

Patient safety in dentistry – state of play as revealed by a national database of errors

S. Thusu,¹ S. Panesar² and R. Bedi³

IN BRIEF

- Highlights the presence of an anonymous reporting system for iatrogenic harm to patients in a dental setting.
- Outlines the effects of implementation of the CQC's compliance monitoring system.
- Emphasises the need for dental practitioners to check correct patient notes are being used, correct consent forms signed and accurate records kept.

Introduction Modern dentistry has become increasingly invasive and sophisticated. Consequently the risk to the patient has increased. The aim of this study is to investigate the types of patient safety incidents (PSIs) that occur in dentistry and the accuracy of the National Patient Safety Agency (NPSA) database in identifying those attributed to dentistry. **Methods** The database was analysed for all incidents of iatrogenic harm in the speciality of dentistry. A snapshot view using the timeframe January to December 2009 was used. The free text elements from the database were analysed thematically and reclassified according to the nature of the PSI. Descriptive statistics were provided. **Results** Two thousand and twelve incident reports were analysed and organised into ten categories. The commonest was due to clerical errors – 36%. Five areas of PSI were further analysed: injury (10%), medical emergency (6%), inhalation/ingestion (4%), adverse reaction (4%) and wrong site extraction (2%). **Discussion** There is generally low reporting of PSIs within the dental specialities. This may be attributed to the voluntary nature of reporting and the reluctance of dental practitioners to disclose incidences for fear of loss of earnings. A significant amount of iatrogenic harm occurs not during treatment but through controllable pre- and post-procedural checks. **Conclusion** Incidences of iatrogenic harm to dental patients do occur but their reporting is not widely used. The use of a dental specific reporting system would aid in minimising iatrogenic harm and adhere to the Care Quality Commission (CQC) compliance monitoring system on essential standards of quality and safety in dental practices.

INTRODUCTION

The publication of *To err is human* in 1999 followed by *Crossing the quality chasm* galvanised domestic and international healthcare authorities into prioritising the reduction of iatrogenic harm caused by medical intervention.^{1,2} This mandate was further emphasised by the World Health Organisation's (WHO's) World Alliance for Patient Safety.³ Medicine, and in particular surgery, have embraced the importance of reducing the burden of iatrogenic harm through the development of patient safety reporting systems. One of the largest such systems with over 5.5 million cases of iatrogenic harm is housed at the National Patient Safety Agency (NPSA) in England and Wales.⁴ Dentistry has lagged behind its medical

colleagues in developing patient safety centric programmes. However, recently there has been recognition for dentistry to adopt patient safety initiatives.^{5,6} The most active programme has been proposed by the General Council of Dentists of Spain,⁷ which acknowledged the lack of structured or well-studied data regarding adverse events in dentistry and the need to develop a risk management plan in dentistry.

The Departments of Health in England and Wales have been spearheading the patient safety agenda through the creation of the NPSA which manages a national error-reporting system, the National Reporting and Learning System (NRLS). Anonymous reports are uploaded to an online system from individual organisations' local risk management systems. The largest proportion of reported patient safety incidents originate from medical and surgical specialties. The three lowest reporting specialties are dental surgery, orthodontics and paediatric dentistry.⁸

Data collection in dental patient safety is largely limited to hospital-based medicine and surgery, and the salaried dental

services. General dental practices undertake penetrating surgery such as implants along with deep injections, removal or draining of infections and health monitoring, all of which can and do lead to possible avoidable iatrogenic harm to patients. With the current trend of more complex dental procedures being undertaken in general dental services, the potential for iatrogenic harm increases.

The low volume of incident reporting may be explained by certain barriers in dentistry. Dentists in primary care may not be aware of the PSI system as a voluntary reporting method. A similar lack of awareness was also found to be a cause of low reporting in medical primary care (5%) in a study looking at the breakdown of case reports received by the NPSA since 2003.⁴

A voluntary reporting system such as that used by the NPSA considerably under-represents the scale and severity of patient safety incidents.⁹ As a consequence, the low data reported on dental specialties may be just a tip of the iceberg. Dentists may deem non-life-threatening errors to be insignificant and hence not important to report.

¹Research Fellow, ²Head, Centre for International Child Oral Health, King's College London, 26-29 Drury Lane, London, WC2B 5RL; ³Special Advisor, National Patient Safety Agency, 4-8 Maple Street, London, W1T 5TD

*Correspondence to: Dr Sundeep Thusu

Email: sundeept.thusu@kcl.ac.uk

Online article number E3
Refereed Paper – accepted 8 May 2012
DOI: 10.1038/sj.bdj.2012.669
© British Dental Journal 2012; 213: E3

Table 1 Causes of patient safety incidents

| | |
|--------------------------------------|-------|
| Total number of PSIs | 2,339 |
| No. of PSIs not applicable + repeats | 327 |
| Total no. of PSIs after amendments | 2,012 |
| Pre-procedure | 960 |
| During procedure | 764 |
| Post-procedure | 288 |
| Adverse reaction | 80 |
| Clerical | 722 |
| Communication | 96 |
| Equipment failure | 298 |
| Fall | 155 |
| Infection control | 33 |
| Inhalation | 72 |
| Injury | 210 |
| Management | 78 |
| Medical | 111 |
| Operator injury | 35 |
| Radiographs | 86 |
| Wrong site extractions | 36 |

The majority of dental practices operate a dual role as NHS contractors and private treatment providers. Such practices are run as businesses and therefore may be reluctant to disclose incidents because of the perceived risk of damage to their reputation and livelihood. The independent regulator of health and social care in England, the Care Quality Commission (CQC), has recently introduced regulation that all dental practices – whether private or NHS-based – must register with them to obtain a licence to operate. This will bring all dental practices under the CQC's compliance monitoring system as detailed in its publication *Essential standards of quality and safety*, in effect monitoring all PSI reporting.

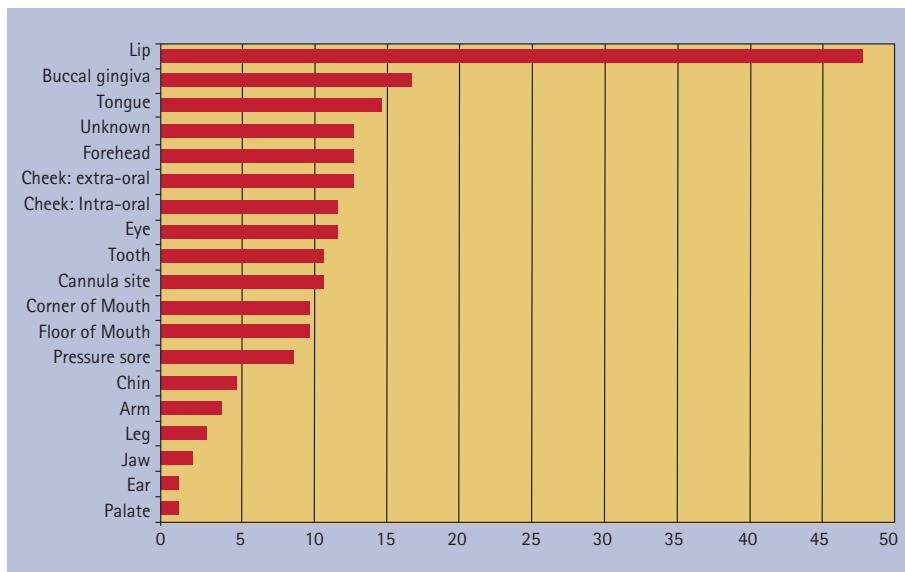
There is no specific tool focused on improving reporting of PSIs in dentistry. Generic reporting has been identified as a problem in engaging individual specialties.⁴ The solution sought by the NPSA is a bespoke reporting system such as the one designed for anaesthetists, which has proved a success and seen a significant improvement in the level of reporting from senior clinicians.¹⁰

The objective of this study is two-fold:

- Investigate what types of PSIs occur in dentistry
- Look at the validity of the National

Table 2 Classifications of patient safety incidents

| | |
|-----------------------|---|
| Adverse reaction | Patient experienced an adverse reaction due to procedure |
| Clerical | PSI due to wrong notes/cancellations/delayed procedures/wrong name tags but no harm |
| Communication | PSI due to poor/lack of communication between healthcare professionals + poor/lack of communication with patient |
| Equipment failure | Use of medical/dental equipment that failed to work leading to potential of patient harm but not resulting in actual harm |
| Fall | Injury due to patient's fault or external environment not related to treatment or clinical environment |
| Infection control | Harm or potential of harm due to poor infection control |
| Inhalation | Procedure or treatment leading to patient inhaling foreign objects |
| Injury | Treatment/procedure leading to direct injury to patient |
| Management | PSI due to poor clinical management |
| Medical | Incident due to underlying medical condition not exacerbated by procedure or treatment |
| Operator injury | Accidental injury to the dentist or member of the dental team eg needlestick injury to dentist |
| Radiographs | Avoidable repeated exposure to radiation due (very relevant to dentists as they take their own radiographs and report on them, similar to radiologists and radiographers) |
| Wrong site extraction | Wrong site extraction (NB not extractions resulting in new injury) |

**Fig. 1 Sites commonly involved by accidental injury by the dentist**

Reporting and Learning System (NRLS) database in accurately capturing the dental specific PSIs.

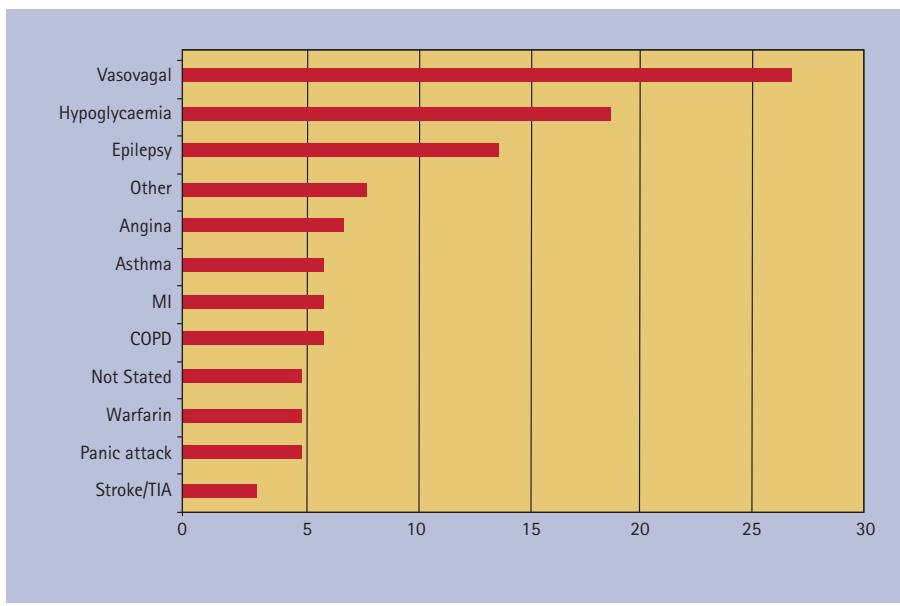
METHODS

The NRLS is a voluntary, national reporting system set up in 2003 for the NHS in England and Wales. It is housed at the National Patient Safety Agency (NPSA) and is one of the largest and most comprehensive reporting systems in the world. It has recorded over 6.9 million incidents to date, with increases in the reporting year

on year.¹¹ Staff report incidents through their hospital or primary care organisation so that local action can be taken when needed. These incidents are then uploaded to the national database. Healthcare staff, patients, and other members of the public can also report incidents independently through the website.¹² Each NRLS report refers to an unintended or unexpected incident that could have or did lead to harm for one or more patients receiving NHS-funded care. It includes the reporting of incidents where an error took place but

Table 3 Key-word search result

| Speciality level 1 | Speciality level 2 | Frequency | Percentage |
|-----------------------------------|-----------------------|-----------|------------|
| Dentistry - general and community | Other | 1,051 | 44.9% |
| | Oral surgery | 114 | 4.9% |
| | Endodontics | 74 | 3.2% |
| | Restorative dentistry | 59 | 2.5% |
| | Paedodontics | 27 | 1.2% |
| | Orthodontics | 17 | 0.7% |
| | Periodontics | 8 | 0.3% |
| Surgical specialties | Missing | 1 | 0.0% |
| | Dental surgery | 335 | 14.3% |
| | Paedodontics | 242 | 10.3% |
| Medical specialties | Orthodontics | 192 | 8.2% |
| | Dental medicine | 219 | 9.4% |
| Total | | 2,339 | 100.0% |

**Fig. 2** Causes of medical emergencies

did not harm the patient, and also no-harm errors where the incident did not reach the patient.

Data from the NRLS database were analysed for all incidents of iatrogenic harm in the specialty of dentistry from January to December 2009. The domains searched were 'Dentistry - General and Community', 'Dental Medicine' and 'Dental surgery, Orthodontics or Paedodontics'.

DATA ANALYSIS

The free-text elements from the NRLS were analysed thematically by one reviewer (ST). A pragmatic 10% ($n = 234$) sample of these thematically categorised incidents were reviewed by a second reviewer (SSP). Any disputes were resolved by the senior author (RB). Repeated entries were

compiled together as one entry. Those entries that were wrongly attributed to dental specialties were excluded from the final analysis. Each entry was assigned classifications based on the nature of the PSI. This is summarised in Table 2. Of those categories, five areas of interest were investigated further – injury, inhalation/ingestion, medical emergency, adverse reaction and wrong site extraction.

A further classification was also assigned depending on whether the PSI occurred pre-operatively, intra-operatively or post-operatively.

Microsoft Excel was used to organise the themes and trends of the information generated from the incident reports. This was designed to help explore, organise and understand the information

so as to identify themes in qualitative data analysis.

RESULTS

The initial keyword search showed up 2,339 incident reports including one possible death (Table 3). There was good inter-rater agreement with the themes allocated to the incident (Cohen's Kappa = 0.73). After further analysis, reports that were deemed to be repeated or wrongly attributed to dentistry were rejected resulting in a total number of 2,012 PSIs and no deaths.

For the various thematic categories illustrated in Table 2 the data can be summarised in Table 1 and graphically in Figure 5.

A closer analysis of the five categories of PSI were analysed further.

INJURY

This refers to physical iatrogenic harm to the patient from the dentist during a procedure. A total 210/2,012 (10.4%) injuries were caused, with the lip being the most common site (Fig. 1). The type of injury sustained was also tabulated (Table 4) with lacerations the commonest (35%).

The commonest procedure to cause an injury to the patient by the dentist is when using a bur (34%) (Table 5).

MEDICAL EMERGENCY

Investigation of these reports attributed harm to the patient caused by an underlying serious medical condition which may have been exacerbated due to the dental procedure being carried out – rather than caused by the dentist.

Of the 111/2,012 (5.5%) incidences, ten main causes of medical emergency were identified (Fig. 2).

ADVERSE REACTION

In the examination of the causes of adverse reactions suffered by the patient due to a dental procedure, 80 incidents (4%) revealed ten main causes (Fig. 3). The most prevalent of these was the application of local anaesthetic, accounting for 46/80 cases (58%).

INHALATION/INGESTION

Of the 72 incidences where the patient either inhaled or ingested a foreign object during the dental procedure, the most

common was ingestion of hypochloride (32%) (Fig. 4). All the patients were reported to have rubber dams on at the time of the incident. Indirect restorations such as crowns and bridges being inhaled or ingested accounted for approximately 21%.

WRONG-SITE SURGERY

Thirty-six out of 2,012 (2%) of all reports related to wrong site tooth extractions. Of these 22 (61%) were carried out on adults and the remaining 14 on paediatric patients, of which 4 were on orthodontic clinic. Sixteen (44%) wrong site extractions were carried out while the patient was under general anaesthetic.

DISCUSSION

Dental procedures are becoming more complex and invasive, especially those related to implantology. Coupled with general dental practitioners (GDPs) using potentially hazardous chemicals in day-to-day activity, the potential for iatrogenic harm is greatly increased.

The data from the NRLS show the three lowest reporting specialties are dental surgery, orthodontics and paediatric dentistry.⁸ Reports arising from medical based primary care have also been particularly low.⁴ Nevertheless serious harm is being done within these dental specialties. Highlighting the areas of concern and learning from these incidents will only lead to enhancing the safe treatment of dental patients.

The database is limited by the fact that it is a voluntary reporting system and as discussed earlier, dentists that run and operate their practices as a business are hesitant to make regular reporting of errors for fear of loss of earnings. Expecting to make reporting mandatory is not a feasible option as it had been noted that mandatory systems deter practitioners from reporting incidents as they fear public disclosure and possible comeback for those individuals.¹⁴ Hence by making the system voluntary it is hoped that it would encourage more reporting and the analysis of these incidents by the NPSA might lead to the identification of possible solutions to the problems.

More importantly, with all dental practices, private or NHS-based, needing to adhere to the CQC compliance monitoring

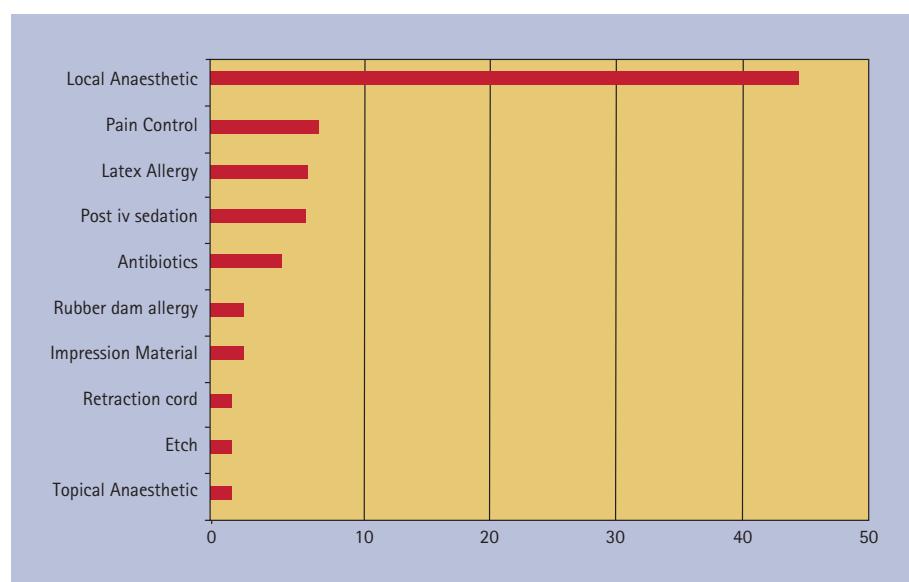


Fig. 3 Causes of adverse reaction

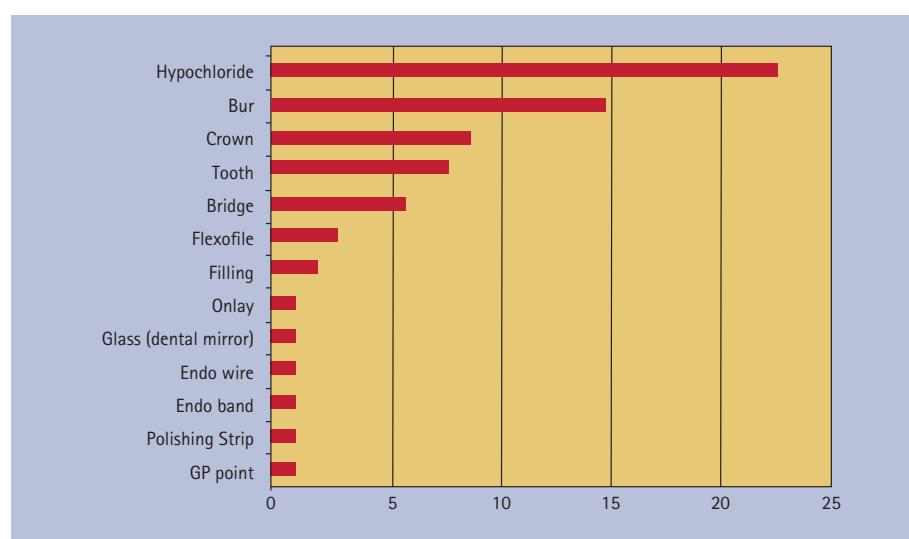


Fig. 4 Causes of inhalation/ingestion

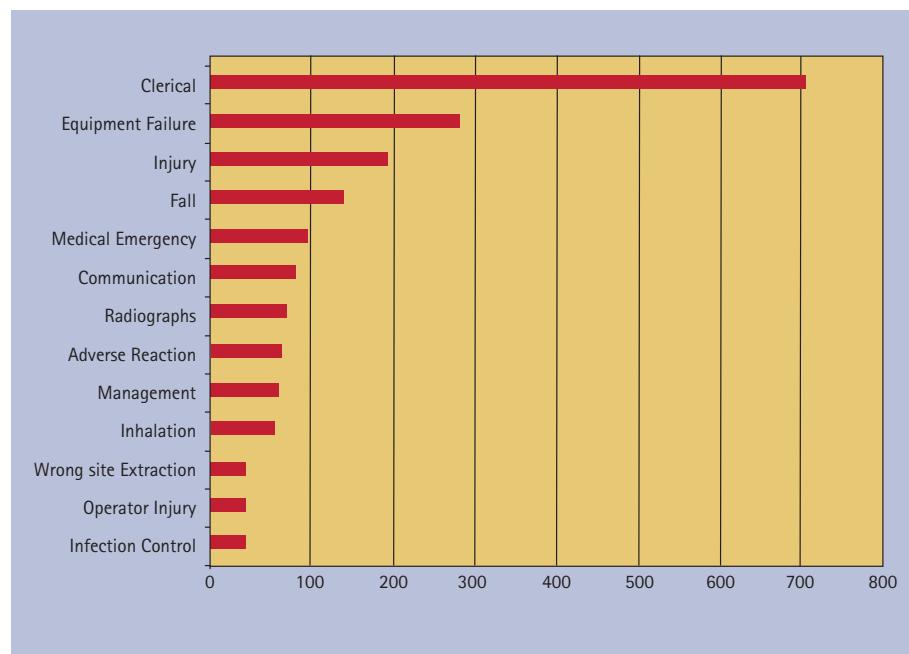


Fig. 5 Results of causes for patient safety incidents

Table 4 Type of injury sustained

| Site of injury | Type | n | n/N (%) | Site of injury | Type | n | n/N (%) | Site of injury | Type | n | n/N (%) |
|-------------------|---------------|----|---------|-------------------|---------------|----|---------|--|------------|---|---------|
| Lip | | | | Cheek: Intra-Oral | | | | Chin | | | |
| | Laceration | 31 | 64.6 | | Laceration | 6 | 50.0 | | Sharps | 3 | 60.0 |
| | Sharps | 11 | 22.9 | | Sharps | 4 | 33.3 | | Bruising | 1 | 20.0 |
| | Bruising | 3 | 6.3 | | Bruising | 2 | 16.7 | | Laceration | 1 | 20.0 |
| | Burn | 3 | 6.3 | | Total (N) | 12 | 100.0 | | Total (N) | 5 | 100.0 |
| | Total (N) | 48 | 100.0 | Eye | | | | Arm | | | |
| Buccal gingiva | | | | | Liquid** | 12 | 100.0 | | Bruising | 2 | 50.0 |
| | Laceration | 9 | 52.9 | | Total (N) | 12 | 100.0 | | Sharps | 1 | 25.0 |
| | Bruising | 6 | 35.3 | Cannula site | | | | | Unknown* | 1 | 25.0 |
| | Sharps | 2 | 11.8 | | Bruising | 11 | 100.0 | | Total (N) | 4 | 100.0 |
| | Total (N) | 17 | 100.0 | | Total (N) | 11 | 100.0 | Leg | | | |
| Tongue | | | | Tooth | | | | | Sharps | 2 | 66.7 |
| | Laceration | 13 | 86.7 | | Fracture | 8 | 72.7 | | Unknown* | 1 | 33.3 |
| | Sharps | 2 | 13.3 | | Enamel*** | 2 | 18.2 | | Total (N) | 3 | 100.0 |
| | Total (N) | 15 | 100.0 | | Unknown* | 1 | 9.1 | Jaw | | | |
| Unknown | | | | | Total (N) | 11 | 100.0 | | Fracture | 2 | 100.0 |
| | Unknown* | 8 | 61.5 | Corner of mouth | | | | | Total (N) | 2 | 100.0 |
| | Burn | 2 | 15.4 | | Burn | 7 | 70.0 | Ear | | | |
| | Sharps | 2 | 15.4 | | Laceration | 2 | 20.0 | | Sharps | 1 | 100.0 |
| | Pressure sore | 1 | 7.7 | | Sharps | 1 | 10.0 | | Total (N) | 1 | 100.0 |
| | Total (N) | 13 | 100.0 | | Total (N) | 10 | 100.0 | Palate | | | |
| Forehead | | | | Floor of mouth | | | | | Laceration | 1 | 100.0 |
| | Bruising | 7 | 53.8 | | Laceration | 7 | 70.0 | | Total (N) | 1 | 100.0 |
| | Sharps | 3 | 23.1 | | Sharps | 3 | 30.0 | *Not indicated from free-text | | | |
| | Unknown* | 3 | 23.1 | | Total (N) | 10 | 100.0 | **Result from a liquid splashing into the eye(s) | | | |
| | Total (N) | 13 | 100.0 | Sacrum | | | | ***Injury to the enamel of a tooth not being treated | | | |
| Cheek: extra-oral | | | | | Pressure sore | 9 | 100.0 | | | | |
| | Bruising | 6 | 46.2 | | Total (N) | 9 | 100.0 | | | | |
| | Sharps | 4 | 30.8 | | | | | | | | |
| | Laceration | 3 | 23.1 | | | | | | | | |
| | Total (N) | 13 | 100.0 | | | | | | | | |

system to essential standards of quality and safety – in effect monitoring of all PSI reporting – GDPs could see this as an opportunity to display active steps being taken to minimise iatrogenic harm.

Raw data extraction showed how the NPSA database has structured the reporting system by individual dental specialties (Table 3). It should be noted that 1,051 incidents (45%) were unable to be classified into the specified specialties, indicating that the reporter could not stratify the incident within what was available.

After analysis of the raw data (2,339 PSIs and one death) reports that were deemed to be repeated or wrongly attributed to dentistry were rejected resulting in a total

number of 2,012 PSIs and no deaths. The main issue was the classification of paedodontics, which within the dental fraternity is understood to be a combination of paediatrics and orthodontics. Both specialties have a significant crossover, however, a large number of medical paediatric PSIs were wrongly reported under this classification. It would perhaps be better that the two specialties were split in order to remove this confusion.

The largest number of reported incidents of patient safety error or potential for patient error is pre-procedural – 960 events (48%) (Table 1). This correlates well with the highest cause of PSI being clerical errors – 722 incidents (36%).

Along with management errors (4%) and communication errors (5%), it highlights that a significant amount of iatrogenic harm occurs not during treatment but during easily controllable pre- and post-procedural checks. This emphasises the need for dental practitioners to check the correct patient notes are being used, correct consent forms have been signed and accurate records are being kept.

The second largest causes of PSIs were from failure of equipment – 15%. The most common incident was malfunction of the dental chair or individual units attached to the chair. Similar results were also found in other surgical error analysis, where the most common types of reported incidents

Table 5 Procedure leading to the injury sustained

| Site of injury | Procedure | n | n/N (%) | Site of injury | Procedure | n | n/N (%) | Site of injury | Procedure | n | n/N (%) |
|-----------------------|------------|----|---------|---------------------------|------------|----|---------|------------------------|------------|---|---------|
| Lip | | | | Cheek – intra-oral | | | | Sacrum | | | |
| | Bur | 23 | 47.9 | | Bur | 6 | 50.0 | | Unknown | 7 | 77.8 |
| | LA* | 14 | 29.2 | | LA* | 4 | 33.3 | | Extraction | 2 | 22.2 |
| | Extraction | 6 | 12.5 | | Extraction | 2 | 16.7 | | Total (N) | 9 | 100.0 |
| | RCT** | 3 | 6.3 | | Total (N) | 12 | 100.0 | Chin | | | |
| | Unknown | 2 | 4.2 | Cheek – extra-oral | | | | | LA* | 3 | 75.0 |
| | Total (N) | 48 | 100.0 | | Extraction | 6 | 46.2 | | Bur | 1 | 25.0 |
| Buccal Gingiva | | | | | LA* | 4 | 30.8 | | Extraction | 1 | 25.0 |
| | Bur | 9 | 52.9 | | Bur | 3 | 23.1 | | Total (N) | 4 | 100.0 |
| | Extraction | 6 | 35.3 | | Total (N) | 13 | 100.0 | Arm | | | |
| | LA* | 2 | 11.8 | Tooth | | | | | Unknown | 3 | 75.0 |
| | Total (N) | 17 | 100.0 | | Extraction | 8 | 72.7 | | LA* | 1 | 25.0 |
| Tongue | | | | | Bur | 2 | 18.2 | | | | |
| | Bur | 11 | 73.3 | | Unknown | 1 | 9.1 | | Total (N) | 4 | 100.0 |
| | Extraction | 2 | 13.3 | | Total (N) | 11 | 100.0 | Leg | | | |
| | LA* | 2 | 13.3 | Cannula site | | | | | LA* | 2 | 66.7 |
| | Total (N) | 15 | 100.0 | | Extraction | 9 | 81.8 | | Unknown | 1 | 33.3 |
| Unknown | | | | | Unknown | 2 | 18.2 | | Total (N) | 3 | 100.0 |
| | Unknown | 8 | 61.5 | | Total (N) | 11 | 100.0 | Jaw | | | |
| | RCT** | 3 | 23.1 | Corner of mouth | | | | | Extraction | 2 | 100.0 |
| | LA* | 2 | 15.4 | | Bur | 8 | 80.0 | | Total (N) | 2 | 100.0 |
| | Total (N) | 13 | 100.0 | | RCT** | 2 | 20.0 | Ear | | | |
| Forehead | | | | | LA* | 1 | 10.0 | | LA* | 1 | 100.0 |
| | Extraction | 7 | 53.8 | | Unknown | 1 | 10.0 | | Total (N) | 1 | 100.0 |
| | Ultrasonic | 3 | 23.1 | | Total (N) | 10 | 100.0 | Palate | | | |
| | Unknown | 3 | 23.1 | Floor of mouth | | | | | Bur | 1 | 100.0 |
| | Total (N) | 13 | 100.0 | | Bur | 7 | 70.0 | | Total (N) | 1 | 100.0 |
| Eye | | | | | LA* | 3 | 30.0 | *Local anaesthetic | | | |
| | RCT** | 10 | 83.3 | | Total (N) | 10 | 100.0 | **Root canal treatment | | | |
| | Unknown | 2 | 16.7 | | | | | | | | |
| | Total (N) | 12 | 100.0 | | | | | | | | |

were equipment malfunction.¹⁵ This problem could easily be avoided if the dental team tests the dental chair and its equipment before treatment commencing. The practice should also ensure that regular maintenance checks are carried out on such equipment and logs are kept.

A small number of errors occurred while radiographs were taken – 4%. These involved the need for repeat X-rays because the image was of the wrong site or was the wrong type of image. Dental practitioners often take and report their own images, particularly intra-oral images. As they have to adhere to the Ionising Radiation (Medical Exposure) Regulations (IRMER), unnecessary irradiation of patients should

be avoided. To minimise these errors accurate record keeping and technique should be practised.

Other smaller causes of PSIs were operator injury (1.8%) and infection control (1.6%). Although very small, it shows the need for the practitioner to be aware of and be comfortable in their working environment. All those working within the clinical setting should be made aware of infection control guidelines with regular checks being carried out on all senior and junior staff. Provision for retraining should be considered for repeated infringements.

Injuries occurring to the patient are illustrated in Figure 1. The most common injury sites are the areas around the oral

cavity – lips (23%), tongue, buccal mucosa and cheeks. These errors may occur due to sudden movements by the patient in which case clear instructions should be relayed to them to keep still and should they want to move to do so after alerting the operator. There were some surprising areas of injury, including arm and leg. The practitioner should be aware and comfortable in their surroundings to avoid injuring patients.

The commonest types of injuries sustained were tissue lacerations (35%), sharps (18.5%) and burns (6%) (Table 4). Correlating the type of injury to the procedure being carried out (Table 5) indicates that the use of a bur (34%) leads most commonly to an injury, along with

extractions (24%) and administration of local anaesthetic (18.5%).

Injury to the patient resulting in an adverse reaction accounted for 4% of PSIs; the highest proportion of cases was related to the administration of local anaesthetic. This could be technique related or simply an undiagnosed allergic reaction. Nevertheless knowledge of how to treat a patient with such a complication is part of dentists' training and continuing professional development (CPD) courses would aid in cementing this. There are, however, some adverse reactions attributed to latex and antibiotics, which highlight the need for detailed medical and drug histories to be checked before any treatment. This is most important in treating patients with chronic medical problems.

Incidents caused due to medical complications are clearly illustrated in Figure 2. An awareness of patients' conditions could help to tailor the treatment. For example: check if patients with epilepsy have taken their medication before treatment, and ensure patients suffering from cardiothoracic problems are not kept in a supine position for extended periods of time. Regular Basic Life Support and CPD courses would help in ensuring the dental team know how to deal with medical emergencies.

The dental team should know and check where the relevant medications for treating medical emergencies are kept in the clinical setting.

The inhalation or ingestion of dental-based objects during dental procedures is the second most common cause of accidental ingestion/inhalation in the United States.¹⁶ This is obviously a risk as most dentistry is practised with the patient supine, increasing the risk of objects being dropped into the mouth.¹⁷ The accidental exposure to hypochloride during root canal treatment was the most common incident – 25%. All the reports commented that a rubber dam had been in place during the incident. This may imply that either the application of the rubber dam and clamp was incorrect or a perforation may have occurred during the procedure. Use of a rubber dam is indicated by the *British Endodontic Society Quality Guidelines* for root canal treatment but the use of sealant around the dam and clamp is not a requirement. This may aid in preventing a leakage of the hypochloride in the mouth.

The second most common inhaled objects are burs. In general dental practices, burs are commonly recycled and sterilised to allow for repeated usage and keep the costs down. Multiple uses could wear down the bur tail eventually leading to its fracture.

The third most common inhaled/ingested objects were indirect restorations such as crowns and bridges. When fitting these indirect restorations it is recommended that the patient is sitting as upright as possible.¹⁷ For crowns, a piece of gauze should be placed as far back in the mouth as possible without irritating the gag reflex; and for bridges a string of floss should be attached to the retainer arm.¹⁷ From the reported incidences none of the patients were sitting upright. Half of the patients having crowns fitted had gauze placed while none of the bridges had floss tied to them.

The BBC (UK) estimated that the cost associated with wrong site surgery is escalating and stood at more than £1 million in 2006, a 145% increase on the 2003/4 figures. A third of these claims involved surgery on the wrong tooth.¹⁸ The NPSA data indicate that wrong site extractions accounted for approximately 2% of PSIs. The literature surrounding wrong site tooth extraction is sparse at best.¹⁹

Wrong site surgery is an example of a serious preventable error which – as well as the economic impact of further procedures and compensation proceedings – can lead to short- and long-term medical and psychological implications and potentially catastrophic outcomes.

Several solutions are available to mitigate against this avoidable error. These include top-down solutions such as those suggested by the NPSA which has taken a lead in identifying and monitoring reports of a national set of 'Never Events' for England and Wales. These events are serious and deemed to be completely preventable. One of the eight Never Events is wrong-site surgery. Primary care trusts are required to monitor the occurrence of Never Events within the services they commission and publicly report them on an annual basis. An engagement exercise on the future of Never Events for 2011 and beyond for the NHS is being led by the Department of Health.²⁰

In 2010, a government decision was made to abolish the National Patient Safety

Agency as part of a cost-saving exercise. For the next two years, the NRLS will temporarily be transferred out of the NPSA.²¹ Organisations will still continue to report incidents as normal. Furthermore, we can continue to accrue information on the frequency, burden of harm and preventability from research studies (quasi-experimental), qualitative methods such as significant event audits, repositories of data, for example those found at the General Dental Council, National Health Service Litigation Authority (NHLA), the Medicines and Health Regulatory Agency (MHRA) and the dental/medical defence organisations.

To reduce the incidence of surgical errors, the NPSA advocates greater use of the World Health Organisation's *Safe surgery saves lives* checklist. This is a simple tool that is likely to reduce surgical mortality and/or morbidity: in the eight pilot sites overall, mortality and morbidity were reduced by a third.²² This checklist has been adapted for use in the UK and has been released as part of the NPSA's Safer Surgery Alert, which emphasises the need for surgical teams to take ownership of the checklist and routinely use it both before and on completion of surgery. It makes clear that the responsibility for safer surgery lies with the surgical team. This could be translated into the modern day dental practice, both in the hospital and in the community. A specialty specific checklist in dentistry is currently being piloted in two large dental schools.²³ Similar efforts have been made in other surgical specialties such as cataract surgery.²⁴ Another key initiative that could help ensure that this potentially devastating event does not occur is the use of CPD topics on patient safety in dentistry and the introduction of the same in the undergraduate curriculum.

Dentistry is a high-precision specialty and we must have a rethink towards our adoption of safer surgery initiatives. Some sentinel events like wrong site surgeries, which have the propensity of great harm, should be guarded against. This can only be undertaken through professional and individual buy-in of safety solutions.

CONCLUSION

Issues of patient safety in dentistry, although less frequent compared to medicine, do occur as illustrated by the incidents recorded in the NRLS database.

Highlighting areas of concern and forming a framework whereby future cases of avoidable injury are prevented would usher in a new culture of patient safety into the dental specialty.

We would like to thank Bhavesh Patel, information analyst, for interrogation of the NRLS database.

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