



CLINICAL EFFECTIVENESS MATTERS 2013

Clinical Effectiveness Matters is the publication of the BAOMS Clinical Effectiveness Subcommittee of BAOMS Council (CEC) that allows local clinical audits from the various regions of the UK to be published and disseminated.

2013 has been a very busy year for the CEC. We have been involved in developing Commissioning Guidance using a NICE accredited process manual with the support of the RCS and the Department of Health (as was). We have three groups working on three guidance topics; Orthognathic Treatment, TMJ Procedures and Exodontia. The first of these to be published, under the leadership of Paul Johnson has been the commissioning guidance for Orthognathic Treatment. This can be accessed by clicking the following link: - <http://www.rcseng.ac.uk/surgeons/surgical-standards/docs/orthognathic-procedures-commissioning-guide> The other two Commissioning Guidance groups are still working through the process and there have been delays, particularly in the development of Commissioning Guidance for Exodontia secondary to the changing political and primary care structure within NHS England. Hopefully we will be able to overcome these difficulties and are working to do this.

I would like to remind everyone that whatever changes occur locally, regionally or within the constituent countries of the UK, BAOMS remains the national OMFS surgical specialty association with representation throughout the UK. With this in mind, I would like to remind all that the BAOMS National Audit for Revalidation this year is on "Patients Referred with Impacted Third Molars". Although this Audit is overseen by BAOMS through the CEC and is supported by NFORC and HSCIC, it is open to all stakeholders (e.g. GDP's with a specialist interest, Oral Surgery Specialists) and we hope that everyone who deals with patients referred with impacted third molars will be aware and will take part. Details of this audit can be found on the BAOMS website: - <http://www.baoms.org.uk/page.aspx?id=665> . Although there is comprehensive guidance documentation on this web page there is also the facility to feedback and answer questions.

There have been several very useful CEC meetings since I commenced as BAOMS CEC Chair in 2012 and I'm very grateful for all those who have attended and contributed. Two contributions merit particular recognition. The first from, Mr Kelvin Mizen, CEC Regional Rep for Yorkshire, is the promotion of a standard clinical audit template that can be used in an effort to standardise clinical audit. This was first published by the Department of Health but the most recent version is available on the HQIP website and can be viewed / downloaded by clicking the following link: - <http://www.hqip.org.uk/template-clinical-audit-report> . The second suggestion was made by Mr Andrew Gibbons, the CEC Armed Forces Rep, and this was to have an Online Audit Library on the BAOMS website for publication and dissemination of local and regional clinical audits. This proposal was warmly welcomed by all on the CEC as it will provide open access to allow audit projects to be supported and will hopefully prevent duplication improving both the quality and accessibility of OMFS Clinical Audit projects. It is planned for the BAOMS Online Audit Library to be updated regularly and this also means that we will not need to publish Clinical Effectiveness Matters in its current form. This edition of Clinical Effectiveness Matters is therefore the last.

As well as the above projects, the CEC is currently working to develop clinical guidelines using a NICE accredited process manual. We have recently appointed an information scientist, Alison Bethel who will be supporting this process and other suitable CEC projects. Data collection tools for orthognathic surgery, including the updated minimum dataset (agreed with BOS), are available to download from the BAOMS website by clicking on the following link: - <http://www.baoms.org.uk/page.aspx?id=520> . I appreciate that clinical audit and clinical effectiveness work is voluntary and often needs to be carried out in often very limited "spare time", I do hope however hope that myself and my colleagues on the CEC are through our efforts, facilitating the process for all to engage with. Talking of engagement, the CEC has recently been expanded to include the recently elected BAOMS Special Interest Group (SIG) representatives. This should improve our capacity to develop clinical audit projects and databases specific to the various OMFS Subspecialties e.g. Head and Neck Skin Cancer.

The following clinical audit project summaries below, have been collated by the BAOMS CEC Regional Reps (listed in the table below) and I apologise for any errors or omissions that may have occurred during the collation for incorporation of these reports into this document. For those of you who have audits to publish that are not included in this publication I would be most grateful if you would submit them either to myself or your local CEC Rep for inclusion in the forthcoming Online

Audit Library. If you require any more information or wish to use or become involved with a particular clinical audit, please contact the authors or their Regional BAOMS CEC Rep.

Thanks to all for your ongoing support.

All the very best.

James Gallagher
Chairman of the BAOMS Clinical Effectiveness Committee

Regional Co-ordinators	Region / Group	
	Armed forces	Andrew Gibbons
	Beds Herts Bucks	Chi-Hwa Chan
	Mersey	Simon Rogers
	Northern	Mark Greenwood
	Northern Ireland	Dermot Pierse
	North West	Stuart Clark
	North West Thames	Mahesh Kumar
	Oxford	Jennifer Wylie
	Scotland	Ian Holland
	South Thames	Jeremy Collyer
	South West	Peter Revington
	Trent	Iain McVicar
	Wales	Steven Key
	Wessex	Steve Walsh
	West Midlands	Bernie Speculand
	Yorkshire	Kelvin Mizen
Co-opted	Clinical Guidelines	Tim Blackburn

Armed Forces

Changes in Mandibular and Zygomatic Fractures Incidence through Boom and Bust

Peterborough and Stamford Hospitals and Military District Hospital Unit Peterborough

Mr M J A Turner, Miss S Thomas, Mr C E Moss, Wing Commander A J Gibbons

Introduction: Anecdotally it has been noticed by Oral and Maxillofacial Surgeons at Peterborough that the number of facial fractures treated has reduced in recent years.

Aim: To benchmark trends in the facial fracture workload at Peterborough from 2005-2010 for future audit.

Methodology

A request for the number of primary procedure coding for the following codes was made to Clinical Information services. Codes V09.3 V15.2 V15.3 V15.8 V15.9 were included. Data was collected for calendar years 2005-2010

Results

Year	Zygoma	Mandible	Total
2005	21	26	46
2006	21	21	42
2007	22	28	50
2008	27	37	64
2009	12	28	40
2010	16	13	29

Discussion

The data shows a gradual rise in all numbers up to 2008 and then a sharp decline in the number of treated fractures. The reasons for this are not known. However, as most OMFS fractures are as a result of alcohol related assaults outside the home, it may be that the concurrent economic decline in the UK disposable income has reduced alcohol consumption outside the home in communities in the Peterborough area. Unemployment as a crude measure of economic well being measured over the same time period from Office of National Statistics data shows a rapid increase in unemployment since 2008 in Peterborough.

Recommendations

Over the next year, the audit is to be expanded to a regional level by the authors to see whether the Peterborough data is a regional trend or an isolated case.

East of England

**LUTON AND DUNSTABLE HOSPITAL NHS FOUNDATION TRUST
DIRECTORATE OF ORAL AND MAXILLOFACIAL SURGERY**

**Re-audit of Outcomes Following Division of Ankyloglossia for Breastfeeding
(NICE Interventional Procedure 149)**

July 2012

Project leads:

Jacky Simmonds, Infant Feeding Advisor

Mr Chan, Consultant Oral and Maxillofacial Surgeon

Additional Support:

Calista Strange, Clinical Quality Facilitator

Distribution list:

Amica Patel (Senior Clinical Quality Facilitator)

Helen Lucas, Head of Midwifery

Tracey Scivier, Martina McIntyre, Midwifery Matrons

Miss Waller, Clinical Director, Obs and Gynae

Catherine Hudson, Audit Midwife

Dr Sarah Skinner, Consultant Neonatologist

Dr Jenny Birch, Consultant Neonatologist

Mr. D Von Arx Clinical Director OMFS

Dr. R White Divisional Director Surgery and Anaesthetics

CONTENTS

1.	Background	3
2.	Aims/objectives	5
3.	Methodology	5
4.	Audit findings	6
5	Summary of main findings	15
6.	Feedback of findings	16
7.	Recommendations and action plan	16
8.	Appendix A Audit Proforma	17

Re-audit of Outcomes Following Division of Ankyloglossia for Breastfeeding

(NICE Interventional Procedure 149)

1 BACKGROUND

Ankyloglossia, also known as tongue-tie, is a congenital anomaly characterised by an abnormally short lingual frenulum, which may restrict mobility of the tongue. It varies from a mild form in which the tongue is bound only by a thin mucous membrane, to a severe form in which the tongue is completely fused to the floor of the mouth. Breastfeeding difficulties may arise, such as problems with attachment (getting the mother and baby appropriately positioned to breastfeed successfully), sore nipples with insufficient feeding leading to the need for more frequent feeding and poor infant weight gain.

Many tongue-ties are asymptomatic and may not be problematic. Some babies may develop breastfeeding difficulties. Conservative management includes breastfeeding advice, and careful assessment to determine whether the frenulum is interfering with feeding. If division is required, this should be undertaken as soon as possible to enable the mother to continue with breastfeeding, rather than having to feed artificially.

Division of the tongue-tie is frequently performed without the need for anaesthetic, although topical local anaesthetic is sometimes used. The baby's head is stabilised, and sharp, blunt-ended scissors are used to divide the lingual frenulum. There should be little or no blood loss and feeding is usually resumed immediately. Older babies usually have the procedure performed under general anaesthetic.

The Infant Feeding Advisor, at the Luton and Dunstable Hospital, receives referrals from Community Midwives, Health Visitors, General Medical Practitioners and Paediatricians for babies having tongue-tie. Referrals can include babies in and out of the local area. Occasionally referrals may be received from Luton and Dunstable Hospital midwives. Unless the referral is made by a hospital midwife (when the baby can be assessed whilst in the Maternity Unit) all babies are assessed at the twice weekly Infant Feeding Drop-In Clinics. Mothers may also self-present to clinics, as they are publicised in a hospital leaflet distributed by Community Midwives and on discharge from the hospital Maternity Unit.

At the assessment clinic mothers are given advice on good positioning and attachment of baby to the breast. Depending on severity of tongue-tie, a referral is made to the named Consultant in Oral and Maxillofacial Surgery at Luton and Dunstable Hospital to perform division. The division usually takes place within a few days of referral.

In 2005, the National Institute for Health & Clinical Excellence (NICE) issued Interventional Procedure Guidance 149¹ which reviewed the efficacy and safety of division of ankyloglossia for breastfeeding. NICE concluded that the evidence

¹ 1. NICE Interventional Procedure 149 (Dec 2005). [Division of Ankyloglossia \(Tongue-tie\) for Breastfeeding](#). NICE: London.

suggested no major safety concerns with this procedure and from the limited evidence available, the procedure can improve breastfeeding. The evidence was thought adequate enough to support the use of the procedure provided that arrangements are in place for consent, audit and clinical governance. NICE also recommends that division of tongue-tie for breastfeeding should only be performed by registered health professionals who are properly trained.

Division of ankyloglossia was introduced locally during 2006 and, as a new procedure, initial outcomes were reported to the Interventional Procedures Committee. Subsequently data have been prospectively recorded to measure outcomes for babies following division of tongue-tie for breastfeeding. NICE have quoted success rates of 95% for improved breastfeeding 48 hours after tongue-tie division and a study of 215 infants reported success rates of 80% for improved feeding at 24 hours².

A baseline audit was conducted in 2009, including 136 babies having division of tongue tie between March 2006 and May 2009. Overall there were very positive outcomes to the tongue-tie divisions performed during this audit period .

The following recommendations were made:

- 1) The standard data points collected as part of ongoing monitoring will be reviewed and the current audit form will be revised accordingly.
The audit form was revised and has been used effectively.
- 2) Methods to improve consistency in recording baseline data will be explored e.g. post procedure feeding, and longer term follow-up data.
On reflection it was decided that telephoning to assess the current situation would be more productive than asking mothers to complete something written and return to us. This also gave the opportunity to offer further support if this was felt necessary.
- 3) Develop a Luton and Dunstable Information Leaflet to provide parents with information and advice on Tongue Tie.
This leaflet was developed and has been welcomed by the parents of the babies with tongue tie. It gives details of the problems that mothers and babies may experience with a tongue tie baby and explains the procedure well. This is, of course, in addition to a full verbal explanation of the procedure. The leaflet is due for review in 2013.
- 4) Investigate the possibility of others being trained to perform tongue-tie division to ease the named Consultant's workload, and reduce any occasional long wait if the Consultant is away from the Trust (concern is mother may change to artificial feeding if nipple pain too intense.)
Unfortunately the training offered to International Certified Lactation Consultants

² Griffiths, M. (2004). Do Tongue Ties Affect Breastfeeding? Journal of Human Lactation, 20 (4), pp409-414.

in Southampton is currently unavailable. The current service works quite well, but there can be a problem when annual leave occurs. There is a possibility that a further member of staff from the Maxillofacial Unit may be available on some occasions.

- 5) Investigate how other hospitals within Beds, Herts and Bucks might develop a tongue tie division service, to reduce the number of babies seen here for assessment and division.

Bedford Hospital offers a tongue tie division service. It is understood from Health Visitor colleagues that Hertfordshire are looking at how they might set up a service – but there appears no definite plans currently. A number of parents are opting to have the procedure done privately by trained International Certified Lactation Consultants.

2 AIMS/OBJECTIVES

The re-audit aims are:

- To measure intra-procedural outcomes/complications e.g. pain, bleeding etc.
- To measure if local outcomes match the success rate for improved breast feeding specified in the literature reviewed by NICE (95% at 48 hrs) and Griffiths (80% at 24 hrs).
- To review outcomes at longer term follow-up (three months).
- To identify areas requiring further actions.

Results have been compared to the baseline audit where applicable.

3 METHODOLOGY

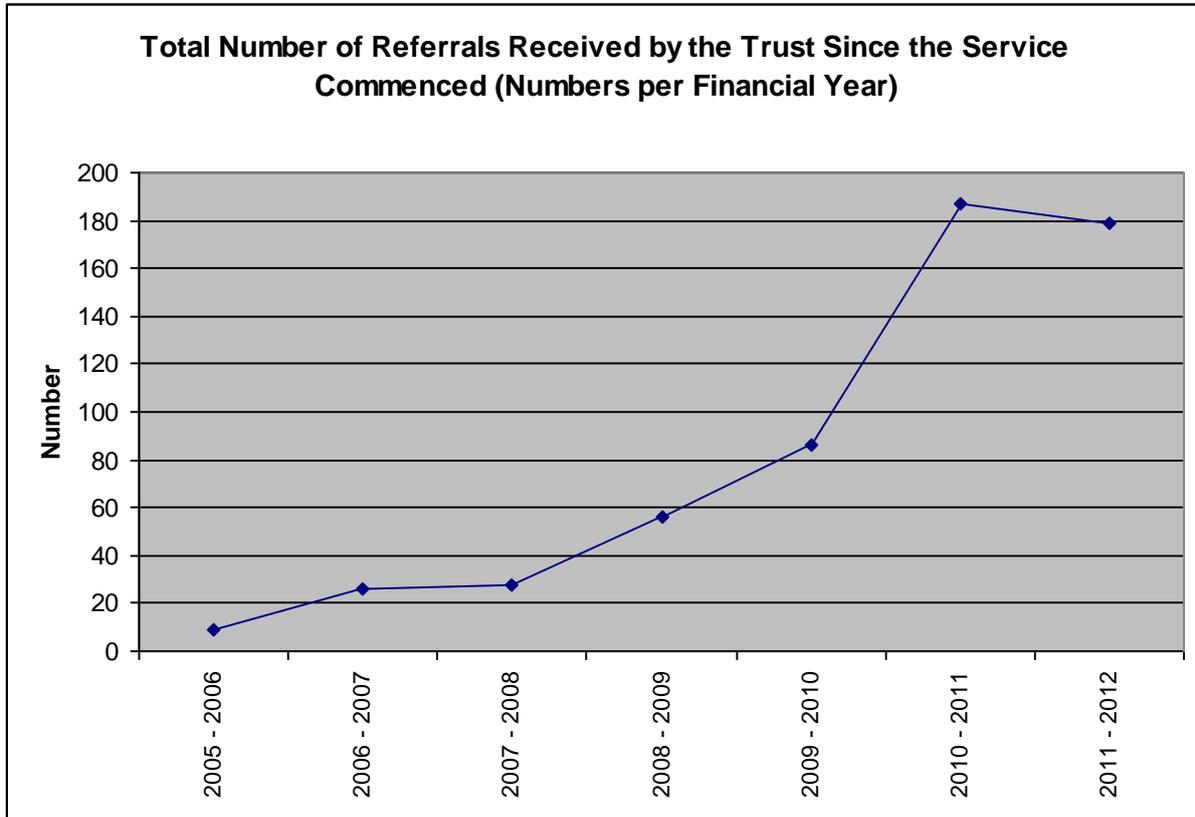
The data collection form (Appendix A) was designed by Project Leads. This data collection form is completed for every baby who requires frenulum division, and outcome data is recorded when division of ankyloglossia has been performed.

The audit sample included 50 consecutive divisions (who had a three month post division check) undertaken between April 2011 and April 2012.

The data were analysed by Clinical Quality staff using SPSS.

4 AUDIT FINDINGS

4.1 Total Annual Referrals Received by the Trust Since the Service Commenced (Numbers per Financial Year)



4.2 Analysis of Re-audit Data

The re-audit sample included 50 consecutive divisions undertaken between April 2011 and April 2012.

4.2.1 Demographics

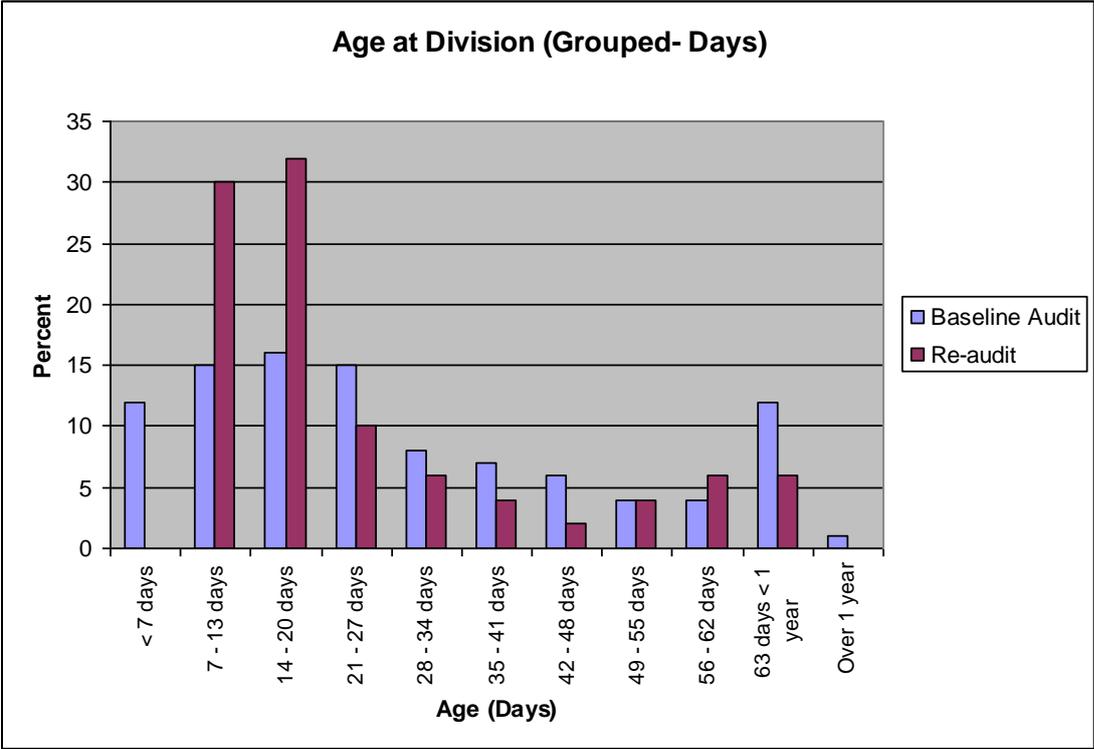
Gender

Re-audit: Not recorded = 3

	Baseline Audit	Re-audit
• Male	85/136 (62.5%)	26/47 (55.3%)
• Female	51/136 (37.5%)	21/47 (44.7%)

Age Distribution

The ages of the babies at the time of the division have been grouped and displayed in the graph below.



Mean: Baseline audit: 41 days old
 Re-audit: 26 days old

Age Range: Baseline audit: 1 day old – 446 days old.
 Re-audit: 7 days old – 129 days old.

4.2.2 Feeding Problems Identified in Drop-In Clinic

The audit proforma prompts the data collector to record the presence or absence of the following problems. Some infants had more than one problem identified.

Problem	Number of Cases & Percent (%)	
	Baseline Audit	Re-audit
Breastfeeding not easy	79/136 (58%)	42/50 (84%)
Bottle feeding not easy	16/136 (12%)	1/50 (2%)
Solids not easy	1/136 (1%)	0/50 (0%)
Poor weight gain	-	1/50 (2%)
Not satisfied	13/136 (10%)	-
Latching not easy	43/136 (32%)	-
Nipple problem	46/136 (34%)	29/50 (58%)
Expressing at present	21/136 (15%)	6/50 (12%)
Using nipple shield	2/136 (1%)	2/50 (4%)
Lip lick problem	0/136 (0%)	0/50 (0%)
Continuous feeds	17/136 (13%)	1/50 (2%)
Dribbling	11/136 (8%)	0/50 (0%)
Tongue problems	2/136 (1%)	-
Other – “Mastitis”	1/136 (1%)	-
Other – “Mastitis / Thrush”	-	1/50 (2%)
Other – “Keeps pulling off breast regardless of flow”	-	1/50 (2%)

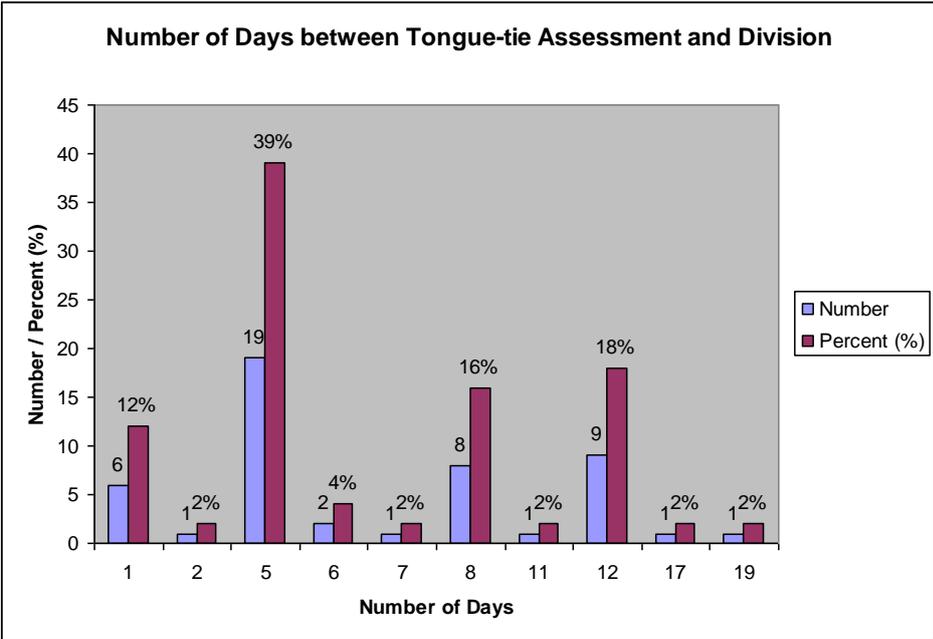
N.B: The feeding problems listed on the audit proforma were revised following the baseline audit.

The most commonly reported problems were ‘breastfeeding not easy’, and nipple problems.

4.2.3 Number of Days between Tongue-Tie Assessment and Division

This was not measured in the baseline audit.

Re-audit: The date of assessment was not recorded in one case. Results for the remaining 49 cases are shown below.



Mean: 7 days

59% of divisions were undertaken within 7 days of assessment.

4.2.4 Examination

Tongue

	Number of Cases & Percentage (%)	
	Baseline Audit	Re-audit
Thick	16/132 (12%)	5/49 (10.2%)
Medium	41/132 (31%)	10/49 (20.4%)
Diaphanous	75/132 (57%)	34/49 (69.4%)

Total	132/132 (100%)	49/49 (100%)
Not recorded	4/136	1/50

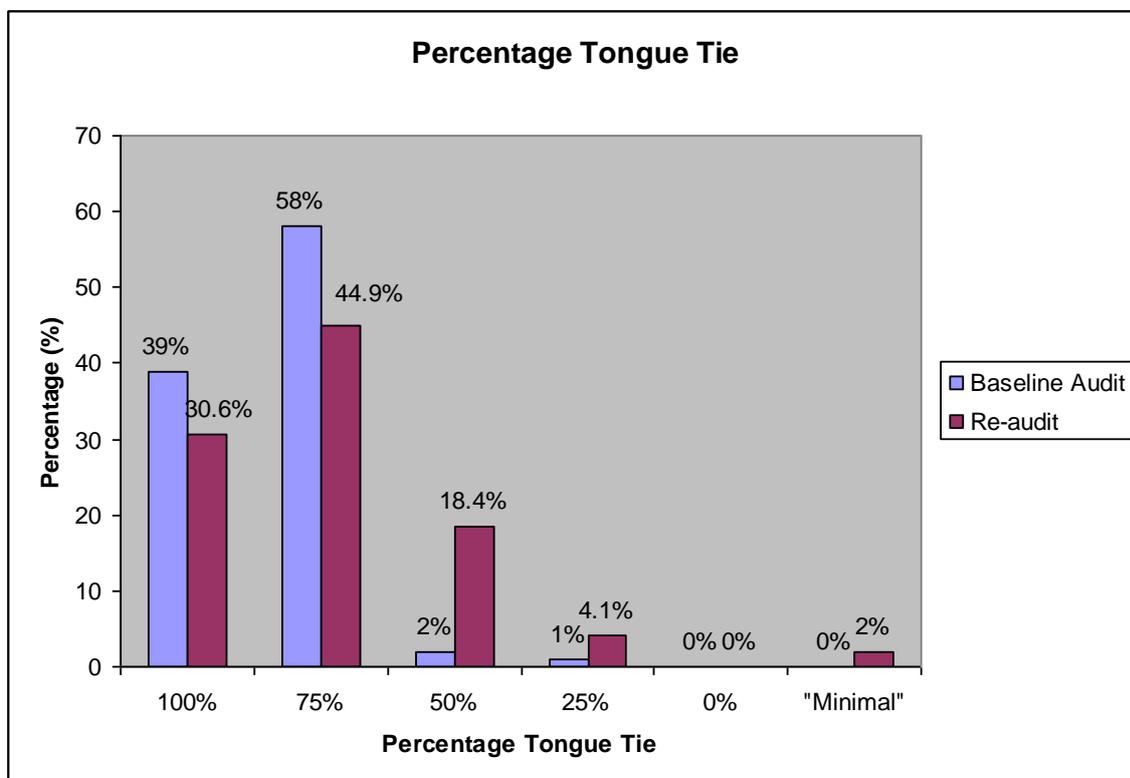
Nearly seventy percent of the babies had a diaphanous frenulum (translucent/fine).

Percentage Tongue Tie

The 'percentage of tongue tie' is gauged by eye, ranging from 25% (i.e. extending 25% of the distance along the underside of the tongue) to 100% (i.e. extending all the way to the tip).

Baseline audit: This was not recorded in four cases.

Re-audit: This was not recorded in one case.



Just under half of the cases had a 75% tongue tie on examination, i.e. the frenulum was attached 75% of the distance along the underside of the tongue.

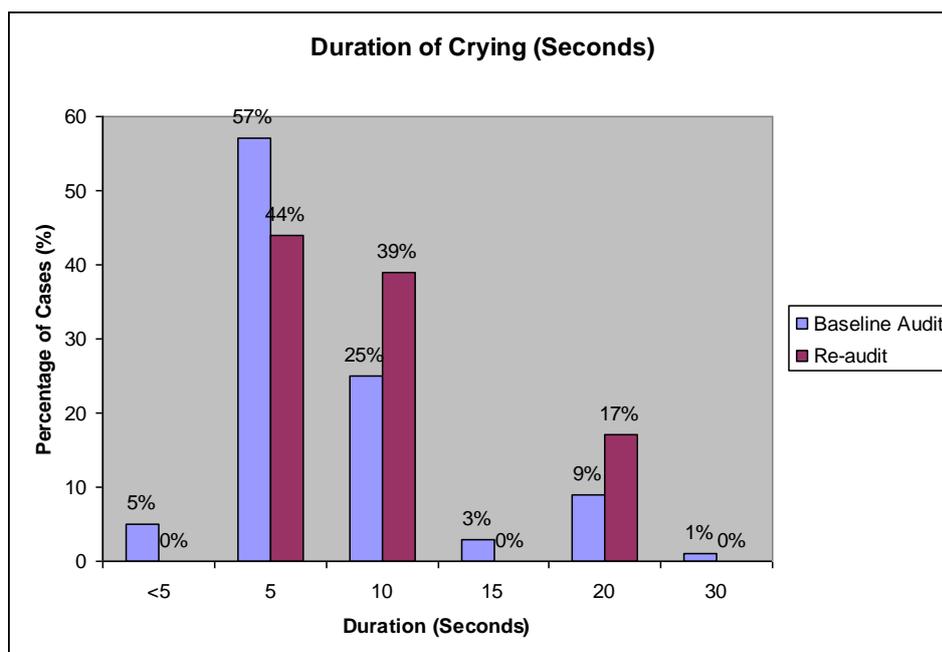
4.2.5 Procedure Outcomes

Pain on Division (Increased Crying)

Increased Crying	Number of Cases & Percent (%)	
	Baseline Audit	Re-audit
Yes	110/132 (83%)	19/44 (43%)
No	22/132 (17%)	25/44 (57%)
Total	132/132 (100%)	44/44 (100%)
Not recorded	4/136	6/50

Duration of Crying

Re-audit: Increased crying was reported in 19 cases; the duration of crying was recorded in 18 of these cases (baseline audit: the duration of crying was recorded in 102/110 cases).



The majority of babies (83%) cried for 10 seconds or less.

Amount of Bleeding On Division

Amount of Bleeding	No. of Cases & Percent (%)	
	Baseline Audit	Re-audit
None	15 (11%)	3 (7%)
Few Drops	110 (83%)	41 (93%)
Small	7 (5%)	-
Pressure > 1 min	-	-
Suture	-	-
Diathermy	-	-
Total	132 (100%)	44 (100%)
Not recorded	4/136	6/50

No babies required pressure for more than one minute, suture or diathermy.

4.2.6 Post Procedure Monitoring

Any Immediate Difference At First Feed?

Immediate Difference	No. of Cases & Percent (%)	
	Baseline Audit	Re-audit
Yes	58/67 (87%)	35/36 (97%)
No	9/67 (13%)	1/36 (3%)
Total	67/67 (100%)	36/36 (100%)
Nil recorded	-	3/50 (6%)
Baby didn't feed immediately post division (baby asleep / not hungry / not interested in feeding)	14/136	3/50 (6%)
Infant feeding advisor not present at first feed post division	55/136	8/50 (16%)

Where a feed was observed immediately after the division; a positive change was observed in the majority of cases (97%).

Comments:

- Attached to breast very well now, mum says very comfortable and baby feeding well
- Attached very well, good breast feed taken
- Attached well, good feed observed
- Attached well, needs to ensure sufficient underlying breast tissue scooped in, largish nipples - but feeds well when positioned well
- Attachment much improved, excellent breastfeed observed
- Baby quite sleepy unable to interest in breast. Mum fed prior to appt, Mum didn't bring nipple shield. Advised to attend drop in.
- Baby very sleepy. P&A explained, has taken AF ++ from bottle. ?N/T confusion. MW asked to call to reweigh baby, BSW to visit and Drop In if no better
- Comfortable feed - needs to ensure sufficient underlying breast tissue taken in
- Currently using nipple shield and AF, baby not hungry at present
- Fed very well after procedure
- Good breastfeed observed, comfortable
- Good feed taken using nipple shield. Advice given re use of this and positioning and attachment
- Improved attachment **x2**
- Less fussy, advised re P&A
- Less painful
- More comfortable when correctly attached. Mum needs to ensure more underlying breast tissue scooped in.
- More content at breast, good feed taken.
- Mother said stopped breastfeeding yesterday, encouraged to give breastfeed, baby attached and fed very well. Supply and demand discussed. Declined BSW support.
- Much improved attachment - feels more comfortable
- Much more comfortable
- Much more comfortable feed taken - encouraged to breast feed (+EBM) exclusively
- Much more comfortable feed. attaching well now
- Much more comfortable, good BF observed **x2**
- Mum says much better
- Mum says much more comfortable
- No pain now, baby observed to be breastfeeding very well
- Today gave bottle milk but is still breast feeding
- Very effective feeding

4.2.7 Feeding at Early Assessment Check

This check is usually carried out a few days post procedure but can be up to a month post procedure in some cases.

Re-audit

This was not recorded in 3 out of the 50 cases (6%).

Re-audit

Griffiths (2004)

NICE (2005)

		24hr check	48hr check
• Better	40/47 (85%)	80%	95%
• Unchanged	7/47 (15%)		
• Worse	0/47 (0%)		

Eighty-five percent of the sample reported that feeding was better at the Early Assessment check.

Comments

- Baby has two neonatal teeth erupting but under gum. Sore lumps on tongue - Mr Chan advised polyps, no problem
- Baby still not attaching well - currently giving EBM not BF
- But now ? thrush, advised to attend Chaul End.
- No reply.

Baseline Audit: Feeding at 24-Hour Check

This was not recorded in 56 out of the 136 cases (41%), results below are based on the remaining 80 cases.

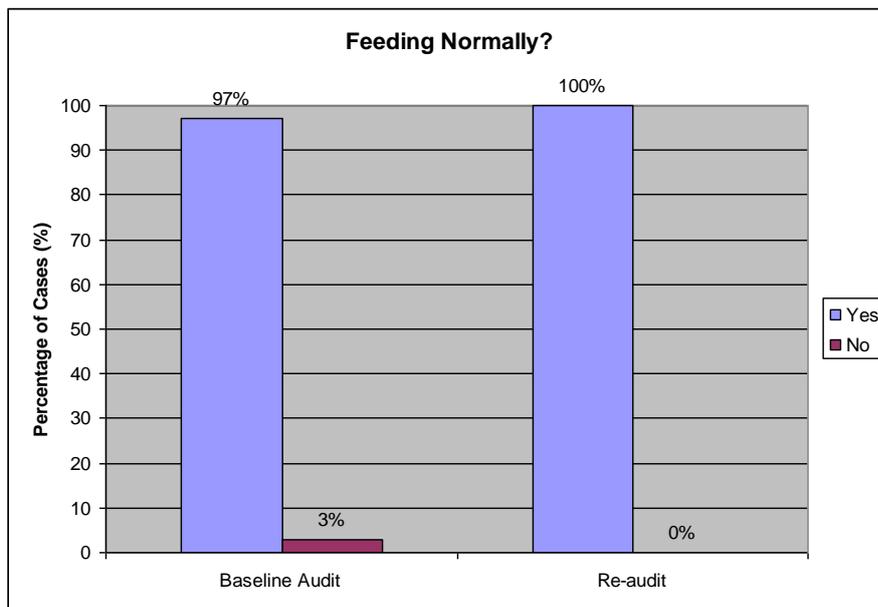
	L&D	Griffiths (2004)
		24hr check
• Better	69/80 (86%)	80%
• Unchanged	11/80 (14%)	
• Worse	0/80 (0%)	

Eighty-six percent of the sample reported that feeding was better at the 24 hour check.

4.2.8 Feeding at 3 Month Check

Baseline Audit: Follow-up information was available for only 41 (30%) of the original 136 women. There were some difficulties in contacting many of the women.

Feeding Normally at 3 Months?



All the women (50/50) reported that their babies were feeding normally three months post division.

Feeding Method at Three Months

Baseline audit: not recorded = 4/41

	Baseline Audit	Re-audit
• Breast	20/37 (54%)	40/50 (80%)
• Bottle	12/37 (32%)	5/50 (10%) 3/5 Artificial feed 2/5 Expressed breast milk
• Both	5/37 (14%)	5/50 (10%)

Comments

- 'Excellent service, Infant feeding advisor great help'
- BF to 2 months. Then AF
- Breastfed for 3 months. Then started AF **x2**
- EBM only. Never attached well.
- 'Excellent service'
- 'Excellent service, very quick and made a real difference'
- 'Made a definite difference'
- 'Made a huge difference'
- Worried about baby's weight, advised to attend clinic for support

4.2.9 Comments and Service Evaluation (Feedback from Mothers)

- Breast fed till 4 and half months. AF after that.
- Breast fed until 8 months - definitely made a difference.
- Breast fed until three and half months. AF after that. 'Fantastic service'
- Still breast feeding at 6 months, 'really helped being clipped'
- Still breast feeding at 8 months
- Still breastfeeding at 6 months
- Still breastfeeding at 9 months

5. SUMMARY OF MAIN FINDINGS

In the financial year 2011 – 2012, 179 referrals for tongue-tie assessment were received. The re-audit sample included 50 consecutive divisions undertaken between April 2011 and April 2012.

Compliance with NICE Recommendations/Success Rates

- NICE recommends that division of tongue-tie for breastfeeding should only be performed by registered health professionals who are properly trained. Locally, tongue tie division is undertaken by Consultants, therefore compliant with the NICE recommendation.

Current evidence suggests that there are no major safety concerns surrounding this procedure and limited evidence suggests that this procedure can improve breastfeeding. NICE quote success rates of 95% for improved breastfeeding 48 hours after tongue-tie division, and Griffiths (2004) reported success rates of 80% for improved feeding at 24 hours. Locally, the Early Assessment Check is usually carried out a few days post procedure but can be carried out up to a month post procedure in some cases. This repeat survey found that 85% of the mother's reported that feeding was better at the Early Assessment Check. This is comparable to the success rate reported by Griffiths (2004).

Main Findings

- 55% of the patient sample were male, and 45% were female.
- The most commonly reported problems at assessment of the ankyloglossia were 'breastfeeding not easy' and nipple problems.
- The average number of days between assessment and division of tongue-tie was 7 days (range 1 day – 19 days).
- On examination, nearly seventy percent of the babies had a diaphanous frenulum (translucent/fine). Just under half of the cases had a 75% tongue-tie, i.e. the frenulum was attached 75% of the distance along the underside of the tongue.
- The average age at division of tongue-tie was 26 days old (range 7 days – 129 days old).
- Upon division just over 40% of the babies showed increased crying. Crying lasted between 5 and 20 seconds.
- No babies required pressure for more than one minute, following the division, or suture or diathermy. The vast majority of babies (93%) only had a few drops of blood. The remainder (7%) did not bleed.
- Where a feed was observed, by the Infant Feeding Advisor, immediately after the division, a positive change was observed in the majority of cases (35/36, 97%).
- At the three month check:
 - 100% of babies were feeding normally (compared to 97% in the baseline audit).
 - **40 babies (80%) were breastfeeding (compared to 54% in the baseline audit).**
 - 5 babies (10%) were bottle feeding (3/5 artificial feed, 2/5 expressed breast milk). 32% of babies were found to be bottle feeding at three months in the baseline audit
 - 5 babies (10%) were breastfeeding and bottle feeding (compared to 14% in the baseline audit).

6. FEEDBACK OF FINDINGS

- 6.1 Mr Chan and Jacky Simmonds will present findings at forthcoming ENT/OMFS Joint Clinical Governance Meeting (Autumn 2012).
- 6.2 This report will be distributed to the staff listed on the front cover.

7. RECOMMENDATIONS AND ACTION PLAN

1. Review Audit Proforma.
2. Continue to pursue training for Int Board Certified Lactation Consultant to perform frenotomy, and to seek ways of dividing tongue ties when Consultant is absent.

8.1 Appendix A

Tongue-tie Audit Form

Mothers name:

Referred By: Hospital midwife

Mothers Phone No:

Community midwife

Addressograph here

Baby Name:

GP

Address:

Other

Date:

GP Name:

L&D Out of Area

Date TT assessed:

Division required? YES/NO

Date/time of appt:

Parent Informed:

Date of division:

1. Feeding

Current feeding method: BF/AF/Mixed

Breast easy	Y/N/NA	Nipple problem	Y/N	Lip lick problem	Y/N
Bottle easy	Y/N	Expressing	Y/N	Dribble	Y/N
Solids easy	Y/N	Nipple shield	Y/N	Continuous feeds	Y/N
Poor weight gain	Y/N	Other	Y/N		

2. Family History

Y/N

Comments:

3. On Examination

Tongue-tie a) thick

Percentage tongue-tie a) 100%

A 2 Year Prospective audit of Basal Cell Carcinoma (BCC) and Squamous Cell Carcinoma (SCC) Excision

Mr Mark J.A Turner (FDS FRCS), Mr Valmiki Sharma (MFDS MRCS)

Peterborough City Hospital, Peterborough, UK

Introduction:

Skin cancer is a pertinent and escalating issue in Britain and has considerable impact on public health due to the large number of cases generally, but especially so in the head and neck region where local anatomy exerts a significance, both functionally and in no small part cosmetically, on the ability to excise these lesions with adequate margins. Definitive surgical treatment is based upon achievement of adequate surgical margins and it is therefore important to regularly audit these to assess if satisfactory standards are being achieved in a Unit.

Gold Standard:

Complete Excision rate of 93% (Guidelines for the management of basal cell carcinoma. Telfer NR, Colver GB, Morton CA; British Association of Dermatologists. Br J Dermatol. 2008 Jul; 159 (1):35-48).

Method:

A 2 year prospective audit of BCC and SCC excision with demographic data including tumour site, size, type and deep and radial margins were entered into custom Access™ database from August 2010 to 2012 in the OMFS department.

All lesions were marked using X2.5 magnification with a 3 mm excision margin for BCCs and 4 mm for SCCs lesions. The depth of excision dependent on lesion and site.

Results:

A total of 492 skin lesions were excised in 371 patients in the OMFS department from August 2010 to 2012. Of these 237 were male and 134 were female. 302 were basal cell carcinomas and 34 were squamous cell carcinomas.

156 were other lesions (Actinic Keratosis, Bowen's, Naevi etc.)

Of the BCCs:

Of the SCCs:

- | | |
|----------------------------------|-------------------------------|
| * 202 (66.6%) excised in Males | * 22 (65%) in males |
| * 100 (33.3%) excised in Females | * 12 (35%) in female |
| * Average age 73.7 years | * Average age 76 years |
| * Clinical size range 3-40mm | * Clinical size range 8-40mm |
| * Mean clinical size 11.7mm | * Mean clinical size 16mm |
| * Mean histological size 8mm | |
| * Complete Excisions 290 (96%) | * Complete excision 33 (97%) |
| * Incomplete Excisions 12 (4%) | * Incomplete excisions 1 (3%) |

Conclusion:

At a complete excision rate of 96%, we are achieving above the Gold Standard set for BCCs. At a complete excision rate of 97% for SCCs, we are achieving above the Gold Standard which we, as a department, have accepted.

Recommendations:

- Wider margins are recommended for morphoeic lesions and those sited on the nose and ear.
- 2nd cycle re-audit in 2014
- Consider setting the Gold Standard for complete excision of cutaneous SCC of the head and neck region to 97%.

LUTON AND DUNSTABLE HOSPITAL NHS FOUNDATION TRUST

DIVISION OF SURGERY

Department of Maxillofacial & Oral Surgery

June 2011

AUDIT of POST TRAUMATIC EYE OBSERVATIONS

Project Leads:

Dr. S. Toledano, DF2 MFS

Mr. C. Chan, Consultant MFS Surgeon

Mr. D. Von Arx, Clinical Director, MFS

Clinical Quality Support:

Elaine Swanson, Clinical Quality Development & NICE Guidance Manager

Eunice Morris, Clinical Quality Clerk

Distribution List (Summary report):

Consultants (MFS Department); Consultants (Emergency Assessment Unit); Ward Sisters/Managers (EAU, 20, 21, 23, Cobham Clinic); Clive Underwood (Practice Development Nurse – Theatres); Matron Humphries (Surgical Specialties); Sheila Puckett (General Manager – Surgical Specialties); Mr. J. Tolia (Clinical Director Ophthalmology); Miss. C. Farrow (Consultant CAEC Representative A&E); Mr. J. Pickles (Medical Director); Carmel Synan-Jones (Acting Assistant Director of Nursing).

CONTENTS

1.	Introduction	3
2.	Objectives	3
3.	Methodology	3
4.	Audit Findings	4
5.	Discussion of Key Findings	7
6.	Dissemination	7
7.	Recommendations & Action Points	7

References

Appendix A: Audit Standards

Appendix B: Eye Observation Chart

AN AUDIT OF POST TRAUMATIC EYE OBSERVATIONS

1. BACKGROUND

Retrobulbar haemorrhage after facial trauma or surgery is an uncommon but well documented complication¹. It can present following orbital fracture, cosmetic or re-constructive surgery to the eyelid/orbit, endoscopic operations of the sinus and the use of retrobulbar injections. Retrobulbar haemorrhage is serious and if not diagnosed and treated early, may lead to permanent blindness. Key signs and symptoms include pain, diplopia, ophthalmoplegia, proptosis, decreased pupil responses, dilated pupil and decreasing visual acuity leading to blindness. Prognosis is improved through early detection of symptoms and abnormal eye observations.

Patient's presenting to maxillofacial (MFS) department's pre or post operatively for fractures of the orbital walls are at increased risk of retrobulbar haemorrhage. Diagnosis can be confirmed using Computerised Tomography (CT) of the orbit or using ocular ultrasound (USS), and are important in measuring the size of the haematoma.

A survey¹ of maxillofacial surgeons which was conducted in the United Kingdom, demonstrated that each surgeon had on average seen one case of retrobulbar haemorrhage. It was noted that over 90 different eye observations regimens existed across the UK and the authors recommend a standard regimen for eye observations to be adopted.

The use of orbital observation charts is paramount in monitoring patients at increased risk of developing retrobulbar haemorrhage and enables early detection of such cases.

2. AIMS/OBJECTIVES

To ensure compliance with all standards of visual observations for patients having an increased risk of developing retrobulbar haemorrhage.

3. METHODOLOGY

A list of audit standards is shown in Appendix A.

A list of patients undergoing surgery at the Luton & Dunstable Hospital, to treat fractures of the orbit, zygomatic complex or isolated zygomatic arch fractures between March 2009 – March 2011 were identified using MFS department records.

A total of 46 cases were randomly identified for retrospective review.

Clinical data were collected by the principal project lead. Additional data were collated by the Clinical Quality Department for further analysis.

(Appendix B: Orbital Observation Chart)

4. Audit Findings

Gender

Male:	43	93.5%
Female:	3	6.5%
	46	100%

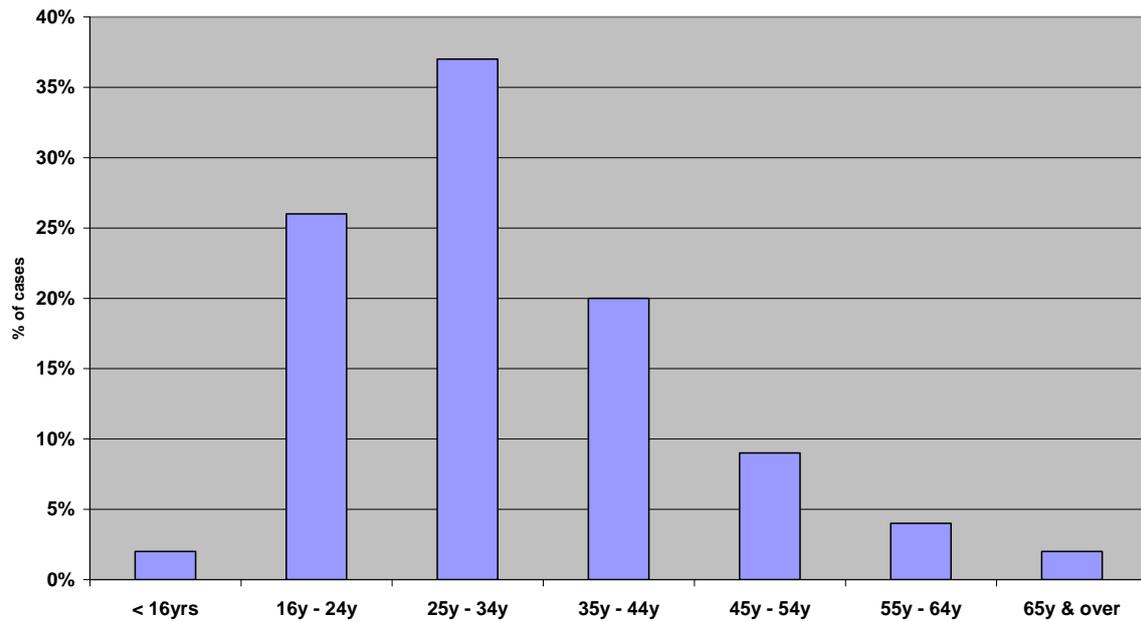
When was the Patient Admitted for Treatment?

2009	9	20%
2010	28	60%
2011	9	20%
	46	100%

Age at Admission

Age Range:	14yrs – 65yrs
Mean age:	32.1yrs

Age Distribution



Primary Coded Procedures

Key:

C051: Reconstruction of cavity of the orbit

C052: Plastic repair of cavity of orbit

C082: Open reduction of fracture of orbit

C085: Internal fixation of fracture of orbit

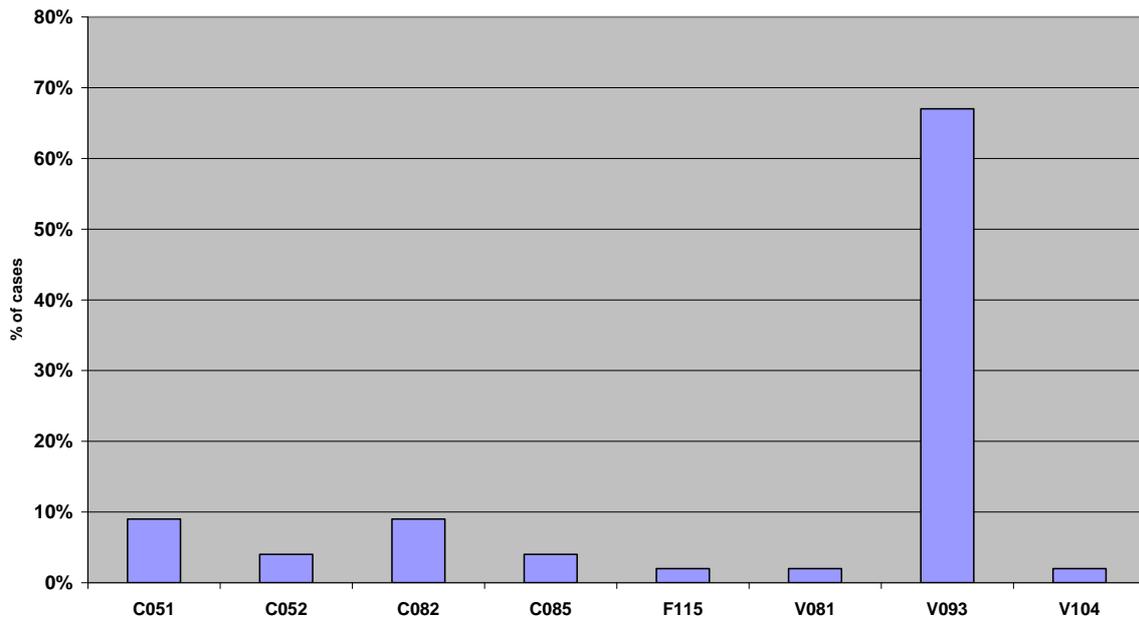
F115: Endosseous implantation into the jaw

V081: Reduction of fracture of alveolus of maxilla

V093: Reduction of fracture of zygomatic complex

V104: Low level osteotomy maxilla

Primary Coded Procedure (OPCS Code)



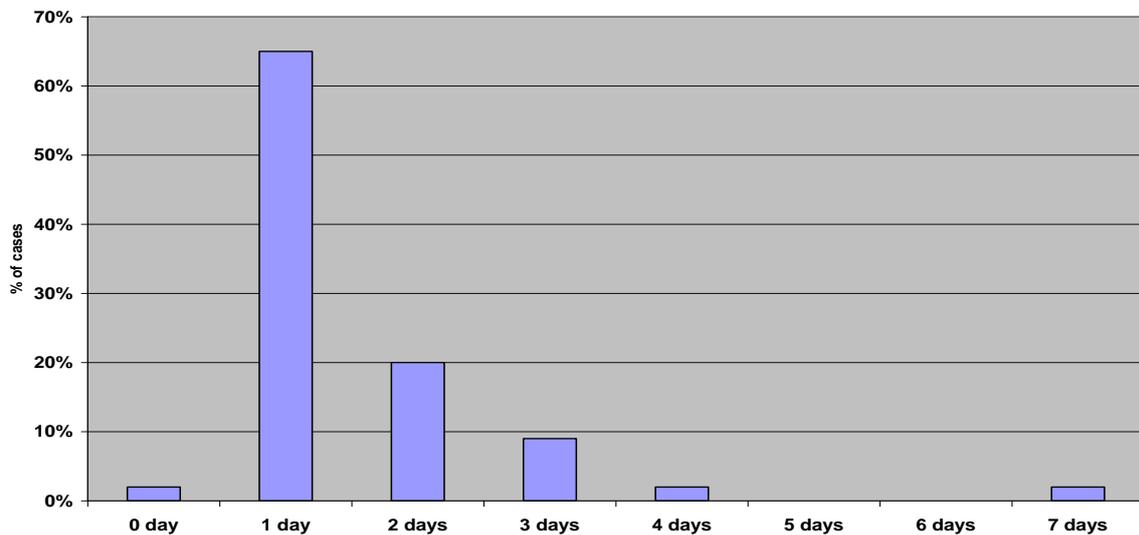
Two thirds of the patients underwent reduction of fracture of the zygomatic complex (OPCS-V093).

How long was the Length of Hospital Stay?

Range: 0 – 7 days

Mean LoS: 1.5 days

Hospital LoS



Two thirds of patients were discharged the day following their procedure.

Patient with LoS 4 days: also had fracture of the mandible

Patient with LoS 7 days: noted that patient was also being managed for subarachnoid haemorrhage

Compliance with Audit Standards

N = 46 cases included

	Criterion	Standard	Actual/ Compliance
1.	MFS surgeon to document post operative instructions / observation schedule within the operation notes	100%	45/46 (98%) High
2.	A copy of the observation schedule (which includes instructions) is filed in the relevant part of the patient's health record	100%	45/46 (98%) High
3.	Type of observation protocol that was requested: Excludes one case where the MFS Surgeon did not document instructions N = 45 cases - Standard (as per schedule)		

	<ul style="list-style-type: none"> - Different - Unclear 	<p>100%</p> <p>-</p> <p>-</p>	<p>11/45 (24%)</p> <p>30/45 (67%)</p> <p>4/45 (9%)</p>
4.	The observation protocol requested by the MFS Surgeon should be followed.	100%	<p>19/45 (42%)</p> <p>Low</p>
5.	<p>Average number of observations that were missed within each protocol requested (across all 5 observations of pain, visual acuity, proptosis, pupil response, pupil size):</p> <ul style="list-style-type: none"> - Standard Protocol - Different Protocol 	<p>All observations to be completed (Zero missed)</p>	<p>2.6</p> <p>40</p>

High compliance: > 90%

Moderate compliance: 75% -90%

Low compliance: < 75%

5. Discussion of Key Findings

Although retrobulbar haemorrhage is relatively uncommon, it does pose serious consequences if not detected early. Post operative orbital observations therefore need to be consistently undertaken for all patients.

The audit shows that the planned regime of post-operative observations are consistently recorded by MFS surgeons within the operation notes. This information is supported by a copy of the orbital observation chart being available within the health record.

Audit findings show that the standard observational protocol was requested for a quarter of the patients, where the average number of missed observations was relatively low. Overall, adherence to the requested protocols was lower than the standard (42%). The incidence of missed observations increased where a different observational regime was requested. This implies that where a different protocol is requested by the operating surgeon, these instructions are not well supported by the current version of the orbital observation chart.

6. Dissemination of the Audit Findings

- A copy of the report will be circulated to all members included within the report distribution list (**Clinical Quality Department**).
- The results will be presented at the Maxillofacial Department Clinical Audit/Governance meeting (**Dr. S. Toledano – by July 2011**)

7. Recommendations & Actions

Agree a standardised local Eye Observations protocol for patients undergoing procedures of the orbit, maxilla and zygomatic arch. The revised protocol will need to incorporate observations required within the Emergency Department and within the admitting ward (i.e. prior to surgical intervention).

Post operative observations should commence within the Theatre Recovery area and continue for the duration of the protocol period within the receiving ward.

Leads: Mr. Von Arx & Mr. Chan with MFS Surgeons

Timescale: Immediate

The Eye Observation Chart will be re-formatted to meet the requirements specified above.

Leads: Mr. Von Arx & Mr. Chan with MFS Surgeons

Timescale: To be completed by Autumn 2011

A supply of hard copy Observation Charts will be made available within the A&E Department, EAU, Theatre Recovery and all Surgical Wards. The chart will also be available for download from the Trust Intranet.

Mr. Chan, Miss Farrow, Matron Humphries & Clive Underwood

Timescales: To be completed by Autumn 2011

The updated protocol and Chart will be formally re-launched within the MFS Department, A&E, EAU, MFS Theatre & Recovery areas and Surgical Wards.

Leads: Mr. Chan, Mr. Von Arx & MFS Surgeons

Timescale: By Autumn 2011

References

1. Post-traumatic eye observations. Bater MC, Ramchandani PL, Brennan PA. Br J Oral Maxillofac Surg. 2005 Oct; 43(5): 410.

Appendix A

	Criterion	Standard	Exceptions
1.	MFS surgeon to document post operative instructions / observation schedule within the operation notes	100%	None
2.	A copy of the observation schedule (which includes instructions) is filed in the relevant part of the patient's health record	100%	None
3.	Type of observation protocol that was	NA	-

	<p>requested?</p> <ul style="list-style-type: none"> - Standard (as per schedule) - Different - Unclear 		
4.	The observation protocol requested by the MFS Surgeon should be followed.	100%	None
5.	<p>Average number of observations that were missed within each protocol requested:</p> <ul style="list-style-type: none"> - Standard - Different 	<p>All observations to be completed (Zero missed)</p>	None

East Midlands

Effectiveness of the division of ankyloglossia—a multicentre audit

P. Morton *, J. Gallagher, H. Cottom, G. Cousin, N. McCurley
Northampton General Hospital, United Kingdom

Introduction: Ankyloglossia presents with a shortened lingual frenulum. This restricts tongue movements, resulting in breastfeeding difficulties, with poor infant weight gain.

Guidelines by the National Institute for Clinical Excellence (NICE) advise the division of ankyloglossia in infants experiencing difficulties with breastfeeding and states that there are no major safety concerns. NICE acknowledges that the evidence for definite benefit is limited.

Aim: The pilot audit of the division of ankyloglossia in one centre last year, showed improvement in breastfeeding scores in 100% of cases treated (statistically significant). The aim of this audit is to enlist further UK centres to gather data for analysis forming the basis for a national audit, supporting the division of ankyloglossia as a safe, effective intervention.

Method: Infants were referred to the Maxillofacial Departments at Northampton General, Broomfield, Royal Blackburn, and Belfast City Hospitals between 2009 and 2012. The ankyloglossia was divided if the infant was experiencing feeding difficulties and if clearly evident on clinical examination. Breastfeeding was recorded on a scale of 0 (impossible) to 10 (no feeding problems).

Results: From 104 procedures, 100% of mothers at Northampton General and Broomfield reported improvements in breastfeeding scores following division of ankyloglossia. Results are being collated from the Royal Blackburn and Belfast City with ongoing statistical analysis.

Conclusion: This audit has demonstrated that the division of ankyloglossia in multiple UK centres has improved infant breastfeeding, with no adverse outcomes reported. This methodology could be used nationally to help strengthen the evidence base for the NICE guidelines.

EFFECTIVENESS OF REMOVAL OF WISDOM TEETH TO REDUCE INFECTION RATE IN MANDIBULAR ANGLE FRACTURES

Chai Sanapala, DF2 Trainee

Northampton General Hospital

The decision to leave or remove wisdom teeth when repairing angle fractures of the mandible has mainly been due to surgeon's preference. The main reasons for removing wisdom teeth are to remove any sources of infection and factors that could cause delays in healing. The reasons against removing wisdom teeth are to aid in reducing the fracture and also strengthening the fracture of the mandible initially.

A clinical audit was carried out to determine the effectiveness of removing wisdom teeth to reduce infection rates in mandibular angle fractures.

Method: Between 1/01/09 and 1/01/11, all patients with angle fractures of the mandible in-line with a wisdom tooth had their details recorded. Patients with postoperative infection between the time period had other factors investigated that could be a risk to infection.

Gold Standard: Overall 11% derived from the literature

Results: Overall 69 patients were recorded with a mean age of 26, 90% being men. Infection rate post-operatively was 7%. 94% had no complicating medical conditions, 80% were smokers and the waiting times for the operation was on average 11 hours. 75% of the patients with infection had their wisdom tooth removed.

Consideration: Infection on admission, complicating medical conditions, poor oral hygiene, smoking, waiting time till operation and type and duration of post-operative antibiotics.

Conclusion: The infection rate was comparable to published rates and the results show a high chance of operative infection when the patient is a smoker and have had their wisdom tooth removed. Although the results show a high correlation, a larger sample and further risk factors need to be assessed.

AN AUDIT OF JUNIOR DENTISTS YEAR 2 (DENTAL FOUNDATION DOCTORS IN ENGLAND-DF2S') CONFIDENCE WITH DEALING WITH ACUTE MEDICAL CONDITIONS – EXPERIENCE FROM NORTHAMPTON GENERAL HOSPITAL

Bartek Swiech, James Gallagher

Northampton General Hospital

The primary goals of this audit are to evaluate and improve DF2's ability to manage acute medical problems on the maxillofacial ward. DF2 doctors are often the first responders in emergencies on their wards. Their clinical acumen and knowledge has a significant effect on patient treatment.

This project analyses basic knowledge of emergency medicine of seven DF2 doctors, who completed Basic Life Support (BLS) and Dentist on the Ward (DW) courses and are currently working in Maxillofacial Surgery in Northampton General Hospital in England.

The audit uses a multiple choice test (twenty questions) which was completed by each DF2 doctor. The test included questions about ABCD approach, life support algorithms, diagnosing and treatment of; - myocardial infarction, pulmonary embolism, hyperkalaemia, hypoglycemia, anaphylaxis, sepsis and delirium.

Topics tested in this audit were covered in 70% during BLS and DW, and 30% of questions were based on Immediate Life Support (ILS) algorithms. DF2 doctors scored between 20% and 50% of correct answers in this test (average 35,7%).

The project revealed topics well known to DF2 doctors, including; - treatment of myocardial infarction, treatment of hypoglycemia and ABCD rules. The topics poorly known by DF2's included; - treatment of anaphylaxis and hyperkaeleemia, BLS algorithm and interpretation of ECGs.

The second part of this audit, including mandatory teaching sessions with practical exercises for DF2's covering subjects of BLS, DW and elements of ILS courses showed a significant improvement of knowledge and confidence of all doctors included in this project.

Retrospective and prospective study of factors influencing success and failure of skin grafts to the head and neck following excision of skin cancers. A single surgeon experience

L. McCarthy, P.J. Ameerally

Northampton General Hospital, United Kingdom

Introduction: There are multiple factors that influence the success and failure of skin grafts.

Aim: To analyse factors influencing the success and failure of skin grafts and improve future management of patients having this procedure.

Materials and method: One hundred and fifty six patient records from the database of one consultant were analysed retrospectively. Data collected included age, sex, location procedure was performed, general anaesthesia or local anaesthesia, site, size and type of tumour, past medical history, medications, full or partial thickness flap, graft donor site, dressing type and duration, suture material type and size at the graft and donor site, antibiotics usage and post-operative complications. Similar data is being collected prospectively.

Results: There was a 3:2 male to female ratio. The mean age was 78 years. 86% of the grafts were full thickness and 14% partial thickness. 86% of the procedures were performed under local anaesthetic. 62% of the tumours were basal cell carcinomas, 30% squamous cell carcinomas, 5% melanoma and 3% other tumours. 45% had no complications, i.e. both the donor and recipient site were healthy. Of the 55% with a complication, 12.5% of these complications were associated with the donor site, whilst the others were related to the recipient site. Bleeding (45%) of the graft recipient site was the most common complication reported, followed closely by infection (29%) of the recipient site. And partial necrosis (17%) of the recipient graft site. Graft loss (7%) and haematoma formation (2%) were rare complications.

KSS Regional OMFS Trauma Audit 2013 Abstract

Introduction: An audit on hard tissue facial trauma service provision within the KSS region. The aims were to determine delay from referral to treatment in cases requiring urgent treatment; to ascertain if the assessment of post-operative radiographs effects management; to examine the reasons behind delayed discharge.

Method: Prospective multi-centre audit between 18/02/13 to 17/03/13.

Results: Mean injury to theatre time was 22.68 hours, this was significantly longer if referral came from another A&E department ($P = 0.006$). Post-operative radiographs were taken in 84% of patients. 4% of cases returned to theatre. Radiographs were involved in the decision to return to theatre in 2% of cases but were never the sole reason for return to theatre. 47% of patients were deemed to have a delay in discharge, radiographs were responsible for this in 58%, TTO's in 29% and social reasons in 13%. When responsible, radiographs were associated with a 3 hour delay on average.

Discussion: The findings of this audit are in keeping with published evidence that routine radiographs do not change treatment plans on their own, contribute to delays in discharge and incur an increased cost. Medicolegal justification of radiographs is ethically questionable and is no better than clear contemporaneous documentation of post-operative clinical findings (e.g. occlusion). There may be a role for post-operative radiographs for training purposes especially in more junior trainees.

Oxford

Oxfordshire Regional Audit 2012

1) Dental Assessments for head and neck Oncology Patients

BAHNO Standards specify that 100% of H&N Cancer patients should have a dental assessment prior to commencement of treatment and also after treatment.

We carried out a retrospective audit looking at 40 consecutive attendances at MDT. (ENT & OMFS patients).

60% OMFS & 40% ENT. 37% of OMFS patients and 7% of ENT patients had an OPT available. No patients had a documented dental assessment prior to or after treatment.

Information taken to the MDT and the Cancer Network and also discussed as part of Peer Review. 2x Macmillan Therapists have been appointed in Oxford and personnel numbers are being increased across the network. Education has gone on throughout the MDT with a Dental Assessment proforma being drawn up for use. The audit will be re-done in early 2013 once the proforma has been implemented to assess change.

2) Compliance with NICE guidelines for VTE prophylaxis

NICE specify that all patients over the age of 18 who are admitted to hospital should be risk-assessed for VTE.

We carried out a retrospective audit looking at 50 patients admitted under OMFS.

42% of patients were compliant with the NICE guidelines for VTE assessment. However, 100% of patients had the correct prophylaxis prescribed..

Although the correct prophylaxis is being prescribed, the assessments are not being documented accurately. This is being audited at a Trust level as well as a departmental level. Teaching sessions

have been carried out with all groups of medical and nursing staff and reminder sessions carried out on a monthly basis at Clinical Governance meetings. To be re-audited December 2012.

3) Complications of Orthognathic Surgery in a Group of Craniofacial Patients

Ideally, patients should have the same complication rate regardless of whether they have craniofacial syndromes or otherwise.

28 patients having low level orthognathic surgery with recognised craniofacial syndromes were identified.

Return to theatre rates were higher (12.5%) compared with 0.2% in conventional patients. There was also a slight increase in bony non-union (occurring in 2 patients), compared with conventional patients.

These risks should be taken into account when operating on this group of patients and they should be consented appropriately.

Northern Ireland

CEC report for Northern Ireland 2011

Two regional audit meetings were held during the year. The first was at Altnagelvin Hospital in May and the second at the Ulster Hospital in November.

A number of worthy audits were conducted by both units. The sessions also included interesting CPC case discussions and Morbidity and Mortality discussion. The audits covered a range of OMFS topics and included

- AH**
- 1) National BJON update
 - 2) Adequacy of excision margins – non melanoma skin lesions
 - 3) Head & Neck Cancer outcomes
 - 4) Re-exposure of canine
 - 5) Thromboprophylaxis in OMFS
 - 6) Multicentre Radiology Audit – OPT's & Ceph's
- UHD**
- 1) Tongue-tie audit, patient satisfaction
 - 2) Post-operative pain and throat pack usage
 - 3) An audit of Operation notes

Ms M Tumelty presented an audit of excision margins in non-melanoma skin cancers. This was a retrospective audit using case-notes and pathology reports. The guidelines from the British Association of Dermatologists were used. Involved margins were at level of approximately 3% which fell well within national guidelines. Involved margins were discussed at the local MDT and wider local excision was the usual follow-up. Some debate centred on what constituted a close versus involved margins as the BAD guidelines referred to clinical margins.

Ms O Morgan presented an audit on VTE prophylaxis in OMFS. The audit showed poor compliance on the whole. This was timely study as a new VTE prescribing document was about to be introduced in the Province. The talk stimulated thought provoking debate on the matter. The consensus was that the VTE guidelines whilst welcome were not wholly in keeping with OMFS practice and were seen to be more useful for General Surgery and Orthopaedics. Indeed an instance of adherence to the guidelines which resulted in a take-back to theatre following an osteotomy was cited. Concerns were also raised about rigid adherence and bleeding during Head and Neck and parotid surgery. A re-audit was proposed.

Ms K Bready presented an audit on Operation notes based on College guidelines. The aims and objectives were to:

- 1) Ascertain how operation note taking in our unit conformed with the college guidelines.
- 2) Provide a benchmark from which future comparisons can be made.

The Royal College guidelines from 2008 were used. 100 sets of notes were reviewed using the RCS criteria. The note-keeping was found to be non-compliant on a number of fronts. In the discussion it was felt that some of the criteria as set in the guidelines may not be required in the operation notes as they are recorded elsewhere. It was decided a new departmental benchmark would be set and a follow-up audit.

NI Audits 2012 for BAOMS CEC

An audit of Kardex (Prescription cards) completion: Hegarty, Hanratty

- Audited 100 charts on the adult OMFS ward in a 4 week period using a proforma
- Factors looked at included patient details, black pen, DoB, weight, allergies
- Allergy status only recorded in 80%
- Weight recorded in 84% Dob only in 27%
- 100% in black pen
- SHO/DF2s underwent training and re-audited one month later
- Improvement in outcomes where overall correct completion went from 35% to 84%

Botox audit: Stenhouse & Hanratty

- * Prospective assessment of all patients receiving Botox injection into the muscles of mastication
- * Visual analogue pain score on day of injection and 6 weeks later
- * Patient perception questionnaire
- * 12 patients: 7 with masseteric hypertrophy, 7 masseteric spasm, 2 with both
- * Reviewed 6 weeks post-op
- * 10 improved, 2 unsure

An Audit of the Removal of Osteosynthesis Plates – Donaldson, Pierse, Swinson, Stenhouse, Smith

- A retrospective trawl of theatre logbooks and clinical notes over a one year period 2011
- 12 cases required plate removal, 15 plates in all. 3 were not placed in 2011
- During 2011 342 plates were placed in 118 patients
- Of the plates removed 11 plates were trauma related and three orthognathic
- All trauma plates removed were in the mandible
- 2 orthognathic plates were Mandibular and one maxillary
- Removal rates were 8% in trauma and 1.4% in orthognathic cases: 4.3% overall
- The rate of removal was within accepted norms

Audit of Ophthalmic Assessments of Orbital and Zygomatic patients pre-surgery: Hegarty, Pierse, Barry, Swinson, Smith and Stenhouse

75 patient case-notes of midfacial fractures including: Zygomatic Complex fractures, Orbital fractures and Le Fort fractures were assessed against a proforma

Signs recorded included visual acuity, diplopia, direction of diplopia, PEARLA and Hess charting pre-operatively

There was poor recording of acuity at 33%

Presence/absence of diplopia was recorded in 93%

PEARLA in 56% and V2 nerve assessment in 96%

100% with diplopia underwent a Hess assessment

Conclusion: Juniors were under-recording one of the most important signs in visual acuity. PEARL was under-recorded. To address these deficiencies a formal ophthalmology tutorial was introduced at induction and further ongoing training.

An audit of clinical note-taking on outpatient clinics within an OMFS department: Liyanage, Hanratty, Pierse, Stenhouse, Swinson, Smith

Notes from 4 outpatient clinics were assessed against a recognised standard.

(RCS guidelines, good clinical care)

Generally there was good compliance with recording patient identifier, presenting complaint and management plan at 100%.

Medical history, date and examination findings were recorded in over 90% of records.

There was poorer compliance with social history and diagnosis recording at 62% for SH and 58% for diagnosis.

Compliance was much higher on new patient episodes compared to reviews.

Training was undertaken and the audit repeated after 3 months.

Compliance improved significantly for recording of Social history and Diagnosis. The results overall but still did not attain 100% but were above 90%.

Discussion: providing a diagnosis may not be realistic at first presentation but even a differential diagnosis would be useful. Social history enquiries can feel awkward for juniors and relevant questions not asked.

D Pierse

Auditing Paediatric Maxillofacial Accident and Emergency Presentations

Aim & Objectives

The aim of the audit was to prospectively collect data from all oral maxillofacial surgery (OMFS) paediatric A+E presentations/referrals at Royal Manchester Children's Hospital (RMCH) accident and emergency. The data collected included information regarding the age, sex, referral source, diagnosis, management and follow-up plan of these patients. We also collected information on whether the patient was registered with a general dental practitioner.

Background

The Royal Manchester Children's Hospital is the largest single-site children's hospital in the UK. The hospital receives patients less than 16 years of age from numerous sources, including Trafford, Salford and Wigan. However, RMCH is the regions primary referral centre for the under 3 year olds.

The Accident and Emergency department sees around 36,000 new patients a year and is served by the on-call maxillofacial team based at Manchester Royal Infirmary.

A previous audit on the management of OMFS paediatric admissions at RMCH the maxillofacial team managed to see, treat and discharge two thirds of all OMFS paediatric admissions. One third however required admission.

Method

One data collection form was attached to the back of the daily handover for the on-call OMFS senior house officer.

Data was collected over a six month period (11th September 2011- 28th February 2012).

Results

The commonest age group presenting to A+E with an OMFS injury/complications was 1-3 years, this is consistent with previous findings, with an average age of 5.7 years of age

The three main reasons for paediatric patients presenting to the OMFS teams were soft tissue injury (47%), infection/ swelling (28%) and isolated dental trauma (12%).

The commonest OMFS soft tissue injuries presenting to the on-call OMFS team are facial lacerations (92%), of these 61% were categorised as simple lip lacerations.

Dental abscess (76%) is the most common infective reason for a paediatric OMFS patients to present to A+E.

Only a third (33%) of paediatric patients attending A+E with dental infections were registered with a general dental practitioner

Two-thirds (66%) of OMFS paediatric presentations required formal hospital admission, the remaining third (34%) could be seen, treated and discharged from A+E.

58% of those patients requiring hospital admission required a general anaesthetic and operation, 28% required an operation and antibiotics and 14% required admission for iv antibiotics.

Conclusions

A quarter of Paediatric A+E presentations were simple lip lacerations. The commonest (68%) group to sustain simple lip lacerations is the 1-3 year olds. Cases such as these were managed in a number of ways depending on experience levels in the team and A+E staffing. 63% of the lip lacerations were admitted, taken to theatre and treated under general anaesthetic. 6% were sedated using ketamine in A+E and sutured under la and discharged the same day. 19% were sutured under la and discharged the same day.

The commonest paediatric injury presenting to the OMFS team is soft tissue trauma, usually lip lacerations.

43% of paediatric OMFS referrals are lacerations, of these 58% of lacerations required formal admission and a surgical procedure under general anaesthetic

Therefore; if it were possible to manage these patients more effectively in A+E the OMFS team at RMCH could improve the efficacy of the service.

In select cases these patients can be managed with ketamine and local anaesthetic safely and quickly

- No GA required or formal hospital admission
- Home same day
- Only suitable for select cases

With only 43% of patients sustaining a dental trauma being registered with a GDP, that leaves 57% without a dentist for follow up. Of these patients not registered with a dentist 50% were referred to paediatric department UDH, 50% were not followed up. This is not adequate patient management of dental trauma and thus there is a need to put a formal link in place between the OMFS on-call team & the paediatric dental team at Manchester Dental Hospital.

To ensure all dental trauma and infection patients, not registered with a GDP, are correctly followed up a referral form has been introduced for the on-call team.

Reasons and Benefits of Cone Beam CT scans Royal Blackburn Hospital Oral and Maxillofacial department. S. Farmah

Aim

To find out if the maxillofacial team at Royal Blackburn hospital are utilising the available use of the CBCT scanner at Manchester Dental hospital appropriately and for justified indications.

Standards

Standards were measured against a set of evidence based guidelines called: Radiation Protection: Cone Beam CT for Dental and Maxillofacial radiology. These guidelines were set out by SEDENTEXCT who are a European collaborative project lead by Prof Keith Horner in 2011.

Method

Retrospectively 56 CBCT patient referrals were gathered from Blackburn, Bolton and Burnley Maxillofacial departments between 2010 and 2012.

Results

All referrals were found to be appropriate based on the "Basic Guidelines" set out in the guidelines. Referrals were made for assessment of periapical disease, bony pathosis, exodontia, implant dentistry, localised applications for developing dentition and periodontal assessment. 77% of the referrals were for diagnostic reasons initially which could then used for surgical guides e.g. placing of dental implants.

50% of cases were referred for the detection of periapical disease and/or bony pathosis. All these cases satisfied the indications stated in the guidelines where a CBCT may be indicated for periapical assessment when conventional radiographs give a negative finding and when there are contradictory positive clinical signs and symptoms.

It was also found that CBCT scans have helped to stop operative interventions that would normally have been indicated. In 6 cases relating to maxillary teeth with suspected periapical pathology, no such pathology was found and was subsequently referred to ENT colleagues for further assessment. In 5 cases a neuralgia type diagnosis were made where otherwise the clinician and often the patient would have felt the source of pain come from a suspected tooth.

In some cases using CBCT the precise relationship to the mandibular canal subsequently helped the clinician and patient on the risks of surgery.

Conclusions

Overall the cases selected and analysed show that additional information gained from CBCT was beneficial in determining treatment plans and making diagnoses in what were complex cases. In all cases that required operative intervention the CBCT was able to offer the surgeon additional information that was not always available on conventional 2D radiography and thus minimise risks of any iatrogenic damage during the procedure. Patients were also better informed about specific risks when deciding treatment options in particular third molar removal.

A handout was distributed to all clinicians within the departments detailing lists of the basic principles for referring patients for CBCT and also details specific referral criteria for specific categories used by the maxillofacial team.

North West Thames

OMFS Department, North West London Hospitals NHS Trust

Summary of Audits 2011-12

1. An Audit of the Dental Assessment pathways for head and neck patients in the NWLH Trust.

An audit to ensure all those referred for dental assessments prior to treatment for head and neck cancer, involving chemotherapy and/or radiotherapy, were seen appropriately. A proforma was designed to find out the following pieces of information:

When the patient was referred, the method of referral, date they went for a dental assessment, date they had any dental treatment completed.

Any delay in provision of RT/Chemo and any complications following treatment.

The data highlighted a problem of some referrals not being processed correctly, and hence some patients not being seen for a DA at all. This was mainly an admin. issue which was relayed to NWP admin staff. Another change that has been implemented is staff grade doctors now attending MDT meetings, so patients can have a DA on the same day. This change has yet to be re-audited.

2. Success rates and reasons for fibula free flaps for mandibular reconstructions

Method: was collecting data retrospectively on 50 patients who had fibula free flaps. We have high success rates (96% success rate) compared with other OMFS departments and we continue to use as our preferred method of mandibular bony reconstruction.

3. An audit to evaluate whether blood glucose (and C-RP) is recorded in A+E for patients admitted with OMFS infections

We took all patients seen August to October 2011 (over 3 months) with odontogenic and skin infections, and looking at the admission notes, determined whether a blood glucose, and CRP, was recorded. Only 24% had BM checked.

A primary intervention involving a teaching session with all clinical fellows and SHOs was held to record the CRPs and BMs in the notes for all patients with swellings, and registrars reminded. The audit was repeated (3 months) and showed only a small improvement, 37% of patients had BM recorded. A second information session involving all team members in OMFS and A&E, discussion at Clin Gov, posters and emails to 'repeat offenders' was carried out. A further 3 month audit showed 100% compliance amongst SHOs but CFs only 87%. An improvement, but further audit is being conducted.

4. An audit of orthognathic surgery and outcomes as performed by C M from 2007-2012

Data collection: collected from hospital notes/orthodontic notes/BOS satisfaction questionnaire/orthognathic proforma, and inputted into data capture spreadsheet on excel.

Conc: results compared to the regional standards show C M's work agrees with, and is often better than, the standards seen elsewhere. Infection rates and length of stay seem to be a bit higher, but this is due to the way of recording the data rather than actual higher rates.

5. Quality of operative records audit

A quick retrospective audit looking at the quality of 30 sets of operative notes of various procedures carried out between September-October 2011 in OMFS at Northwick Park, based on RCS Good Surgical Practice guidelines. Outcome: clinicians were largely compliant with the guidelines and we keep accurate, high quality records. One negative was varying legibility of certain notes.

6. Audit of assessment of impacted canine teeth

A retrospective audit looking at the clinical and radiographic assessment of procedures involving impacted upper canine teeth in 3 OMFS departments (Hillingdon, Northwick Park and Watford General) over a 3 month period December 2011- February 2012. Data was collected and input into an excel spreadsheet. Outcome: on average only 53% cases audited had the correct radiographs taken and also had the position of the tooth recorded in the initial assessment records.

7. Audit looking at mandibular SCC margins

A retrospective audit looking at clearance of mandibular SCCs (only cases reconstructed with fibula free flap). 16 cases audited. Outcome: In all 16 cases, margin clearance was achieved.

8. The efficacy of the two-week suspected cancer referral pathway to the OMFS department

Objective: to assess the appropriateness of the two week pathway. Method: retrospective study over 6 months carried out between April and October 2011. 252 patient notes audited, data collected included appropriateness of referral, risk factors, investigations and diagnosis. Outcome: 8% urgent referrals were diagnosed as malignancy/dysphasia. 63% inappropriately referred when compared to NICE guidelines.

9. Is level 2 care necessary for patients in the immediate post-operative period after elective orthognathic surgery?

A retrospective review of all elective single- and double-jaw orthognathic procedures undertaken at our regional OMFS unit over the previous 3-years.

Procedure, location and duration of hospital stay, complications, transfusion requirements, use of peri-operative antibiotics and steroids, use of elastics and wafers for IMF post-operatively were assessed. These results were compared against those in the recent literature.

Outcome: Level 2 care is unnecessary for patients in the immediate post-operative period after elective orthognathic surgery. The audit data supports the recent change in protocol that all orthognathic patients can have a bed booked on a specialist H&N ward, prior to admission, where close airway management can be monitored by trained health care professionals.

10. Extraction of First Permanent Molars in Children

The aim of the audit was to see if referrals for extractions of first permanent molars (FPM) are meeting the RCS guidelines for of extractions FPM in children. This was a prospective audit carried out over 4 months, the data was recorded at the time of the consultation by V C consultant orthodontist and P W a staff grade based at HH.

Outcome:

Results showed RCS guidelines are not being followed.

Clinicians with in secondary care also need to consider guidelines when assessing these cases in clinic especially to avoid unnecessary and repeated GA procedures.

Possible consideration of the care pathway

This was baseline data and it was a pilot audit, it could be possibly extended to all sites, to determine whether a pattern, is being established. Depending on the results it could highlight the possible need for further guidelines or promotion of existing guidelines.

West Midlands



An Audit and Re-audit into Consultant-led Surgical Tracheostomies Referred from ICU

Department of Oral & Maxillofacial Surgery,
University Hospital Birmingham

Adil Aslam, Bernard Speculand, Matthew Idle



Aims & Introduction

Intensive Care Units (ICU) often view medical patients off endotracheal intubation by means of a tracheostomy. This can be done percutaneously in ICU or in theatre surgically.

Surgical tracheostomies require great care, co-ordination and good communication between operating surgeons & anaesthetic colleagues in managing the patient's airway.

Complication can occur quite rapidly regardless of the patient's prior health or comorbidities (e.g. loss of airway; desaturation). It is therefore important that senior and experienced surgeons are present in theatre should such complications arise.

This audit is to assess the seniority of surgeons performing surgical tracheostomies, the time taken to complete the procedure and complications that arise during it.

Best Practice

National guidelines for best practice in Surgical Tracheostomy do not exist. The **Intensive Care Society** have guidelines regarding Percutaneous Tracheostomy but not Surgical Tracheostomy but do concede:

"It is inevitable that such expertise can only be acquired with experience, but this principle should never be considered an excuse for exposing patients to potential harm from the relative novice."

From Feb 2013 to September 2013 **National Confidential Enquiry into Patient Outcome and Death - NCEPOD** (as part of a wider evaluation of tracheostomy care in the UK) will be sending questionnaires nationwide to a sample of surgeons performing surgical tracheostomies. The results collected over this seven month period may well become the basis for national guidelines for surgical tracheostomy.

Up until that point the decision on supervision is very much with the consultant surgeons on a departmental level. The maxillofacial team (OMFS) at University Hospital Birmingham (UHB) decided **gold standard management as having a consultant operating or at least present in theatre during all ICU referred tracheostomies.**

Method

Surgical tracheostomies were carried out in the emergency theatres of Queen Elizabeth Hospital, Birmingham.

Theatre logbooks were used to collect patient information, surgeon seniority and length of operation. The information was counterchecked using the hospital computer system (Clinical Portal) where operative notes can be also be accessed.

Information was collected from June 2010 for 12 months and presented to the Maxillofacial department. Recommendations were made and the process was re-audited over 2011-12.

Results

	OMFS	ENT	TOTAL
2011-2012	79	25	104
2010-2011	29	16	45
TOTAL	108	41	149

Table 1: Total Number of Surgical Tracheostomies performed in UHB over Audit period

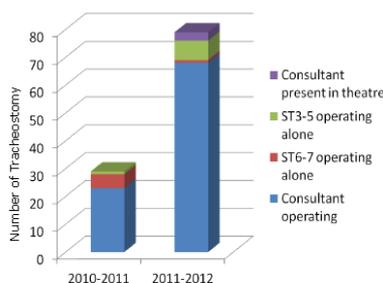


Figure 1: Seniority of Maxillofacial surgeons performing Surgical Tracheostomies over Audit period. (ST—Surgical Trainees)

	ST alone	Overall
2011-2012	87.3 min	70.8 min
2010-2011	68.3 min	56.6 min

Table 2: Differences in average Operating Times between Maxillofacial Surgical trainees operating alone with overall average Operating times

Discussion

In the first year 79% of maxillofacial consultants scrubbed in for surgical tracheostomies. At the re-audit phase this increased to 86%, which, if consultant presence in theatre (un-scrubbed) is taken into account increased to 90%. In 2010-2011, if surgical trainees were left to operate unsupervised, they were usually in their senior training years. At the re-audit this trend reversed.

One patient had to be taken back to theatre due to bleeding during the re-audit phase. A consultant surgeon was present at both operations.

Overall consultant-led surgery shortened the time taken to complete the procedure. However these results must be interpreted cautiously. In the 2010-2011 period 28% of the tracheostomy entries in the theatre logbook were incomplete or missing. This improved to 15% following re-auditing but is still far from ideal.

Conclusion

There was a 231% increase in surgical tracheostomies performed over 2011-12 with OMFS performing 76% of them (64% in 2010-11). The most likely reason for this is a reduction in percutaneous tracheostomies.

With an increased demand for surgical tracheostomies a 90% consultant presence appears acceptable, although there should be efforts to avoid junior surgical trainees operating unsupervised.

Recommendations

The audit has highlighted the need for improving theatre book record keeping. This will be fed back to theatre staff.

Consultants should remain vigilant in avoiding junior surgical trainees operating unsupervised.

Limitations

No record of anaesthetist seniority was kept during these audits which should be considered in future audits.

References

Standards for the care of adult patients with a temporary tracheostomy. Standards and Guidelines. Intensive Care Society. 2008

National Confidential Enquiry of Patient Outcomes and Death. Adult tracheostomy. Patterns and problems with tracheostomy in UK hospitalised adults. Protocol November 2012.

Scotland

An Audit of Antibiotic Prescribing in Oral Surgery and Dental A&E

Charlotte Payne SHO Dundee Dental Hospital

> Why chosen:

- Re-audit based on 3 previous audits done in DDH.
- Recommendations from last audit included:
 1. Stating reason for prescription in pt notes
 2. Diagnosis in pt notes
 3. Recording pts temperature
 4. Severity of infection should be recorded
 5. A copy of SDCEP should be with the prescription pads
 6. Resist the pressure to prescribe from patients and educate them on the miss-use of antibiotics

> Aim:

1. Analyse the prescribing patterns to measure compliance with the current Scottish Dental Clinical Effectiveness Programme (SDCEP) guidelines
2. Compare how antibiotic prescribing patterns have changed since the three previous audits: are we getting better at prescribing?

> Objectives:

1. Improve antibiotic prescribing patterns to avoid unnecessary or incorrect antibiotic prescription
2. To ensure patients receive appropriate and effective antimicrobial therapy when antibiotics are deemed necessary
3. To make sure the diagnosis and justification for prescription are written clearly in the patients notes as well as details of the drug, dose and duration.

> Method:

- Collected 97 prescriptions written in April, May and June 2012 in oral surgery and A&E.

- From the carbon copy of the prescription recorded:

Patient details

Drug

Dose

Duration

Accuracy of prescription writing

- Corresponding dental notes checked for indications of antibiotic treatment
- Results compared with 2007, 2008 and 2011 audits

> Data Collection

Indications

1. Abscess – unable to establish drainage
2. Abscess – with systemic involvement
3. Cellulitis
4. ANUG
5. Pericoronitis
6. Other
7. None given

Was the indication acceptable?

What was the drug prescribed?

- Was this acceptable?
- As per standard?

What was the dose?

- Was it correct?
- As per standard?

Was the prescription written out as per BNF?

> Results

Total of 66 prescriptions and corresponding notes analysed

Total sample of 96 prescriptions written in the period

What was prescribed?

A range of different drugs, doses and durations:

1. Ibruprofen

400mg QDS 5 days (4)

600mg QDS 5 days (3)

2. Paracetamol

500mg 2 tablets QDS 5 days (5)

Chlorhexidine MW

0.2% 300ml (9)

Metronidazole

200mg TDS 3 days (1)

200mg TDS 5 days (11)

200mg TDS 7 days (1)

400mg TSD 7 days (3)

400mg TDS 30days (1)

Amoxicillin

500mg TDS 7 days (1)

500mg TDS 5 days (4)

250mg TDS 5 days (20)

500mg TDS 30 days (1)

Erythromycin

250mg QDS 5 days (1)

Sodium fluoride mouthwash

0.05% 250ml (1)

Benzydamine mouthwash

0.15% 300ml QDS 7 days_ (3)

CHX gel

0.2% 2xday 7 days (1)

Duraphat toothpaste

2800ppm (1)

Miconazole oromucous gel

24mg/ml 80g tube (2)

Cocodamol

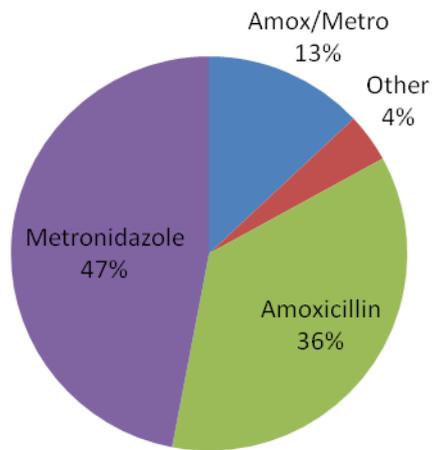
35/500mg 4-6 (2)

Doxycyline

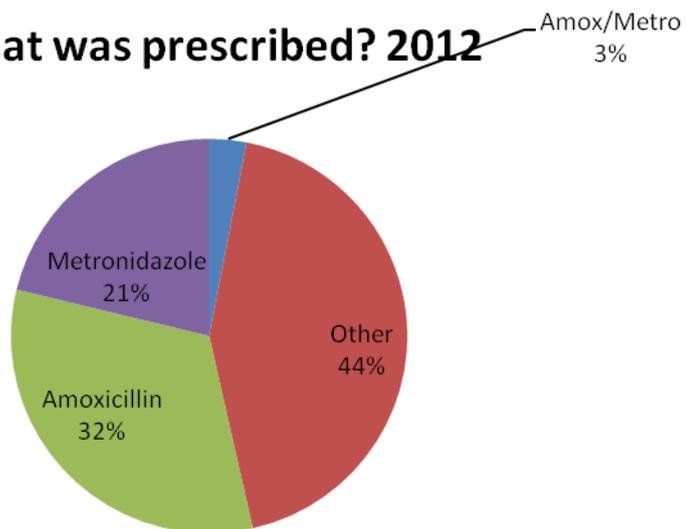
100mg 1 x day 5 days (1)

Not stated (6)

What was prescribed? 2011

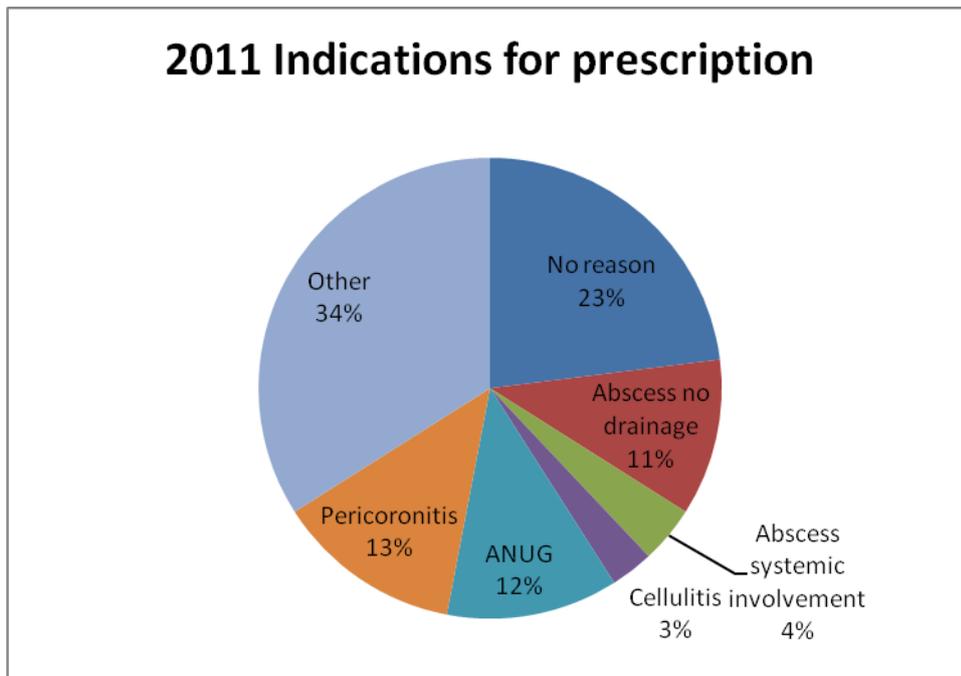


What was prescribed? 2012

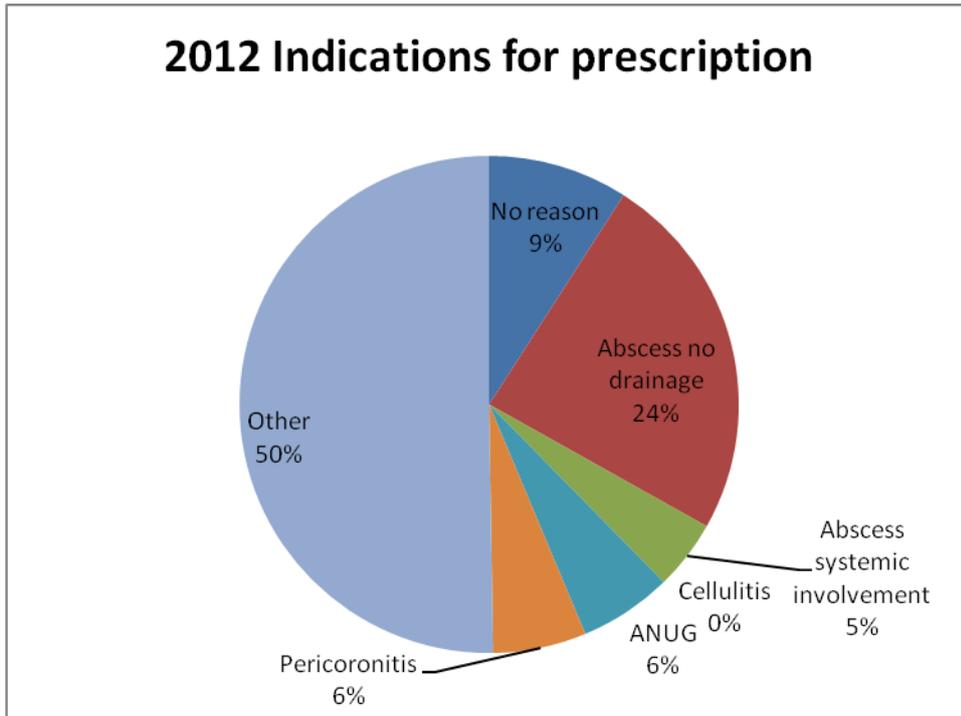


Indications

Indication	2012 (%)	2011 (%)	2008(%)	2007(%)
Abscess - no drainage	24	11	12	14
Abscess systemic involvement	5	4	5	0
Cellulitis	0	3	2	6
ANUG	6	12	3	16
Pericoronitis	6	13	13	20
Other	50	35	28	28
None given	9	23	-	16



2012 Indications for prescription



- Other (50%) – indications for prescription:

1. Pain – 8
2. Possible sinusitis/OAC – 1
3. MOS post op prophylaxis – 5
4. Candidal infection – 2
5. Gingivitis - 2
6. BRONJ - 2
7. Alveolar osteitis – 2
8. Lichen planus – 1
9. High caries rate – 1
10. Pt refused treatment – 5
11. Ulcer – 1
12. Failed LA – 3

- Out of the 66 prescriptions:

51 (77%) were considered appropriate and justifiable according to SDCEP guidelines/correct and valid justification written in the notes for the prescription given.

15 (23%) were considered not appropriate. This was due to:

1. Lack of adequate justification 8
2. Incorrect drug/dose/duration 5
3. Justification not according to SDCEP guidelines 4

2011 audit – 50% of prescriptions met SDCEP guidelines.

2012 audit – 77% of prescriptions met SDCEP guidelines.

9% of prescriptions had no indication in the notes.

Accuracy of prescription

	2012 (%)	2011(%)	2008(%)	2007(%)
Missing CHI no.	18	15	11	21
Missing tabs/volumes	7	44	11	36
Missing alcohol warning	12	50	5	-
Missing date	4	2	1	-
Missing address	13	1	-	-

➤ General observations on A&E and Oral Surgery:

- Copies of SDCEP guidance is easily available in A&E and oral surgery
- Noted that staff are tending to provide local measures and review patients, rather than prescribe straight away
- Staff are advising more junior members and students to use the SDCEP booklet

➤ Discussion

Key area to improve in 2011 audit – indication/justification for prescription written in notes.

Other – 50% reasons:

- MOS prescriptions, at clinicians discretion as no SDCEP guidelines.
- 5 patients refused treatment. Some on grounds of anxiety, others no reason. How do we educate these patients about antibiotics? Do some feel it is an alternative to treatment? Would an information leaflet be of benefit?

*23% of our prescriptions did not meet the SDCEP guidelines. Where do we need to improve?

1. The drug, dose and duration must meet SDCEP guidance and be written in the notes
2. Justification must be clearly written in the notes, and this must meet SDCEP guidance, if it does not a reason must be stated. This includes any relevant information for this prescription eg. Pt medical history, recorded temperature – any other reasons why this drug was prescribed.

9% of prescriptions had no indication in the notes.

- Wrong date on carbon copy of prescription?
- Some were illegible
- Some had drug and no reason stated for prescription

Some examples of prescriptions considered inappropriate:

1. Amoxicillin 250mg TDS 5 days prescribed for periapical abscess – no mention of attempted drainage

If drainage is attempted this must be recorded in the notes. SDCEP guidelines say local measures and drainage are the first course of action before prescription of antibiotic.

2. Periapical abscess that was drained but then metronidazole 200mg TDS 5 days was prescribed

If drainage is achieved then review is more appropriate before prescription of antibiotic. If there was another reason for the prescription this was not clear in the notes.

3. Pt refusing treatment and Amoxicillin 250mg TDS 5 days given

Are we being pressured to give antibiotics? Do pts think it is an alternative to dental treatment. Possible patient information leaflet on antibiotics and indications?

4. ANUG 200mg metronidazole TDS 3 days – no local measures in notes

5. Pericoronitis – amoxicillin 500mg TDS 7 days, no mention of local measures

Local measures before prescription as SDCEP guidelines.

Durations varied:

Metronidazole

200mg TDS 3 days (1)

200mg TDS 5 days (11)

200mg TDS 7 days (1)

400mg TSD 7 days (3)

400mg TDS 30days (1)

Amoxicillin

500mg TDS 7 days (1)

500mg TDS 5 days (4)

250mg TDS 5 days (20)

500mg TDS 30 days (1)

SDCEP guidelines should be followed.

- Are we getting better at prescribing?

Antibiotic prescription has fallen –

2011 - 96% of everything prescribed in the sample

2012 – 56% of everything prescribed in the sample

Our increase in “other” prescriptions is positive. A lot of prescriptions were for pain relief or mouthwashes.

The fall in antibiotic prescription is a good outcome for this audit. It shows that we are thinking twice before prescribing. Out of the 45 prescriptions for antibiotics prescribed 32 (71%) were accurate/appropriate. The other prescriptions had poor justifications eg. No mention of trying to

drain or had inaccurate doses or durations. 5 of the prescriptions were for patients refusal of treatment.

The indications for prescribing have improved since 2011. “No reason” for prescription has reduced from 23% to 9%. This is not perfect but an improvement. Prescriptions for diagnoses such as pericoronitis and ANUG have reduced – are we using more local measures than last year?

The 2011 audit recommended collecting 150 prescriptions, so you come out with a sample of around 100 to analyse. The previous audit found 101 matching notes but the true sample size was 124. In this 2012 audit the sample size was 66 and true sample size 97. This reduced sample size is a result of missing CHI numbers on the carbon copies of the prescription, poor printing and illegible writing. This is perhaps more significant in the 2012 audit because it has reduced the sample size to only 66. It may be sensible to use a patient sticker for both the prescription and the carbon copy to ensure the CHI number is available. Also checking the information has printed through and is legible. However, overall – there appears to be less prescriptions this year within the same time period.

➤ Recommendations

1. Justify your antibiotic prescribing and write this clearly in the notes, including any other factors that mean your prescription is justified eg. Record patient temperature/severity of infection.
2. Write your prescription according to the SDCEP booklet – correct dose, duration and correct drug
3. Use patient stickers for your prescription and also the carbon copy with both the CHI number and address
4. Make sure the date is correct on the prescription
5. Ensure you record the alcohol warning in the notes and on the prescription
6. Educate your patient on the use of antibiotics – possible leaflet?

An Audit of Cross Infection Control in Relation to Sharps Trays and Boxes on a Maxillofacial/ENT ward.

S. D. O'Connor^a, M. T. M. McErlain^a, M. Dhillon^b and V. Sood.^c

^aSHO, ^bSTR, ^cConsultant Oral and Maxillofacial Surgery, Monklands Hospital, Lanarkshire.

Introduction

Healthcare Associated Infection (HAI) is a subject which has garnered much media attention and has become more prevalent in the public consciousness. In acute hospitals in Scotland it has been estimated that 9.5% of patients will contract a HAI subsequent to admission¹. The cost of HAI in Scotland has been equated to £183 million per year¹ and £1 billion per year in the UK as a whole^{2,3}. It has been estimated that at least 20% of HAI's are preventable⁴ by the use of universal cross infection control procedures.

Portable clinical trays and sharps boxes in the Maxillofacial surgery and ENT ward of Monklands Hospital, Airdrie, are used daily by the healthcare team for venepuncture procedures. These trays are used by all members of the healthcare team who consist in the main of ENT and Maxillofacial surgeons of all grades, ward nurses, phlebotomists and visiting doctors from other specialties.

This audit is based on observations, made by the authors, of failures in infection control procedures within the ward. It was noted that a seemingly large proportion of portable clinical trays and sharps boxes were not being emptied of used instrumentation or decontaminated following their use. In some cases with visible contaminants, such as blood, remaining on the trays **{Picture 1}**. Such contamination can contain significant concentrations of pathogenic micro-organisms⁵. It was also noted that sharps boxes which accompany these portable clinical trays were frequently overfilled.

These observations represented a failing of the healthcare team in decontamination and infection control in relation to portable clinical trays and sharps boxes.



Picture 1. Blood soiled sharps tray and sharps box

Aims

- To identify the frequency of clinical tray decontamination after use.
- To identify within the bounds of anonymity any group of healthcare worker within the ward team who are deficient in relation to the above standards.
- To assess the proportion of filled sharps boxes which are sealed at the appropriate time.

Audit Standards

- 100% of portable clinical trays should be emptied of instrumentation following use.
- 100% of portable clinical trays should be decontaminated after use. (By means of an antimicrobial wipe or by washing using an antimicrobial agent in the sink provided for this purpose).
- Antimicrobial wipes should be available within the ward preparation room at all times.
- 100% of sharps boxes should be sealed and disposed of before becoming overfilled beyond the indicated safe level.

Method

This audit consisted of two prospective cycles. Both cycles took the form of observational studies using a proforma for data collection (Appendix 1). The second cycle of this audit was carried out, after dissemination of the results of this first cycle and implemented changes (detailed in discussion section).

Each audit cycle consisted of a study of 50 occasions when a healthcare professional was observed to use a portable clinical sharps tray. On each occasion, the sharps tray and box were observed at the time of its replacement and the decontamination and disposal of equipment recorded. The specialty and grade of healthcare professional in question was also recorded, as was the availability of disinfectant wipes in the clinical area and the condition of the sharps box.

Data for the first cycle were collected over a five week period. Data was collected at all times of the day and night. Healthcare professionals under observation were not made aware that they were being observed so as not to influence the results.

Results

Cycle 1:

In the first audit cycle clinical trays were used most frequently by SHO grades (64% {n=32}), followed by nursing staff (32% {n=16}) and StR grades (4% {n=2}). 'Other' grades (10% {n=5}) that used the trays included a GP in training, clinical support workers and phlebotomists.

The proportion of clinical trays being emptied of soiled equipment and decontaminated is illustrated in **{Fig. 1}**. 36% {n=18} of clinical trays were found to have been emptied appropriately and decontaminated with an antimicrobial wipe after use. 30% {n=15} of trays were emptied but not decontaminated. 34% {n=17} were neither emptied nor decontaminated.

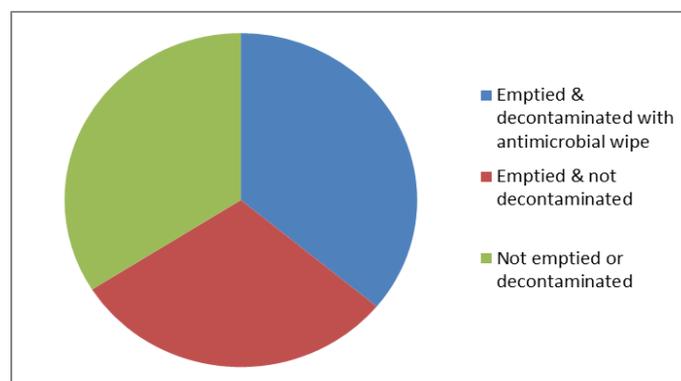


Figure 1. Tray decontamination outcomes, cycle 1

The variation in decontamination of clinical trays between grade of operator is illustrated in **{Fig. 2}**. Nursing staff performed correct decontamination procedure most frequently with 64% {n=7} of trays used by nurses decontaminated correctly. Only 34% {n=11} of SHO grades decontaminated trays

correctly after use. No StR grades or grades from the 'Other' category (as listed above) were found to have decontaminated their trays after use.

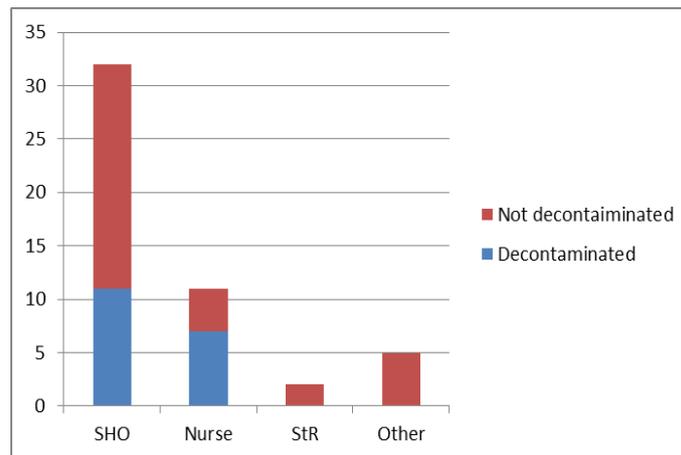


Figure 2. Decontamination by grade, cycle 1

The variation in decontamination of clinical trays between specialties of operator is illustrated in **{Fig. 3}**. SHO's in OMFS were found to have decontaminated clinical trays following use 78.6% {n=11} of the time. No decontamination of the clinical trays following use was noted in the ENT SHO group.

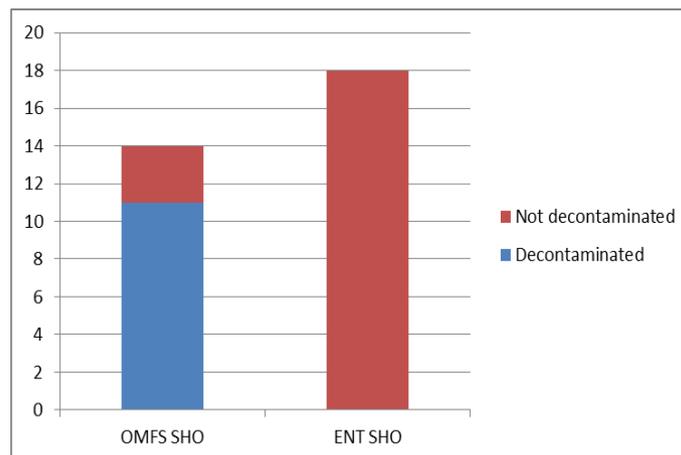


Figure 3. Decontamination by specialty, cycle 1

Antimicrobial wipes were found to be unavailable in clinical preparation area on 12% {n=6} of occasions that clinical tray use was observed. On 22% {n=11} of occasions when clinical tray use was observed, the accompanying sharps boxes were found to be overfilled beyond the safe volume.

Cycle 2:

In the second audit cycle clinical trays were again used most frequently by SHO grades (92% {n=46}), followed by StR grades (4% {n=2}), nursing staff (2% {n=1}) and consultant staff (2% {n=1}).

The proportion of clinical trays being emptied of soiled equipment and decontaminated is illustrated in **{Fig. 4}**. 80% {n=40} of clinical trays were found to have been emptied and decontaminated with an antimicrobial wipe after use. 12% {n=6} of trays were emptied but not decontaminated, 6% {n=3} of trays were emptied and decontaminated by washing. 2% {n=1} were neither emptied nor decontaminated.

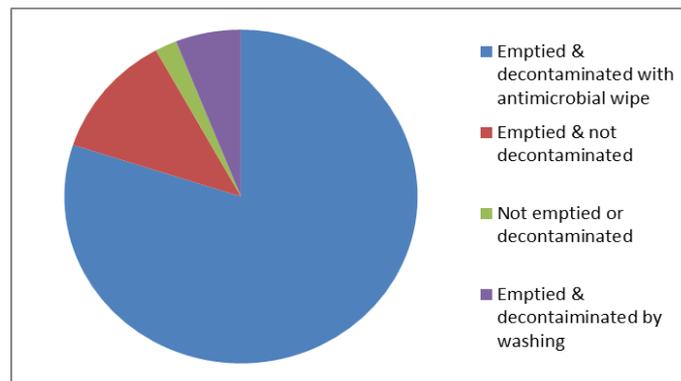


Figure 4. Tray decontamination outcomes, cycle 2

The variation in decontamination of clinical trays between grade of operator is illustrated in **{Fig. 5}**. In this cycle the only grades observed not to have decontaminated trays were SHO's. Of the trays used by SHO's 85% {n=39} were decontaminated appropriately after use with 15% {n=7} not subjected to a decontamination procedure.

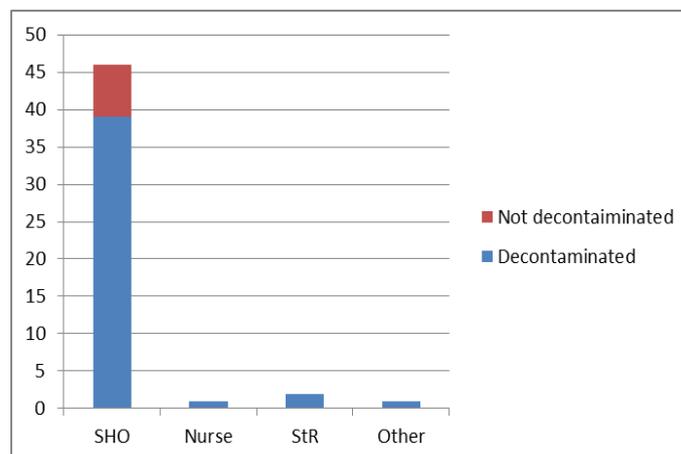


Figure 5. Decontamination by grade, cycle 2

The variation in decontamination of clinical trays between specialties of operator is illustrated in **{Fig. 6}**. SHO's in OMFS were found to have decontaminated clinical trays following use on 96% {n= 26} of occasions. SHO's in ENT were found to have decontaminated clinical trays following use on 76% {n= 13} of occasions. In this cycle it was noted that no visiting medical SHO grades decontaminated trays after use.

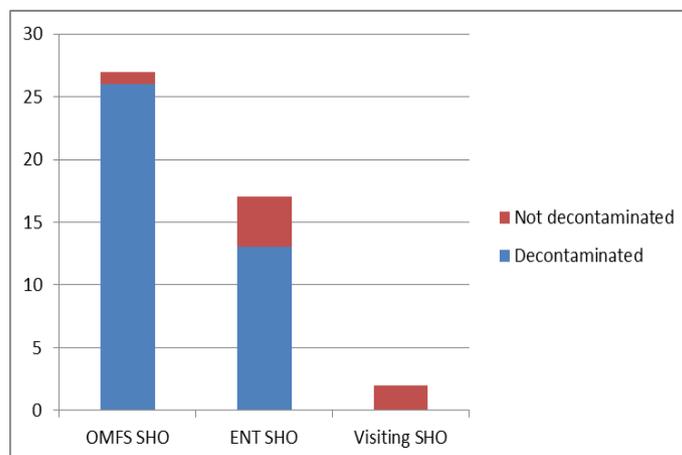


Figure 6. Decontamination by specialty, cycle 2

Antimicrobial wipes were found to be unavailable in clinical preparation area on 4% {n=2} of occasions that clinical tray use was observed. On 8% {n=4} of occasions when clinical tray use was observed, the accompanying sharps boxes were found to be overfilled beyond the safe volume.

Discussion

It is well documented that organisms such as MRSA and Vancomycin-resistant Enterococcus can transfer from environmental sites to patients⁶. Equipment used during venepuncture has been shown to potentially act as a reservoir to such pathogenic bacteria⁷. Equipment such as portable clinical sharps trays which can come into contact with transmissible organisms as a result of their use can be classified as medium or intermediate risk with inadequate decontamination⁸ **{Fig. 5}**. This makes the cleaning/decontamination of reusable equipment following use and subsequent contamination of paramount importance.

Risk	Application of item	Recommendation
High	Equipment that: - enters a sterile body cavity - penetrates the skin - touches a break in the skin or mucous membrane	Sterilization
Intermediate	Equipment that touches intact skin or mucous membrane	Sterilization or disinfection
Low	Equipment that does not touch broken skin or mucous membranes, or is not in contact with the patient	Cleaning

Figure 5. Decontamination according to associated risks.

Adapted from; Medicines and Healthcare products regulatory Agency, Microbiology Advisory Committee (the MAC manual) 3rd edition, part 1, 2010

The results for the first cycle of this audit showed that the audit standards set were not met. Only 36% of clinical trays were correctly decontaminated following use. In addition, 22% of sharps boxes were observed to be overfilled beyond the safe level. Antimicrobial wipes were unavailable in the clinical preparation area on 12% of occasions.

No group observed during the first cycle of this audit demonstrated absolute compliance with appropriate decontamination procedure. Nursing staff were found to decontaminate clinical trays most frequently with 64% of trays used by nurses decontaminated correctly following use. The results showed junior members of the healthcare team (SHO's) had deficiencies in their level of decontamination and infection control, with only 34% of trays used by SHO's decontaminated correctly. This finding is in line with similar studies on cross-infection control carried out at a national level⁹.

The first cycle showed significant differences in cross infection and decontamination between specialties. 78.6% of clinical trays used by dentally qualified OMFS SHO's were observed to be decontaminated after use, whereas no decontamination of trays used by medically qualified ENT SHO grades was observed. These differences could be attributed to many possible variables not least that these groups have had different training backgrounds.

Based on the failure to meet the set standards during this first audit cycle a number of recommendations were made and carried out. These recommendations included;

- Dissemination of the results of this audit to all staff to raise awareness of deficiencies in our practice.

- Education of staff to reinforce awareness of the risks associated with poor cross-infection control and sharps injury.
- Creating a local decontamination protocol in relation to clinical trays and sharps boxes.
- Posters designed and put in place in the ward bloods room demonstrating this local decontamination protocol.

Following the implementation of these recommendations the second audit cycle results showed significant improvement achieved in all areas of cross infection practice being measured.

During the second cycle 86% of clinical trays were correctly decontaminated following use. Less sharps boxes (4%) were observed to be overfilled beyond the safe level. Antimicrobial wipes were unavailable in the clinical preparation area on fewer occasions (8%) when clinical tray use was observed.

Junior member of the healthcare team remained the most deficient in decontamination during this second audit cycle however overall levels of decontamination increased significantly with 85% of trays used by SHO's being decontaminated following use.

Less variation in decontamination between specialties was noted during the second audit cycle with 96% of OMFS SHO's and 76% of ENT SHO's decontaminating trays after use.

Conclusion

The results for this audit have highlighted significant failings in cross infection control and decontamination practice in the Maxillofacial and ENT ward in relation to portable clinical trays and sharps boxes.

By identifying these areas of failure and through staff education and creating a local protocol, we have been able to improve our clinical practice in relation to the standards set for this audit.

While much improved, infection control and decontamination in relation to portable clinical trays and sharps boxes remains below the standards set for this audit and as such further recommendations that will be taken forward include;

- Further staff education.
- Consideration of the introduction of disposable clinical trays.
- Further audit of this topic.

References

1. **NHS Scotland.** National HAI Prevalence Survey Final Report 2007.
2. **National Audit Office report.** Reducing Healthcare Associated Infections in Hospitals in England. *HC230 Session 1999-2000*
3. **Plowman R, Graves N, Griffin MA, Roberts JA, Swan AV, Cookson B, Taylor L.** The rate and cost of hospital-acquired infections occurring in patients admitted to selected specialties of a district general hospital in England and the national burden imposed. *J Hosp Infect* 2001; 47(3):198-209
4. **Harbarth S, Sax H, Gastmeier P.** The preventable proportion of nosocomial infections: an overview of published reports. *J Hosp Infect.* 2003; 54(4): 258-266
5. **Garner J.** Guidline for handwashing and hospital environmental control. *Americal Journal of Infection Control.* 1985; 14(3): 110-126
6. **Hayden MK, Blom DW, Lyle EA, Moore CG, Weinstein RA.** Risk of hand or glove contamination after contact with patients colonized with vancomycin-resistant Enterococcus or the colonized patients' environment. *Infect Control Hosp Epidemiol* 2008; 29(2): 149-154
7. **Rourke C, Bates C, Read RC.** Poor hospital infection control practice in venepuncture and use of tourniquets. *J Hosp Infect* 2001;49(1):59-61
8. **Medicines and Healthcare products regulatory Agency.** Microbiology Advisory Committee (the MAC manual) 3rd edition, part 1, 2010
9. **National Audit office report.** Reducing Healthcare associated infections in England. *HC560 June 2009*

Appendices

Appendix 1:

Proforma used for data collection

Sharps boxes and blood tray cleaning after use, Ward 9, Audit			
Date	/ /12	Time	:
Use of tray	<input type="checkbox"/> Cannulation <input type="checkbox"/> ABG's <input type="checkbox"/> Blood sample <input type="checkbox"/> Other (Specify): _____		
Grade of operator using tray	<input type="checkbox"/> Consultant <input type="checkbox"/> STB <input type="checkbox"/> Nurse <input type="checkbox"/> SHO <input type="checkbox"/> Other (Specify): _____		
Speciality of operator using tray	<input type="checkbox"/> Max Fax <input type="checkbox"/> ENT <input type="checkbox"/> Phlebotomist <input type="checkbox"/> Visiting Doctor <input type="checkbox"/> Other (Specify): _____		
Tray cleaning after use	<input type="checkbox"/> Tray emptied & wiped w/ disinfectant wipe <input type="checkbox"/> Tray emptied & washed in sink provided <input type="checkbox"/> Tray emptied but not cleaned <input type="checkbox"/> Tray not emptied and not cleaned <input type="checkbox"/> Other (Specify): _____		
Sharps box	<input type="checkbox"/> Acceptable <input type="checkbox"/> Overfilled and still in use		
Disinfectant wipes available in prep room on this date and time		<input type="checkbox"/> Yes <input type="checkbox"/> No	
For and queries please contact Stephen O' Connor, SHO in OMFS, MGH MaxFax Dept. Ward 9, Page 144			

Diagnostic quality of radiography relating to an oral and maxillofacial and orthodontic unit: a baseline audit

S.D. O' Connor^a, E. Chalmers^b, R. Jones^c and V. Sood^d

^aSHO OMFS, ^b SpR Orthodontics, ^c Consultant Orthodontist, ^d Consultant OMFS NHS Lanarkshire.

Introduction

Radiography is an essential tool to maxillofacial surgery and orthodontics, used to aid diagnosis, treatment planning and monitoring. The use of radiography entails exposure of patients to ionising radiation and is governed by the Ionising Radiation Regulations (IRR) 1999¹ and Ionising Radiation (Medical Exposure) Regulations (IMRER) 2000². These regulations aim to minimize patient exposure by ensuring that every exposure is justified, optimized, and evaluated. This audit was designed to evaluate the diagnostic quality of radiographs commonly requested by the Maxillofacial department (OPT's, Intra-oral radiographs, Lateral Cephalograms).

Standards

The standard set for this audit was guided by the UK the Health Protection Agency's Guidance notes for dental practitioners in which a grading system of 1-3 is employed to quantify diagnostic quality and states a target of not less than 70% of radiographs being grade 1, no more than 20% grade 2 and no more than 10% grade 3.

Method

This audit is to run over two cycles. The first cycle, reported here, took the form of a retrospective examination of 50 OPT radiographs, 50 Intra-oral periapical radiographs and 50 Lateral Cephalograms. A single examiner carried out a retrospective analysis of all films and ascribed a grade to each radiograph. The grade of each radiograph was recorded, and where graded 2 or 3, the errors in the films were also recorded.

Results / Conclusions

The results of grading and the most common errors were as follows:

	Grade 1	Grade 2	Grade 3	Most common error
OPT	24%	66%	10%	Non-inclusion lower border of mandible
Lat. Ceph.	72%	26%	2%	Incorrect Frankfort plane angulation
Intra-oral	30%	42%	28%	Positioning error

The results of the first cycle of this audit indicate a significant failing in practice in relation to the audit standards. Proportions of grade 1 radiographs were low for the OPT and periapical radiographs included in this audit. Significant errors such as non-inclusion of the lower border of mandible in OPT films (important for the correct diagnosis of fractures of the mandible) and incorrect Frankfort plane angulation in Lateral Cephalograms (correct

angulation being needed to allow accurate cephalometric analysis during orthognathic surgical planning³) were common meaning that proportions of grade 2 and 3 radiographs were high. Proportions of grade 2 and 3 intra-oral periapical radiographs were found to be very high. It was noted during the course of this audit that the bisecting angle technique was being employed by radiographers rather than using intra-oral film holders when exposing these radiographs as is recommended⁴.

It was recognised that changes were need to current practice to bring about improvements to meet the set audit standards. Recommendations for changes to be implemented included:

- Dissemination of the results to relevant staff.
- Training for radiographers in exposure of the above radiographs.
- Introduction of intra-oral film holders for periapical radiographs.
- Further audit.

A second cycle of this audit is underway to measure the effect of these changes and will be reported separately.

References

1. Ionising Radiation Regulations (IRR) 1999
2. Ionising Radiation (Medical Exposure) Regulations (IMRER) 2000
3. Frankfort plane vs. Natural Head Posture in Cephalometric Diagnosis. Dent. Med. Probl. 2003; 40(1): 129-134.
4. The use of dental radiographs: Update and recommendations. JADA 2006; 137(9): 1304-1312.

South West

The outcome for secondary alveolar bone grafting in the South West UK region post CSAG.

ABSTRACT

Background:

In 1998 the delivery of cleft care in the United Kingdom was examined by the Clinical Standards Advisory Group (CSAG), the outcomes of which led to the wide restructuring of cleft services in the UK.

We present a retrospective study evaluating the radiographic outcome of 53 consecutively performed alveolar bone grafts following the regional centralization of secondary alveolar bone grafting to the South West Cleft Centre between 2004 and 2006.

Methods:

A retrospective audit of one surgeon's outcome of 53 consecutively performed alveolar bone grafts assessed radiographically using the Kindelan method

Results:

The result of 94% bone grafted sites achieving a successful radiographic outcome compares favourably with the CSAG data of 58% with Bergland scores published previously.

Conclusion:

The radiographic outcome for alveolar bone grafting has improved with centralization.

A small number of patients are being grafted after the ideal chronological age and this needs to be addressed throughout the region.

The Kindelan assessment provides a reliable method of early assessment for alveolar bone grafting.

INTRODUCTION

The elimination of the residual alveolar cleft by secondary bone grafting has a long history¹, and plays an important role in the dental rehabilitation of patients with cleft lip and palate. Contemporary techniques have largely been attributed to the work of Boyne and Sands², and have been a well accepted treatment modality for cleft patients, providing a means of utilizing and stabilizing the segments of the maxilla prior to definitive orthodontic and restorative treatment³ This procedure creates in-filling of the bony defect to allow spontaneous eruption of the canine, improving alveolar contour and providing support for the alar base. This affords particular benefit in terms of future arch alignment.

BACKGROUND

In 1998 the delivery of cleft care in the United Kingdom was examined by the Clinical Standards Advisory Group (CSAG)⁴ providing a thorough review of outcomes for unilateral cleft lip and palate, and the establishment of criteria that would form the basis for regular assessment of total cleft care⁵. The outcomes of the CSAG report were interesting, but unfortunately from the perspective of secondary cleft surgery disappointing. Bone grafting of the alveolus between the ages of 9 and 11 was deficient, with only 58% of bone grafts undertaken for the 12 year olds in the sample deemed

successful⁶. This when compared to the Norwegian centre with a success rate of 96%, was concerning for standards within the UK. The publication of the CSAG report led to wide restructuring of cleft services in the UK. The outcomes derived from the CSAG report in respect of secondary cleft work has provided a benchmark and prompted newly centralized cleft units to publish their own audit results⁷.

Outcome measures for secondary alveolar bone grafting (ABG) have been developed and validated to assess the success of the techniques used^{1,8,9}. Assessing the success of alveolar bone grafting has included the assessment of post operative radiographs. One of the most utilised systems has been described by Bergland et al¹. The scoring system for outcome was based on a semi-quantitative evaluation of the height of the interdental septum achieved adjacent to the erupted canine (Table 1).

A flaw in this method however has been described by Witherow⁹ in that it had been noted that a bony defect could be visible at the apical portion of a root yet the interdental bone height is normal and so is graded as a success when in fact a partial failure exists. As a result, an alternative two part scale was developed.

Kindelan⁸ also described the use of a four point score (Table 2) to assess the degree of bony fill, and therefore success of secondary grafting at the cleft site in the months immediately after surgery.

When several methods for evaluation exist, there are uncertainties regarding their relative merits in terms of reproducibility and validity and indeed at what stage of dental development at which they should be applied.

For example, a pre requisite for recording interdental septum height (by the Bergland method) is a canine or a precanine fissural tooth brought into its final position in the maxillary arch¹. With bone grafts being performed on younger age groups, it can be seen therefore, that assessment of outcome using this method may have to wait years to complete.

This delay to data collection, post-CSAG, has implications with respect to the desire for early assessment and ongoing evaluation of a particular surgeon's outcome within the newly designated cleft teams.

Nightingale et al¹⁰ published data comparing the reproducibility of three methods of radiographic assessment of alveolar bone grafting, namely the Bergland, Kindelan and Chelsea scales, and evaluated their application in the mixed and permanent dentitions. They concluded that none of the three scales were found to be more reproducible than the others and were equally valid in terms of outcome measures. They also found surprisingly that there was a trend to greater reproducibility in the mixed dentition, suggesting that the outcome of alveolar bone grafting may be assessed at an earlier age than currently adopted.

Therefore in our unit we employ the use of the Kindelan scale as it provides a reliable method for the early and ongoing assessment of bone grafting.

The aim of this project was to compare the outcome of secondary alveolar bone grafting in the South West Cleft centre to those of the CSAG report and previous results prior to centralization and therefore provide a benchmark for future audit.

METHOD

A retrospective audit of one surgeon's (PJR) alveolar bone grafts with 53 consecutively treated alveolar defect sites at Frenchay Hospital, Bristol.

TECHNIQUE

The procedure for bone harvest and grafting was standardized in all cases and followed the method previously described¹¹. Preparation of the recipient site was performed by the standardized method for alveolar bone grafting¹².

DATA COLLECTION

Demographic information was taken from hospital notes (see table 4). Radiological assessment was undertaken on radiographs taken at follow up at 6-9 months following surgery. The assessment was graded using the Kindelan method (as described above), applied to a combination of upper occlusal and periapical intraoral x-rays. Three clinician assessors were used. The Consultant Maxillofacial Surgeon was excluded in the analysis of radiographs to avoid any potential for assessment bias. The pre and post-operative radiographs were directly compared. The assessors scored all post-operative radiographs on two separate occasions at least 1 week apart. In order to determine the reliability of the assessors examining the radiographs their results were subject to Kappa analysis¹³. The Kappa statistic measures the strength of agreement and can be interpreted as below (Table 3).

RESULTS

Table 4 describes the demographic data for our cohort. The majority of cases (86%) involved unilateral clefts with an approximately equal ratio of males to females. All 53 cases had radiographs available for assessment and all were of diagnostic value.

Figure 1 represents a graphical representation of Kindelan score applied to post operative radiographs.

Figure 1 shows that 50 (94%) of grafted sites were scored as either Kindelan 1 or 2. These are considered successful radiographic outcomes.

The mean age at operation was 9 years and 11 months. Only 3 (6%) patients were operated on after age of 12 representing an improvement when compared to the CSAG result (15%). Of the three patients who scored Kindelan 3, two were patients operated on after their twelfth birthday. Following review of the notes, the reasons for these 'late' grafts was seen to be a combination of poor attendance by the patients in the outpatient clinics and late referral to the central cleft unit.

Inter and intra-observer variability results are shown in tables 5 and 6. These demonstrate moderate to very good levels of agreement.

DISCUSSION

This study has evaluated the success of secondary alveolar bone graft surgery, post CSAG, in a regionalized centre and therefore provides benchmarking data to compare with CSAG data. The result of 94% of bone grafted sites achieving a successful radiographic outcome compares favourably with the CSAG data of 58% with successful Bergland scores published previously. A similar result, of 91% success rate, as assessed by Bergland has been reported in a centre with one surgeon previously¹⁴.

Previous unpublished audit data from the South West shows success in 82% of 112 bone grafts of which only 40% had adequate radiographs to allow scoring prior to centralisation. This data included multiple operators over the South West region. This may suggest that centralisation has contributed to better outcome for patients undergoing this procedure and improved follow up with radiographs.

More recently bone grafting has been taking place at younger ages (7-8 years). Our figures show that of the 53 bone grafts performed consecutively in our study, only 3 were operated at or above 12 years of age. The timing when the procedure occurred was performed optimally before the age of 11, as outlined in service specification for the centre, in 94% of cases. This is an improvement when compared against the original CSAG data of 85%. Two of these had a Kindelan score of three. Whilst the total numbers of these patients is not large, this unsatisfactory outcome indeed reflects the findings of Enemark et al¹⁵ who found poor outcomes for grafts undertaken after the age of eleven. This may relate to the position of the permanent canine tooth, which in older patients has been associated with reduced outcome¹³.

The timing of post operative radiographs was subject to tight control, all having been taken at the six to nine month post operative review clinic. One obvious benefit of centralisation in respect of our audit has been the ease of access to all patients' radiographs. The follow up has improved from the previous unpublished audit, prior to centralisation, which found that 60% of radiographs were unavailable or of such poor quality that outcome assessment was not achievable. Therefore standardisation of follow up has improved data collection and radiographic quality. This is an important step forward in patient care, as this allows for valid assessments of outcome with reduced selection bias associated with retrospective projects.

It has been suggested that unless flap dehiscence occurs, bone levels do not change significantly between 3 months and 1 year after surgery¹⁶. However more recently, a 3 year prospective study using three dimensional CT to assess volumetric bone resorption after secondary alveolar bone grafting (prior to eruption of the permanent canine) to twenty four cleft sites showed a mean bone loss of 49.5% in the first year of surgery, remaining constant in the following two years. The study highlighted that conventional 2 dimensional radiographs only seem to evaluate the vertical dimension of the transplant whilst extensive resorption in the bucco-palatal portion of the transplant can be expected¹⁷. Also a subsequent study has shown that the number of teeth to erupt into a grafted site can affect overall bone volumes¹⁸, which might create differences levels of success of grafted sites using Kindelan earlier and Bergland later. Kindelan is an early assessment prior to the eruption of the canine usually, where as Bergland assessment is after the canine has erupted. We **strongly acknowledge the problems** comparing samples that have been assessed using different indices (Bergland and Kindelan) at different post operative time intervals **and we await the long term follow up of our cohort following the eruption of the canine to see if our assessments were accurately applied**. Three dimensional assessment maybe a more ideal way of assessing the success of this procedure as bucco-lingual width maybe required later if dental implants are to be used for

tooth replacement in cases where absence of the lateral incisor requires replacement. **Nevertheless, in routine clinical practice CT scanning is not always feasible or indeed justified, and a simple method of assessment based on routine radiographs and of proven reproducibility would seem useful.**

Our intra-rater agreement showed that when the individual assessors scored the same radiographs on two separate occasions, they exhibited a range of very good to fair agreement, with moderate agreement overall.

Since centralization, alveolar bone grafting has been provided with a consistent treatment pathway except for a small number of cases seen after the ideal time, which may affect outcome and this is the subject of a further study.

CONCLUSIONS

- The radiographic outcome for alveolar bone grafting has improved with centralization.
- A small number of patients are being grafted after the ideal chronological age and this needs to be addressed throughout the region.
- Kindelan assessment provides a reliable method of early assessment for alveolar bone grafting.

ACKNOWLEDGEMENTS

We should like to acknowledge Guy Butcher and Hugh Bellis for their contribution with allowing us to use the pre-CSAG data they collected and to James Hathorn and Amit Patel for their contribution to the radiographic assessments made in this paper.

REFERENCES

- 1 Bergland O, Semb B, Abyholm FE. Elimination of the residual alveolar cleft by secondary bone grafting and subsequent orthodontic treatment. *Cleft Palate J*. 1986 Jul; **23**(3): 175-205
- 2 Boyne P, Sands N. Secondary bone grafting of residual alveolar and palatal clefts. *J Oral Surg* 1972; **30**: 87-92
- 3 Enemark H, Krantz-Simonsen E, Schramm JE. Secondary bone grafting in unilateral cleft lip and palate patients: indications and treatment procedure. *Int J Oral Surg* 1985; **14**: 2-10
- 4 Sandy JR, Williams AC, Bearn D, Mildinhall S, Murphy T, Sell D, Murray JJ, Shaw WC. Cleft lip and palate care in the United Kingdom – The Clinical Standards Advisory Group (CSAG) Study. Part1: Background and methodology. *Cleft Palate Craniofac J*. 2001 Jan; **38**(1): 20-3
- 5 Williams JLI, Markus AF. Cleft care: life after CSAG *Br J Oral Maxillofac Surg*. 1998 Apr; **36**(2): 81-83

- 6 Williams AC, Bearnd, Mildinhall S, Murphy T, Sell D, Shaw WC, Murray JJ, Sandy JR. Cleft lip and palate care in the United Kingdom – The Clinical Standards Advisory Group (CSAG) Study. Part 2: Dentofacial outcomes and patient satisfaction. *Cleft Palate Craniofac J*. 2001 Jan; **38**(1): 24-9
- 7 Clarkson J, Paterson P, Thorburn G, El-Ali K, Richard B, Hammond M, Wake M. Alveolar bone grafting: achieving the organizational standards determined by CSAG, a baseline audit at the Birmingham Children’s hospital. *Ann R Coll Surg Engl* 2005; **87**: 461-465
- 8 Kindelan JD, Nashed RR, Bromige MR. Radiographic assessment of secondary autogenous alveolar bone grafting in cleft lip and palate patients. *Cleft Palate Craniofac J*. 1997 May; **34**(3): 195-8
- 9 Witherow H, Cox S, Jones E, Carr R, Waterhouse N. A new scale to assess radiographic success of secondary alveolar bone grafts. *Cleft Palate Craniofac J*, 2002;**39**(3): 255-260.
- 10 Nightingale C, Witherow H, Reid FAD, Edler R. Comparative reproducibility of three methods of radiographic assessment of alveolar bone grafting. *European Journal of Orthodontics* **25** (2003) 35-41
- 11 Hughes CW, Revington PJ. The proximal tibia donor site in cleft alveolar bone grafting: experience of 75 consecutive cases. *J Craniomaxillofac Surg*. 2002 Feb; **30**(1): 12-16

- 12 Abyholm FE, Bergland O, Semb G. Secondary bone grafting of alveolar clefts: A surgical – orthodontic treatment enabling a non-prosthetic rehabilitation in cleft lip and palate patients. *Scand J Plast Surg* 1981 **15**: 127-140
- 13 Cohen J. A coefficient for agreement for nominal scales. *Educ Psychol Measure* 1960; **20**: 37-46
- 14 Newlands LC. Secondary alveolar bone grafting in cleft lip and palate patients. *Br J Oral Maxillofac Surg* 200 **38**, 488-491
- 15 Enemark H, Sindet-Pedersen S, Bundgaard m, Simonsen EK. Combined orthodontic-surgical treatment of alveolar clefts. *Ann Plast Surg* 1988; **21**: 127-133
- 16 Paulin G, Astrand P, Rosenquist JB, Bartholdson L. Intermediate bone grafting of alveolar clefts. *J Craniomaxillofac Surg* 1988; **16**: 2-7
- 17 Feichtinger M, Mossbock R, Karcher H. Assessment of bone resorption after secondary alveolar bone grafting using three-dimensional computed tomography: A three-year study. *Cleft Palate Craniofac J* 2007 **44**(2): 142-148
- 18 Feichtinger M, Mossbock R, Karcher H. Evaluation of bone volume using CT-guided three dimensional navigation system. *Journal of Craniomaxillofacial Surgery* 2006 **34**, 144-149