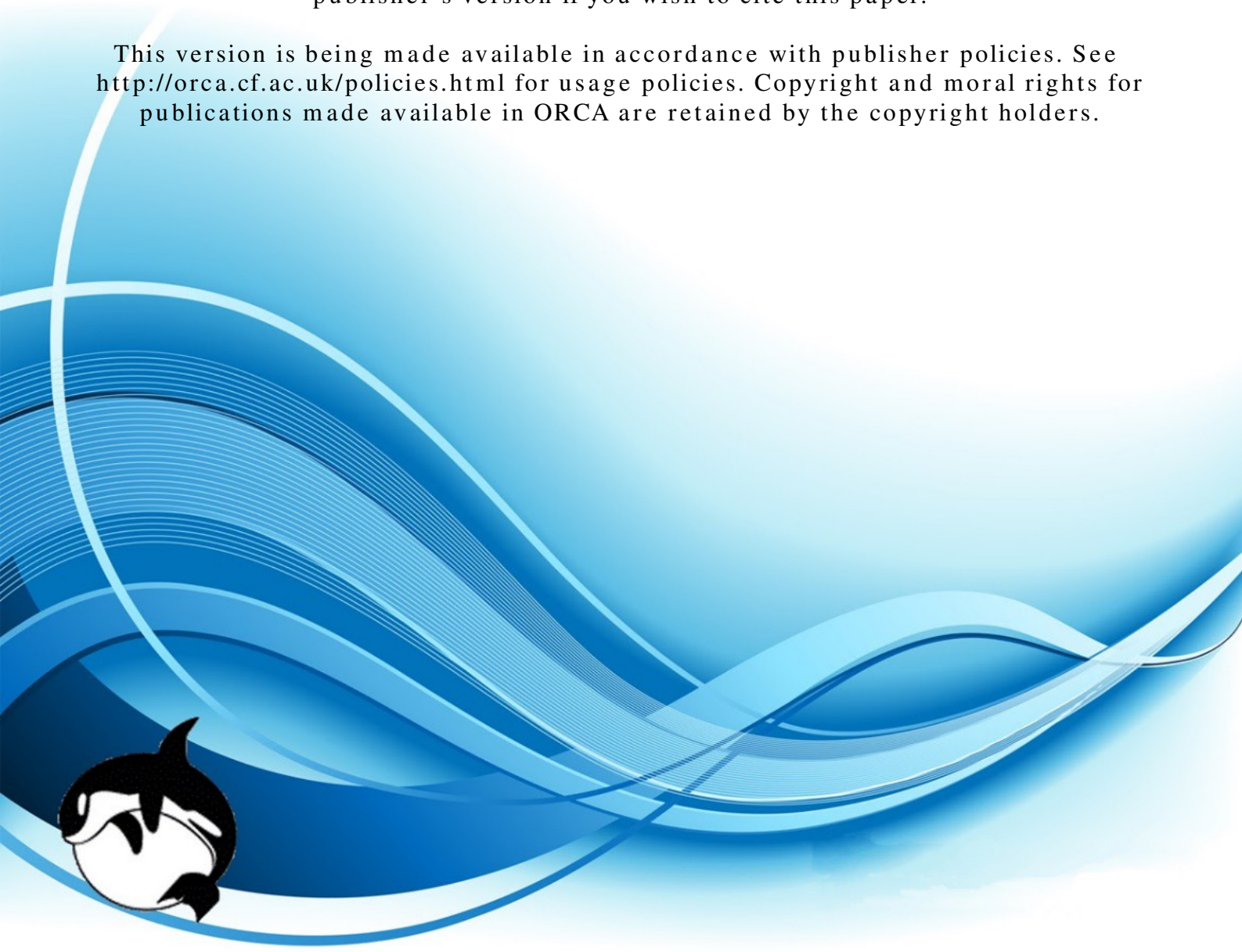

Knowledge of sepsis risk and management amongst dental professionals in Wales: a service evaluation

Stephen M Woolley, Mick Allen, Renata Medeiros-Mirra

KEY POINTS

1. Dental professionals report low levels of knowledge and confidence in Sepsis recognition and management.
2. Relevant investigations pertinent to Sepsis identification are not frequently undertaken in individuals presenting with infection.
3. There is a high requirement and demand for face-to-face and e-learning regarding Sepsis.

ABSTRACT

AIMS- Sepsis is a significant medical condition. This service evaluation aimed to investigate the current level of knowledge, confidence, and educational requirements regarding Sepsis, amongst dental professionals in Wales.

DESIGN -A convenience sampled self-administered electronic questionnaire.

SETTING- All chairside dental professionals registered with Health Education and Improvement Wales, all Local Dental Committees, district general hospitals, Cardiff University Dental Hospital, and Community Dental Services throughout Wales.

MATERIALS AND METHODS- A questionnaire was distributed electronically to an estimated 3716 dental professionals working in Wales in late 2019. Responses were descriptively and statistically analysed.

RESULTS- 357 responses were received (9.6%), which achieves a 95% confidence interval (CI) with a 5% margin of error. The majority of respondents reported lack of knowledge or confidence in Sepsis recognition and management. Approximately two fifths of respondents did not access equipment to measure oximetry, temperature or blood pressure. More than three quarters or respondents had not been trained in Sepsis recognition and management. The majority of respondents requested online/distance training (42%), local/national conferences (27%), and local study days (16%) as postgraduate educational format.

CONCLUSION- There is a clear need for postgraduate education for dental teams regarding the identification and management of individuals with potential Sepsis in Wales.

INTRODUCTION

Sepsis is a life-threatening organ dysfunction caused by a dysregulated host response to infection[1] It is estimated to affect approximately 49 million people worldwide annually, resulting in significant morbidity and mortality if not recognised and managed promptly, with approximately 11M people dying from Sepsis per annum worldwide.[2] Sepsis presents differently in adults and children, with a variety of signs including extremes of temperature, changes in breathing, heart rate, appearance, urinary output, and consciousness.[3] Quantifying Sepsis in the UK is difficult,[4] and definitive diagnosis is challenging even for experienced physicians. According to the UK Sepsis Trust, a leading UK charity raising awareness of Sepsis, approximately 48,000 people die per annum from Sepsis within the UK, of which an estimated 2902 occur in Wales.[3]

There has been a recent drive to appropriately recognise and manage Sepsis early, with national action plans,[4,6] and the publication of Sepsis toolkits[7,8,9] which are considered by dental regulators as a blueprint for excellent Sepsis care.[10] In 2017 NICE updated published guidelines for all healthcare professionals on the recognition, diagnosis and early management of Sepsis, including algorithms for patient management outside of hospital settings.[11]

Dental professionals deal with individuals who present regularly for examination, as well as those with recognised odontogenic infections. They are therefore in a position to identify patients and others who may present with Sepsis, both through the recognition of classic signs and also of deviations from what is 'normal' for those they have regular contact with. Both medical and dental literature contain case reports of odontogenic Sepsis.[12,13,14,15,16] Whilst rare, and possibly associated with additional systemic disease, mortality has been reported from dental infections.[12,13,14,15] In addition, patients and other individuals may attend with Sepsis from other causes. Increased recognition of Sepsis has therefore been urged in the dental press.[17,18]

Studies of different healthcare personnel worldwide have shown low knowledge regarding Sepsis.[19,20,21,22,23,24] Despite its importance, there is no literature examining the ability or confidence of dental professionals in recognising or appropriately managing individuals who present with signs of Sepsis. The aim of this service evaluation was to examine the current knowledge and confidence of chairside dental professionals (dentists, hygienists, nurses and therapists) registered with the General Dental Council and practising in Wales, regarding their knowledge and confidence levels in recognising and managing individuals with potential Sepsis. The study also sought to identify levels and sources of training in Sepsis, and to identify any educational needs.

MATERIALS AND METHODS

Ethical approval for the study was granted by Aneurin Bevan University Health Board (ABUHB). Following approval, an electronic questionnaire was developed using an anonymous online survey tool (Online Surveys). The questionnaire was then modified in light of the Royal College of General Practitioners' Sepsis Clinical Spotlight[25] to include further relevant information and allow cross-sample comparison, and adapted following piloting amongst dental professionals. The final survey contained a core of 21 questions, with a maximum of 33 questions depending on answers requiring further information (Appendix 1). It contained closed and short open questions exploring facets of Sepsis identification and management. The survey was divided into four sections:

1. Background- which recorded clinical role, dental service, and Local Health Board (Q1-3;
2. Awareness- which examined knowledge and confidence in recognising Sepsis in children under 5, aged 5-11, and young people and adults (Qs 4-12);
3. Management- which examined knowledge, confidence, and practise in managing patients presenting with potential Sepsis (Qs 13-19); and

4. Education and Training- which examined training received in Sepsis, and interest / need for further training (Qs 20-21).

The GDC no longer publish registrants' contact details, in line with GDPR requirements. In addition, the broader environmental aims for health boards in Wales, and The Wellbeing of Future Generations Act require all bodies to consider their activities regarding sustainability.[26] Consequently, an electronic survey was developed using an anonymous online survey tool (Online Surveys) and 'gatekeepers' were approached to act as disseminating intermediaries. Health Education and Improvement Wales (HEIW) is a Special Health Authority providing education, training, and development of the healthcare workforce within Wales. It maintains databases of chairside dental professionals registered for continuing professional development (CPD). The maximum number of eligible participants registered with HEIW's CPD system was 3716, though there is the potential for dentist registrants to be listed on more than database (i.e. as a private or NHS dentist).

An invitation email containing information and a link to the online questionnaire was distributed via HEIW to all registered chairside dental professionals. In addition, Local Dental Committee Chairs, Hospital and Community Dental Service Clinical Directors, and Dental Clinical Leads were co-opted as gatekeepers to distribute the email to their members. A follow up reminder email containing information and the link was sent three weeks after the initial email, and a final email containing information and the link a week later. The survey closed a week after the final email. A sample-size calculator was used to determine the ideal response size (e.g. Epi Info ™). [27] No previous studies have explored dental professional's views on Sepsis, so an ideal response rate of 9.4% (n=348) was sought to achieve a 95% confidence interval (CI) with a 5% margin of error for the total population assuming a normal distribution (50%). Non-responders were not directly contactable, so the sample was a convenience sample.

The survey link contained a covering letter page, participant information page, and consent page prior to the questionnaire. Consent to participate was assumed if participants proceeded to answer the questionnaire. The online survey package attributed unique identifiers to participants, to allow retrieval of individual participants' data for internal comparison, but no personal identifiable data were recorded on the survey. All responses were housed on the ABUHB confidential server. Data from completed questionnaires were analysed using Microsoft Excel and SPSS for Windows Version 12. Associations between knowledge and confidence were tested with Spearman's rank correlation coefficient.

RESULTS

Following the initial invitation, 263 responses were received. Following two further invitations, a total of 357 surveys were analysed (9.6% of HEIW sample). Although the response rate was low, and self-selecting, the sample of responses allowed analysis of the dental professional population as a whole, at a 95% confidence level with a 5% margin of error.

Section 1- Background

Dentists comprised 53% of respondents (n=190), therapists 7% (n=24), hygienists 6% (n=22), and dental nurses 34% (n=121). Approximately a quarter of respondents worked primarily in the community dental service (CDS) (n=96, 27%), almost two thirds (n=221, 62%) worked primarily within the general dental service (GDS). and just over a tenth primarily worked within hospital dental services (HDS), either within the University dental hospital in Cardiff or district general hospitals (n=40, 11%)

(Table 1). A breakdown of the total dentist respondents (n=190) shows that 20% (n=38) worked within CDS, 12.1% (n=23) worked in HDS, and 67.9% (n=129) worked within GDS.

Wales is comprised of seven university or teaching health boards (UHBs) who contract dental services for their population. Of the respondents, 345 reported working in a particular UHB, whilst 8 responses did not specify a UHB. Of those respondents whose UHB was known, the sample size ranged from 3% of the total (Powys Teaching Health Board) to 23% (Betsi Cadwaladr UHB) (Figure 1).

Section 2- Awareness

Knowledge and confidence in Sepsis sign recognition

Ninety two percent of participants (n=328) said they were aware of Sepsis. However, on a forced-choice scale, where 1 was no knowledge and 5 was full knowledge of the signs of Sepsis, only 22.9% (n=82) reported some or full knowledge of the signs of Sepsis (4 or 5), and five percent of respondents (n=19) reported no knowledge (1). The proportion of respondents across knowledge and confidence scores are shown in Figure 2, with blue indicating some or full knowledge / confidence in Sepsis recognition. Mean, median and modal scores were 2.87, 3 and 3 respectively. Confidence in recognising signs of Sepsis was generally lower, with 17.1% (n=63) of respondents confident or fully confident (4 or 5), whilst 12% (n=43) had no confidence. Mean, median and modal scores were 2.65, 3 and 3, respectively. There was a very strong association between knowledge and confidence in recognising signs, with those reporting greater knowledge also reporting greater confidence (Spearman's rho= 0.79, $p < 0.0001$, n=357).

Signs and Symptoms indicating treatment need

HDS respondents were more confidently aware of 'red flags' which indicate urgent referral for under 5s, 5-11 year olds or adults than CDS and GDS respondents, approximately a third or less of CDS and GDS respondents confidently aware of 'red flags'. The remaining respondents in those groups reported being unsure or not aware of the signs and symptoms of Sepsis. Awareness of 'amber flags', which may indicate potential Sepsis, was overall higher but still very low (Table 2).

Section 3-Management

Knowledge and confidence in Sepsis management

On a forced-choice scale, where 1 was no knowledge and 5 was full knowledge of the management of Sepsis, 89% (n=318) reported no knowledge or unsure how to manage Sepsis (scores 1-3). Only 7 respondents (2%) reported full knowledge of how to manage Sepsis. Mean, median and modal scores were 2.33, 2 and 2, respectively. Confidence in managing Sepsis reflected a similar pattern, with only 12.3% (n=44) of participants confident or fully confident in managing Sepsis. Mean, median and modal scores were 2.26, 2 and 2, respectively. As with awareness, the proportion of respondents across knowledge and confidence scores are shown in Figure 2. There was a very strong association between knowledge and confidence in management with those reporting greater knowledge also reporting greater confidence (Spearman's rho= 0.82, $p < 0.0001$, n=357).

Measurements

Participants were asked which recordings were made for someone who presents with a significant infection. Recordings taken less than 50% of the time are shown as the red end of the scale (Figure 3.) Tabulated results showed a polarisation of measurements, with the most prevalent (blue) and second

most prevalent (yellow) answers generally either 'never', or 'always'. Approximately a third of respondents reported mostly or always recording temperature and appearance. A fifth to a quarter of respondents mostly or always recorded pulse, BP, respiratory rate, and saturation. Almost two thirds of respondents never recorded an observation on individuals' urinary output. Cognition was only always checked by 22% of the respondents (Table 3).

Adjunctive Equipment

Forty two percent of respondents (n=150) did not have access to oximetry, with a further 3% (n=11) unsure; 41% (n=145) did not have access to a sphygmomanometer, with a further 6% (n=21) unsure; and 35% (n=123) did not have access to a thermometer, with a further 8% (n=30) unsure. Of these individuals, the majority worked primarily in GDS, whilst a small proportion work primarily in HDS (Figure 4). Of dentists in GDS (n=129), 47% (n=60) had access to oximetry, 44% (n=57) had access to a sphygmomanometer, and 50% (n=64) had access to a thermometer.

Information

Only 12.9% of respondents (n=46) were aware of any decision support algorithms available to aid the management and referral of individuals presenting with possible Sepsis. Approximately two fifths of respondents (41.9%, n=149) thought they knew what information should be given to ambulance control if they considered an individual needed to be seen urgently. When considering individuals who were not presenting with red flags, but might later require referral to A&E (amber flags), 81% (n=289) of respondents were uncertain what information to give individuals and escorts to signpost them towards care should things deteriorate.

Section 4- Education and Training

More than three quarters of respondents (77.6%, n=277) had not received training in the recognition and management of Sepsis, and a further 3.6% (n=13) were unsure. Of those that were sure they had received training (n=67), 93% (n=62) had undertaken this in the past two years. Sixty four percent of trained respondents (n=43), which equates to 12% of total respondents, had received training in the recognition and management of Sepsis in the previous year (Table 4). Of those respondents who had received training in Sepsis recognition and management, approximately a third were from each service- 37.3% (n=25) were from CDS; 31.3% (n=21) GDS; and 31.3% (n=21) HDS, equating to 26% of CDS respondents, 9.5% of GDS respondents, and 52.5% of HDS respondents.

Training had taken place in a variety of formats. Almost 90% percent of received training was face-to-face through conferences or courses. Forty three percent of trained respondents (n=29) had attended a conference. Six respondents (9%) had read journal articles, whilst 19.4% (n=13) had accessed information via online training, relevant websites, or as part of a quality improvement programme. Other modalities (shown in brackets) included face-to-face training as part of medical emergency training, or in-house training such as 'dentist on the ward' (Figure 5).

Ninety eight percent of respondents (n=350) thought that they may or would benefit from training regarding the recognition and immediate management of individuals at risk of Sepsis. Of these, 46.2% n=162) preferred face-to-face training through either local/national conferences (26.7%, n=94), local study days (16.3%, n=57), in-house training (3.4%, n=12), or as part of medical emergency training (0.6%, n=2). The most popular individual modality in contrast, was access to online / distance learning (41.7%, n=146) with a further 8% (n=28) preferring to access websites for self-directed learning.

DISCUSSION

The digital survey via gatekeeper accesses a wide sample group and is a cost-effective method of data collection from a wide geographic area. Responses were received from all seven UHBs, as well as 8 from respondents which did not identify a UHB. UHB-based responses varied from 3% (Powys Teaching Health Board) to 23% (Betsi Cadwaladr UHB). This could be due to a number of factors including differences in clinician population between Mid-Wales and elsewhere, participant awareness, and participant motivation. Almost two thirds of respondents worked primarily in the GDS, where the majority of patients will be seen. The results are therefore pertinent to the provision of dental care in Wales.

Whilst over 90% of respondents (92%, n=328) were aware of Sepsis, significantly fewer reported knowledge or confidence in recognising it in practise. These results are unsurprising because there has been a recent focus upon Sepsis in the general media. However, it shows a lag between awareness and knowledge. Healthcare personnel studies in secondary care repeatedly demonstrate low knowledge regarding Sepsis.[19,20,21,22,23,24] and approximately half or under of HDS respondents were confidently aware of 'amber flags', and even less for 'red flags'. Primary care knowledge and recognition is less well known. In this survey 20-36% of CDS and GDS respondents were confidently aware of 'amber flags', and 13-26% of 'red flags'. Low recognition has been demonstrated elsewhere in primary care. In one study of patients admitted to hospital for Sepsis, previously consulted GPs had not suspected an infection in 43% of cases.[28]

Consistent with the reported low knowledge and confidence levels regarding Sepsis signs, this study demonstrated very low levels of awareness of the immediate management of suspected Sepsis. The identification of those at risk of Sepsis requires the use of some simple tests which can inform decision and risk algorithms. The UK Sepsis trust have published algorithms to aid decisions (Figure 6).[9] However, although these have previously been described in the dental literature,[18] only 12.9% were aware of decision support aids which outline red and amber 'flags', and consequent action if present. National Early Warning Scores (NEWS) (Figure 7)[29], which use collated test results, were initially developed to help identify deteriorating patients and prompt care escalation. As such they were primarily for adoption by hospitals and ambulance services, and are standard practice in Wales.[30,31] Recorded parameters are allotted a score, which in aggregate give an overall clinical risk score between low (0-4) and high (>7). The use of NEWS scores have since been recommended for assessing and communicating severity during emergency Sepsis referral from primary care.[6,29,32] The routine use of NEWS was described by only 10% of respondents, and was never used in almost half. This compares to a similar percentage of GPs who reported always used it, and 40% who never used it in practise.[25] An understanding of NEWS, and an ability to undertake the simple tests to populate it, would help in all acute medical conditions in dentistry and not just Sepsis. It would also enable dental professionals to update ambulance control in the case of a deteriorating patient. Dental teams working within the GDS are under different time and financial pressures from salaried services. This may affect their willingness to undertake in depth NEWS assessments. However, NICE guidance on Sepsis was published for all healthcare professionals [11] and the CQC consider use of Sepsis toolkits to be a blueprint for excellent sepsis care [10].

The low use of key clinical tests is marked. Around 45% of respondents never record blood oxygenation or pressure, and 30% never take a temperature. This reflects reported access to equipment. Lack of equipment and clinical skills may explain in part, but low recording of pulse (36%) and respirations (28%) would confirm a reported lack of knowledge. The low recording of micturition

frequency may reflect its usual irrelevance in dentistry. Cognition was mostly or always considered in only 31% of cases. Concerns raised by the patient or escorts that they are not demonstrating their usual behaviour is of particular importance and should always prompt further investigation. Further qualitative research may provide an evidence base for the low use of tests.

This survey clearly demonstrates an evidenced and felt need for education in Sepsis recognition and management. As might be expected, a much higher proportion of HDS respondents had received training in Sepsis than those from GDS (9.5%), and 98% of respondents were interested in further training. A variety of educational interventions have been shown to improve Sepsis knowledge and clinical outcomes.[33] Almost half of respondents preferred face-to-face training in Sepsis through various forms, and a similar amount preferred e-learning. Sepsis has been recommended for inclusion in hospital resuscitation training,[6] but is currently not part of standard Basic Life Support training for the dental team. In addition to increased training, UHBs could consider funding simple test kits for their service providers to enable them to identify appropriate signs and signpost patients accordingly. Whilst recognition of Sepsis is important, and may not be related to infections of dental origin, dentists also have an important role in preventing and managing dental Sepsis by identifying and removing potential sources of odontogenic infection. Previous literature identified an increase in patients admitted to hospital in England for surgical treatment of dental abscesses.[34] Since then admissions have increased, with 2571 admissions in England in 2018-19 with a main Office of Population Censuses and Surveys operation code of F16.1, *'drainage of abscess of alveolus of tooth'*.[35] A similar increasing trend is also evident in Wales. [36]

This study has some limitations. Although sufficient to draw conclusions, the response rate was low. There may be a number of reasons for this: the topic may not have been deemed salient, the survey period was at a busy time, or possible survey fatigue due to survey length or generally increased questionnaire demands.[37,38] The use of intermediaries to access the total population and lack of published contact details prevented non-responders from being chased up. The results are therefore based on a convenience sample. By looking at the Welsh dental workforce as a whole, differences between groups are not highlighted.

Despite these limitations, the total response rate allowed analysis at a 95% confidence level with a 5% margin of error for the population as a whole, and was close to a standard 10% sample used in surveys. In addition, although a significant majority of dentists practise in GDS, two thirds of respondent dentists were from GDS indicating a large enough sample size to be able to infer conclusions.

CONCLUSION

Sepsis is a serious medical condition with significant mortality and morbidity, with outcomes considerably improved by effective early interventions. There is a clearly described role for all healthcare professionals in its early recognition and management, and previously published guidance on decision making. The role for dental teams is not to provide a diagnosis, but to be aware that someone may present with signs of Sepsis from a dental or other infection, and to assess and respond appropriately. The application of simple tests, through an understanding of the Sepsis Trust algorithms and/or the use of NEWS might improve recognition and immediate management. In addition, because of the geographical challenges of Wales, a knowledge of NEWS will help inform ambulance control of any patient deterioration. This study has clearly identified an educational and training need for dental professionals in Wales, in the recognition and immediate management of individuals at risk of Sepsis. Though conclusions should be cautiously drawn, this need is likely to be the same across the UK because of the similarities in post-qualification dental training for all dental professionals.

DECLARATION OF INTERESTS

The authors do not have any conflict of interests. No funding was received for this project.

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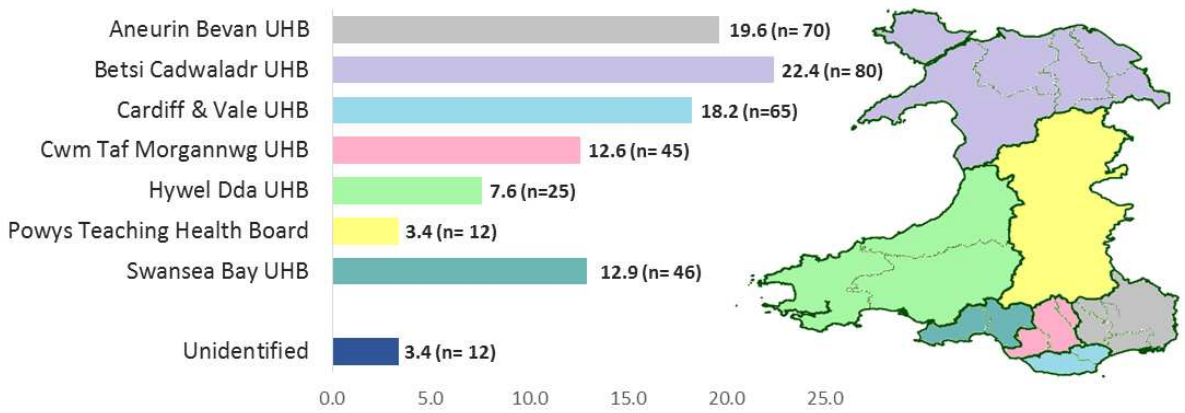

Figure 1. Response by university health board (%)

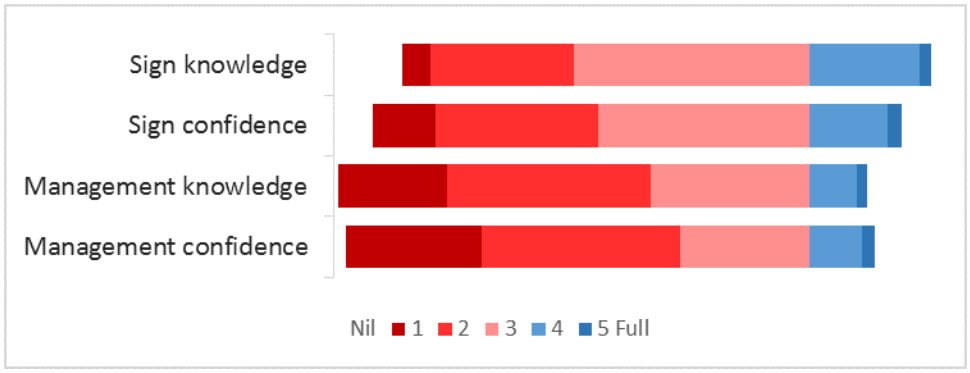

Figure 2. Knowledge and confidence of Sepsis sign recognition and Sepsis management as percentage of sample (1 = no knowledge / confidence; 5 = full knowledge / confidence)

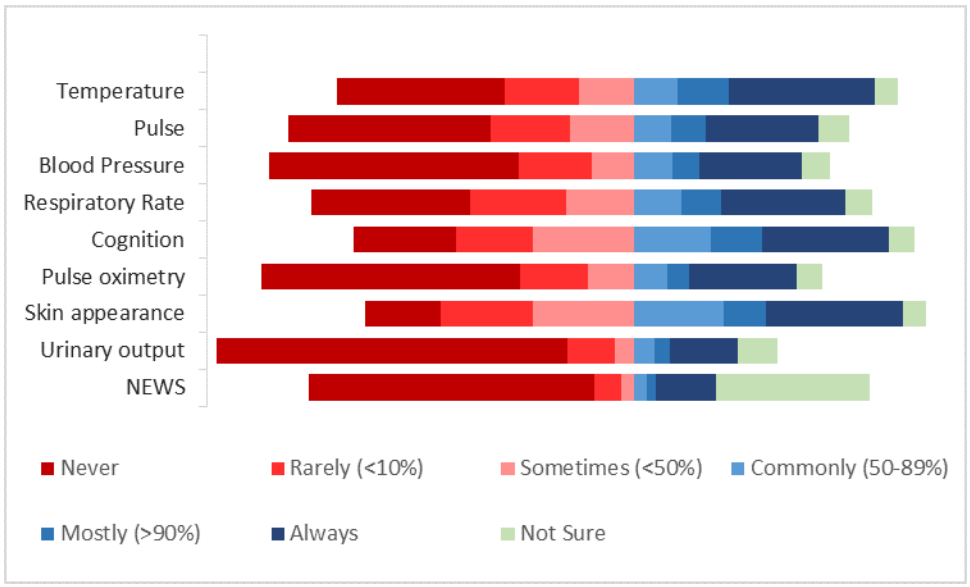

Figure 3. Frequency of clinical information recorded for individuals presenting with signs of infection

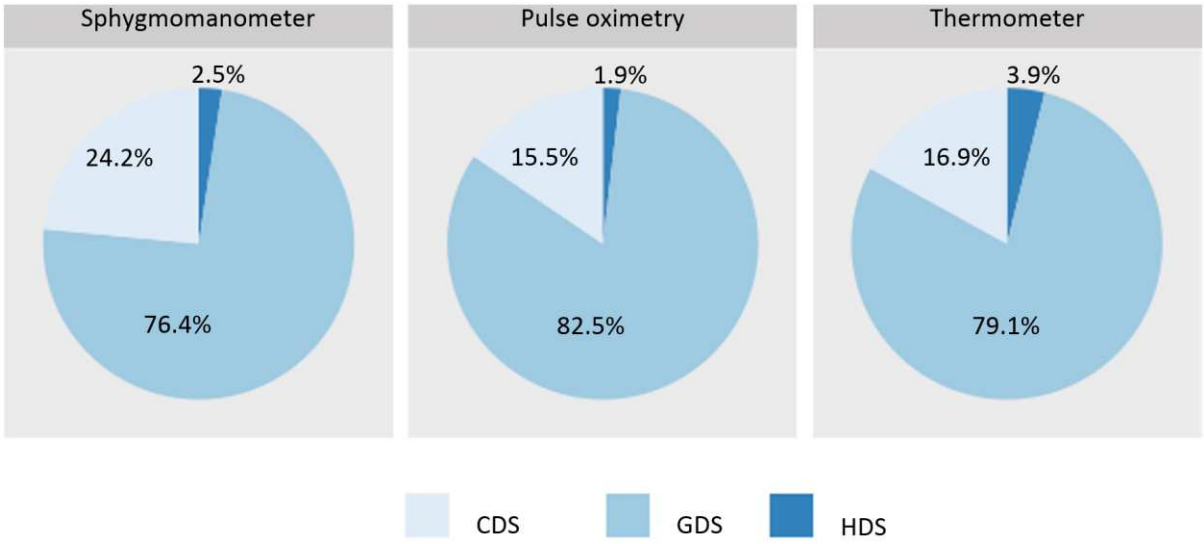

Figure 4. Respondents without access, or unsure whether they have access, to monitoring equipment

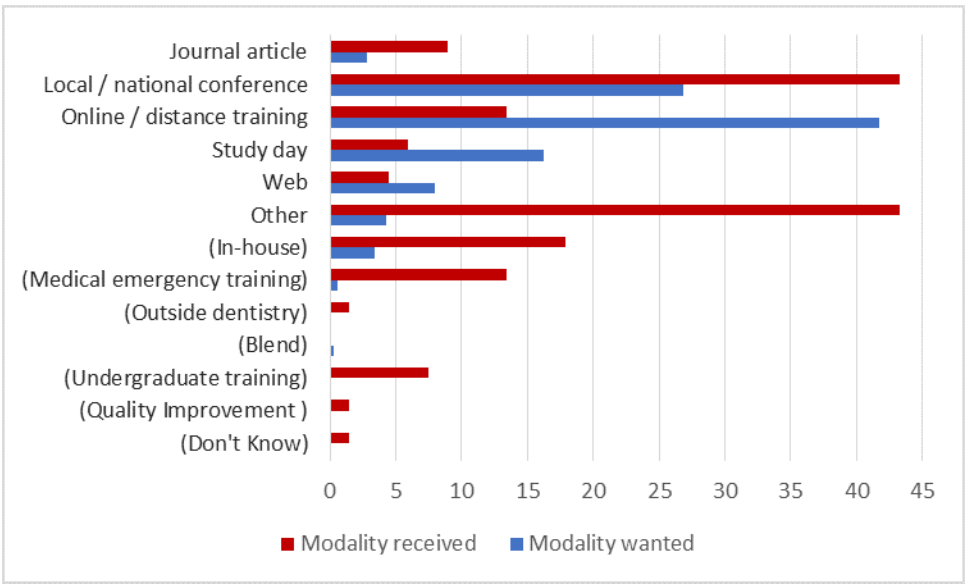

Figure 5. Educational modalities received and required for Sepsis training

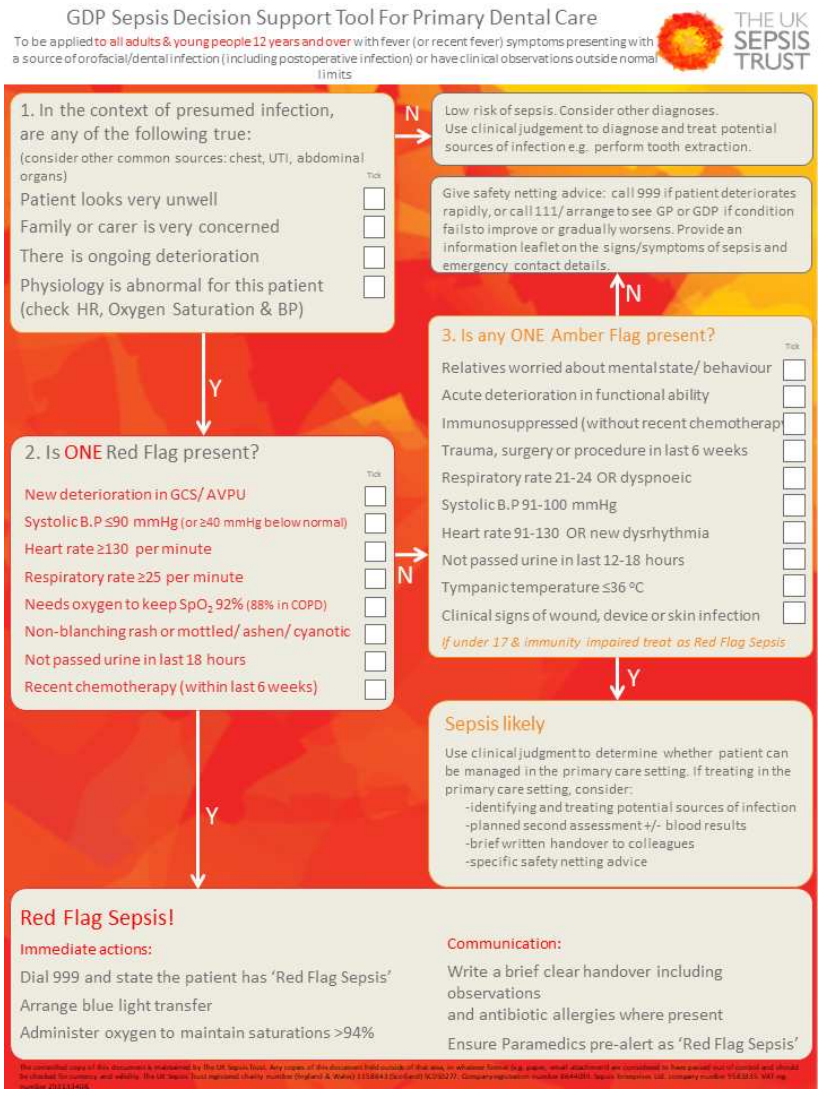

Figure 6. UKST GDP Sepsis decision support tool for primary dental care

Physiological parameter	Score 3	2	1	0	1	2	3
Respiration rate (per minute)	≤8		9–11	12–20		21–24	≥25
SpO_2 Scale 1 (%)	≤91	92–93	94–95	≥96			
SpO_2 Scale 2 (%)	≤83	84–85	86–87	88–92 ≥93 on air	93–94 on oxygen	95–96 on oxygen	≥97 on oxygen
Air or oxygen?		Oxygen		Air			
Systolic blood pressure (mmHg)	≤90	91–100	101–110	111–219			≥220
Pulse (per minute)	≤40		41–50	51–90	91–110	111–130	≥131
Consciousness				Alert			CVPU
Temperature (°C)	≤35.0		35.1–36.0	36.1–38.0	38.1–39.0	≥39.1	

Figure 7. NEWS2 chart

	Dentist	Hygienist	Nurse	Therapist	TOTAL
CDS	38 (10.6%)	2 (0.6%)	41 (11.5%)	15 (4.2%)	96 (26.9%)
GDS	129 (36.1%)	18 (5%)	67 (18.8%)	7 (2%)	221 (61.9%)
HDS	23 (6.4%)	2 (0.6%)	13 (3.6%)	2 (0.6%)	40 (11.2%)
TOTAL	190 (53.2%)	22 (6.2%)	121 (33.9%)	24 (6.7%)	357 (100%)

Table 1 Respondent demographics

Referral Urgency		Respondents			
		CDS (n=96)	GDS (n=221)	HDS (n=40)	Total (n=357)
Amber Flags	Under 5 yrs	29 (30%)	46 (21%)	17 (43%)	92 (26%)
	5-11 yrs	26 (27%)	44 (20%)	14 (35%)	84 (24%)
	Adults	35 (36%)	66 (30%)	22 (55%)	123 (35%)
Red Flags	Under 5 yrs	20 (21%)	31 (14%)	16 (40%)	67(19%)
	5-11 yrs	21 (22%)	28 (13%)	14 (35%)	63 (18%)
	Adults	25 (26%)	41 (19%)	20 (50%)	86 (24%)

Table 2 Proportion of respondents who reported being aware of signs and symptoms of sepsis which indicate urgent referral ('red flags') or potential sepsis ('amber flags')

Measurements	Never	Rarely (<10%)	Sometimes (<50%)	Commonly (50-89%)	Mostly (>90%)	Always	Not Sure	Missing Data
Temperature	106 (29.7%)	47 (13.2%)	34 (9.5%)	29 (8.1%)	32 (9.0%)	92 (25.8%)	15 (4.2)	3 (0.8%)
Pulse	128 (35.9%)	50 (14%)	40 (11%)	24 (6.7%)	22 (6.1%)	71 (19.9%)	19 (5.3%)	3 (0.8%)
Blood Pressure	156 (43.7%)	46 (12.8%)	26 (7.2%)	24 (6.7%)	17 (4.7%)	64 (17.9%)	16 (4.5%)	6 (1.7%)
Respiratory Rate	100 (28.0%)	61 (17.1%)	42 (11.8%)	30 (8.4%)	25 (7.0%)	78 (21.8%)	17 (4.7%)	4 (1.1%)
Cognition	64 (17.9%)	49 (13.7%)	63 (17.6%)	49 (13.7%)	32 (9.0%)	80 (22.4%)	16 (4.5%)	4 (1.1%)
Pulse oximetry	163 (45.7%)	42 (11.8%)	29 (8.1%)	21 (5.9%)	14 (3.9%)	68 (19.0%)	16 (4.5%)	(1.1%)
Skin appearance	48 (13.4%)	58 (16.2%)	63 (17.6%)	57 (16%)	26 (7.3%)	87 (24.4%)	14 (3.9%)	4 (1.1%)
Urinary output	220 (61.6%)	29 (8.1%)	12 (3.3%)	13 (3.6%)	10 (2.8%)	42 (11.8%)	25 (7.0%)	6 (1.7%)
National Early Warning Score (NEWS)	178 (49.9%)	16 (4.5%)	8 (2.2%)	8 (2.2%)	6 1.68%)	37 (10.4%)	96 (26.9%)	8 (2.2%)

Table 3 Frequency of clinical information assessed for individuals presenting with infection

When training in the recognition and management of Sepsis was last received		
Time received	%	(n)
< 1 year ago	64%	43
1-2 years ago	28%	19
3-5 years ago	3%	2
5 years ago	4%	3

Table 4 Time since training in the recognition and management of sepsis was last received