

# Dental care pathways for adult inpatients in an acute hospital: a five-year service evaluation

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## Key points

Describes the need for urgent dental care for inpatients.

Highlights the common presentation of dental problems in inpatients and their management.

To raise awareness of the need to commission dental services for inpatients.

## Abstract

**Introduction** The oral health of adult inpatients has been found to deteriorate during hospital admissions, which can impact on eating and drinking, risk of hospital-acquired infections and overall recovery, thus extending the length of admission.

**Aim** The aim of this paper was to evaluate the reasons for inpatient referrals to the dental and maxillofacial department and the treatment outcomes through analysis of referrals over a five-year period collected prospectively.

**Method** Data were collected from inpatient referrals to the dental and maxillofacial department at East Surrey Hospital over five years from January 2014 to December 2018. Information about reason for referral and treatment outcomes was reflected on.

**Results** In total, 851 referrals were received from hospital staff over five years. The most common reason for referral was related to acute dental pain and potential analgesic overdose (16%), followed by suspected dental abscess or facial swelling (12%) and dental assessment for cardiac inpatients (11%). The most common treatment outcomes included consultation and advice only (16%) or dental extraction (16%). A large proportion of outcomes related to management of oral pain due to dry mouth (9%), oral ulceration (6%), broken dentures (8%) or fillings (5%).

**Conclusion** The data collected show there is a clear need and benefit for hospitals to commission dental services for inpatients.

## Introduction

The oral health of adult inpatients has been found to deteriorate during hospital admissions which can impact on eating and drinking, risk of hospital-acquired infections and overall recovery, thus extending the length of admission.<sup>1,2</sup> Oral-related problems can be a significant burden on someone who is already medically unwell and can lead to their health deteriorating.<sup>3,4</sup> Inpatients are more susceptible to developing oral problems due to factors including polypharmacy, multiple comorbidities, changes in oral hygiene practice

and increasing age.<sup>5</sup> Patients often have pre-existing dental pain that may play a factor in the individual's overall recovery,<sup>6</sup> and many patients who are admitted to hospital have pre-existing oral problems such as caries and broken dentures. Many pre-existing systemic diseases and medications prescribed during an admission can lead to acute ulceration, candida infection and xerostomia, which can be debilitating for patients.<sup>7</sup> Increasing age of the average inpatient also means that patients are more likely to present with oral pain and soft-tissue lesions including cancer.<sup>8</sup> A report by the Royal College of Surgeons England estimates that at least 1.8 million people aged 65 and over have an urgent dental condition.<sup>9</sup>

Many patients, for example those with delirium or dementia in hospital, are not able to communicate that they are experiencing oral pain and signs may include a change in eating habits, facial swelling or behavioural changes.<sup>10</sup>

The impact of severe toothache can lead to reduced oral intake, contributing to urinary tract infections and delirium.<sup>11,12</sup> Unfortunately, dental loss is common in hospital and this

may have a profound impact on eating and well-being.<sup>13</sup> Poor oral health has been found to be linked to increasing frailty, which is a significant healthcare challenge in ageing populations.<sup>14</sup> Poor oral health can also impact on a range of systemic diseases, while high levels of oral plaque are linked to aspiration pneumonia.<sup>15</sup> This carries a high morbidity and mortality risk, and can often lead to prolonged hospital admissions and additional pressures on secondary care services.<sup>16</sup>

Many of the patients in hospital with acute oral problems would benefit from dental input; however, most hospitals do not have a dentist as part of their multidisciplinary team and dental services for inpatients are not routinely commissioned.<sup>17</sup> The responsibility for urgent dental pathways is not included in commissioning standards and therefore is the responsibility of the trust to secure.<sup>18</sup>

The absence of established dental pathways in hospitals may be due to a lack of awareness of the positive difference it can make to inpatient care.<sup>19</sup> In cases where nutrition uptake improves as a result of appropriately

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**Table 1** Examples of urgent and non-urgent dental referrals

Urgent concern		Non-urgent	
<b>Severe dental pain</b>	May be affecting sleep, eating and drinking	<b>Fractured tooth/filling/dentures</b>	No significant pain and not adversely affecting patient
<b>Dental infection</b>	Associated with facial swellings, suppuration, abscess adjacent to teeth	<b>Loose dentures</b>	Pre-existing problem not causing significant pain
<b>Trauma to teeth or soft tissue</b>	May be due to a fall or injury	<b>Cosmetic dental issue</b>	Otherwise signposted to primary care services
<b>Mobile teeth</b>	Risk of aspiration or cause of severe pain		
<b>Ulcers</b>	Often caused by fractured teeth or dentures		
<b>Lost dentures</b>	Most hospitals will not be able to remake dentures, but the patient/family should be advised on how to find a dentist		

managing dental pain, there is the potential to improve recovery and reduce number of bed days. This has both a positive benefit to the patient and also financial benefits to the trust.<sup>20</sup>

In the absence of dental input, it will fall to the responsibility of the hospital doctors to manage oral problems. Doctors often have no undergraduate or post-graduate training in oral health and do not feel confident to manage common oral conditions in their patients.<sup>21</sup>

In addition to patients with acute dental problems, there are other inpatient groups including those commencing IV bisphosphonates and awaiting cardiac surgery that require dental input. Prior to initiation of a bisphosphonate medication, patients should have a comprehensive dental examination<sup>22</sup> to reduce the risk of medicine-related osteonecrosis of the jaw. Patients requiring urgent IV bisphosphonate drugs as part of oncology treatments may require dental treatment while admitted in hospital. An increasing number of patients are taking bone-resorptive drugs and the incidence of osteonecrosis of the jaw has been reported with an increasing frequency.<sup>23</sup>

Patients admitted to hospital awaiting cardiac intervention also require dental assessment; often, this is to reduce the risk of infective endocarditis. SDCEP has produced clinical guidance and recommendations on preventing infective endocarditis in people who are at increased risk of developing this condition; however, implementation of this guidance for inpatients relies on access to dental services and through a hospital-established pathway.<sup>24</sup>

East Surrey Hospital, an acute hospital with approximately 700 beds, has an onsite dental service providing a range of services including oral surgery and special care dentistry. Located within an acute trust, the dental service has

historically provided an *ad hoc* urgent dental service for inpatients. As part of Mouth Care Matters (MCM), an oral health improvement programme introduced in 2015, all inpatients have an oral health assessment 24 hours post-admission by the nursing team, which includes questions on oral health symptoms and a mouth care assessment.<sup>25</sup> The increased awareness of oral health subsequently led to an increase in referrals to the dental unit for advice and management. Developing a pathway between the hospital wards and the outpatient dental service has allowed the medical and nursing team to refer patients for urgent and non-urgent conditions. Although some trusts may have access to oral and maxillofacial surgery services, non-surgical services such as dental fillings and denture replacements are often not available and links to primary or community dental care may not be established.

The aim of this paper is to evaluate the reasons for referral to the dental and maxillofacial department and the treatment outcomes through analysis of referrals over a five-year period collected prospectively.

## Method

Healthcare professionals working within the hospital can refer an inpatient to the dental and maxillofacial department via a written referral; this is a common referral pathway for any inpatient requiring other healthcare assessments, such as neurology, rheumatology etc. The dental service operates Monday to Friday, between 08.30–16.30.

The referrals are entered into a ward logbook by the receptionists and triaged by a member of the dental team. The team aim to review the inpatient within one working day of receiving the referral, with one of the following outcomes:

1. Advice given to staff/patient/family (this may include oral hygiene instruction, reassurance, signposting to dental services post-discharge, correctly advising the medical team)
2. Urgent dental treatment indicated during admission, arranged on the ward or in the dental and maxillofacial department
3. Onward referral to max-fax; for example, for severe facial trauma, spreading infection requiring drainage and systemic antibiotics.

Treatment is only provided to patients where it is likely that the oral problem is impacting on their current hospital admission. Examples include a very mobile tooth preventing eating or being a risk of aspiration, smoothing a tooth that is causing traumatic ulceration and causing severe pain, and extracting teeth before cardiac surgery to make patients dentally fit. Treatment is not usually required for routine dental care; for example, a broken tooth that is not causing significant pain or an asymptomatic retained root (Table 1). For patients who require IV bisphosphonates as part of their haematology-oncology treatment, there is a separate pathway for referral and management.

The following information is recorded in the logbook:

- Date referral received
- Name of ward
- Patient details
- Reason for referral outcome
- Name and signature of clinician.

This data were collected over a five-year period and analysis was performed of all inpatient referrals received by the dental and maxillofacial department at East Surrey hospital, from January 2014 to December 2018. Data were excluded for referrals with incomplete information recorded and for

patients with a new diagnosis of multiple myeloma, as they are referred via a separate pathway.

## Results

In total, 851 referrals were received by the dental and maxillofacial department from hospital staff over five years (Fig. 1). The most common reason for referral was related to acute dental pain and potential analgesic overdose (16%), followed by suspected dental abscess or facial swelling (12%) and dental assessment for cardiac in-patients (11%) (Fig. 2, Table 2).

The most common treatment outcomes included consultation and advice only (16%) or dental extraction (16%) (Table 3). A large proportion of outcomes related to management of oral pain due to dry mouth (9%), oral ulceration (6%), broken dentures (8%) or fillings (5%).

### Patient case scenario one

An 82-year-old patient was not eating or drinking due to soreness in the mouth. Medical staff were concerned about the large ulcer, as well as risks associated with malnutrition for this patient. This problem was recognised as part of the daily mouth care assessment by nursing staff and monitoring of patient nutritional intake. There were concerns from the nursing team that the patient may have oral cancer.

Fig. 1 Total number of referrals from 2014–2018

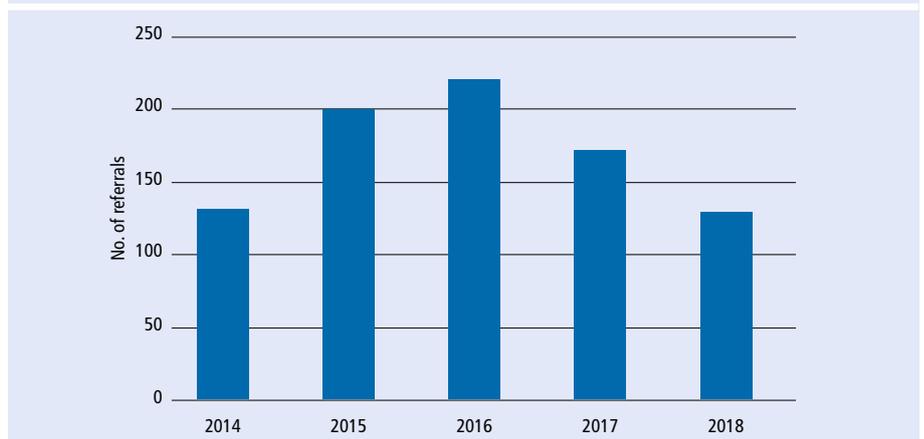


Fig. 2 Visual representation of the reasons for referrals over five-year period

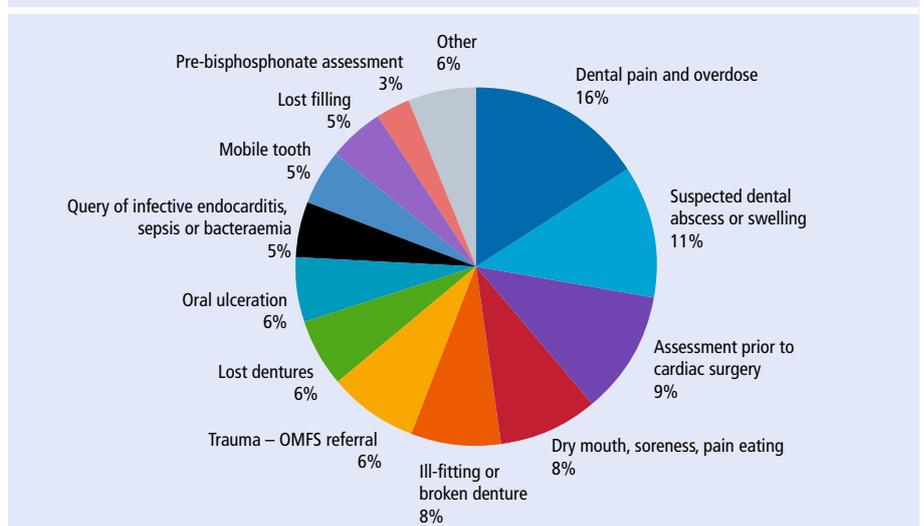


Table 2 Reasons for inpatient referrals over a five-year period

Referral	2014	2015	2016	2017	2018	Total
Acute dental pain and suspected overdose	22	31	39	22	18	132
Suspected dental abscess or swelling	14	27	20	27	12	100
Assessment before cardiac surgery	24	16	13	24	15	92
Dry mouth, soreness, pain eating	4	28	27	11	7	77
Ill-fitting or broken denture	10	20	15	15	9	69
Trauma – OMFS referral	14	19	9	12	11	65
Lost dentures	11	7	9	11	13	51
Oral ulceration	6	10	13	15	8	52
Query of infective endocarditis, sepsis, bacteraemia	11	11	14	4	5	45
Mobile tooth	5	6	15	11	8	45
Lost filling	1	1	18	11	11	42
Pre-bisphosphonate assessment	0	3	17	0	2	22
Other	7	20	10	9	9	55
<b>Total</b>	<b>131</b>	<b>200</b>	<b>219</b>	<b>172</b>	<b>129</b>	<b>851</b>

Key: 'Other' includes damage to teeth after intubation, prolonged bleeding sockets, suspected fungal infection and suture removal

**Table 3 Outcome of inpatient referrals over five-year period**

Outcome of referral	2014	2015	2016	2017	2018	Total
Consultation and advice	15	34	44	39	19	149
Dental extraction	23	32	38	26	25	144
Assessment and radiographs	16	19	26	10	8	79
Treatment planned in primary care	4	17	16	19	3	59
Patient discharged from hospital	7	2	19	16	15	59
Referral to special care consultant	5	26	11	12	3	57
Denture repaired	8	13	12	14	7	52
Temporary filling, dressing or tooth smooth	4	10	20	6	10	50
Dry mouth care	0	19	13	4	3	39
Oral hygiene instruction	7	14	11	2	4	38
Antibiotics advised	12	12	6	4	1	35
Referral to OMFS	6	7	4	10	8	35
New dentures made	8	4	6	11	5	34
Prescription of mouthwash	4	7	9	2	6	28
Treatment declined	2	2	5	4	9	22
Extirpation of tooth	2	0	1	0	3	6
Other	11	8	2	5	11	37
Total	132	225	241	183	140	921

Key: Other' includes removal of sutures, patient deceased, mouth guard construction and denture hygiene advice

The patient was initially referred to the mouth care lead nurse, who referred to the hospital dental team as the patient needed active intervention to treat the cause of the ulceration. The ulcer was identified as a traumatic ulcer. The sharp tooth was identified and smoothed, allowing the ulcer to heal and for the patient to be able to eat (Fig. 3). This case shows how small and effective interventions can lead to improved patient outcome.

#### Patient case scenario two

A 58-year-old patient awaiting valve replacement surgery had uncontrolled severe toothache; the following was a direct quote from the patient: *'This toothache is more painful and problematic than the heart problems, because painkillers aren't working'*.

In this case, the medical team were concerned regarding the spread of infection and stress caused to the patient due to the dental pain; therefore, the patient was referred from the coronary care unit (Fig. 4). The dental treatment helped to reduce the risk of further cardiac complications and to reduce the dependency on hospital pain relief. The patient was given the choice to either extirpate or extract the

tooth. Being able to give the patient choice of treatment is an important part of consent and preserving patient dignity and oral health.

#### Discussion

It is clear that there are benefits to inpatients if their urgent oral health needs are managed by providing timely urgent dental care and this may positively contribute to overall patient recovery. Assessing and making patients dentally fit before bisphosphate and cardiac surgery will also improve their long-term outcomes. Providing dental care for patients undergoing oncology and cardiac interventions requires an established dental pathway in order to prevent delay. In this evaluation, 92 adult inpatients were referred from the cardiac unit directly to the special care dental services for an oral assessment before cardiac surgery (Table 2).

The most common reason for dental referral was dental pain, including patients admitted to hospital due to self-administered analgesic overdose. Inadvertent paracetamol overdose remains a major public health problem requiring emergency hospital admission. This results in a significant burden and cost for secondary care

services and highlights that there are barriers to patients accessing appropriate dental care.<sup>26</sup> Examination and advice with no treatment required following the inpatient referral was the most frequent outcome. Providing reassurance and excluding dental problems as the cause of nonspecific symptoms and possible infections is an important service, as is signposting patients to dental services post-discharge. As mentioned previously, medical staff may not be confident in diagnosing and managing oral health problems and often receive little training in this area, leading to inappropriate advice and treatment.<sup>21</sup> The data from this evaluation demonstrates that there is a benefit in having dentists as part of the multidisciplinary team.

The 34% increase in number of referrals from 2014 coincides with introduction of oral health training for the nurses, allied healthcare professionals and doctors, carried out as part of Mouth Care Matters, a Health Education England programme aimed at improving oral healthcare.<sup>25</sup> The increased awareness of all healthcare professionals in common oral conditions and routine oral assessments resulted in more oral problems being detected. The results also show a trend

Fig. 3 Patient case scenario one (vignette)

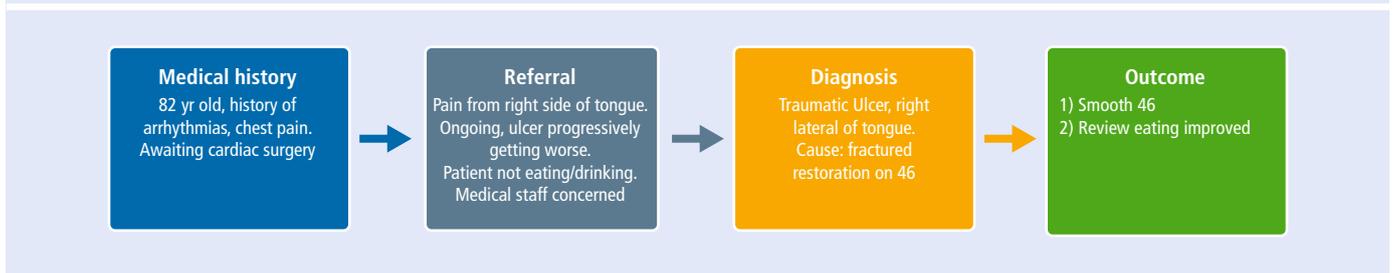
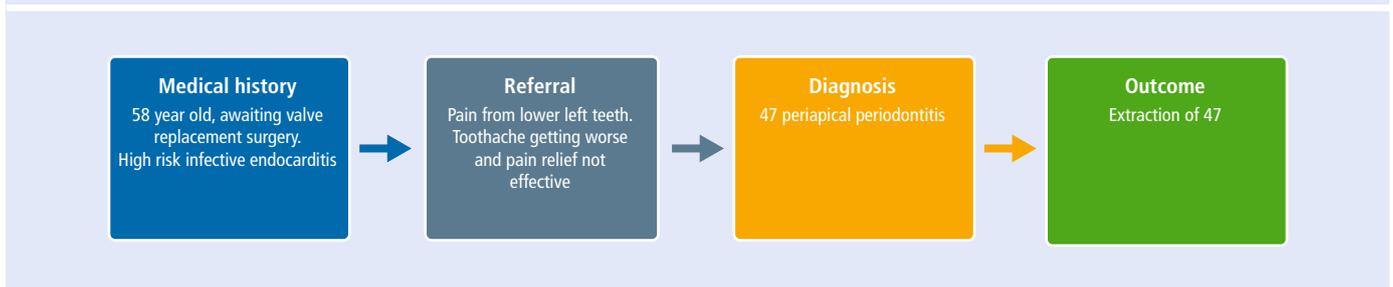


Fig. 4 Patient case scenario two (vignette)



indicating a decrease in number of referrals in 2017; this is most likely linked to creating a dedicated referral pathway to the mouth care lead nurse who could advise on oral hygiene-related issues.

In the UK, there are 168 acute hospitals with 24 teaching hospitals; only 109 have dental or oral and maxillofacial surgery (OMFS) departments.<sup>27</sup> East Surrey Hospital has an onsite dental and maxillofacial department and special care service that can provide urgent dental treatment for inpatients. The service relies on the established dental referral pathway, and capacity (as a result of last-minute cancellations for the dental team), but also utilises dentists in training undergoing dental core training posts. This exposes the trainee to the complex needs of oral healthcare for adult inpatients and utilises their skills in service provision. In order to fully utilise this service, a robust triage system is needed. Many of the referrals were for suspected fungal infections and sore mouth, which may be managed under the remit of the medical team without the need for a dental referral. However, in a study of 146 junior doctors, 92% did not feel confident in diagnosing oral conditions.<sup>21</sup> This highlights the opportunity for dental teams to be involved in training for their medical peers and the benefits towards patient management.

Dental extractions were the most common treatment option (16%); this is not surprising as severe dental pain was the most common reason for referral (16%). Although a temporary filling or smoothing a tooth may

not necessarily be classified as an urgent dental outcome, for an inpatient for whom a sharp tooth is lacerating their soft tissues, it can make a considerable improvement to their comfort and ability to eat/drink (Figs 3 and 4).

A significant proportion of referrals were for denture-related problems (8%) and denture loss (6%). If a denture is lost or broken, this can have a detrimental effect on an individual's nutrition, ability to communicate and well-being. Patients' dentures may be lost on the hospital ward or during hospital transfer due to no fault of their own.<sup>13</sup> It is important that hospitals have local protocols on how to manage denture loss and signpost patients appropriately to minimise the wait to have new dentures made if appropriate. Through appropriate signposting of patients to local dental services, only 4% of patient outcomes related to new denture construction by the onsite dental team.

Hospitals are ultimately responsible for providing overall care when patients are admitted to their wards; this should include urgent dental care for inpatients that are not able to access a dentist. This should be consolidated in a fully funded and commissioned pathway. In recent commissioning guidance, NHS England's service specification for the local area stated that special care and paediatric services will not include dental services for inpatients.<sup>17</sup> It will be necessary for hospitals to have a service-level agreement with local dental services. There is also the important issue of how urgent dental care in hospitals

is remunerated. NHS England commissions all NHS dental services: primary, community and secondary care services, including dental hospitals and urgent dental care services. In secondary care, trusts are paid according to the clinical codes and activity they report to commissioners. A service-level agreement needs to be made with the trusts and the dental provider for appropriate remunerations.

There is an increased awareness that oral health is an integral part of general health in recent years and that a more holistic approach to oral health is needed. The NHS Long Term Plan<sup>28</sup> states that individuals must be supported to achieve and maintain good oral health in care homes and it is the authors' views that this should also extend into hospital care. A drastic shift has occurred over the last century, with older people retaining their teeth and being more likely to have had extensive dental work, including fillings, crowns, bridges, dentures and implants, all of which require meticulous daily cleaning to maintain. These patients are also more likely to develop oral problems that can impact on quality of life, especially when acutely ill in hospital. Services need to be commissioned to meet the future needs of the population.<sup>29</sup>

## Conclusion

The data collected over the past five years in this study show there is a clear need and benefit for hospitals to commission dental services for inpatients. There are well-established

links between poor oral health and general health, and how this impacts patients' overall hospital stays. It is the hospital's responsibility to commission dental service, in-house or externally. The dental and maxillofacial team at East Surrey Hospital have shown how a clear inpatient pathway can utilise the dental team's skills, including the dental core trainees, all with the aim to preserve patient dignity and health, and to improve and reduce patient dependence on hospital care.

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