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“Hello, MaxFax on-call?” – Maxillofacial ‘Bleep Sheet’ Proforma for On-Call

Referrals

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Abstract

The on-call component of a dental core training (DCT) post in oral and maxillofacial surgery (OMFS) is considered to be the most daunting and challenging aspect of the job. The average trainee is a singly-qualified dentist with limited knowledge and experience of managing OMFS presentations. Given the short duration of DCT posts, there is a continual rotation of junior staff through OMFS departments with a variable skillset and knowledge mix. As such, the consistent recording of appropriate information remains a constant challenge. The coronavirus pandemic presents a unique situation in which the majority of dental foundation trainees (DFTs) entering OMFS DCT posts will only have around six months experience of independent practice. This lack of experience and onerous on-call workload could be a potentially dangerous combination, especially during nightshift patterns of on-call. We demonstrate that implementation of an on-call bleep-sheet proforma provides a validated, standardised, systematic and chronological method of record keeping, that

exceeds the minimum required standard of clinical governance, in an era where junior trainees entering OMFS will have even more limited experience than normal.

Keywords: OMFS; maxillofacial; DCT; on-call; proforma; trauma

Introduction

Oral and Maxillofacial Surgery (OMFS), stylised locally as '*MaxFax*', '*MaxFacs*' or '*MaxFac*', comprises the majority of Dental Core Training (DCT) posts available throughout the United Kingdom (UK).¹ Dental core trainees (CTs) experience the full scope and range of inpatient and outpatient OMFS responsibilities, including the on-call out-of-hours duties.

While recent research shows that nine-out-of-ten dental core trainees plan to undertake or have already undertaken an OMFS DCT post, the on-call component has been widely reported as the most challenging and daunting aspect of these posts, alongside lack of medical knowledge and ward duties.^{2,3,4,5}

The on-call duties of CTs vary depending on their employing trust and hospital (Table 1).⁶ As well as variance in duties, the pattern of on-call operated also varies; a 2011 study revealed two-thirds of CTs were between a one-in-five and one-in-eight rota, with half of those on-call working consecutive days or nights or a divided shift pattern working three or four separate nights.⁷

Dental core trainees are well acquainted with the dental hospital environment and clinical setting therein, however, the environment of e.g. a district general hospital, will be something rarely before experienced. In comparison to our newly qualified medical colleagues who, by virtue of their undergraduate training, are well versed in the concept of being available for prolonged periods of time on-call, this phenomenon is relatively novel to CTs.⁵

An OMFS dental core trainee on-call acts as the frontline of the department, triaging and prioritising referrals from other specialties inside and outside the hospital, as well as general dental practitioners (GDPs), general medical practitioners (GPs) and just about anyone else who manages to get through.⁸

The importance of clear, concise and contemporaneous record keeping on-call should therefore not be underestimated.⁹ These records: provide a means to assess quality of care; provide chronological evidence of assessment and treatment of patients; are essential for legal protection of both patient and practitioner; and are, on occasion, the only record that exists prior to admission and/or treatment in emergency situations.^{9,10}

A *proforma*, as defined by the Medical Dictionary is, 'A general term for a fill-in-the-blank form which can serve as an aide memoire of items that must be included in a final report to maximise its utility to end users'.¹¹ Medicine has introduced the use of proformas into oncology and orthopaedics to great success.⁹ Early work has also been carried out in OMFS regarding the use of proformas for recording of maxillofacial trauma, which resulted in more accurate data collection by the junior staff who completed them.^{9,12}

GDPs are well-versed in the use of proformas when referring patients to a relevant speciality in secondary care. For dental core trainees in their first year of DCT, the mixture of fatigue alongside a lack of experience can be a dangerous combination on-call, especially when dealing with an ever-increasing workload and functioning typically without direct supervision.⁹ This quality improvement (QI) project aimed to simplify, standardise and improve the quality and accuracy of record keeping for OMFS on-call referrals in a district general hospital, through the introduction of an on-call 'bleep sheet' proforma.

Materials and Methods

The OMFS department at Altnagelvin Area Hospital (AAH) is one of two hospitals in Northern Ireland providing an in-hours and out-of-hours on-call referral service for OMFS. The specialty uniquely serves a population of approximately 745,000 spanning six counties across Northern Ireland and the Republic of Ireland (Derry/Londonderry, Tyrone, Fermanagh, Donegal, Leitrim and Sligo [Figure 1]).¹³

Quality Improvement (QI) is a systematic process that utilises QI theory and methods, through a 'model for improvement', to continually make small changes that lead to quantifiable improvements for targeted services and/or patient populations (Figure 2).¹⁴ The project was registered with the AAH Clinical Governance Service and approved before commencement.

There are no national or regional standards in place with regards the level of detail required for record keeping in OMFS trauma. A modified scoring method was created from the well-established CRABEL scoring system of assessing quality of medical record keeping, used by the Royal College of Surgeons.¹⁵ This modified method included parameters such as: patient name, unique identifier, referral source, time / date of referral, management, investigations, legibility, follow-up plan and the consultant and CT involved.

An original 'trauma sheet' had been present in the department from 2012 - 2017. This comprised an A5 sheet of paper with space for basic information and limited space for information pertinent to the recording of the referral, outcome and future management.

Using the model for improvement via 'Plan-Do-Study-Act' (PDSA) cycles (Figure 2), 20 randomly selected proformas were analysed and cleaned manually each cycle, between August 2017 and April 2018 (Microsoft Excel for Mac 2016, Version 16.38 20061401). No exclusion criteria were required as all proformas selected would be assessed. Initial data-capture was over a four-week period, with a

subsequent two-week period for each amendment to the proforma to allow for trainee adaptation to the implemented change. Geolytics (<https://geo.sg/>, accessed 24/06/20) was used to produce the geographical heat map locations (Figure 1). Data were analysed using Statistical Package for the Social Sciences (Mac Version 26.0.0.0; SPSS Inc. Chicago) using descriptive statistics.

The pilot version of the new proforma was created and implemented in PDSA cycle three. It was formulated based on previous literature, as well as the guidance for record keeping and information pertained in the original CRABEL scoring and covered both sides of a standard A4 sheet of paper.^{9,10,15} A more comprehensive, redesigned and streamlined proforma on one side of A4 paper was created via PDSA cycle feedback and introduced in cycle seven (Figure 3). There are four components to the proforma: basic demographic data; event details; history, treatment, advice given; outcome and follow-up.

Anonymised data were collected on all paediatric and adult patients referred to and/or attending AAH, both in-hours and out-of-hours. Data collection and analysis were carried out by a single investigator with experience in research methodology. Whilst only one investigator completed the data collection, the binary scoring system was strictly adhered to, which in itself reduced the risk of bias and personal interpretation of the data.

A gold-standard was set at 95% compliance, as some areas of the proforma may have not been possible to complete at time of referral e.g. when a patient was referred from the Republic of Ireland or if information was recorded on a separate clinical sheet. Estimated distance travelled was calculated using the fastest available route by road, determined by Google Maps (<https://www.google.com/maps>, accessed 17/05/18).

Results

There were a total of 3495 referrals to the on-call OMFS service over a 28-week period between August 2017 and April 2018. There was an almost even split of referrals in-hours ($n=1782$; 51%) and out-of-hours ($n=1713$; 49%). The mean number of referrals daily was 15 (range 5-29, SD 6.23), with the service receiving a vast majority of referrals for adults ($n=2901$; 83%) than children ($n=594$; 17%). The mean age of those accessing the service was 45 years (range 0-90, SD 23.1 years).

The geographical locale served by AAH is shown in Figure 1. During the intervention period, 92% ($n=3215$) of referrals were from sites in Northern Ireland and 8% ($n=280$) from the Republic of Ireland. The mean distance travelled by patients was 21 miles (range 0-92, SD 18.4 miles).

There were a total of 12 PDSA cycles undertaken over the 28-week period (this equated to a sample of 240 proformas). Cycle one was a retrospective baseline data collection of the already established A5 trauma sheet, completed by the previous CTs in the final two weeks of their training year in late August and early September 2017 - CRABEL score - 68%. This baseline data allowed comparison between the standard of record keeping at the end of the previous training year and the beginning of the next cohort of trainees, who for the first two weeks of their training had a CRABEL score of 48%.

The introduction of the new pilot proforma after cycle two yielded a CRABEL score of 56% for cycle three. Feedback following the initiation of the new proforma such as suggested layout changes, removal of sections not utilised, and introduction of previously missing areas resulted in a 66% CRABEL score for cycle four.

Cycles five and six saw further layout changes, trainee re-education and reinforcement regarding importance of accurate record keeping, which resulted in CRABEL scores of 73% and 75% respectively. A complete overhaul and redesign of the proforma after cycle six saw the CRABEL score

for cycle seven rise to 84%. Further minor changes and input from the nurse specialist between cycles eight to twelve, resulted in a rise from 88% (cycle eight), to 91% (cycle nine) and 92% (cycle ten). The goal standard (95%) was met in cycle 11 and further maintained through cycle 12 where the mean actually rose to 96%. The proforma takes around seven minutes to complete.

Limitations revealed by the intervention stemmed from legibility of handwriting, the 'human factor' of relying on CTs to fully complete the proforma, as well as information being recorded on other clinical sheets outwith the proforma and then loss of a proforma after a trauma review appointment when e.g. missing sheets had been filed away with the patient's notes.

Discussion

The on-call component of an OMFS DCT post can be a daunting prospect for any junior dental core trainee. As the 'first-on-call', the average trainee is a singly-qualified dentist with limited knowledge and experience of managing OMFS presentations.⁶ This is further compounded by a recent study which highlighted that 48% of dental graduates felt their undergraduate training was inadequate for their job in OMFS.⁷

Given the short duration of DCT posts, there is a continual rotation of junior staff through OMFS departments with a variable skillset and knowledge mix. As such, the consistent recording of appropriate information remains a constant challenge.⁹ Our study compliments the limited literature available, emphasising that use of a proforma ensures longevity of standardised information being collected, at a baseline that is already sitting above the threshold of the minimal amount of information required by the Royal College of Surgeons.^{9,10,12,15}

It is not unusual for trainees, new to the OMFS environment, to initially feel overwhelmed and out of their depth.⁷ The first-on-call can face an onerous workload, sometimes being pulled in seven

different directions at once, alongside a list of tasks expected to be completed in time for the handover. Although considered the most stressful element of the job, the on-call component is also considered crucial for gaining skills in leadership, decision-making and coping with pressure.^{9,16}

Balancing and setting priorities is a significant challenge of an on-call shift, which can be circumvented by using methods such as Covey's Time Management Matrix, which allows trainees to categorise impending and incoming referrals and tasks based on urgency and importance (Figure 5).^{4,17}

Our proforma provides a standardised, systematic and chronologic method of recording maxillofacial information received on-call. It ensures all required detail is gathered and not lost to the ether, as this proforma record may be the only piece of written information that exists e.g. prior to attending emergency theatres. It ensures that all information required for medicolegal reports is recorded that may be required for investigations, litigation, or assessment of compensation.⁹

As the majority of treatment carried out on-call is in the accident and emergency department (A&E) and not in the clinical outpatient setting, bleep-sheet data ensures there is a record of OMFS on-call throughput which can be measured, coded and the department remunerated appropriately. The importance of this aspect was highlighted in a recent study which showed not only was clinical coding by an A&E department only 50% accurate for OMFS treatment, there was no coding record of OMFS input, therefore the A&E department was paid incorrectly, no payment was directed to the OMFS department and there was no quantifiable measure of OMFS activity.¹⁸

Dental Foundation Trainees (DFTs) comprise the majority of trainees who will take up OMFS DCT posts at DCT1 level.¹⁹ The practice of routine face-to-face dentistry changed overnight on 25th March 2020 due to the coronavirus pandemic and as such, some DFTs entering DCT will only have around six months experience of independent practice, prior to beginning DCT.²⁰ This lack of experience and

onerous on-call workload could be a potentially dangerous combination, especially during nightshift patterns of on-call.⁹ The need for a systematic, standardised bleep-sheet proforma is now more relevant than ever. NHS England are themselves aware of the issues the pandemic will have after the summer on trainees, emphasising that hospitals understand that dental core trainees are not doctors and should not be treated as such.²¹

For both novice and experienced CTs, the bleep-sheet proforma can act as an aide memoire to prompt record keeping and provide a platform for anyone not versed in the required detail to pick up, complete and hand-over to the OMFS team when normal service resumes the next day - as is seen in hospitals which utilise the 'hospital at night' policy.^{9,22} A scanned copy of the proforma can then be placed on a patient's digital record, copied and placed in a patient's paper file and a separate copy kept in the OMFS department for review appointments, audit etc.

The transition from primary to secondary care in the current climate has the potential to present an even more exponential learning curve for DFTs than normal. Utilisation of on-call bleep-sheet proformas across sites in the UK, alongside the incorporation of resilience training into induction programmes can help junior trainees adapt to the hospital environment, promote acquisition of key clinical skills and change negative perceptions of OMFS training for new trainees across the UK.^{23,24}

Conclusion

The on-call component of an OMFS training post is widely regarded as the most daunting and challenging aspect of the job. Introduction of an on-call bleep-sheet proforma provides a validated, standardised, systematic and chronological method of record keeping, that exceeds the minimum required standard of clinical governance, in an era where junior trainees entering OMFS will have even more limited experience than normal.

Conflict of Interest

No conflict of interest

Ethics statement/confirmation of patient permission

Not applicable

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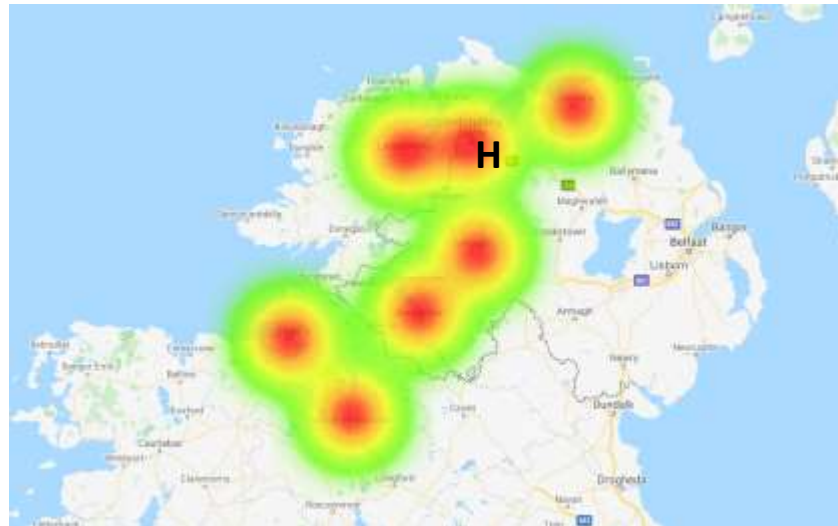


Figure 1. Heat map of referral sites to Altnagelvin Area Hospital.

Key: H – Altnagelvin Area Hospital

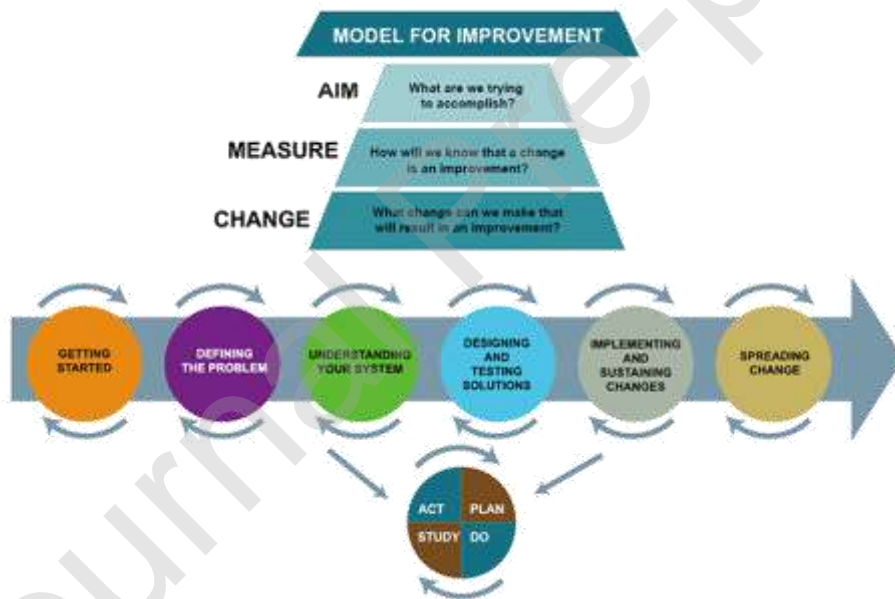


Figure 2. The Model for Improvement Framework and QI Pathway



Altnagelvin Hospital
**ORAL & MAXILLOFACIAL
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ON CALL REFERRAL PRO FORMA

Please complete form fully. If not fully completed, the form will be referred back to the member of the OMFS team responsible.

Consultant On Call	AK	BDS	JGS	JSTEN	AFFIX PATIENT LABEL OR ENTER DETAILS [BLOCK LETTERS]											
Referral Date & Time					Patient Name:											
Referral Source	WHCT	NHCT	ROI*		Male / Female:											
	AH A&E	GMP	GDP		DOB:											
	Other/Details*:				Unique Identifier [AH / H&C]:											
Patient seen by OMFS Team	YES / NO															
Telephone Call Only	YES / NO															
Head Injury / C-Spine Clear	YES / NO / N/A															
Date of Injury																
Mechanism	RTA	ALLEGED ASSAULT	FALL	SPORTS	INDUSTRIAL	ANIMAL	IATROGENIC	OTHER								
Place of Injury / Event	HOME	WORK	ROAD	PUBLIC PLACE	SPORTSGROUND	SCHOOL	HOSPITAL	OTHER								
Injury Suspected	ZYGOMA	MANDIBLE	MAXILLA	SOFT TISSUE	ABSCESS / CELLULITIS	DENTAL / ORTHODONTIC	POST-OPERATIVE COMPLICATION	OTHER								
Radiographs	YES / NO	NIPACS	HARD COPY	CD ROM	Views	OPG	CT	MRI	OM VIEWS	PA MANDIBLE	OTHER					
Other Bodily Injury	YES / NO	LOC	YES / NO	Vomiting	YES / NO	GCS	Alcohol Involved			YES / NO / N/A						
History / Treatment / Advice Given <i>[Please add any additional information if 'Other' selected previously]</i>										LA USED - YES NO		Medical History				
FOR REVIEW APPOINTMENTS PLEASE STATE CLINIC AND TIMEFRAME REQUIRED																
Plan <i>[Please Tick]</i>			Appointment Card Given			OPC Review - YES / NO / N/A	Date:	Time:								
Admitted			Dental Trauma Proforma Completed			Signed:	Print:									
Discharge			Grey Clinical Sheet Completed			Date:	Designation:									

Figure 3. On-Call Bleep-Sheet Proforma

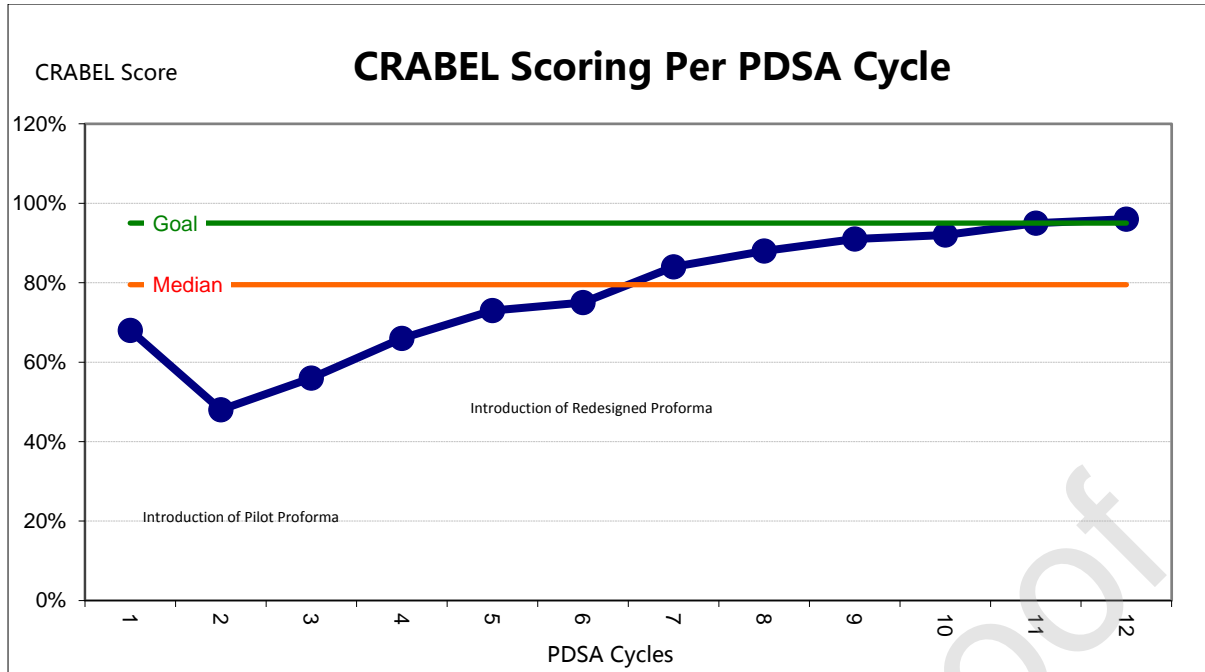


Figure 4. Run chart of CRABEL score for each PDSA cycle

	URGENT	NOT URGENT
IMPORTANT	DO E.g. - A&E patient waiting for trauma management - Replying to new bleeps	PLAN E.g. - Clerk the major oncology patient in at 2pm - Chase the blood investigations from the handover
NOT IMPORTANT	DELEGATE E.g. - Another CT to go prescribe pain relief for inpatient - ENT to close ear laceration instead of OMFS	LIMIT E.g. - Reading emails - Online shopping - Social media

Figure 5. The Covey Time Management Matrix

Table 1. Typical duties of a dental core trainee on-call⁶

- Assessment, triaging and initial management of emergency referrals e.g. midfacial fractures, mandibular fractures, TMJ dislocations, facial lacerations, dental trauma etc.
- Admission clerking for elective and emergency patients
- Prescribing for patients on the ward – intravenous fluids (IV), glucose control, enteral feeding, antibiotics, regular medications
- Venepuncture, IV cannulation, taking blood cultures – including follow-up and subsequent appropriate management where indicated by results
- Arranging post-operative review where appropriate
- Liaising with the second on-call (if present) and/or consultant on-call
- Discharge of patients under the care of OMFS
- Booking patients onto the emergency list for treatment under general anaesthetic
- Acute management of conditions such as trigeminal neuralgia, facial cellulitis and post-extraction complications such as prolonged bleeding
- Liaising with general practitioners offering telephone advice where appropriate