperature compared to hospital measurements and thus carried out an audit of patients who had called the Triage Unit. This paper reports the findings of that audit.

**Aim and Objectives:**

The aim of the audit was to quantify differences between reported temperature at home and on arrival to the triage unit. To achieve this, we have carried out an audit of routinely collected clinical data.

The audit objectives, including rationale and outcome measures can be found in Table 1:

Insert Table 1:

**Method**

This is a retrospective audit of data from 1 January 2022 to 31st December 2022. Participants were adult patients receiving any treatment for cancer (including chemotherapy, radiotherapy, surgery, and immunotherapy) during the audit period at the Oxford Cancer Centre, a large regional cancer unit in the South of England. Our inclusion criteria were deliberately broad to include all patients who were eligible to call the cancer triage line and potentially be admitted to the Triage Unit. To comply with local and national standards (NHS Digital Opt-out 2018) only patients who have opted in were included in the audit. Full inclusion and exclusion criteria can be found in Table 2.

Insert Table 2:

The data to be extracted for the purposes of the audit are specified in Table 3, and were defined by CM, SF, and to ensure that analyses could be carried out to meet the objectives of the audit. Anonymised patient data was extracted from the Trusts electronic patient record system and cleaned by the Trust Informatics team.

Insert Table 3:

**Data analysis**

Approval for the audit was given by the Oxford University Hospitals NHS Foundation Trust Institutional Board Ethics approval ID 8343. All analysis was carried out using SPSS version 29.

Pre-planned analyses included summary statistics for temperature (mean, standard deviation and range) and outcome data (proportions), as well as proportions above common temperature thresholds for both home and clinic body temperatures. The Oxford Triage Unit uses the UKONS triage tool (UKONS, 2023), where a home

temperature of 37.5°C is a red flag indicating that the patient should be brought in for assessment, so this was used as the primary definition of fever in the analysis. We also carried out sensitivity analyses using a threshold of 38°C, as this is used to define febrile neutropenia in UK NICE guidelines (NICE, 2020). Where recorded temperatures were outside the range of 25-50°C, we presumed that the values were incorrect, and they were not included in further analyses. In patients where both clinic and home temperatures are available for a given presentation, we planned to present this data both as a scatter plot and using a Bland-Altman difference plot. In patients with home temperatures, we also planned to stratify by home temperature to assess how often they were advised to attend the triage clinic.

**Results**

A total of 10,195 individual contacts to the triage line were included in the audit, of whom 1,144 (11.2%) were advised to attend the Triage Unit. We had data on 1,252 attendances at the Triage Unit during the audit period.

*Home temperature data*

Home temperature was recorded during 4,323 triage line contacts (42.4% of 10,195). Twelve of the recorded temperatures were outside the pre-defined plausible physiological range and were not included in further analysis. These included probable typographical errors, and results which were plausible body temperatures on the Fahrenheit scale. A summary of home temperature readings is provided in Table 4.

Insert Table 4:

Average home temperature was 0.7°C higher in those advised to attend the Triage Unit (37.5°C, n=725) than in those not advised to attend (36.8°C, n=3586), and this

was statistically significant ($p<0.001$). Figure 1 shows the percentage of patients who were advised to attend the Triage Unit, stratified by temperature. As seen in Figure 1, 38.2% of patients with home temperatures above 37.5°C were advised to attend the Triage Unit. A notes review of a random sample of patients who were not advised to attend but had a temperature over this trigger level showed that they were referred to an appropriate healthcare service as they would not be able to get to the Triage Unit within an hour due to distance from the hospital.

Insert Figure 1:

*Comparison of home and hospital temperatures*

A temperature reading was present for 819 Triage Unit attendances (65.4%), with all measurements falling within the pre-defined plausible physiological range. A summary of Triage Unit temperatures is given in Table 4. Home temperatures were available for 398 (31.8%) Triage Unit attendances, and both home and hospital measurements were available for 389 (31.1%) attendances.

Figure 2 shows a scatter plot of home and Triage Unit temperatures. This demonstrates that 123 (31.6%) patients were febrile at home but not on arrival at hospital, while 9 (2.3%) patients were afebrile at home but found to be febrile in hospital.

Insert Figure 2:

Figure 3 shows a Bland-Alman difference plot of home and hospital temperatures. This shows that, on average home temperatures are 0.65°C (95% CI 0.55°C to 0.75°C) higher than the first hospital temperature. However, the limits of agreement show that home temperatures can be expected to range from 1.26°C (95% CI 1.10°C to

1.43°C) lower than the hospital temperature, to 2.56°C (95% CI 2.39°C to 2.73°C) higher than the hospital temperature.

Insert Figure 3:

*Patient outcomes*

Of the 1,252 attendances at the Triage Unit, 707 (56.5%) had a recorded neutrophil measurement. Of these, 46 (6.5%) had clinical neutropenia, defined as a neutrophil count of $\leq 1.0 \times 10^9$/litre (NICE, 2012). There was no statistically significant difference between either home or hospital temperature in patients with and without neutropenia. Of 699 patients with both a hospital temperature and a recorded neutrophil count, only one had febrile neutropenia, defined as a temperature of >37.5°C and a neutrophil count of $\leq 1.0 \times 10^9$/litre.

Electronic patient records showed that 849 (67.8%) of patients attending the Triage Unit were admitted, although only 5 patients (0.4% of the total) were shown as being admitted at least overnight. Only 11 patients (0.9%) had a diagnosis of sepsis on their patient record following attendance at the Triage Unit.

We had data on 9,051 contacts with the triage line who were not advised to attend the triage clinic. Within 72 hours of their initial contact, 1,622 (17.9%) called the triage line again, 754 (8.3%) attended the Emergency Department at the same Trust as the Triage Unit, and 4,659 (51.5%) had an outpatient appointment within the Trust. The most common form type of outpatient appointment recorded in this period was a follow-up phone call from the triage nurses (2,598, 28.7% of all contacts who were not advised to attend).

**Discussion**

Missing Temperature Recordings

Early identification of fever in cancer patients is reliant on regular temperature recording as this is often the first sign of what can be a life-threatening episode of neutropenic sepsis (UKONS, 2023). Cancer patients, especially those undergoing systemic anti-cancer treatment (SACT), are predominately treated as out-patients and are encouraged to take their temperatures at home (NICE, 2020). All cancer patients in the UK should have access to a 24-hour cancer triage unit and are advised to contact them if they have a temperature of 37.5°C or more or feel unwell. Our audit found that only 42.3% (n=4,311) patients who called the triage line were able to provide a home temperature. This finding was surprising since patients who are being treated in the Oxford Cancer Centre are usually provided with a thermometer (typically an oral/axilla type), as well as written and verbal instructions on how to use the thermometer when to record their temperature and the importance of temperature recording. A future step of this audit will be to assess the reasons behind this finding. It is already well documented that cancer patients may go through a range of emotions (Mazzocco et al, 2019) and experience information overload (Chae et al, 2016). Investigating this alongside exploring the quality of nurse-to-patient education will likely be useful in addressing these findings.

A surprising finding of our audit was the number of patients who attended the triage unit in person who did not have a hospital recorded temperature. We feel that this is an error in the data extraction process as it is Trust policy for all patients to have a full set of observations completed upon arrival on the unit. The Trust where this audit took place uses a system for electronic notifications and documentation of vital sign observations (SEND) (Wong et al, 2015) to record all observations. This data is then automatically recorded onto Electronic Patient Record system. Finding this missing data would have required a full review of the patients notes which was not within the scope of this audit.

Differential between home and hospital temperature

Our audit shows that there is a significant difference between home and hospital recorded temperatures. It is very difficult to know for certain why this might be, although we can make some evidence-based suggestions as to why these differences are observed. The body temperature itself may have changed between the two measurements, although we believe that this is unlikely, as temperatures were typically lower at hospital. The course of infection would be expected to result in higher temperatures in hospital, unless antipyretic medications are used, and patients are counselled not to take antipyretic medications before presentation at the Triage Unit. However, our observation matches the results of previous research looking at cancer patients admitted with neutropenia, where temperatures at home were higher than those measured in hospital (Warnock et al, 2018). This result could also be because a number of patients, fearful of having a life-threatening infection, artificially report a higher temperature than the thermometer records knowing that will get them seen by a clinician. However, there is also previous research that indicates the opposite is true, and patients often mask and delay reporting neutropenic sepsis (Oakely et al, 2017)

Patients at this trust are typically provided with contact thermometers designed to be used orally or in the axilla (although they may also use their own thermometers), whereas tympanic infrared thermometers are used at the Triage Unit. The difference in measurement site used at home and in hospital is unlikely to account for the size of differences observed. However, it is known that, without traceable calibration, thermometers can become unreliable over time (Machin et al, 2021), and this is more likely for infra-red (tympanic/forehead) based rather than contact (oral)

thermometers, although there is no clear consensus on the optimal thermometer for clinical care.

We do not believe that patient thermometers were likely to be regularly checked or calibrated during the audit period. Hospital thermometers are more likely to receive regular checks and calibration, but we do not know how this was implemented during the audit period.

In general, contact thermometers are expected to have longer stability and reliability, as they are technically simpler, and more resilient to insults such as mechanical shock, whereas the complex electronics used in infrared thermometers are more susceptible to damage (Machin et al, 2021). Our observation from technical tests on clinical thermometers is that, while infrared thermometers can show considerable drift over time, contact thermometers tend to stop working before showing considerable errors in measurement. We know that taking an accurate temperature is highly reliant on the person using the equipment correctly. (Crawford et al, 2009; Machin et al, 2021). Accurately being able to undertake and record temperature is one of the standards for pre-registration nursing education (NMC 2018). It is also the responsibility of the employer to ensure that nurses are trained in equipment used in their clinical area, thus it is likely that hospital recorded temperatures have been taken using an appropriate technique. However, this cannot be assumed for patients, who will have had limited instruction on how to use their thermometer and will be using them when unwell or stressed. Therefore, there is considerable margin for user error in patient-measured temperature. (Crawford et al, 2009; Machin et al, 2021). This is supported by Honaker et al's (2018) study, which found that knowledge of temperature recording among cancer patients was relatively low. Honaker and colleagues also reported a high number of their participants were

unable to correctly identify the various locations for placement of a thermometer in the oral cavity, symptoms of infection other than fever and activities that could falsely elevate temperature. The implications for having an inaccurate home recorded temperature are similar to those of not having a temperature reading, in that some patients may be brought into the Triage Unit unnecessarily. An additional risk is that if patients whose home recorded temperature is falsely low, they may not be advised to come to the Triage Unit, treatment might be delayed, and the patient has increased risk of becoming acutely unwell.

Low levels of recorded neutropenia and sepsis.

We observed that recorded rates of neutropenia, febrile neutropenia, and sepsis in our audit cohort were relatively low compared to previous research (Warnock et al, 2018). A possible reason for lower rates of neutropenia and febrile neutropenia is the increasing use of a variety of treatment modalities which are more targeted to the underlying cancer, and less likely to cause neutropenia (Kochanek et al, 2019). This may also explain the low rates of sepsis found in our audit, although there is also the possibility that sepsis was poorly coded in the EPR. However, to confirm or deny this, would have required a full review of the patients notes which was not within the scope of this audit.

UKONS Tool Usability in Clinical Practice

There are no national guidelines in place to support training, standardisation and consistency of oncology/haematology triage (UKONS, 2023). However, there are national recommendations regarding the provision of telephone triage service: The Manual for Cancer Services recommends that all cancer patients receiving systemic anticancer therapy should have access to a 24-hour telephone advice service (NHS England, 2011). The UKONS toolkit has been developed to provide guidelines that

can be adopted to guide and support triage teams in all stages of the triage and assessment process (UKONS, 2023). All nurses who work on the triage help line undergo education and training in taking a history from a patient and understanding how to use the UKONS toolkit to guide them in telephone triage.

The UKONS toolkit is designed to be used for telephone triage, where the clinician is unable to see the patient, and is reliant of self-reported signs and symptoms, which must be elicited by careful questioning. One of the "red flags" in the UKONS toolkit is the presence of fever. We noted that home temperature was significantly higher in those patients who were advised to attend the triage unit, implying that the tool is being correctly implemented. We noted that some patients whose reported home temperature exceeded the UKONS threshold were not advised to attend the triage unit and were initially concerned that this was incorrect. However, a notes review of a sample of these patients showed that they had been correctly triaged and were told to attend a more appropriate urgent care setting, such as a closer emergency department.

Our findings, correlates with Trip and colleagues (2021), in that the UKONS toolkit provides a standardised framework for patients to report symptoms directly to their clinical team and receive appropriate specialist advice at an early stage.

**Recommendations for cancer services**

Several recommendations can be made for cancer services following this audit:

- The importance of education and training for staff who assess patients who call the triage line.

- Review when education is given on recording their temperatures to cancer patients, and if necessary, reinforce the need for home temperature measurement at routine appointments during cancer treatment.
- Identify and address reasons why patients do not report home temperatures when calling the triage line.
- Consider providing additional training for patients on how to take temperature at home (e.g. via video). This could include optimum location for measurement as well as common causes of inaccurate measurement such as hot drinks and recent exercise.
- Observe patients and/or their carers taking and recording temperatures.
- Ensure that thermometers being used for clinical assessment are regularly checked against a traceable standard, and that there is a process for recalibration or replacement of thermometers that are shown to be inaccurate.

**Limitations and strengths**

This audit has some limitations. It was reliant on data that was routinely collected as part of the Trust EPR system. It was also reliant on data being recorded and/or coded correctly within the EPR system. We were also unable to capture outcomes from patients who were advised to attend services at other trusts.

The strengths of the audit include a large data set over a whole calendar year to avoid seasonal variations. As the trust is a regional cancer centre, patients were from a wide geographic catchment area (demographic spread), with a range of acuity, cancer sites, and both haematology and oncology patients.

**Areas for future research**

The results of this audit highlight multiple areas where further research is needed:

- Identification of the cause of different temperatures at home and in hospital. This is likely to be multifactorial, research should assess thermometer accuracy (both at home and in clinic), patient technique, antipyretic use, symptoms such as mucositis which might cause inaccurate readings, and the possibility of inaccurate reporting of temperature by patients, and the potential reasons for this.
- Thermometer inaccuracy may be exacerbated by mechanical shocks. The level of shock that is typically experienced in routine use by both patient and clinical thermometers could be investigated using accelerometers or other similar devices.
- Continuous remote measurement of temperature could reduce the effect of patient reporting, and potentially also patient technique. However, such thermometers often use less accurate sites such as the chest to improve acceptability. Research into the accuracy of these devices in a cancer cohort may identify whether trends in continuously measured temperature are as useful as one-off measurements using a more accurate device.

**Conclusion**

Fever is often the first sign of infection or sepsis in patients undergoing cancer treatment and is a key marker for escalation of care. We found that although temperature is correctly used to identify patients needing further assessment, it is often missing from patients self-reporting when they call the triage line and may be measured inaccurately. Improvements in temperature measurement, particularly in the home environment, may optimise patient care in this vulnerable cohort.

**Funding and conflicts of interest**

This audit was not funded. Susannah Fleming and Clair Merriman are members of the National Body Temperature Measurement Group, an unfunded collaboration with the aim of improving clinical body temperature measurement, and this work was carried out under its auspices. The authors declare no other conflicts of interest.

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**References**

Academy of Medical Royal Colleges (2022) Statement on the initial antimicrobial treatment of sepsis v2.0 https://www.aomrc.org.uk/reports-guidance/statement-on-the-initial-antimicrobial-treatment-of-sepsis-v2-0/ (last accessed 12/02/24)

Chae J, Lee CJ, Jensen JD. Correlates of Cancer Information Overload: Focusing on Individual Ability and Motivation. Health Commun. 2016;31(5):626-34. doi: 10.1080/10410236.2014.986026. Epub 2015 Oct 29. PMID: 26512760.

Crawford, D.C., Hicks, B. and Thompson, M. (2009) Which thermometer? Factors influencing best choice for intermittent clinical temperature assessment. Journal of Medical Engineering & Technology. 30(4): 199-211, doi: https://doi.org/10.1080/03091900600711464

Honaker T. and Salters D. (2018) Monitoring Temperature. Knowledge and skills of outpatients with cancer. Clinical Journal of Oncology Nursing, 22:6, 619-625 doi: 10.1188/18.CJON.619-625.

Kochanek M, Schalk E, von Bergwelt-Baildon M, Beutel G, Buchheidt D, Hentrich M, Henze L, Kiehl M, Liebregts T, von Lilienfeld-Toal M, Classen A, Mellinghoff S, Penack O, Piepel C, Böll B. (2019) Management of sepsis in neutropenic cancer patients: 2018 guidelines from the Infectious Diseases Working Party (AGIHO) and Intensive Care Working Party (iCHOP) of the German Society of Hematology and Medical Oncology (DGHO). Ann Hematol. May;98(5):1051-1069. doi: 10.1007/s00277-019-03622-0. Epub 2019 Feb 22. PMID: 30796468; PMCID: PMC6469653.

Machin G., Brettle D., Fleming S., et al. (2021) Is current body temperature measurement practice fit-for-purpose?, Journal of Medical Engineering & Technology, 45:2, 136-144, DOI: 10.1080/03091902.2021.1873441

Mazzocco K., Masieeo M., Carriero MC., et al. (2019) The role of emotions in cancer patients' decision-making. Ecancermedicalscience. Mar 28;13:914. doi: 10.3332/ecancer.2019.914.

NHS England: National Peer Review Programme (2014). The Manual for Cancer Services, Chemotherapy Measures.V1.0 http://www.cquins.nhs.uk/?menu=resources (accessed 01/08/2016)

Oakely C, Taylor C, Ream E, Metcalfe A. (2017) Patients making potentially life-threatening delays in reporting neutropenic sepsis: Grounded theory study. Journal of Clinical Oncology, 35. https://doi.org/10.1200/JCO.2017.35.15_suppl.e21560

NHS England Digital (2018) National data opt-out - NHS Digital National data opt-out - NHS Digital (last accessed 30th January 2024)

National Institute for Health and Care Excellence (NICE) (2020) Neutropenic Sepsis: Prevention and Management of Neutropenic Sepsis in People with Cancer. *Clin. Guidel.* 151 http://guidance.nice.org.uk/CG151 (last accessed 1st November 2023)

Nursing and Midwifery (NMC) (2018) Standards for pre-registration nursing education. London. https://www.nmc.org.uk/globalassets/sitedocuments/standards/nmc-standards-for-pre-registration-nursing-education.pdf (last accessed 1st November 2023)

Trip I, George S, Thomson M, Petty R, Baxter M. (2021) Cancer Treatment Helpline: a retrospective study of the NHS Tayside experience. BMJ Open Quality 10:e001488. doi:10.1136/ bmjoq-2021-001488

United Kingdom Oncology Nursing Society (UKONS) (2023) Oncology/ Haematology 24-Hour Triage: Rapid Assessment and Access Toolkit. www.ukons.org/site/assets/files/1134/oncology_haematology_24_hour_ triage.pdf (last accessed: 12 June 2023).

Warnock C., Totterdell P., Tod AM., et al. (2018) The role of temperature in the detection and diagnosis of neutropenic sepsis in adult solid tumour cancer patients receiving chemotherapy. Eur J Oncol Nurs. Dec;37:12-18. doi: 10.1016/j.ejon.2018.10.001. Epub 2018 Oct 21. PMID: 30473045.

Wong, D., Bonnici, T., Knight, J. Morgan, L., Coombes, P., Watkinson, Peter. (2015) SEND: a system for electronic notification and documentation of vital sign observations. *BMC Med Inform Decis Mak* **15**, 68. https://doi.org/10.1186/s12911-015-0186-y

**Tables and Figures**

| Objective | Rationale | Outcome measures |
|---|---|---|
| To quantify how often (a) home and (b) Triage Unit body temperatures are recorded. | Understand current practice in requesting and recording temperature measurements. | • Frequency of recording of home temperature in hospital notes of patients calling triage line<br>• Frequency of recording of clinic temperature in hospital notes of patients admitted to Triage Unit |
| To quantify any systematic differences between home and clinic measured body temperature | Potential service improvement(s) if systematic differences found. | • Difference plot analysis of home and triage body temperatures in patients with both recorded |
| To estimate the current prevalence of sepsis, febrile neutropenia, neutropenia, and overnight admission following assessment in the Triage Unit | Understand current patient population and their outcomes. | • Incidence of neutropenia and febrile neutropenia in patients admitted to the Triage Unit<br>• Incidence of sepsis in patients admitted to the Triage Unit<br>• Incidence of overnight admission in patients admitted to the Triage Unit |
| To investigate re-presentation (to triage line or ED) among patients not referred at initial call to triage line. | Understand risk, if any, of delayed treatment under current practice. | • Incidence of re-presentation among these patients |

Table 1: Objectives, Rationale and Outcome Measure

| Inclusion Criteria | Exclusion Criteria |
|---|---|
| Aged 18 or over | Under the care of a paediatric cancer team |
| Current diagnosis of any cancer (including both oncology and haematology patients) | |
| Receiving active cancer treatment (e.g. chemotherapy, radiotherapy, surgery, immunotherapy) during the audit period | |
| Under care at the Trust and eligible to call the cancer triage team | |

Table 2: Inclusion and Exclusion Criteria

| Population | Data collected |
|---|---|
| All contacts with the triage line during the audit period (n=10,195) | • Date of contact<br>• Most recent home body temperature measurement before or during the call<br>• Whether advised to attend triage ward |
| Subgroup: patients who attended the triage unit during the audit period | • First clinic body temperature measurement<br>• Diagnosis of sepsis during the presentation<br>• First clinic neutrophil measurement<br>•<br>• Admission for at least 1 overnight stay following triage unit presentation |
| Subgroup: patients who contacted the triage line during the audit period but were not, at initial contact, referred to hospital. | • Subsequent re-presentation to triage line, Triage Unit or ED within 72 hours. |

Table 3: Data extracted from patient records for the purposes of the audit

| Site | Home (N=10,195 contacts) | Triage clinic (N=1,252 attendances) |
|---|---|---|
| No temperature readings recorded, n (%) | 5,872 (57.6%) | 433 (34.6%) |
| Excluded readings outside the range 25-50°C, n (%) | 12 (0.1%) | 0 (0%) |
| Included temperature readings, n (%) | 4,311 (42.3%) | 819 (65.4%) |
| Mean temperature (SD) | 36.95°C (0.95°C) | 36.34°C (0.67°C) |
| Range | 33.0°C to 40.5°C | 34.7°C to 39.2°C |
| Above 37.5°C, n(% of 4,311) | 1,072 (24.9%) | 44 (5.4%) |
| Above 38°C, n(% of 4,311) | 586 (13.6%) | 22 (2.7%) |

Table 4: Summary of body temperatures measurements measured at home and at first presentation to the triage unit.

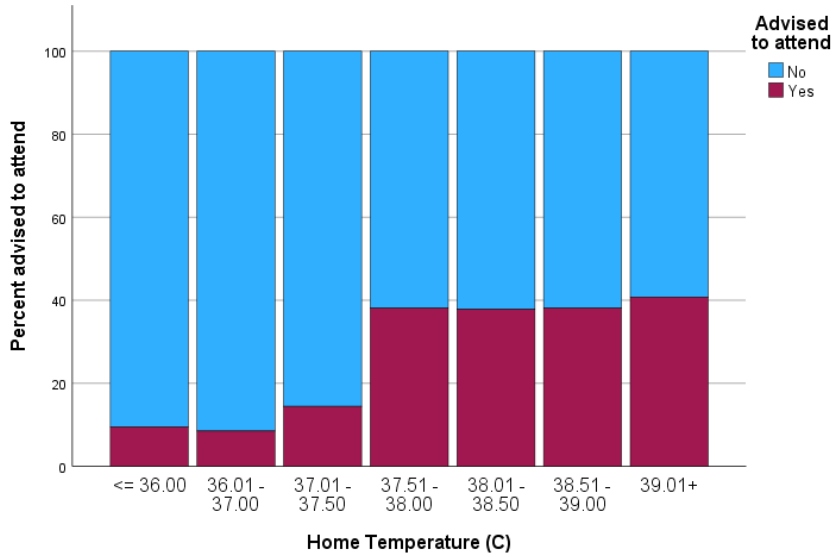


Figure 1: Percentage of patients advised to attend the Triage Unit by the triage line, stratified by home body temperature

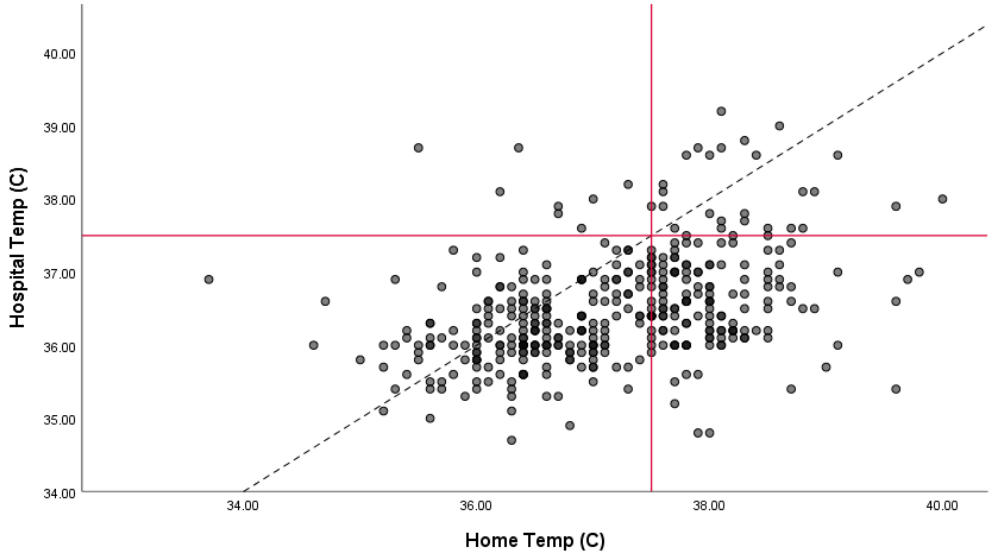


Figure 2: Scatter plot of home and hospital temperatures. N=389 attendances at Triage Unit. The line of equality is shown in black, and the clinical threshold of 37.5°C is shown by red lines. Overlapping markers are shown in darker grey.

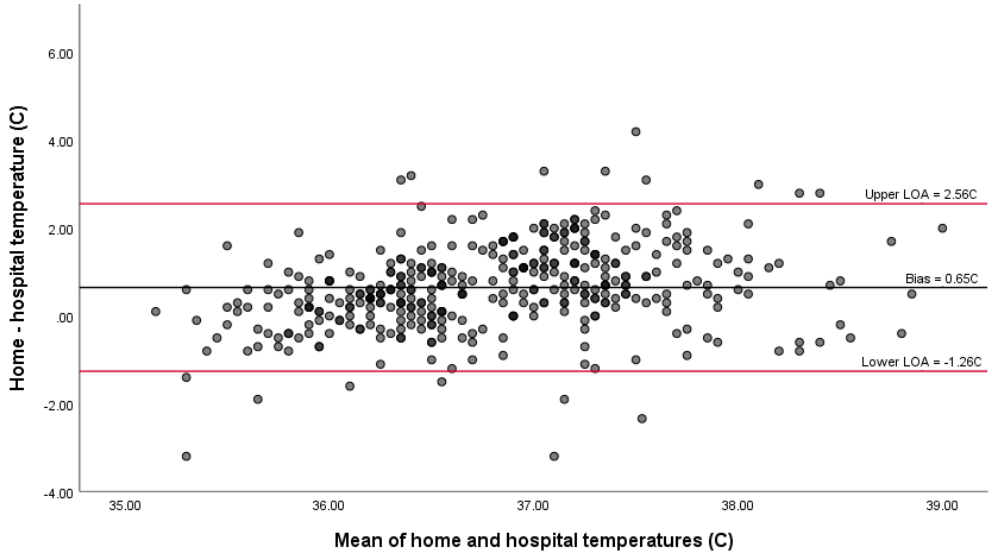


Figure 3: Bland-Altman difference plot of home and hospital temperatures. N=389 attendances at triage clinic. The bias is shown in black, and the limits of agreement in red. Overlapping markers are shown in darker grey.