Outcomes

Dental Clinical Academic Group

KING'S HEALTH PARTNERS

An Academic Health Sciences Centre for London

Pioneering better health for all

King's Health Partners brings together:

- three of the UK's leading NHS Foundation Trusts;
- a university ranked 19th in the world;
- 3.6m patient contacts each year;
- 31,000 staff;
- 25,000 students;
- a combined annual turnover of £2.8bn;
- clinical services provided across central and outer London locations, including seven mental health and physical healthcare hospitals and many community sites;
- a comprehensive portfolio of excellent quality clinical services with international recognition in cancer, diabetes, mental health, regenerative medicine, cardiac and clinical neurosciences;
- a major trauma centre and two hyper-acute stroke units.

About King's Health Partners

King's Health Partners Academic Health Sciences Centre brings together one of the world's top research-led universities, King's College London, and three of London's most successful NHS Foundation Trusts – Guy's and St Thomas', King's College Hospital and South London and Maudsley.

The partnership provides an unrivalled combination of complex clinical specialties that cover a wide range of physical and mental health conditions and a breadth of research expertise that spans disciplines from medicine and biomedical sciences to the social sciences and humanities.

There are three facets to our mission: to integrate clinical care, research, and education and training in order to improve healthcare for people with physical and mental health care problems. We are uniquely structured to deliver our mission for integration – our 21 Clinical Academic Groups (CAGs) bring together all the clinical services from the three trusts with the relevant academic departments of King's College London.

Foreword

Professor John Moxham, Director of Clinical Strategy

Across King's Health Partners we are committed to providing accurate and timely information about patient care and believe that identifying, measuring and publishing healthcare outcomes results in a culture of improvement and increased value. This is why we are publishing a series of outcomes books that will help patients and referring clinicians make informed decisions and drive up the quality of the care we deliver.

The books report key outcomes for treatments that are provided by our 21 Clinical Academic Groups (CAGs). They are designed for a clinical and lay audience and contain a summary of patient volumes and measures (e.g. length of stay, re-admissions, patient experience), clinical outcomes, technological and research innovations and publications.

CAGs form the building blocks of our Academic Health Sciences Centre. We believe that by bringing together our clinicians and academics across teaching, training and research, we can achieve better outcomes for patients.

The primary purpose of King's Health Partners is to improve health and well-being locally and globally. We must deliver this goal against a challenging economic environment, with rising demand for, and costs of healthcare. We will only achieve sustainable health improvement if we strive always to increase value. We define value in terms of outcomes that matter to patients, over the full cycle of care, divided by the cost of producing those outcomes. By publishing outcomes books we have more information to support us measuring the value of the healthcare we provide.

These books are a work-in-progress. Our goal is to increase the depth and breadth of reporting each year. Books will be updated annually to demonstrate progress across the tripartite agenda.

We hope you find these data valuable, and we invite your feedback. Please send comments and suggestions to us at kingshealthpartners@kcl.ac.uk.

For more information please visit our website at www.kingshealthpartners.org.

Yours faithfully,

Professor John Moxham, Director of Clinical Strategy, King's Health Partners
November 2013

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Integrating Mental and Physical Healthcare with King's Health Partners (KHP)

Mental and physical integrated healthcare

King's Health Partners' aims to create a centre where world-class research, education and clinical practice (the 'tripartite mission') are brought together for the benefit of patients.

We want to make sure the lessons from research are used more swiftly, effectively and sympathetically to improve healthcare services for people with physical and/or mental health care problems.

In transforming healthcare for the whole person, we will achieve this through our commitment to integrated mental and physical healthcare research, education and clinical delivery, across our breadth of services and from conception to the last days of life.

We aim to:

- transform outcomes for patients with both mental and physical health conditions, to ensure that care in all healthcare settings address the whole person, and is patient centred;
- expand our international programme of research and provide comprehensive innovative staff education programmes;
- develop and evaluate novel and integrated mental and physical healthcare pathways in

collaboration with commissioners, patients and primary care colleagues.

More specifically, we will:

- address underlying physical health risk factors which contribute to the excess mortality experienced by patients with enduring mental health problems;
- reduce the adverse impact of mental health disorders on outcomes of long-term conditions and medically unexplained symptoms;
- integrate service provision for the whole person throughout all of our specialties.

Academic integrated care system

We are committed to working with our partners across local boroughs to integrate services at a local level to improve patient care. To this end we will use 2014/2015 to test the provider offer and new models of care to enable a more integrated academic health system.

We are a founder member of Southwark and Lambeth Integrated Care (SLIC), a movement for change aiming to genuinely shift how care services are delivered so they are coordinated around the needs of people, treating mental health, physical health and social care needs holistically.

This programme is vital to address the crisis of value within our healthcare economy: quality must improve significantly so people receive effective care and experience it positively.

A lot has already been achieved. Work to date has built an ever deepening shared understanding of the issues, a commitment to action, and an understanding of the options to reduce avoidable emergency admissions, speed up delays in discharge, improve mental and physical health liaison and reduce admission to residential care.

KHP's urban Public Health collaborative

Public health has been identified as a priority and is one of our grand challenges. We have developed a strategy approved by our Executive – 'Over the next five years we aim to be recognised internationally for our academic and service innovation in urban Public Health in addressing local and international issues, with a focus on inequalities in health and healthcare delivery, particularly with regard to ethnicity and deprivation.

Through our Clinical Academic Groups (CAGs) and the south east London sector will be an innovative test bed to develop and test solutions in prevention and management of long term conditions of Public Health importance, thereby achieving academic, training and service delivery to improve public health excellence.

In order to reduce morbidity, improve mortality and reduce health inequalities in south east London all CAGs have responded to a call for increased action in the following areas, with emerging progress. We have implemented both an alcohol and tobacco strategy which has so far:

KHP alcohol strategy

- Developed appropriate resources for clinical staff and patients
- Developed and implemented training for all staff on excess alcohol early identification and intervention
- Established ourselves as a centre of excellence for integrated research, training and practice in the management and prevention of alcohol misuse
- Attracted funding for future alcohol clinical, training and research initiatives
- Monitored the impact of the strategy on indicators of alcohol related harm.

KHP tobacco strategy

- Is now smoke-free in 1 CAG since 2013
- Developed an informatics structure for routinely and systematically recording smoking status
- Support referrals and treatment uptake for smoking cessation across the partnership
- Co-produced clinical care pathway for nicotine dependence treatment
- Co-produced nicotine dependence record card for service users
- Developed and implemented training packages for smoking cessation interventions for all our healthcare professionals
- Monitored the impact of our smoking cessation strategy in relation to knowledge and uptake of skills by staff, uptake of smoking intervention, outcomes of intervention, user satisfaction, prevalence of smoking, cost effectiveness of interventions.

Introduction

The Dental Clinical Academic Group (CAG) integrates the remarkable expertise and strengths of three partner organisations: King's College London, Guy's and St Thomas', and King's College Hospital. Our history of providing excellence in research, education and patient care is long and rich. As early as 1799, lectures on dental surgery were held at Guy's Hospital, ultimately leading to the creation of Guy's Medical and Dental School. Through a series of mergers of academic institutions and hospitals, King's College London Dental Institute was formalised in 1998.

The scale and impact of the Dental Institute is extensive. We provide care for more than 300,000 patients each year at more than 30 sites across south London. Our staff body of over 1,000 work in two major dental hospitals in our partner NHS Foundation Trusts, four polyclinics and over 30 community clinics. This breadth allows us to treat patients close to their homes.

Our international reputation for excellence and innovation draws patients from around the world. Through our joint multi-disciplinary clinics with medical specialities we provide services for people with complex and rare conditions. Examples of the services we provide in partnership with other disciplines include: oncology with head and neck cancer; Behcet's syndrome with ophthalmology; Sjögren's syndrome with rheumatology; orofacial granulomatosis with gastroenterology/renal; cognitive behavioural therapy with psychiatry; and dental treatment for people with rare dermatological disorders such as epidermolysis bullosa. Our nationally reputed salivary gland centre uses new approaches to tackle problems of salivary stones and obstruction with minimally invasive techniques including basket stone retrieval, balloon ductoplasty and lithotripsy thereby avoiding the need for surgery.

Our research influences and informs national policy. We provide a dental public health specialist service to the local NHS, advising on population oral health needs and health strategy. Our oral health promotion service provides a wide range of community initiatives in line with the agreed oral health promotion strategy.

We educate the entire dental team, from dental nurses through to highly trained dental specialists and everything in between. Currently we educate 20% of the dentists in England and we are home to the largest dental school in Europe. Despite our size, our students are very satisfied with the

education and clinical experience they receive and our National Student Survey scores have exceeded 90% for each of the last three years.

Our research is internationally recognised for its excellence. Our publications are highly cited and our textbooks are used throughout the world. The breadth of research is extensive, including understanding how structures of the head and neck develop and what causes both natural development and deformities; understanding how saliva and production of saliva influences oral disease and taste, creating products to minimise the effects of low saliva production; developing ways to detect cancer in its earliest stages; developing innovative ways to image tissues in real time without the need for x-rays; and developing new materials and a host of techniques to improve health, minimise the negative aspects of surgical treatments, and restore function and aesthetics. Our researchers actively participate in the Guy's and St Thomas' Biomedical Research Centre and collaborate with colleagues within King's Health Partners and around the world.

Oral health and the population of south east London

There is much to be done to address the oral health needs of south east London. Though much focus is on the prevention of oral disease, there remains great need and diversity in oral conditions and related health behaviours in the socially diverse population of south east London (see the oral health heat map shown in Figure 1 overleaf). This mirrors the general health inequalities in south east London and includes health behaviours such as high alcohol consumption, smoking, poor diet and violence which are risk factors for all common oral diseases and conditions such as oral cancer, periodontal diseases, dental caries and oro-facial trauma.

Despite improvements in oral health, dental diseases are amongst the most prevalent preventable conditions in younger children. Children's oral health is a priority in emerging public health policy to provide a good start to a healthy life.

Figure 1 | Oral risks and health risks south east London 2011/12

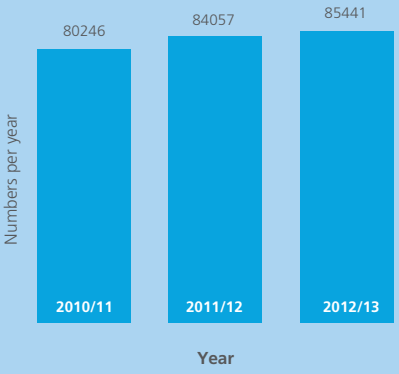
	Source	Lambeth	Southwark	Lewisham	Greenwich	Bexley	Bromley
		%	%	%	%	%	%
Dental Caries							
5-year prevelance	1	31.3	24.5	31.3	–	–	16.3
Obesity							
Obesity children: 4–5 yrs % obese 2010/11	2a	11.6	13.8	11.1	12.4	11.2	7.8
Obesity children: 11yr obese 2009/10	2b	25.1	25.7	24.4	21.5	21.5	17.2
Oral Cancer registrations 2005–07	3	10.8	11.4	9.9	9.2	7.7	8.6
Age standardised oral cancer rates per 100,000 population	4	9.4	8.6	7.0	7.5	6.0	6.5
Health behaviours							
Smoking prevelance adults, 2009–10	3	21	22	20	24	19	15
Smoking prevelance adults, 2003–05	5	(28.1)	(27.7)	(26.8)	(26.6)	(27.8)	(21.9)
Alcohol binge drinking estimate (adults), 2003–05	6	16.8	14.8	12.9	12.6	10.7	10.7
NHS dental attendance rates in the past 24 months in children*	7	64.4	64.9	67.8	85.4**	65.3	70.4

**assumes local children attended a dental practice in their PCT (24 months) **marked inflow of patients*

Key:
= Worse that national average = Better than national average

Source: www.nwph.net/dentalhealth/caveat.htm

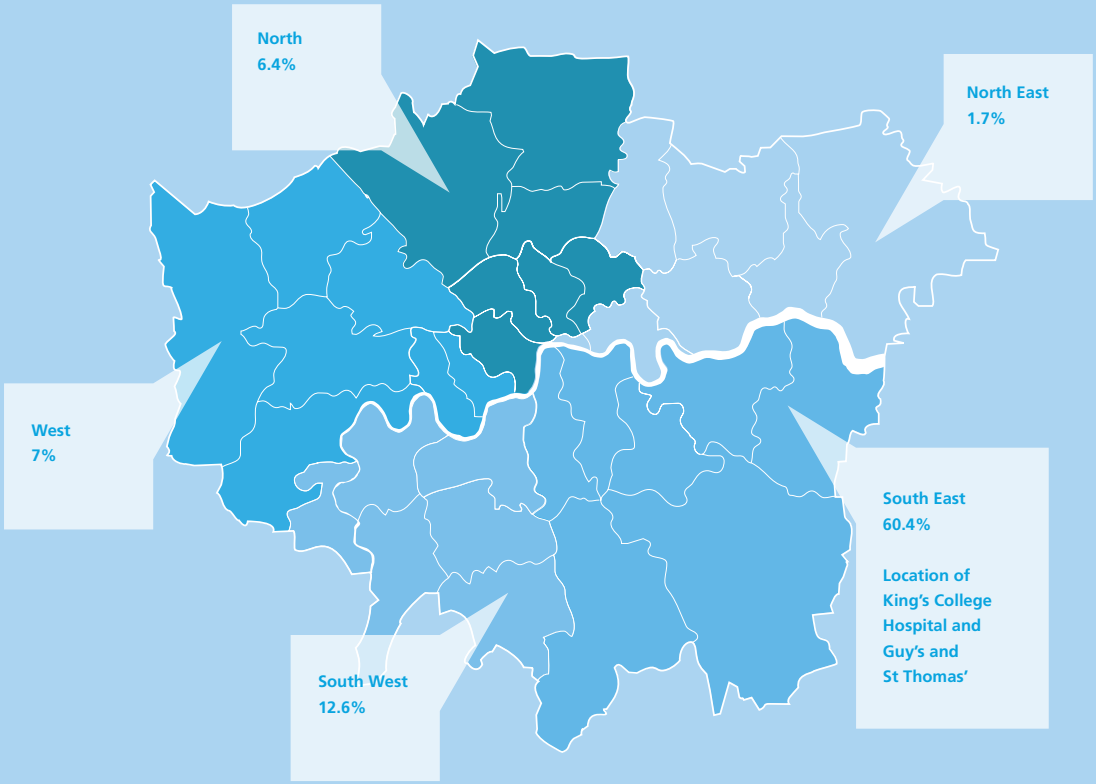
Figure 2 | New patients seen by the Dental CAG



Source: King's Health Partners Informatics

Patient catchment area for the Dental CAG, 2012/13

The map below shows that in 2012/13, 88.1% of patients seen by the Dental CAG were from the London area. The remainder of patients seen were from other areas of the UK including the Channel Islands and from around the world.



CAG structure

CAG Leader
Prof Dianne Rekow
(Academic Lead)

Prof Tim Newton (Research Lead)

Mr Eric Whaites (Clinical Lead)

Prof Mark Woolford (Education Lead)

Ian Jackson (Financial Lead)

Guy's and St Thomas' Dental Hospital
Mr Eric Whaites (Clinical Director)

Angela Farmer
(General Manager)

Samantha Salaver
(Head of Nursing)

King's College London
Prof Dianne Rekow
(Dean of the Dental Institute)

Professor Mark Woolford
(Associate Dean/Education)
– Undergraduate Education
– Postgraduate Education

Professor Andrea Streit
(Associate Dean/Research)
– Craniofacial development and stem cell biology
– Mucosal and Salivary research

Jeremy Williams (Director of Administration)

Prof Nigel Pitts (Centre for Innovation and Translation)

Dr Rebecca Moazzez (Clinical Research Unit)

Professor Raman Bedi (Centre for Transcultural Oral Health)

King's College Hospital Dental Hospital
Dr Rob Hale (Clinical Director)

Ian Jackson
(General Manager)

Lesley Davies
(Head of Nursing)

Dental disciplines

The Dental CAG incorporates a full range of disciplines:

Conservative Dentistry is a division of Restorative Dentistry that focuses on preserving tooth structure and restoring function of tissues lost to disease, fracture, or trauma. It includes preventive dentistry (like applying sealants to prevent cavities from forming) and filling cavities in the teeth.

Endodontics focuses on causes, diagnosis, prevention, and treatment of diseases and injuries of the tooth root, dental pulp, and surrounding tissues. The tooth pulp contains nerves and blood vessels. If they become diseased or injured, they can cause considerable pain. The pain can be relieved by root canal treatment which involves removing the contents of the pulp, then sealing the apex of the root and filling the remaining tooth cavity. Endodontics is a recognised specialty in the UK.

Implantology is the study and practice of restoring function lost by missing teeth with an implant. Implants are metal or ceramic structures surgically inserted into the upper or lower jaw bone. When the surgical site is healed and the implant is firmly supported by bone, crowns are added to the implant, providing the aesthetics and function of a normal tooth.

Maxillofacial Surgery is a surgical specialty that focuses on diagnosis and treatment of diseases and trauma affecting the face. This includes head and neck cancer, adult facial deformity, orthognathic surgery, cleft surgery, and facial trauma management.

Oral Medicine is concerned with the oral health care of patients with chronic recurrent and medically related disorders of the mouth and with their diagnosis and non-surgical management. Among its focus is diagnosis and management of dry mouth conditions, such as Sjögren's Syndrome, and non-dental chronic orofacial pain conditions such as burning mouth syndrome and trigeminal neuralgia. This is a recognised specialty in the UK.

Dental and Maxillofacial Radiology involves multiple aspects of medical imaging which provides information about anatomy, function, and diseased states of the teeth, jaws, and skull and provides interpretation of anomalies that might be found. Imaging modalities used may

include cone beam CT, panoramic radiology, cephalometric imaging, and intra-oral radiographs. This is a recognised specialty in the UK.

Oral Surgery focuses on treatment and on-going management of irregularities and pathology of the jaw and mouth that require surgical intervention. This is a recognised specialty in the UK.

Orthodontics focuses on the development, prevention, and correction of irregularities of the teeth, bite, and jaw. An orthodontist may intervene to prevent a malocclusion (improper bite) from developing in a growing child or correct a malocclusion that has already developed. They collaborate with maxillofacial surgeons to treat trauma to the face and/or reposition bones in faces that grow severely deformed. This is a recognised specialty in the UK.

Paediatric Dentistry is concerned with comprehensive oral health care for children from birth through adolescence, including care for those who have intellectual, medical, physical, psychological and/or emotional problems. This is a recognised specialty in the UK.

Periodontics is the study and treatment of structures supporting the teeth, including the gums, periodontal ligament, and bone. This is a recognised specialty in the UK.

Prosthodontics focuses on replacement of missing teeth and the associated soft and hard tissues by prostheses (crowns, bridges, dentures) which may be fixed or removable or may be supported and retained by implants. For these procedures, understanding and restoration of the occlusion (the way teeth come together during function) is of particular importance. Prosthodontics is a recognised specialty in the UK.

Restorative Dentistry deals with the restoration of diseased, injured, or abnormal teeth to normal function. Within the Dental Institute restorative dentistry encompasses conservative dentistry, fixed and removable prosthodontics, paediatric dentistry, periodontology, and sedation and special care dentistry. Restorative dentistry is a recognised specialty in the UK.

Special Care Dentistry focuses on maintaining and improving the oral health of individuals and groups who have physical, sensory, intellectual, mental, medical, emotional or social impairment or disability or, often, a combination of these factors. This is a recognised specialty in the UK.

Aims and ambitions

The aspiration of the Dental CAG is to understand disease, restore function, and enhance health by:

- engaging in quality research and translating discoveries into evidence-based clinical practice, health care policy, and new products;
- delivering a values-based curriculum to prepare students to care for a diversity of patients and appreciate and understand the rapid evolution of knowledge, discovery, and technology;
- promoting and enabling multi-disciplinary collaboration of researchers, teachers, and clinicians;
- providing high quality patient care;
- engaging people in valuing and preserving their own oral and systemic health.

Our aims for 2013/14 are:

- integrating community special care dentistry provision across 11 of the 12 boroughs in south London and consolidating this within King's Health Partners;
- integrating the dental services of South London Healthcare Trust (there are services at Queen Mary's Sidcup, the Princess Royal in Bromley and Orpington Hospital) with those at King's College Hospital and consolidating these within King's Health Partners;
- modernising the undergraduate curriculum to emphasise science, clinical skills, care of the patient, professionalism, communication, and management and leadership with particular emphasis on intertwining science with clinical skills; in parallel, a reorganisation of the academic staff will refocus research for even greater impact and collaboration;
- opening a polyclinic at Norwood Hall in spring 2014, bringing dental and medical services to a new community, offering opportunities for greater exploration of oral-systemic interactions;
- expanding and enhancing our research enterprise through new funding, broader emphasis on clinical research, and recruiting new investigators.

Table 1 | We aim to meet King's Health Partners' goals:

King's Health Partners' goals	Dental CAG contributions
Top ten globally	We have an international reputation.
An integrated academic healthcare organisation	We have operated as an integrated academic healthcare organisation for over 15 years.
Pioneering the integration of mental and physical healthcare	We have established collaborations with the Institute of Psychiatry and South London and Maudsley relating to understanding causes of dental anxiety and pain, cognitive behavioural therapy, dental risk indicators of neurodegenerative diseases, and periodontal disease in dementia.
Delivering innovative models of local healthcare	We have created models, including: a nationally-utilised method for cognitive behavioural therapy for dental anxiety, significantly reducing the need for sedation; guidelines for early detection of oral cancer; objective assessments for monitoring and improving patient care in oral mucosal diseases; approaches to eliminate trigeminal nerve trauma historically related to dental extractions; and minimally invasive procedures to treat salivary gland problems, historically requiring surgical removal of the gland.
Generating evidence to support effective population health interventions	The dental public health group has identified specific tasks to influence interventions and has implemented many, changing how people behave and changing NHS policy.
Delivering globally competitive specialist services	The breadth of the Dental CAG allows us to offer excellent specialist services across the range of dental specialties as well as creating dedicated clinics for minimally invasive procedures for minimising nerve damage associated with surgical extractions and for treating salivary gland disorders and offering in-depth care for special needs patients.
Delivering the UK's leading comprehensive children's services	We treat the full range of dental needs of children, including those needing sedation for treatment, and we collaborate with other CAGs and work with hospitalised paediatric patients to monitor and improve oral health. We plan to create a dedicated child oral health outpatient centre at St Thomas' Hospital.
Delivering high impact early phase trials of first-in-man therapies	We continue to develop new materials and approaches, creating products and patents currently being explored in trials.
Providing education and training for the healthcare workforce of the future	We train over 20% of the dentists in England as well as a high proportion of specialists and dental care professionals. Our new curriculum focuses on effective team care delivery and our students experience multiple treatment settings, including hospital, polyclinic, and community-based care.
Attracting commercial partnerships with Pharma, Biotech, MedTech	We have a long history of commercial partnerships with dental and biotech companies. Our recently created Centre for Innovation and Translation will enable even more interactions and impact.
Providing system leadership, based on Academic Health Science Network (AHSN) and Collaboration for Leadserhip in Applied Health Research and Care (CLAHRC)	The new Oral Clinical Research Unit collaborates with broader King's Health Partners practice-based research and networks.
Driving the quality of care	We are dedicated to clinical research with a 'every patient a research participant' ethos. This, along with already strong research and education, provides a valuable platform to assure we deliver evidence-based care in our two Trust sites as well as providing care in community clinics.

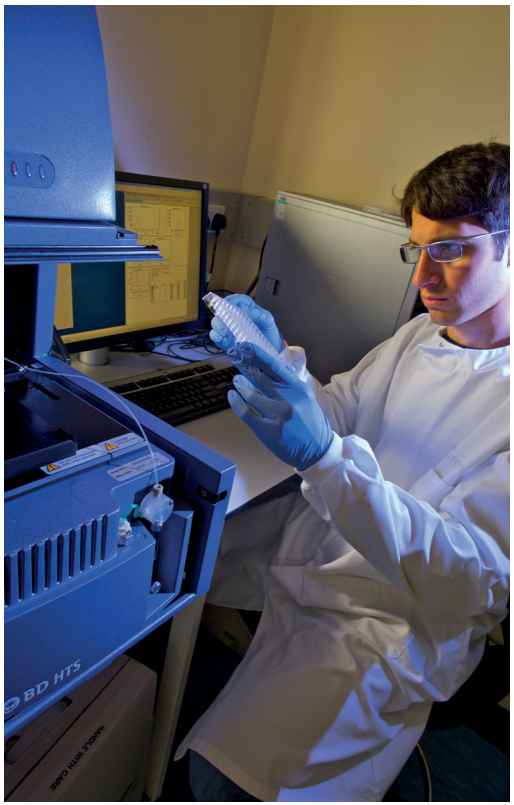
The Dental CAG is collaborating across King's Health Partners to drive outcomes and continually improve patient care

Clinical outcomes
Collaborating to improve care

Clinical outcomes are measurable changes in the health or quality of life of patients that result from the care they have received. The constant review of clinical outcomes establishes standards against which we can continuously improve all aspects of clinical practice.

The Dental CAG works in collaboration in multi-disciplinary clinics with other CAGs, including with rheumatology and opthalmology for treating Sjögren's syndrome; with gastroenterology and dietetics for orofacial granulomatosis; with dermatology for bullous disease; with psychiatry for cognitive behavioural therapy, pain, dental risk indicators of neurodegenerative diseases, and periodontal disease in dementia; and with cancer specialists to provide services for patients with a range of complex and rare diseases who require specialised dental care.

Together these collaborations have enabled us to understand the oral-systemic implications of disease and form a sound platform for continually improving patient care.



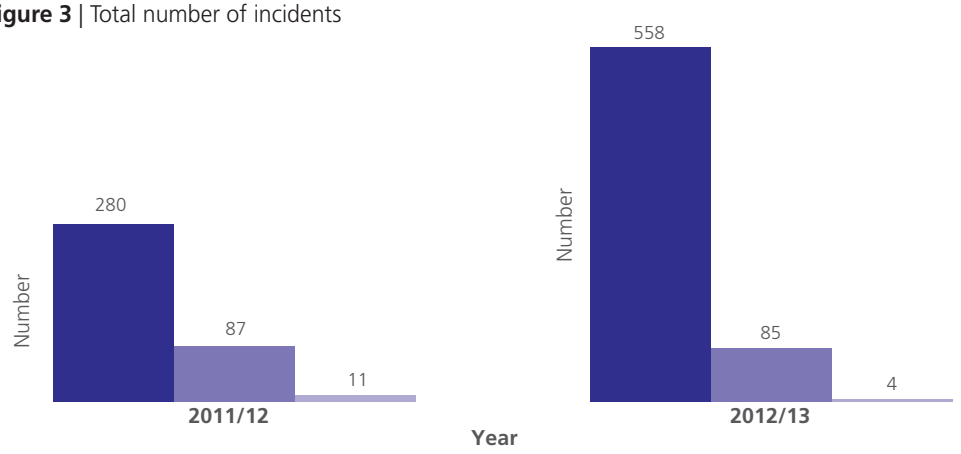
Quality of care outcomes

We aim to ensure that all patients get the most effective care in a timely and efficient manner. 'Quality of care' is a guiding principle in assessing how well the health system is performing in its mission to improve the health of patients. The quality of care outcomes we collect assess the health system's performance and measure how safe, effective, patient-centred, timely, efficient and equitable the care we provide is.

Patient safety is one of our highest priorities. We are committed to continual improvement in this area.

Figure 3 shows that out of all the incidents that have taken place in the Dental CAG, the number of low harm incidents has fallen over the last two years and the number of moderate harm incidents is extremely small compared to the total number of incidents.

Figure 3 | Total number of incidents



Key:

= No harm = Low harm – harm requiring first-aid level treatment, or extra observation only (e.g. bruises, grazes)

= Moderate harm – harm requiring hospital treatment or a prolonged length of stay but from which a full recovery is expected (e.g. fractured clavicle, laceration requiring suturing)

Source: King's Health Partners Informatics

Using research to improve patient care

Integrating research and clinical experience has resulted in improvements to clinical practices. Examples of this include:

- Oral cancer can be incredibly debilitating and has a profound impact on quality of life. Diagnosed early, it is often treatable. Dental CAG researchers and clinicians have developed new approaches focused on education prevention and screening for oral cancer and pre-cancers in high-risk communities. Our new diagnostic screens based on DNA ploidy analysis, have proven to be highly predictive of cancers developing. This approach innovated by the CAG are now being incorporated into Europe-wide guidelines and education.
- Dental CAG researchers and clinicians have created a reliable way to score the severity of oral soft tissue disease. By doing so, they are able to monitor relatively subtle changes of conditions worsening or improving. This is important because when oral tissues are diseased, it often becomes difficult to eat and the taste of food may change. With this new technique, transitions in conditions can be measured. One particularly valuable outcome is that in some conditions, the need for drug therapy with its intrinsic side effects has been replaced by simple changes in diet. Translated into multiple languages, this scoring system is now used worldwide.
- Few people like going to the dentist, but some are so anxious that they avoid treatment altogether, despite declining oral health and commonly associated increases in pain. Some of these anxious patients are willing to be treated, but only if they are sedated, making them vulnerable to the intrinsic health risks of sedation. Our clinicians and researchers have uncovered ways to work with these patients, teaching them ways to modify their anxiety through behaviour modification. For most patients, the need for sedation can be eliminated in three sessions for patients fearful of injections and in five sessions for patients fearful of routine restorative care. These approaches have now been adopted into national guidelines.
- Dental decay is among the most ubiquitous infectious diseases in the world. Periodontal disease is a major cause of tooth loss and has been implicated in low birth weight babies, cardiovascular disease, and other systemic diseases. There are very few people who are not affected by these diseases at some time in their life. Dental CAG educators, researchers, clinicians and public health experts are working to improve the clinician's understanding, including: how to ascertain when decay is active (as opposed to when it has become inactive and is not progressing); minimally invasive approaches to restoring tissues lost to decay; modifying behaviour patterns that influence both decay and gum disease (e.g., alcohol and smoking); and improving opportunities for prevention through making appropriate national and international changes in healthcare policies.


Each year we see more patients, and ensure that we see them on time

Performance measures

Performance measurement involves regularly monitoring outcomes and results to generate reliable data on the effectiveness and efficiency of clinical services. Data relate to a specific time period and are measured using specific methods.

Figures 4, 5 and 6 show that the number of patients seeking treatment from the Dental CAG continues to rise and that we meet waiting times targets for both admitted and non-admitted patients, demonstrating that despite an increase in patients, access to services is not compromised.

Figure 4 | Admitted patients (elective) All elective (inpatient + daycare, excludes Maxillofacial surgery)

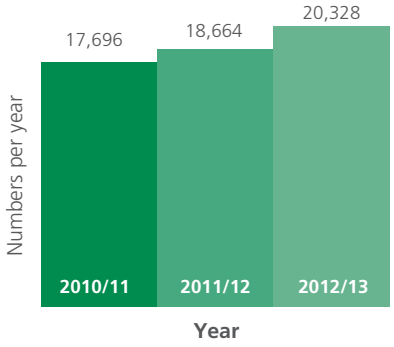


Figure 5 | Waiting times admitted (referred to treatment compliant). Percentage patients treated within 18 weeks of referral (target 90% admitted)

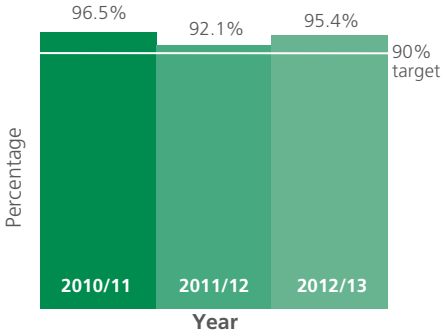
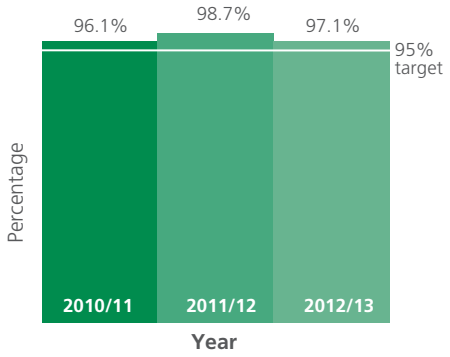


Figure 6 | Waiting times non-admitted (referred to treatment compliant). Percentage patients treated within 18 weeks of referral (target 95% non-admitted)



Patient experience

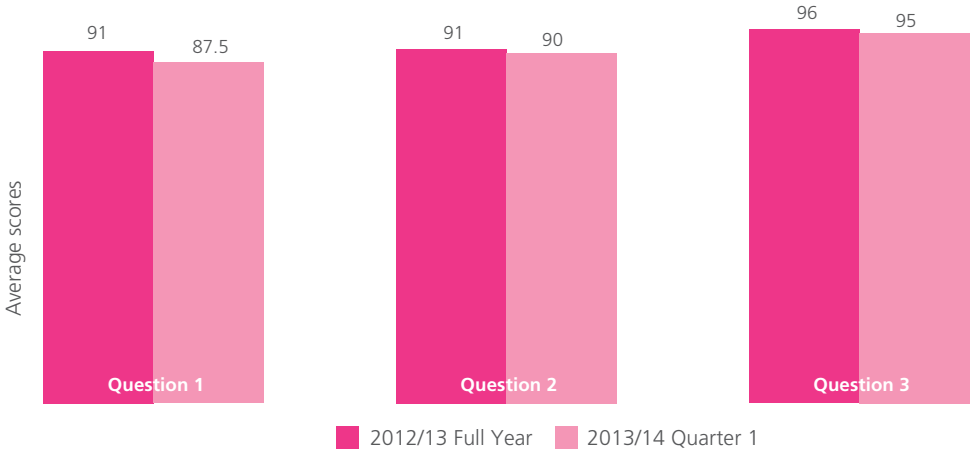
Collecting and analysing data about patients' experiences of healthcare is essential to achieving high quality care. Across King's Health Partners we are committed to using patient experience data to improve the quality of the care we provide.

The majority of our patients have a positive patient experience when using our dental services.

Figure 7 shows that patient satisfaction scores out of 100 for all respondents remained above 90 for 2012/13. The three questions asked are King's Health Partners wide metrics and are key indicators of patient satisfaction.

For the first quarter of 2013/14 the scores out of 100 for all respondents remains very high.

Figure 7 | Average scores out of 100 for all respondents



Key:

Question 1 – Were you involved as much as you wanted to be in decisions about your care?

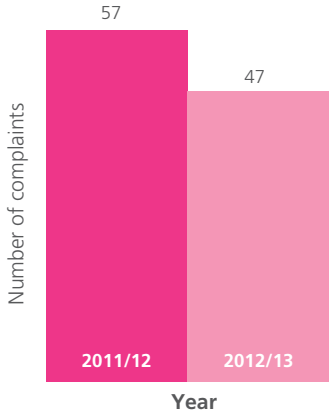
Question 2 – In your opinion, how clean was the hospital room or ward / toilets and bathrooms that you used?

Question 3 – Overall, did you feel you were treated with respect and dignity while you were in hospital?

Source: King's Health Partners Patient Experience Team

We see over 300,000 patients each year and receive comparatively small numbers of complaints. Figure 8 shows that we are continuing to reduce the overall number of complaints, striving to provide better and more consistent patient care.

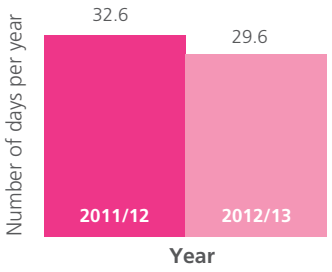
Figure 8 | Patient complaints



Source: King's Health Partners Informatics

Figure 9 shows that the teams dealing with these complaints reduced response times from 32 days to just under 30 days and continue to try to resolve these complaints as quickly as possible.

Figure 9 | Complaint follow up times (days)



Source: King's Health Partners Informatics


We are the largest dental school in Europe and educate over 20% of England's dentists

Education and training

We are the largest dental school in Europe and educate over 20% of the dentists in England as well as a large number of specialists and dental care professionals. A new curriculum being implemented in the autumn of 2013 focuses on effective team care delivery. Students gain experience in multiple treatment settings, including both in hospital and in the community. The new curriculum emphasises science, clinical skills, care of the patient, professionalism, communication, and management and leadership with particular emphasis on intertwining science with clinical skills. Unlike medical education, primary and secondary care within the Trusts is an integral component of dental education.

The Dental CAG educates over 700 undergraduate students and over 500 postgraduate students at any one time including many that study at Guy's and St Thomas'. In 2012 we were the top rated Dental Institute in the Guardian's University Guide and the Complete University Guide.

A purpose built Dental Academy was opened by the CAG in 2010, in collaboration with the University of Portsmouth (UoP), enabling undergraduate teaching in a primary care setting and pioneering team-based training alongside UoP dental care professionals. A new facility, Norwood Hall, is now under construction and will add emphasis on oral-systemic interactions.

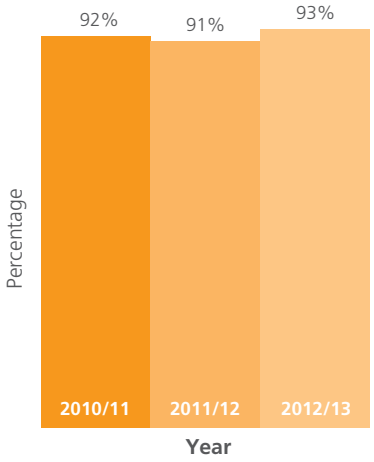
Students engage in dental care with hospitalised paediatric patients, and actively participate in primary care based health facilities in Lambeth, Southwark, and Lewisham as part of the community special care dentistry service, which currently delivers 20% of services to patients in facilitates in local communities.

Student satisfaction

In 2013 we achieved 93% satisfaction in the undergraduate National Student Survey. When choosing King's College London to pursue their research and clinical training, most postgraduate students say that it was the institution's reputation that attracted them. Postgraduate research students report high levels of overall satisfaction (81%) particularly highlighting the quality of supervision (89%), excellent resources (84%) and the strong research culture (71%). Students undertaking taught postgraduate courses highly value the skills gained (78%).

Source: Postgraduate Research Experience Survey (PRES) 2013 and Postgraduate Taught Experience Survey (PTES) 2013

Figure 10 | Student satisfaction (undergraduate)



Source: King's Health Partners Informatics

The breadth of the dental workforce

We provide education for a range of dental professionals, including:

- Dental nurses: 2 year diploma, 25 students per year with a total of 50 currently enrolled.
- Dental hygienists/therapists: 2.5 year diploma, 30 students per year with a total of 75 currently enrolled.
- Dentists: 5 year BDS degree, 165 students per year with a total of 740 currently enrolled. Up to 20 of these students are engaged in a special widening participation programme. These students are drawn from atypical school settings. Some students come with prior university-level training, up to 30 with 1 year of prior learning can be accepted, and eight students with medical degrees are granted two years of prior learning.
- An intercalated 6 year degree: Dental students enrolled in the 5 year BDS programme have the option of adding an additional year of study to explore other fields in greater detail and by doing so also earn a BSc degree.
- Postgraduate dental training: Over 400 postgraduate students are currently enrolled in postgraduate programmes primarily focused on specialty training.
- PhD researchers: Over 100 students are currently enrolled in PhD programmes, across the breadth of research initiatives within the Dental CAG.

Research and innovation

Research is an integral part of Dental CAG activities. Our researchers are prolific with a high number of quality publications and our research is highly valued. Out of nearly 100 dental schools in the US and UK, the number of citations for King's College London publications ranks behind only Harvard University and the University of Michigan.

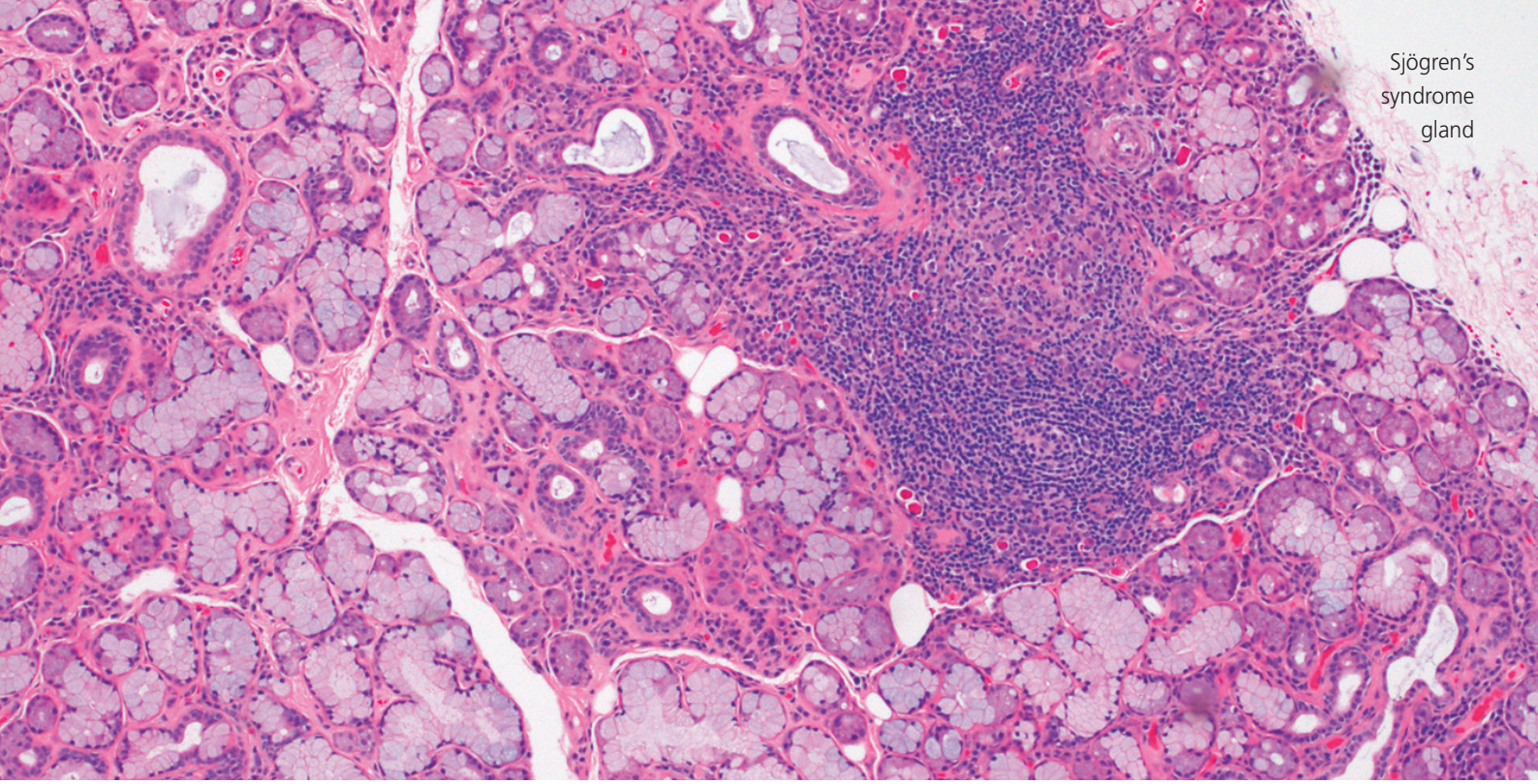
Our research is approximately evenly split between discovery science and clinical/translational science. The breadth of the research is evident in the names of our research-intense departments, including: craniofacial development and stem cell biology; salivary and mucosal research (historically clinical and diagnostic sciences); biomaterials, bimimetics, and biophotonics; and public and population health. Each of these encompasses both researchers and clinicians, assuring that evidence-based clinical care and evidence-based education is always a priority.

Our research is far-reaching. Among many successes is the quality of our research as measured in the 2008 Research Assessment Exercise, which resulted in the CAG receiving an award of one third of all UK Quality Related (QR) funding.

Significant collaborations with other CAGs explore interactions between dental and systemic manifestations of multiple diseases, including Sjögren's syndrome, orofacial granulomoatosis, bullous disease, and cancer as well as pain, risk factors in dementia, and a host of others. We participate in international collaborations with many highly esteemed organisations including the Forsyth Institute in Boston on the human oral microbiome database, and University of California San Francisco on Sjögren's syndrome; both funded by the US National Institutes of Health.

Patient participation has created 120,000 saliva samples in the UK Biobank from which novel salivary biomarker tools are being created. We focus on clinical research, enabling clinicians to engage every interested patient in clinical research studies.

Our research brings real impact to the scientific community and patients alike. Fundamental discoveries, published in high impact journals,



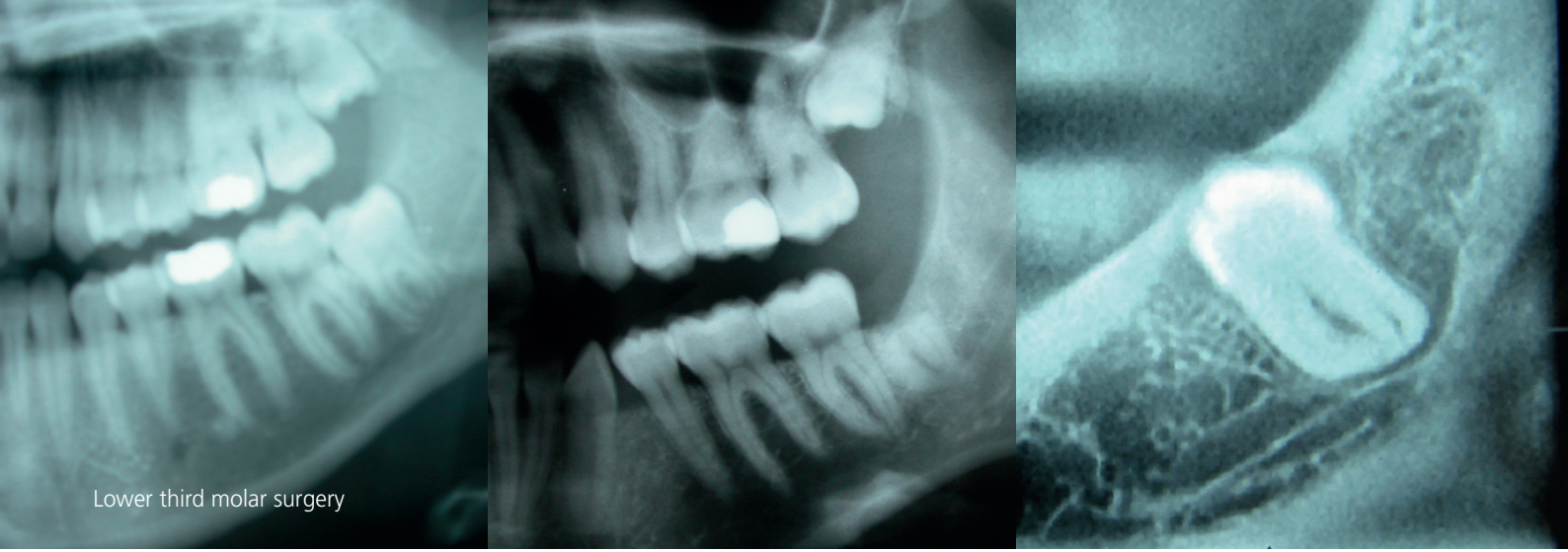
Sjögren's syndrome gland

have increased understanding of the molecular processes that regulate the development of tissues and organs of the craniofacial complex. Some of our research in this area includes: identifying factors that influence tissue response to scaffolds which restore form and function to structures that fail to develop properly or are lost to disease or trauma; creating new materials to restore form and function; identifying biologic markers that signal impending cancers as well as those available in saliva that yield diagnostic value; and developing innovative new imaging approaches, one of which can visualise blood vessel configuration and flow of individual blood cells in real time. This research complements the improvements in patient experience noted above.

Collectively, we secure a high level of research income from a range of national and local funding agencies, including extramurally funded research.

We are working together to pioneer new techniques, technologies and treatments:

- Third molar surgery is one of the highest volume surgical procedures in the NHS with 1.2 million cases each year. With third molar extractions, there is the risk of neuropathic pain resulting from nerve damage. Our CAG has pioneered an innovative surgical procedure, removing only the crown and leaving the root undisturbed, dramatically reducing risk of nerve damage. This is now an NHS adopted procedure and the American Dental Association includes



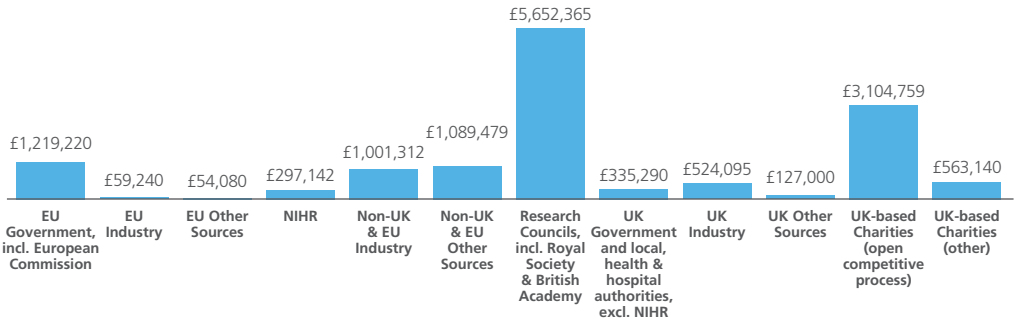
Lower third molar surgery

a reporting code for reimbursement of the procedure in the US.

- Collaboration between our researchers and clinicians has developed a system to alleviate tooth hypersensitivity. Using a spray-on system, bioactive glass coats the teeth, sealing tubules responsible for this condition and cleans the teeth at the same time. A spin-out company is now commercialising the system, and has raised over £4.5 million from institutional and venture capital investors. Three product lines have been launched in the past 24 months, treating over 700,000 patients across the EU, USA and Asia.
- Saliva is an important fluid, coating and protecting teeth and oral soft tissues. At times, the amount of saliva produced can be reduced or ducts carrying the saliva from the glands to the oral cavity can be blocked, preventing saliva from being delivered. This can cause a host of related problems: the gland or duct may become painful and perhaps inflamed, taste of food can change, soft tissues are not protected and many foods can abrade them causing people to change their eating patterns which can influence their nutritional status, and there is an increase in risk of tooth decay. Historically, the standard of care was to remove the gland, often causing scarring of the face in addition to removing the source of saliva production. Our clinicians and researchers have created innovative minimally invasive approaches to treating gland obstructive disease, eliminating scarring and in the vast majority of cases, leaving the gland function intact.

Figure 11 overleaf illustrates the research income streams with the Dental CAG.

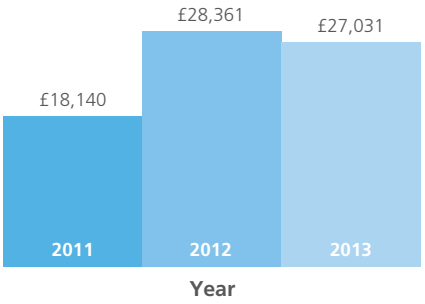
Figure 11 | King's College London dental research grants and income, 2009–2012



Source: King's College London Informatics

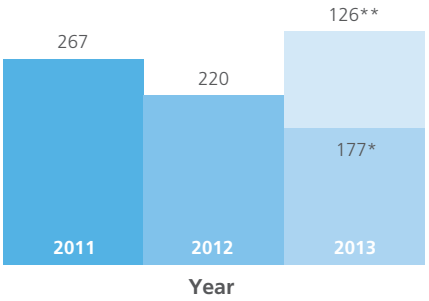
The Dental CAG has 11 innovations which are currently covered by patents throughout the world. Note: No single patent can provide coverage of intellectual properties throughout the entire world; most countries require individual patent applications and decisions.

Figure 12 | Patent expenditure (for the purchase of patent rights)



Source: King's College London Informatics

Figure 13 | Total number of all publications over academic year



* This number represents the number of publications till the end of July 2013

** This number is calculated based on the publication rate from January 2013 to July 2013

Source: King's College London Informatics

Our publications are highly cited, ranked third in the world behind only Harvard University and the University of Michigan

Publications

List of recently published books by members of the Dental CAG:

Author	Title	Publisher
Whaites E, Drage N,	**Essentials of Dental Radiography and Radiology**	5th edition, Churchill Livingstone Elsevier 2013
Whaites E, Drage N,	**Radiography and Radiology for Dental Care Professionals**	3rd edition, Churchill Livingstone Elsivier 2013
Palmer R, Ide M, Floyd P	**A Clinical Guide to Periodontology**	3rd edition, July 2013
Warnakulasuriya S, Tilakaratne WM	**Oral Medicine and Pathology: A Guide to Diagnosis and Management**	Japee Brothers Medical Publishers Limited, 2014

List of representative manuscripts published in 2013:

Discovery Science	Journal
Bertazzo S, Gentelman E, Cloyd K, Chester A, Yacoub M, Stevens M (2013) Nano-analytical electron microscopty reveals fundamental insights into human cardiovascular tissue calcification.	Nature Materials
Moog G, Dereuddre-Bosquet N, Teillaud JL, Biedma ME, Voll V, Van Ham G, Heyndrickx L, Van Dorsselar A, Katinger D, Vcelar B, Zolla-Panzer S, Mangeot I, Kelly C, Shattock RJ, LeGrand R (2013). Protective effect of vaginal application of neutralizing and non-neutralizing inhibitory antibiolies against vaginal SHIV challenge in macaques.	Mucosal Immunology
Khonsari RH, Ohazama A, Raouf R, Kawasaki M, Kawaski K, Porntaveetus T, Ghafoor S, Hammong D, Suttie M, Odri AG, Sandford RN, Wood JN, Shaarpe P (2013) Multiple postnatal craniofacial anomalies are characterized by conditional loss of polycystic kidney disease 2(Pkd2), 22(9), 1873–1885.	Human Molecular Genetics
Matalova E, Lesot H, Svandova E, VandenBerghe, T, Shapre PT, Healy C, Vandenabeele P, Tucker AS (2013) Caspase-7 participates in differentiation of cells forming dental hard tissues, 55(5), 615–621.	Development Growth and Differentiation
Theveneau E, Steventon B, Scarpa E,Garcia S, Trepat X, Streit A, Mayor R (2013) Chase and run between adjacent cell populations promotes directional collective migration, 15(7), 763–72.	Nature Cell Biology
Thompson H, Tucker AS (2013) Dual origin of the epithelium of the mammalian middle ear, 339 (6126), 1453–6.	Science
Volponi AA, Kawasaki M, Sharpe PT (2013) Adult human gingival epithelial cells as a source for whole tooth bioengineering, 82(4), 329–334.	Journal of Dental Research
Clinical Dentistry	
Campbell H, Escudier MP, Brostoff J, Patel P, Mulligan P, Challacombe SJ, Sanderson JD, Lomer MCE (2013) Dietary intervention for oral allergy syndrome as a treatment of orofacial granulomatosis: a new approach? 42(70), 517–522.	Journal of Oral Pathology and Medicine
Ide M, Papapanou P (2013) Epidemiology of association between maternal periodontal disease and adverse pregnancy outcomes – systematic review, 40 (s114), S181–194.	Journal of Clinical Periodontology
Bradley PJ, McGurk M (2013) Incidence of salivary gland neoplasms in a defined UK population, e-publication ahead of print.	British Journal of Oral and Maxillofaical Surgery
Sperandio M, Brown AL, Lock C, Morgan PR, Coupland VH, Madden PBV, Warnaskulasuiya S, Moller S, Odell EW (2013) Predicitive value of dysplasia grading and DNA ploidy in malignant transformation of oral potentially malignant disorders, 8(8), 822–31.	Cancer Prevention Research

Olley RC, Wilson R, Moazzez R, Bartlett D (2013) Validation of a cumulative hypersensitivity index (CHI) for dentin hypersensitivity severity, 40(10), 942–947.	Journal of Clinical Periodontology
Renton T, Janjua H, Gallagher JE, Dalgleish M, Yimaz Z (2013) UK dentists' experience of iatrogenic trigeminal nerve injuries in relation to routine dental procedures: why, when, and how often? , 214(12), 633–42.	British Dental Journal
Stober B, Veitz-Deenan A, Barna JA, Matthews AG, Vena D, Craig RG, Curro FA, Thompson VP (2013) Effectiveness of a resin-modified glass inomer liner in reducing hypersensitivity in posterior restorations: A study from the Practitioners Engaged in Applied Research and Learning Network, 144(8), 886–97.	Journal of the American Dental Association
Public Policy	
Anderson HR, Bernabe E, Burney P, Hay RJ, et al (2013) UK health performance: findings of the global burden of disease study 2010, 381, 997–1020.	The Lancet
Scott S, Walter F, Webster A, Sutton S, Emergy J (2013) The model of pathways to treatment: conceptualization and integration with existing theory, 18(1), 45–65.	British Journal of Health Psychology
Tsakos G, Sabbah W, Chandola T, Newton T, Kawachi I, Aida J, Sheiham A, Marmot MG, Watt RG (2013) Social relationships and oral health among adults aged 60 years or older, 75(2), 178–186.	Psychosomatic Medicine
Material Science	
Cama G, Gharibi B, Sait MS, Knowles JC, Lagazzo A, Romeed S, DiSilvio L, Deb S (2013) A novel method of forming micro- and macroporous monetite cements, 1(7), 958–969.	Journal of Materials Chemistry
Sauro S, Osorio R, Fulgencio R, Watson TF, Cama G, Thompson I, Toledano M (2013) Remineralisation properties of innovative light-curable resin-based dental materials containing bioactive micro-fillers, 20(1), 2624–2638.	Journal of Materials Chemistry

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