

Colgate



Inequalities to Personalized Medicine: A Tale of Disparities

Programme and Abstract Book

54th Annual Scientific Meeting

of the International Association for Dental Research

Australian & New Zealand Division

28th September – 1st October 2014

Brisbane Convention & Exhibition Centre

Brisbane, Australia

www.iadranz.org.au





Welcome to the 54th Annual Scientific Meeting of the International Association for Dental Research, Australian & New Zealand Division Brisbane Convention & Exhibition Centre, Brisbane, Australia

On behalf of the Local Organising Committee I would like to extend a warm welcome to all delegates and guests attending the 54th IADR ANZ Division meeting in sunny Brisbane. We received a record 160 abstracts of which 145 have been accepted for inclusion in the scientific programme, and have 184 registered delegates and 11 accompanying persons, making this meeting the largest ever in the history of the ANZ Division. We are proud of this achievement and thankful to you for your support of the meeting and the Division activities. We trust the program will be a scientific and social success, and hope that you enjoy your stay in Brisbane.

The scientific programme is packed with national and international speakers, in a rejuvenated format that accommodates plenary, symposia and open oral sessions in addition to poster presentations. I am particularly indebted to the numerous invited guest speakers who have contributed generously to the programme. I'm sure this has been a key attraction for delegates. Rarely have we seen so many esteemed colleagues gathered in one location delivering cutting edge research findings.

The theme for this year's meeting is "Inequalities to Personalized Medicine: A Tale of Disparities". The theme is particularly relevant to my own research endeavours, and I trust you will find stimulating. At no time in the past has there been such an extensive gap in population health outcomes despite amazing breakthroughs in individualized healthcare. I am hopeful that the 3 days of the scientific program will stimulate new ideas, foster collaborations, and drive dental research further in an attempt to close this gap.

I am honoured to welcome Professor Helen Whelton as this year's Colgate Eminent Speaker. Helen is the Immediate Past President of IADR and will be addressing us on GOHIRA and fluoride research. We are also fortunate to be hosting the current IADR President, Professor Yoshimitsu Abiko, who will be delivering a plenary address on Personalized Medicine. I wish to pay special thanks also to Professor Cindy Shannon, UQ Pro-Vice Chancellor Indigenous Education for her support of this meeting and my own research efforts, and her tiring work supporting Indigenous health outcomes. At the other end of the spectrum, we welcome Professor Dietmar Hutmacher from QUT who will be delivering a plenary session on Biofabrication of Hard and Soft Tissues.

The Colgate Welcome Reception will commence directly after the conclusion of presentations on the first day of the scientific program, while the Gala Dinner will be held on Tuesday evening at the beautifully restored Main Auditorium at Brisbane City





Hall in King George Square. Dinner will be accompanied by classical, jazz and pop-style music delivered by Dr Alexander Merenda and the String Quartet.

This conference would not have been possible without the generous support of Colgate Palmolive Australia as our major sponsor. Special thanks to Drs Susan Cartwright and Sarah Raphael for their assistance and ongoing support.

My personal thanks also to the members of the Local Organising Committee, staff at the Brisbane Convention & Exhibition Centre and Brisbane City Hall for their assistance and organisation, Associate Professor Jason Armfield for assistance with registrations, and Associate Professor Boyen Huang for assistance with correspondence and communications with members and delegates.

Please take the time to explore beautiful Brisbane, the Southbank Precinct, and perhaps a little further afield if you have the time.

Welcome to Brisbane.

Yours sincerely,

Camile S. Farah

A handwritten signature in black ink, appearing to read 'Camile S. Farah', with a decorative flourish at the end.

Chair, Local Organising Committee, 54th IADR ANZ Annual Scientific Meeting

President, International Association for Dental Research, Australian & New Zealand Division



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Brisbane, Australia

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Quick Facts

Plenary and Symposia

We are grateful to the many plenary and symposia session presenters for their time and contributions. These sessions will surely make a significant impact on the quality of the meeting. These sessions are built around the theme of the meeting. The Colgate Eminent Speaker is Professor Helen Whelton, Dean of the Dental School at the University of Leeds, and the Immediate Past President of IADR. We will also be joined by the current President of IADR Professor Yoshimitsu Abiko who will be travelling from Japan to join us. Other invited guest speakers include Cindy Shannon, Eric Reynolds, Greg Seymour, Chris Peck, Mark Bartold, Newell Johnson, Wendell Evans, Camile Farah, Saso Ivanovski, Dietmar Hutmacher, Patrick Warnke, Yin Xiao, Michael Foley, Lisa Jamieson, John Broughton, Kelly Jones, Kostas Kapellas, Diep Ha, Reshika Chand, Alison Rich, Kaye Roberts-Thomson, Grant Townsend, Lakshman Samaranayake.

Concurrent Oral Sessions

There are 2 concurrent sessions all days except for Monday morning, when there will be only one open oral session, and a closed Colgate Poster Competition Judging session. Presenters are asked to check their abstract ID, Abstract Sequence Number, title, and corresponding session on the Program and Session Sequence documents.

All Concurrent Oral Sessions are compared of 10 free papers. Presenters are provided with 10 minutes to present their paper, followed by 5 minutes Q&A. Each Concurrent Oral Session will be chaired by a Chairperson identified in the Program.

Poster Sessions

There will be three poster sessions. Poster sessions can be found in the Session Sequence document. These are also colour-coded and match the Program. Posters will be displayed for the full day. All authors are asked to be alongside their poster during morning and afternoon tea and lunch breaks. The Poster Sessions are an opportunity for delegates to approach the author of the poster and ask questions or discuss any element of the information displayed. Posters must be no larger than (2m high x 1 m wide) portrait, and poster presenters must provide their own Velcro 'hooks' or pins to display their posters.

Colgate Competition

Colgate Competition entrants will be judged in 2 categories (Junior and Senior) concurrently in P11 on Monday morning. Entrants have 5 minutes to present their poster to the judges, followed by up to 5 minutes of Q&A. All Colgate Competition entrants are asked to make themselves available directly after the Opening Ceremony as the Competition will commence at 9am. Session sequence will be released on the day of judging.





In addition to the closed judging session, all Colgate Competition entrants have been provided an opportunity to showcase their research with either an oral or poster presentation in the open sessions so all delegates can experience their research. It is vitally important that we support these students and provide them opportunities to interact with senior researchers in their field.

Audio Visual Requirements

The following items will be automatically available for speakers: PowerPoint, PC, data projector, single screen, lectern, lectern microphone, and laser pointer.

We will provide as standard at the Conference, a windows-based PC and data projection facility for all presenters. If you will be using your own laptop, either PC or Macintosh you are requested to advise us, so that we can ensure that we have the necessary equipment to enable a smooth changeover between speakers.

Speakers are requested to have their PowerPoint presentations loaded at least four (4) hours prior to your presentation.

Terms & Conditions

By presenting at the conference you agree to the following terms and conditions:

1. Presenters take full responsibility for the content of their abstract and presentation.
2. You understand that the Conference Organisers and IADR ANZ will publish your abstract and biographical information provided in the conference proceedings. Your abstract must not be published elsewhere.
3. You will not use your presentation as means of selling your organisations' products or services.
4. You will commence your presenter with a Conflict of Interest declaration.
4. You will undertake to provide required items to the Conference Organisers by appropriate deadline.

Social Program

The Colgate Welcome Reception will be held in the Brisbane Convention & Exhibition Centre at the Plaza level North Terrace overlooking Southbank and the Brisbane CBD. This is a casual affair commencing at 6pm on Monday 29th September.

The Gala Dinner will be held at the beautifully restored Brisbane City Hall, King George Square. Dress code for this function is Black Tie formal (dinner suits for males and long dresses for females). This is your opportunity to dress up, let your hair down, and have a great time. Entertainment will be provided by Alexandra Merenda and the String Quartet.

Disclaimer

The 2014 IADR ANZ Conference reserves the right to amend or alter any advertised details relating to dates, program and speakers if necessary and without notice, as a result of circumstances beyond their control. All attempts will be made to keep any changes to an absolute minimum.



54th IADR ANZ Division Local Organising Committee

		
<p>Camile Farah BSc, MDSc (OralMed OralPath), PhD, GCEd (HE), GCExLead, FRACDS (OralMed), FOMAA, FIAOO, FICD, FPFA</p> <p>Chair, Local Organizing Committee & President, IADR ANZ Division</p>	<p>Saso Ivanovski BSc, BDentSt, MDSc (Perio), PhD, FICD</p> <p>Chair, Scientific Programme</p>	<p>Tess Matias BSc, MDSc (Perio), MRACDS (Perio), DClinDent (Dento- Maxfac Radiology), PhD, FICD</p> <p>Chair, Social Programme</p>

			
<p>Steve Hamlet BSc, MSc, PhD</p> <p>Member, LOC</p>	<p>Michael Foley BSc, MPH, MEpi, FADI, FICD, FPFA</p> <p>Member, LOC</p>	<p>Carol Tran BOH</p> <p>Member, LOC</p>	<p>Fatima Dost BOH, MPhil</p> <p>Member, LOC</p>



Invited Guest Speakers

 <p>Professor Yoshimitsu Abiko</p>	<p>Yoshimitsu Abiko is Professor Emeritus at Nihon University School of Dentistry at Matsudo in Japan, and was the Director of the Department of Biochemistry and Molecular Biology at Nihon University School of Dentistry until March 2014. Prof. Abiko is currently the President of the International Association of Dental Research (IADR) and previously served on the IADR Board as the Asia Pacific Region (APR) Regional Board Member from 2006-2009. He has also served on the <i>Journal for Dental Research (JDR)</i> Editorial Board on two occasions, as well as on various other IADR committees. Prof. Abiko is also a former President of the Pan-Asia Pacific Federation and the Japanese Association for Dental Research (JADR).</p>
 <p>Professor Mark Bartold</p>	<p>Mark Bartold attended the University of Adelaide where he received his Bachelor of Dental Surgery, Bachelor of Science in Dentistry with First Class Honours, PhD and Doctor of Dental Science. He has a Fellowship of the Royal Australasian College of Dental Surgeons in the Special Stream of Periodontics and is also a Fellow of the Academy of Dentistry International, the International College of Dentists and the Pierre Fauchard Academy. Currently he is Professor of Periodontics and Director of the Colgate Australian Clinical Dental Research Centre at the University of Adelaide. He is a member of the editorial board of 8 international dental journals and is the current Editor of the Australian Dental Journal. Professor Bartold has authored over 230 scientific articles and holds four patents arising from his research work. In 2004 he was made a Member of the Order of Australia for his contributions to periodontal research and teaching.</p>
	<p>John R Broughton's iwi (Māori tribal) affiliations are Ngāi Tahu and Ngāti Kahungunu ki Heretaunga. John has a joint appointment with the Department of Preventive and Social Medicine of the Dunedin School of Medicine and Oral Diagnostic and Surgical Sciences of the Faculty of Dentistry at the University of Otago. John has been involved with Māori health and Māori oral health in particular, since graduating as a dentist in 1977. He was a guest lecturer at both the Dental School and the Dunedin School of Medicine during the 1980s and took up the new position of lecturer in Māori health in 1989. He was responsible for the establishment of the Ngāi Tahu Māori Health Research Unit in the Dunedin School of Medicine, Te Whare Kaitiaki, the Māori oral health clinic in the</p>



<p>Professor John R. Broughton</p>	<p>Faculty of Dentistry and Te Ao Mārama, the New Zealand Māori Dental Association. He is currently the co-ordinator for the new final year dental student clinical placement programme with Māori oral health providers throughout the country. Many of his publications are concerned with Māori oral health. John is also an internationally recognized Māori playwright. A new production of his acclaimed play, <i>Michael James Manaia</i>, was a hit at the Melbourne Arts Festival in October 2012 and was invited to the Austalian Performing Arts Market in Brisbane in February 2014.</p>
 <p>Ms Reshika Chand</p>	<p>After completing a Bachelor of Health Science with a major in Health Promotion and Population Health at The University of Queensland Reshika joined The Perio-Cardio study team at Menzies School of Health Research in Darwin. Soon after she moved to The University of Adelaide's oral health research centre, ARCPOH. Although at the very beginning of her career, Reshika has a strong interest in research and a passion for reducing inequalities between Australia's mainstream population and the minority populations. She began an honours project looking to build on the current understandings of Indigenous health beliefs. Her focus was to understand what underpins oral health self-ratings in Australian Indigenous populations. Reshika strongly believes that strong research should be used to inform policy in order to reduce the inequalities faced by many minority populations in Australia. She is hoping to complete her honours by the end of 2014 and commence postgraduate study soon after.</p>
 <p>A/Professor Wendell Evans</p>	<p>Wendell Evans co-ordinates the cariology component of the Doctor of Dental Medicine (DMD) degree program. The key strategy – The Caries Management System (CMS) – developed by him and colleagues, deals with preventing new tooth decay and arresting existing decay, thus preventing cavities. The CMS is also embedded in the Bachelor of Oral Health (BOH) degree program. The clinical program takes place in the "No drill" clinic where students (1) manage patient behaviour in relation to caries prevention using motivational interviewing techniques and (2) manage non-cavitated carious lesions using non-surgical strategies. Recently, his research has been devoted towards caries prevention in the community. He obtained NHMRC funding to implement a cluster randomised multi-centre (22 dental practices) trial of the CMS across NSW and the ACT. Results after 3 years showed a 30-40% reduction in cavities and need for restorative care in the intervention practices (see publications). An analysis of the 7-year results is</p>





	<p>ongoing (not yet published) and show that the 3 year results have been sustained.</p>
 <p>A/Professor Camile S. Farah</p>	<p>Camile Farah is a registered specialist in Oral Medicine and Oral Pathology and has interests in clinical oral medicine (mucosal pathology, salivary gland diseases, orofacial pain), diagnostic head and neck pathology (oral cancer and precancer), and oral and maxillofacial radiology (Cone Beam CT). He maintains a private practice in Oral Medicine in Brisbane CBD, is a Consultant Oral Pathologist to Qscan Radiology Clinics, Consultant in Oral Medicine & Oral Pathology at the UQ School of Dentistry, and Head of the Oral Oncology Research Program at the UQ Centre for Clinical Research, where he undertakes clinical and translational research into head and neck cancer early detection, molecular diagnostics, and imaging. He has published over 110 peer reviewed clinical and scientific articles including 7 book chapters, and has attracted more than \$5 million in competitive research funding. He is a Fellow of many Academies and Honour Societies, an editorial board member for several journals, and has presented his research at many national and international meetings. He is the Immediate Past President of the Oral Medicine Academy of Australasia and served as its Inaugural President, and is the current President of the Australian & New Zealand Division of the International Association for Dental Research, Chairman of the Research Advisory Committee for the Australian Dental Research Foundation, and has recently been appointed as Chairman-elect of the Foundation.</p>
 <p>Dr Michael Foley</p>	<p>Michael Foley is Director of Brisbane Dental Hospital, a large specialist referral centre and general practice public dental clinic. He holds Masters degrees in Epidemiology and Public Health, and lectures on these subjects at the University of Queensland. He was elected ADAQ President in 2005, and has been heavily involved in water fluoridation advocacy for many years.</p>
	<p>Diep Ha is a Research Fellow at the Australian Research Centre for Population Oral Health, at the University of Adelaide. Diep has a dental background and has completed PhD in Oral</p>



 <p>Dr Diep Ha</p>	<p>Epidemiology at the University of Adelaide. She currently oversees data collection and analysis of the ongoing Child Dental Health Survey series. She is involved in examiner training and data analysis of the National Child Oral Health Study. Her research interests include caries risk assessment for children attending school dental services; evaluation of inequality in oral health; effectiveness of dental health preventive measures; and statistical modelling of dental caries. For her research, Diep has been awarded an IADR/Colgate Research in Prevention Award at the 84th General Session of the International Association of Dental Research (IADR), Brisbane, Australia 2006 and an IARD/Lion Young Investigator Award at the 88th General Session of the International Association of Dental Research, Barcelona, Spain 2010.</p>
 <p>Professor Dietmar W. Hutmacher</p>	<p>Professor Dietmar W. Hutmacher's background is a strong combination of academia and industry. His expertise is in biomaterials, biomechanics, medical devices and tissue engineering. He is one of the few academics to take a holistic bone engineering concept to clinical application. He is a Professor and Chair of Regenerative Medicine at the Institute of Health and Biomedical Innovation of QUT, where he leads the Regenerative Medicine Group, a multidisciplinary team of researchers including engineers, cell biologists, polymer chemists, clinicians, and veterinary surgeons. His pre-eminent international standing and impact on the field are illustrated by my publication record (more than 220 journal articles, edited 6 books, 40 book chapters and some 400 conference papers) and citation record (more than 13000 citations, h-index of 58). Three of his papers in Materials Science have received citations in the top 1% for the field, and he was also ranked by Thomas Reuters 45th world-wide in citations per paper (54 per paper) in Materials Science over the past decade.</p>
	<p>Saso Ivanovski graduated from the University of Queensland with BSc in 1993, a PhD in 2000, and an MSc specialist training in Periodontology in 2002. He was a Senior Lecturer at the University of Queensland Dental School and NH&MRC postdoctoral fellow at the Institute of Molecular Biosciences from 2003 to 2006. During this period, he spent a year as a research fellow at the Eastman Dental Institute in London. In 2006, Saso was appointed the inaugural Chair and Professor of Periodontology at the Griffith University School of Dentistry and Oral Health where he leads the specialist training program in periodontology. He is a fellow of the International Team of</p>





Professor Saso Ivanovski

Implantology, former federal president of the Australasian Osseointegration Society (AOS) and federal president-elect of the Australian Society of Periodontology (ASP). Saso leads a research group with an interest in the clinical and biological aspects of osseointegration and periodontal regeneration.



A/Professor Lisa Jamieson

Lisa Jamieson is Director of the University of Adelaide's Indigenous Oral Health Unit. She has been involved with four randomised controlled trials involving oral health interventions among Indigenous Australians, funded by the National Health and Medical Research Council. She collaborates with Indigenous investigators in New Zealand, Canada and the United States, and has a wide network of Indigenous oral and general health researchers in Australia.



Professor Newell W. Johnson

Newell W Johnson CMG, FMedSci is a registered specialist in oral pathology, in oral medicine and in periodontology. He has considerable teaching and research experience across the globe. He is a former Member of the IADR Council and was President of the British Society for Dental Research 2004-2006. He was Foundation Dean, 2005-2009, School of Dentistry and Oral Health, Griffith University, inaugural Chair of the Australasian Council of Dental Schools and Chair of the Faculty of Oral Pathology of the Royal College of Pathologists of Australasia 2007-2010. He is current Chair of the Queensland Committee of the RACDS. He is highly cited [h-Index 56] in head and neck oncology, HIV-disease, cariology, periodontology and oral medicine and lead a team of PhD students and international collaborators from his base in the Griffith Health Institute. He was a member of the original Global Oral Health Inequalities Research Agenda [GOHIRA] team and is currently promoting policies for reducing



	<p>inequalities in risk for oral and oropharyngeal cancer through the IADR, World Health Organisation, FDI World Dental Federation, International Academy of Oral Oncology and governments.</p>
 <p>Dr Kelly Jones</p>	<p>Kelly Jones [BA (Hons) MPH PhD] is a Research Fellow at the Australian Research Centre for Population Oral Health and the Indigenous Oral Health Unit at The University of Adelaide. In addition to her current research in Indigenous oral health, Dr Jones has interests in health services research, the social contexts of oral health and innovative mixed methods approaches to oral health research. She currently teaches on the social determinants of oral health in the Dental curriculum at the University of Adelaide.</p>
 <p>Mr Kostas Kapellas</p>	<p>Kostas Kapellas is a research associate at the Australian Research Centre for Population Oral Health (ARCPHO) and Deputy Director of the Indigenous Oral Health Unit, the University of Adelaide. He received a Bachelor of Oral Health in 2006 and Bachelor of Science in Dentistry (Hons) in 2009 both from the University of Adelaide. He has recently submitted his PhD thesis titled: <i>The Effect of Non-Surgical Periodontal Intervention on Pulse Wave Velocity: A Marker of Arterial Stiffness and Function</i> for examination.</p> <p>Kostas holds keen interests in investigating the relationships between periodontal disease and systemic health with a specific focus on cardiovascular disease and diabetes. Through his experience as a post-graduate student in the Northern Territory and South Australia, Kostas has also established an interest in the general and oral health of Aboriginal and Torres Strait Islander people.</p>
	<p>Chris Peck has a background in jaw biomechanics and orofacial pain providing extensive experience in orofacial structure-function relationships and the impact of pain on the individual and community. This requires collaboration across engineering and neuroscience and has resulted in a focus on developing possible clinical management strategies to improve pain conditions and musculoskeletal disorders. He has worked with NSW Health in developing community surveys and his research focus has included an interdisciplinary focus investigating the biological, psychological and social aspects of pain. He has developed collaborations with Universities in Canada, The</p>



 <p>Professor Chris Peck</p>	<p>Netherlands, Japan and Thailand and led international consortia into research criteria for jaw disorders. He is currently Dean of Dentistry, President of the Australian and New Zealand Academy of Orofacial Pain and is a Senior Staff Specialist at Royal North Shore Hospital's Michael J Cousins Pain Management and Research Centre. He is involved in undergraduate and postgraduate orofacial pain curricula and is a member of the Jaw Function and Orofacial Pain Research Unit at Westmead Hospital.</p> <p>Professor Peck has been funded by competitive national grants in Canada and Australia and published in key biomechanics and neuroscience journals. He has led an international consortium to develop an expanded taxonomy for Temporomandibular disorders and with Professor Greg Murray, developed a model explaining pain-motor interactions. Current research includes brain changes associated with chronic Orofacial pain.</p>
 <p>Laureate Professor Eric C. Reynolds</p>	<p>Eric Reynolds is a Melbourne Laureate Professor and Head of the Melbourne Dental School. He is also Associate Dean of the Faculty of Medicine, Dentistry and Health Sciences of the University of Melbourne and CEO of the Oral Health CRC. He has been researching and teaching for 30 years on the aetiology and prevention of oral diseases. He has over 242 scientific publications and 19 patents. Professor Reynolds is on the Editorial Board for the Australian Dental Journal and has also been a member of the Editorial Board for the Journal of Dental Research, the publication of the American Association for Dental Research. Professor Reynolds has received numerous awards and distinctions with the most significant being the Clunies Ross National Science and Technology Award in 2002 to recognize the successful application of science and technology and the Victoria Prize in 2005 which is awarded to an individual whose scientific discovery or technological innovation has significantly advanced the State of Victoria. Also in 2005 he was appointed an Officer of the Order of Australia (AO) for service to community dental health and to dental education. In 2011 he received the Distinguished Scientist Award from the International Association for Dental Research.</p>
	<p>Alison is the Acting Dean of the Faculty of Dentistry, University of Otago and Head of the Department of Oral Diagnostic and Surgical Sciences. She is a Professor in Oral Pathology at the University of Otago with responsibility for the undergraduate and postgraduate oral pathology programmes. Alison is a registered specialist in oral pathology in New Zealand and is</p>





Professor Alison Rich

Head of the Medlab Dental Oral Pathology Diagnostic Service run by the University of Otago. She is a past Chair of the Faculty of Oral Pathology, Royal College of Pathologists of Australasia and past Australasian Councillor to the International Association for Oral Pathology.



Professor Kaye Roberts-Thomson

Kaye Roberts-Thomson is currently the Interim Dean of the School of Dentistry for 2014. She was previously the Director of the Australian Research Centre for Population Oral Health (ARCPOH) at the University. Her research interests are in epidemiology and dental public health, particularly in inequality in oral health and access to dental care. Her current work is in Indigenous health, oral health surveys and health promotion for oral health. She has been a leader in national oral health surveys in Vietnam, East Timor, Tuvalu and Australia and trained and calibrated examiners for national surveys in New Zealand. She has been very successful in attracting research funding. Since 2006, \$988,428 has been awarded for grants on which she was first chief investigator and \$12,387,819 for grants on which she was a chief investigator. Her outputs arising from research since 2006 include 57 publications in scientific journals (national and international), books and book chapters, as well as a report for the Australian Government undertaken as contract research. Many of these scientific papers are in the highest impact journals in the area of oral epidemiology and dental public health.

Sam Samaranayake is the Head, and the Professor of Oral Microbiomics and Infection at the University of Queensland, School of Dentistry. Prior to this he served as the Dean of the Faculty of Dentistry at the University of Hong Kong for a decade. He is also an Honorary Professor at the Eastman Dental Institute, London and many other international universities in China, Saudi Arabia, India and Indonesia. Hailing from Sri Lanka, Professor Samaranayake earned his doctoral degree at the University of Glasgow, UK where he was a Consultant/ Senior Lecturer in Oral Medicine and Pathology. Then he served as a Professor at the University of Alberta, Canada, and subsequently at the University of Hong Kong.



 <p>Professor Lakshman Samaranayake</p>	<p>Professor Samaranayake, considered the foremost international authority in oral candidal infections, has authored more than 400 ISI publications cited in the literature over 12,900 times (h-index 59). For his research he has received a number of awards and honors including the <i>Distinguished Scientist Award</i> of the International Association for Dental Research, Washington, USA, and the coveted <i>King James IV Professorship</i> of the Royal College of Surgeons of Edinburgh, UK. He has served as a World Bank Consultant in Problem Based Learning (PBL), a council member of the FDI and the Chair of its Science Commission. He is a much sought after speaker and lectured extensively in more than 40 countries, on the subjects of oral microbiomics, infection control and dental education.</p>
 <p>Professor Greg Seymour</p>	<p>Greg Seymour was formerly Dean of the Faculty of Dentistry and Professor of Periodontology at the University of Otago, New Zealand. He was educated at the University of Sydney obtaining a BDS (hons) degree in 1971 and an MDS in the clinical specialty of Periodontics in 1974. He obtained his PhD in Immunology from the University of London in 1978. Professor Seymour is a Fellow of the Royal College of Pathologists in the UK, a Fellow in the Faculty of Oral Pathology of the Royal College of Pathologists of Australasia and a Fellow of the Royal Australasian College of Dental Surgeons in the special stream of Periodontics. He has authored or co-authored over 345 papers in the scientific literature in the areas of Periodontology and Oral Immunology. His H-index is currently 57 with over 11,800 citations. In 2003 he was awarded Honorary Life Membership of the British Society for Periodontology and in 2004 he became a member of the Order of Australia (AM). He has been the recipient of numerous research prizes including a Distinguished Scientist Award of the IADR in 1997. In 2008 he was elected to Fellowship of the Royal Society of New Zealand. He is currently an Honorary Professor in the Sir John Walsh Research Institute at the University of Otago.</p>
	<p>Cindy Shannon is a descendent of the Ngugi people from Moreton Bay. In 2011 Cindy was appointed as the Pro-Vice-Chancellor (Indigenous Education) at The University of Queensland. She was previously the Director of the Centre for Indigenous Health at The University of Queensland and guided the development and implementation of Australia's first degree level program that specifically targeted Aboriginal health workers. Cindy also has an ongoing affiliation with the Institute for Urban Indigenous Health in South East Queensland, having</p>



 <p>Professor Cindy Shannon</p>	<p>played a key role in its establishment. Professor Shannon has contributed to Indigenous health policy development and implementation nationally and undertaken a number of independent primary health care service reviews, including a major report for the 2003 interdepartmental review of primary health care service delivery to Aboriginal and Torres Strait Islander communities.</p> <p>Cindy was a member of the National Health and Medical Research Council, and chaired its Aboriginal and Torres Strait Islander Research Advisory Committee from 2005-2012. She is also Fellow of the Queensland Academy of Arts and Sciences, Member, Health and Hospital Fund Advisory Board, Chair of the Queensland Aboriginal and Torres Strait Islander Foundation and Member, Greater Brisbane Metro South Medicare Local Board.</p>
 <p>Professor Grant Townsend</p>	<p>Grant Townsend is Professor of Dental Science, Leader of the Craniofacial Biology and Dental Education Group, and Director of Assessment in the School of Dentistry at the University of Adelaide, South Australia. He was Associate Dean (Academic) throughout the 1990s when a PBL-based dental curriculum was introduced at the Adelaide Dental School, and he is still heavily involved in undergraduate and postgraduate teaching in the School, including teaching head and neck anatomy, neuro-anatomy, human growth and development, and local anaesthesia.</p> <p>Grant's research interests include craniofacial biology, especially twin studies of the dento-facial region, and also dental education. He has published over 350 refereed papers and book chapters and has been invited to give lectures or act as an external examiner or consultant in many countries. He was awarded the Alan Docking Science Award in 2000 by the IADR (ANZ Division) for outstanding scientific achievement in the field of dental research and was made a Corresponding Member of the Finnish Dental Society in 2007 in recognition of outstanding contributions to dental research with Finnish collaborators. He has recently edited a special issue of the Australian Dental Journal with Professor Alan Brook, titled 'The face, the future, and dental practice: how research in craniofacial biology will influence patient care' and, with his colleagues in Adelaide and overseas, contributed several papers to the issue.</p>
	<p>Patrick Warnke is an internationally-renowned Tissue Engineer and Oral and Maxillofacial and Plastic/Reconstructive Surgeon who created world headlines after his research team succeeded</p>





Professor Patrick Warnke

in 'growing' a new jawbone in the back for a cancer sufferer for subsequent transplantation into the defect site. This technique now called Endocultivation, uses the patient's own stem cells and methods of tissue engineering. Professor Warnke's focus, with extensive medical plus dental specialist training and research experience, is to bring the "bench-to-bedside", that is, to translate laboratory research into real-life applications in the clinics where the ultimate benefit is that of the patient.

Professor Warnke was part of the independent scientific group to assess the world's first face transplant by Prof Bernard Devauchelle et al. (First human face allograft: early report. Lancet July 2006) Prof Warnke wrote the initial editorial comment for this remarkable medical breakthrough by French surgeons (Warnke PH: Repair of a human face by allotransplantation. Lancet July 2006).

In 2007, Professor Warnke launched the revolutionary MyJoint program for the European Union – an international cutting edge tissue engineering network comprising researchers and practitioners from leading institutions worldwide who are focused on developing technologies that will enable patients to use their own bodies as "bio-reactors" to grow biological replacement joints and organs (www.myjoint.org). To this end, the network has pioneered novel 3D printing and additive technologies (selective laser melting) and clinical grade nanotechnology (electrospinning) for extracellular matrix design in bone engineering.

Professor Warnke has been the inaugural Director of the Clem Jones Research Centre for Stem Cells and Tissue Regenerative Therapies on the Gold Coast and founding member of Cell Reprogramming Australia with a focus on utilizing induced pluripotent stem cells (iPSC) for tissue engineering. Since February 2013 Professor Warnke holds the Chair for Faciomaxillary and Regenerative Surgery at Griffith University and is committed to implement the emerging new therapeutic option in adult stem cell based Tissue Engineering and Regenerative Medicine within the new Griffith Health Centre opposite the new Gold Coast University Hospital.

One leading current research focus is on clinical grade extracellular matrix design for individualized artificial skin replacements and tissue engineered face transplants for skin cancer sufferers.

Extraordinary students with an unlimited motivation and thoughtful interest in tissue engineering with novel biomaterial design for clinical applications are welcome.





Professor Helen Whelton

Helen Whelton is Dean of the School of Dentistry, University of Leeds, UK. She is also a Professor of Dental Public Health and Preventive Dentistry in University of Leeds and an Adjunct Professor at University College Cork (UCC), Ireland. She currently directs a national research programme to evaluate water fluoridation in Ireland. She has recently moved from her position in UCC where she was Vice Head of the College and Dean of the Graduate School in the College of Medicine and Health. She has expertise in National Surveys, epidemiology, measurement methods, Health Services Research and clinical trials. She consults widely on the measurement of dental fluorosis and dental caries and has trained teams of researchers in many countries in this respect. Outside of dentistry Helen has served on the board of the Irish Health Research Board, the National Obesity Task Force and the Irish Women's Health Council. She is currently the President of the International Association for Dental Research. In her spare time she enjoys occasional sailing with her family off the beautiful south coast of Ireland.



Professor Yin Xiao

Yin Xiao is currently a Professor at Institute of Health and Biomedical Innovation (IHBI), Queensland University of Technology (QUT) and is the group leader of the bone and clinical research program. He is the Director of Australia-China Centre for Tissue Engineering and Regenerative Medicine (ACCTERM). He obtained his BSc and MSc from Wuhan University, China, with more than 10 years clinical experience. In 2000, he graduated with a PhD from School of Dentistry at the University of Queensland, Australia, and worked as a research officer there for two years following his graduation. This was followed by an NHMRC Peter Doherty Fellowship at the School of Life Sciences at the QUT. In 2004 he was awarded an NHMRC Visiting Fellowship for 6 month at the Bone Tissue Engineering Centre at the University of Carnegie Mellon, PA, USA. In 1995 and 2012 he was appointed Associate Professor and Full Professor of Bone Biology and Tissue Engineering at QUT, respectively. He has been also appointed to a number of honorary senior positions in several Universities, including currently an Adjunct Professor at Griffith University and three Chinese universities: Wuhan University in Wuhan; Sun Yat-sen University in Guangzhou, and Fujian Medical University in Fuzhou.

Since earning PhD he has been awarded for more than 4 million dollars in research money from NHMRC, ARC, PCTH, ITI, ADRF, UQ, QUT, and IHBI etc. Prof Xiao graduated 10 PhD and 3 Masters students. Currently, he is supervising 4



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	postdoctoral research fellows, 12 PhD, 2 Masters, and 3 visiting fellows. He has published over 150 journal papers, 2 edited books, 14 book chapters, and 4 patents.
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Welcome to Country

Maroochy Barambah

Maroochy Barambah, of Turrbul/Dippil ancestry, was born on Cherbourg Aboriginal Reserve in Queensland. She is the Songwoman and Law-woman of the Turrbal People – the Traditional Owners of Brisbane and a direct descendant of Daki Yakka (Chief of the Old Brisbane tribe).

Taken from her family at the age of 12 and fostered out to a family in Melbourne, Maroochy went on to attend the *Melba Conservatorium of Music in Melbourne* and *Victorian College of the Arts* where she graduated in Dramatic Arts in 1979.

In 1989 Maroochy became the first Aborigine to perform on the *Australian operatic stage* when she made her debut in *Black River*. She was the first Australian to perform at the United Nations in New York – in honour of the **International Year for the World's Indigenous Peoples** in 1993. Over the years Maroochy has appeared in numerous television programs including *The Flying Doctors*, *Winner Take All* and *Women of the Sun*, as well as films including *Bran Nue Dae*.

The recipient of many awards (both in Australia and overseas), Maroochy was bestowed an Honorary Senior Fellowship of the University of the Sunshine Coast in 2000 for her outstanding and sustained contributions to the community.





Venues and Maps

The conference will be held on Plaza Level (entrance on Grey St), at the Brisbane Convention & Exhibition Centre (BCEC), Southbank, Brisbane. Rooms P9, P10 and P11 will be used for the meeting. IADR Council will be in the Arbour Boardroom on Arbour Level.

The Gala Dinner will take place at the Main Auditorium in Brisbane City Hall in King George Square in Brisbane CBD.

BCEC Live is a free app that can be downloaded for iPhone, iPad and Android to help you get to the BCEC, navigate the centre, view floorplans, browse the Southbank precinct attractions, and get updates on what's on where during the conference.

Download BCEC Live for iPhone or iPad at:

<https://itunes.apple.com/au/app/bcec-live/id602042976?mt=8>

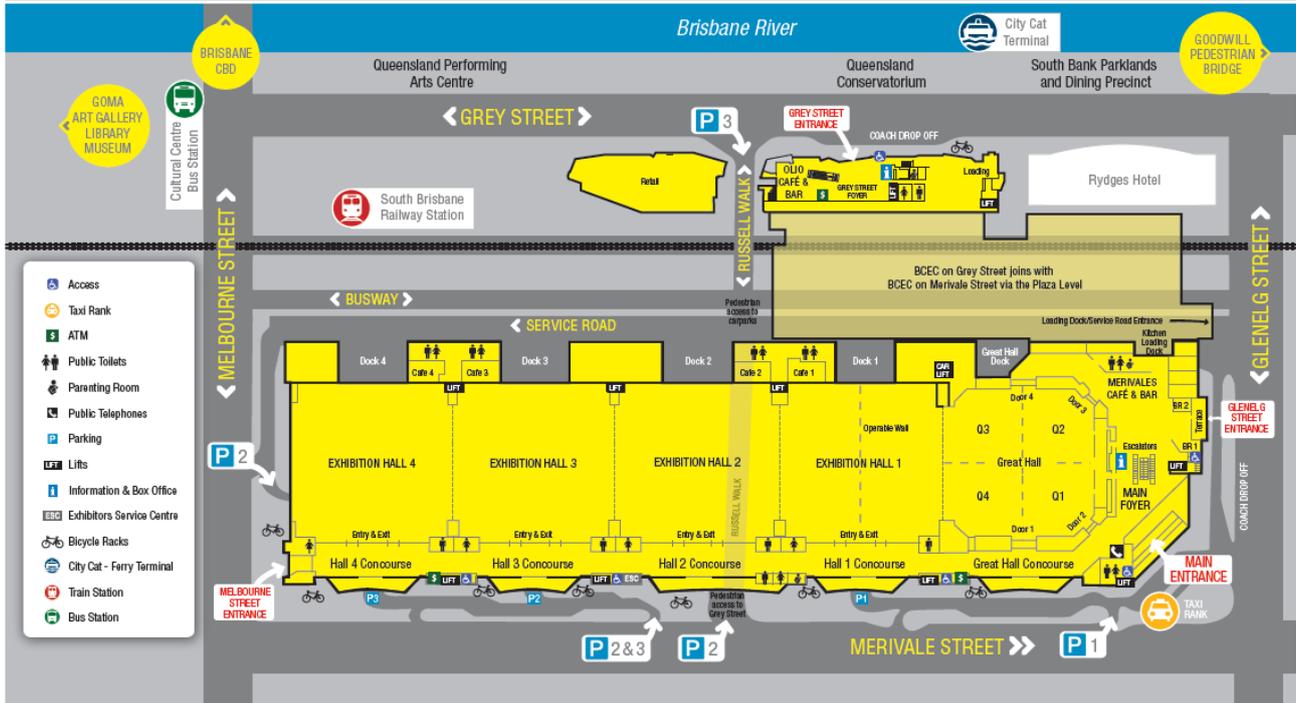
Download BCEC Live for Android at:

https://play.google.com/store/apps/details?id=com.appnetwork.conference.bcec&feature=nav_result#?t=W251bGwsMSwxLDMsImNvbS5hcHBuZXR3b3JrLmNvbmZlcmVuY2UuYmNIYyJd



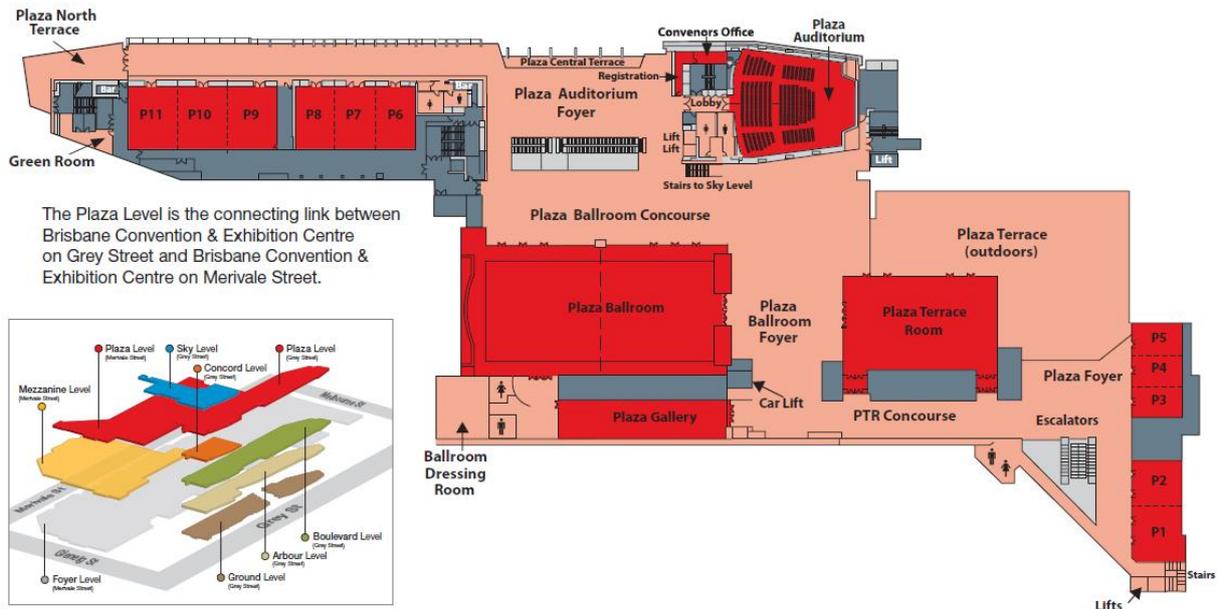
Location & Access Map

BCEC on Merivale Street & Grey Street



Plaza Level

BCEC on Merivale Street & Grey Street





BCEC Location & Inner City Accommodation Map





Registration

The Registration desk will open on Sunday 28th September from 12:00– 5:00pm in the Foyer of P11 (Plaza Level Grey St) and then again from 7.30-8.30am in the Foyer of P9 on Monday, Tuesday and Wednesday mornings prior to the commencement of the scientific program.

Personalised name tags (including a bifold mini program and venue map) will be provided to all delegates registered before 22nd September 2014. All delegates registered after 22nd September will receive a non-personalised bifold program.

Delegates with registered dietary requirements will receive a colour coded card which they must bring to the Gala Dinner function on Tuesday 30th September to indicate their dietary requirements to wait staff at the Brisbane City Hall Main Auditorium. Please do not forget these, as there is no way of identifying you otherwise.

Colour Codes:

Green=Vegetarian, Red=Halal, Yellow=Lactose-Free, Blue=Gluten-Free

Free wifi

Free wifi is available throughout the Brisbane Convention & Exhibition Centre for checking emails and conference program.

To access free wifi look for **BCEC LINK** on your wifi list on your smart phone, tablet or laptop, and connect. No password is required.

Speaker's Desk

All plenary, symposia and oral session presenters are required to have their Powerpoint presentations ready and uploaded before commencement of each session. The AV Operator will be located at the Speaker's Desk at the back of rooms P9/P10 (Plaza Level Grey St from 7:30am on Monday, and from 7:00am Tuesday and Wednesday). All oral sessions for both P9/P10 or P11 should be provided to the AV Operator at the Speaker's Desk before the commencement of each session to minimise delay and interruption to the scientific program.

Mac users are invited to bring their adaptors to provide to the AV Operator ahead of time.



Location and Climate

Brisbane's Climate

Brisbane is a subtropical paradise, blessed with wonderful, warm sunshine throughout the year.

Boasting a long-term annual average high temperature of 26.4C and minimum low of 16C, Brisbane has the perfect climate for life in the great outdoors.

It characteristically has a hot and humid period between October and March, with occasional thunderstorms, hail and torrential rain more common. The months between April and September are traditionally dry and moderately warm.

In December-January, the city can experience daily temperatures of 40C but it rarely reaches heatwave conditions. Daily average highs for those hotter months are 32C.

The city's heart is as warm and welcoming as its weather. With more than 300 days of sunshine a year, Brisbane is the perfect location for visitors to enjoy a range of activities – sport, picnics in parks, bushwalking, water sport and other relaxing forms of recreation.

On warm, clear days you can take day trips to numerous intriguing destinations in and around Brisbane, while on perfect nights dine alfresco-style and take in the great river views.

A testament to Brisbane's wonderful weather is the fact that most of the city's public spaces, such as the city malls, South Bank, cafe strips, and bayside areas, are alive with activity all year round.

The State Government, Brisbane City Council and surrounding councils have good weather-management systems in place, with regular weather updates provided by radio and TV stations.

For the latest conditions, visit the Bureau of Meteorology site bom.gov.au and follow the Queensland links.

Sun protection: When out sight-seeing, always wear a shirt, hat, sunglasses and good sunscreen, even on cloudy days. Reapply sunscreen regularly if spending the whole day outdoors. Try to stay out of the sun in the middle of the day when it is strongest. Always drink plenty of fluids to prevent dehydration.





Getting to and from the Venue

BCEC

Location

Cnr Merivale and Glenelg Streets
South Bank, Brisbane
Queensland Australia

Postal Address

PO Box 3869
South Bank 4101
Queensland Australia

Phone

Australia: 07 3308 3000
International: 61 7 3308 3000
Toll Free Australia Only: 1800 063 308
Sales Enquiry: 07 3308 3063

Fax

Australia: 07 3308 3500
International: 61 7 3308 3500

Getting To Brisbane

Airport

With more than 20 million passengers in 2011/12, the award-winning [Brisbane Airport](#) is the third busiest in Australia. Brisbane is the closest destination for international travellers to Australia and is a great hub to start from for many Australian experiences.

Airtrain

Once you've arrived, getting around Brisbane is a pleasure with its first class network of travel and transport links. From the airport, board the Airtrain for a direct transfer to the city (kids travel free) and links the domestic and international terminals. Brisbane Airport is located less than 20 minutes from the city centre via train.

Cruise

The Cruise Terminal at [Portside Wharf](#) welcomes the majority of cruise liners that dock in Brisbane. Located on the north side of the city and home to a buzzing dining precinct, Portside Wharf is a luxury landing for cruise passengers. For those wanting to get closer to nature, Morton Island is Brisbane's latest destination for cruise liners and welcomes visitors with white sandy beaches, adventure sports and dolphin feeding.

Getting around Brisbane

Public Transport – Ferry/Bus/Train

Visitors to Brisbane are able to travel across the city on one cashless ticket called a 'Go Card' making getting around easy, simple and cost effective. Issued by Translink, the Go Card is a





touch-on touch-off system which can be used on the city's buses, trains, CityCats and ferry services. A Go Card can be purchased at the Translink office located in the Brisbane Visitor Information Centre, on Queen Street Mall or at most local news agencies.

City Loop Bus

For inner-city travel, Brisbane's free-loop bus service is a fast way to get from point A to point B. Available from Monday to Friday only between 7.00am and 6.00pm the Brisbane City Loop Bus runs every ten minutes and is a jump-on and jump-off system.

Bicycle & Pedestrian Access

Discover Brisbane by foot to get to know the city intimately because of the central business district's compact structure and proximity to the Brisbane River. Alternatively, visit one of the 150 CityCycle hire stations to explore the city from the seat of a bicycle. Home to more than 1100 kilometres of dedicated path ways, walking or cycling around the city is a fun, simple and smart way to travel.

Green Cabs

Introduced to Brisbane's transport landscape in 2009, Green Cabs have quickly become the way to travel around the inner-city. Eco-friendly and affordable the service is only available on weekends, during special events or on special request. Green Cabs can be picked up from the Wheel of Brisbane, South Bank and used between West End and Fortitude Valley.

Taxi

Another way to get to where you need to go is via a taxi. You'll find taxi ranks at the Brisbane international and domestic airports, as well as throughout Brisbane City and its surrounding regions. Jumping in a taxi can be a quick and efficient way of getting to your destination. If you need transport for four passengers or less you can order a standard taxi, if you need wheelchair access or have between five – 10 passengers you will need to order a maxi taxi.

Click [here](#) to find a taxi rank.

Key phone numbers

Brisbane Visitor Information & Booking Centre: (07) 3006 6290.

TransLink (transport information): 13 12 30.

Black & White Cabs: 13 32 22.

Yellow Cabs: 13 19 24.

Emergency (ambulance, police or fire brigade): Dial 000.



Public Transport in Brisbane

Brisbane prides itself on being green and its sustainability, so it's no wonder that public transport is one of the best ways to get around the city.

With the [TransLink](#) go card you can travel seamlessly on all TransLink bus, ferry and rail services across south-east Queensland. It's the perfect travel companion. Get your go card from selected retailers and QR stations, online or over the phone, and top up your card balance like a prepaid mobile phone whenever it suits you.

Ferry

One of the most pleasant and cost-effective ways to get around Brisbane is via its main artery, the Brisbane River. [Brisbane Ferries](#) operates Brisbane City Council's CityCat and CityFerry Services. The CityCat is generally used for longer journeys up and downstream, while the CityHopper and Cross River ferries are used for short journeys across the water. Enjoy the ample sightseeing opportunities as you wind your way around the river with access to key city stops including New Farm Park, South Bank and Bulimba.

Bus

Buses are a popular form of transport in Brisbane due to their virtual door-to-door access in this city which boasts its fair share of hills. Brisbane City Council operates the bus network in the capital and even offers free city loop buses around the CBD operating Mon-Fri 7am-5.50pm, every ten minutes from any red CBD bus stop and a guided City Sights bus tour. If you want to get out and enjoy Brisbane's nightlife, the council also has you covered running all-night bus and train services, known as NightLink services from the CBD and Fortitude Valley on Friday and Saturday nights.

Train

Brisbane has a sophisticated train service which connects the CBD to the outer suburbs in all directions. There are 11 lines in operation including to the airport, the Gold and Sunshine Coasts, and Ipswich. Trains are modern and air-conditioned.



Meals

Each day of the conference, delegates will receive morning tea, lunch and afternoon tea. Dietary requirements have been noted with Convention staff, and names will be cross-checked.

All meals will be served in the Foyer area on Plaza Level in front of P9-P11.

Delegates with registered dietary requirements will receive a colour coded card which they must bring to the Gala Dinner function on Tuesday 30th September to indicate their dietary requirements to wait staff at the Brisbane City Hall Main Auditorium. Please do not forget these, as there is no way of identifying you otherwise.

Colour Codes:

Green=Vegetarian, Red=Halal, Yellow=Lactose-Free, Blue=Gluten-Free

Daily menus at BCEC are shown below.

MONDAY 29th September

Monday Morning Tea

Muffin selection: blackberry and apple, chocolate and caramel, carrot crumble and cream cheese icing (v)

Fruit and nut slice (v, dairy free)

Filtered Rainforest Alliance Certified™ coffee and a selection of teas served from stations





Monday Lunch - cold with 2 hot items and dessert

Sandwiches, wraps and rolls - New Yorker: pastrami, coleslaw, Swiss cheese, Russian dressing

Sandwiches, wraps and rolls - Smoked turkey, cranberry and chestnut mayonnaise, avocado, brie, mesclun

Sandwiches, wraps and rolls - Roasted eggplant, basil pesto, crumbled goat's cheese, char grilled zucchini, spinach (v, gf)

Salads - Roast chicken, wild rice, almonds, red cabbage, carrot, shredded celery, dried cranberries (gf)

Salads - Gluten free penne pasta, Moroccan beef, peas, sundried tomatoes, basil pesto mayonnaise (gf)

Salads - Greek salad, cherry tomatoes, cucumber, fetta, capsicums, Spanish onion, (v, gf)

Seafood paella, egg, tomato, chorizo, mussels, clams (gf)

Moroccan vegetable tagine, mint, citrus quinoa, toasted almonds, basil (v, gf)

Chocolate and caramel pot (v)

Sliced seasonal and tropical fruit (v, gf)

Filtered Rainforest Alliance Certified™ coffee and a selection of teas served from stations

Fresh orange juice and water

Monday Afternoon Tea

Mini chicken and leek pie

Coconut and berry tapioca verrines (v, gf)

Filtered Rainforest Alliance Certified™ coffee and a selection of teas served from stations



TUESDAY 30th September

Tuesday Morning Tea

Bacon and egg pie

Bran and apricot muffins (v, gf)

Filtered Rainforest Alliance Certified™ coffee and a selection of teas served from stations

Tuesday Lunch - cold with 2 hot items and dessert

Sandwiches, wraps and rolls - Honey glazed ham, gouda, pineapple and tomato chutney, baby spinach

Selection of wraps and rolls (2pp) - Slow cooked beef, roasted sweet potato, goat's cheese, caramelised red onion, rocket, kale pesto

Sandwiches, wraps and rolls - Shaved fennel remoulade, spiced hummus, cheese, chopped egg (v, gf)

Salads - Smoked barramundi, fennel, orange and goat's cheese slaw, radicchio, honey mustard dressing (gf)

Salads - Dukkah lamb, quinoa tabouleh, parsley, mint, tomato, minted yoghurt dressing (gf)

Salads - Tofu Greek salad, char grilled vegetables, rocket, pistachios, lemon dill dressing (v, gf)

Indian butter chicken, basmati rice, cucumber yoghurt

Sri Lankan vegetable curry, seeded mustard (v, gf)

French pastries (v)

Chocolate pudding, chocolate sauce (v)

Filtered Rainforest Alliance Certified™ coffee and a selection of teas served from stations

Fresh orange juice and water





Tuesday Afternoon Tea

Madagascan vanilla ice cream

Murray River salted caramel and macadamia nut ice cream

Cookies and cream ice cream

Kangaroo Island honey with pistachio ice cream

Filtered Rainforest Alliance Certified™ coffee and a selection of teas served from stations

WEDNESDAY 1st October

Wednesday Morning Tea

Steamed curry chicken bun

Yoghurt cake (v)

Filtered Rainforest Alliance Certified™ coffee and a selection of teas served from stations

Wednesday Lunch - cold with 2 hot items and dessert



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Sandwiches, wraps and rolls - Sandwich of slow cooked pork, apple slaw, pecan and maple mayonnaise, shredded lettuce

Sandwiches, wraps and rolls - Roast chicken, brie, apple chutney, fig Vincotta mayonnaise, mesclun

Sandwiches, wraps and rolls - Babaganoush, grated carrot, vine ripened tomatoes, radish, basil pesto, coral lettuce (v, gf)

Salads - Chinese chicken, water chestnuts, sprouts, cucumber, coriander, baby corn, Asian greens, rice noodles (gf)

Salads - Tofu Greek salad, char grilled vegetables, rocket, pistachios, lemon dill dressing (v, gf)

Salads - Crunchy Asian slaw, Chinese cabbage, radish, edamame, coriander, red capsicum, creamy satay dressing (v, gf)

Lamb massaman: slow cooked lamb, coconut curry sauce, jasmine rice (gf)

Ricotta and porcini ravioli, truffle cream sauce (v)

Apple crumble tart, whipped cream (v)

Banana pecan pudding, caramel sauce (v)

Filtered Rainforest Alliance Certified™ coffee and a selection of teas served from stations

Fresh orange juice and water

Wednesday Afternoon Tea

Chocolate fudge slice (v)

Sliced seasonal and tropical fruit (v,gf)

Filtered Rainforest Alliance Certified™ coffee and a selection of teas served from stations



Attractions

About Brisbane

Brisbane is Australia's fastest growing city and is rated the world's sixth best business destination by the Economist Magazine.

The seat of government and commerce in the state of Queensland, Brisbane has a population of 1.8 million.

The gateway to the country's most popular tourist region, Brisbane is serviced by world class domestic and international airports located just 20 minutes from the city centre. Brisbane International Airport operates 24/7 and has direct international flights each week.

With an all year round idyllic climate, Brisbane is a dynamic, sophisticated and cosmopolitan city with a relaxed, friendly alfresco lifestyle.

Quick Facts

- Brisbane is the second fastest growing city in the world behind Phoenix, Arizona
- Brisbane is the birth place of the world's first cervical cancer vaccine
- Brisbane is the closest major Australian capital to the eastern seaboard
- The Brisbane River is older than the Nile
- Brisbane is known as Australia's 'Most Livable City'

- [Visit Brisbane](#)
- [Brisbane Airport](#)
- [TransLink](#)
- [Brisbane Visitor Information Centre](#)
- [Moreton Island](#)
- [Stradbroke Island](#)
- [Destination Image Gallery](#)

<http://www.bcec.com.au/brisbane>



About South Bank

South Bank is a unique riverside cultural, entertainment and dining precinct in the heart of the city of Brisbane. Set in lush subtropical riverfront parkland, it is a dynamic urban lifestyle and retail precinct that showcases Queensland's art and culture and is home to Brisbane's newest dining destination.

Located on a one kilometre stretch of the Brisbane River, South Bank is home to the only sand and swimming beach in the heart of an Australian city. You'll be surprised at the diversity of attractions, with rainforest walks, more than 50 restaurants, cafes and bars, stylish shops, symphony orchestras, state opera companies, performing arts theatres and art culture including Australia's most celebrated Gallery of Modern Art.

Quick Facts

- Home to Australia's most celebrated Gallery of Modern Art
- Australia's only sand and swimming beach in the heart of the city is located in South Bank
- Home to Brisbane's most sophisticated riverside dining destination

- [South Bank](#)
- [Queensland Art Gallery and Gallery of Modern Art](#)
- [Queensland Conservatorium Griffith University](#)
- [Queensland Maritime Museum](#)
- [Queensland Museum](#)
- [Queensland Performing Arts Centre](#)
- [State Library of Queensland](#)

<http://www.bcec.com.au/south-bank>



Restaurants and Bars

South Bank is one of Brisbane's best dining hotspots with an array of cafes, pubs, bars, take-away restaurants and gourmet eateries to suit any taste. Just some of the precinct's many cuisine styles include Turkish, Indian, Malaysian, Japanese, Mediterranean, Modern Australian, Russian and Italian.

<http://www.visitbrisbane.com.au/south-bank/eat-and-drink>

Dining out magazine is the premier publication and online restaurant directory for the best dining venues in Australia's major cities and tourist hot spots. You will be able to find dining venues from high end white table cloth dining to hidden take away secrets.

You can quickly book online to dine at your favourite restaurant, review menu's, find dining out deals for affordable dining, search for location or cuisine or simply browse the latest online edition of the Dining Out Magazine for Brisbane or the Sunshine Coast.

<http://www.diningoutmagazine.com.au/>





Social Programme

Colgate Welcome Reception (Plaza Level North Terrace, BCEC)

Dress: Smart Casual (6:00-8:00pm)

Cocktail Package includes two hour silver beverage package

COLD CANAPÉS:

Tandoori chicken, mango chutney, minted crème fraîche on cucumber (gf)

Crusted beef carpaccio, tomato consommé jelly, salsa verde

Mini vegetable tartlets (v)

Smoked trout tartlet, sour cream, baby capers

HOT CANAPÉS:

Mini chicken and mushroom pie

Thai spiced beef skewers, green mango salsa (gf)

Salted cod croquette, citrus mayonnaise

Saffron and fontina arancini (v)

Silver Beverage Package

Lindeman's Henry's Sons Semillon Sauvignon Blanc (wine of Australia)

Lindemans Henry's Sons Brut Cuvee (wine of Australia)

Lindeman's Henry's Sons Shiraz Cabernet (wine of Australia)

Hahn Premium Light

Hahn Super Dry 3.5

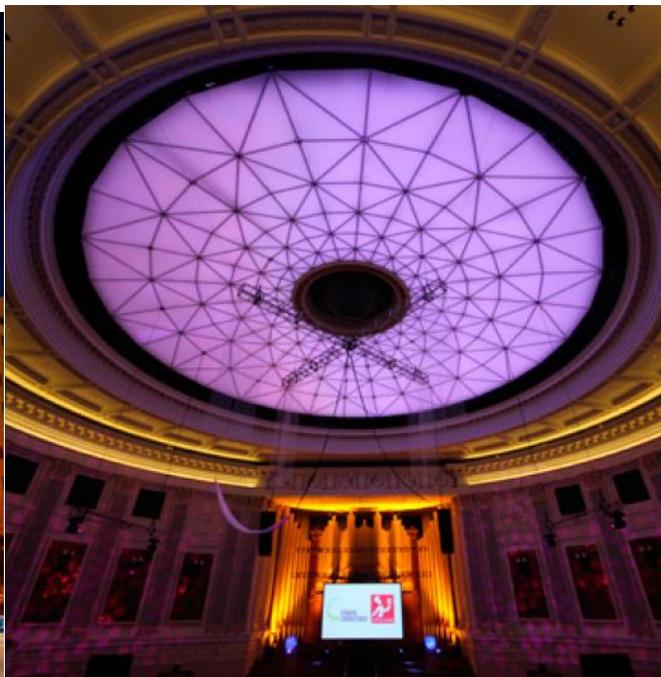
Hahn Super Dry

Orange juice - glass

Mt Franklin sparkling spring water

Soft drink - Glass (Coke, Diet Coke, Sprite, Lift)



Colgate**Gala Dinner** (Main Auditorium, Brisbane City Hall, King George Square)**Dress: Black Tie (6:30-11:00pm)**




**54th ANNUAL SCIENTIFIC MEETING OF THE
INTERNATIONAL ASSOCIATION FOR DENTAL RESEARCH
Australian and New Zealand Division – GALA DINNER**

The Main Auditorium
Tuesday, 30 September 2014

Beverages

Sparkling

The Imprint Sparkling

White Wine

Sirromet Perfect Day Semillon Sauvignon Blanc

Red Wine

Sirromet Perfect Day Merlot Nebbiolo Shiraz

Accompanied by

Cascade Premium Light

Carlton Draught

Sparkling Mineral Water, Orange Juice and Soft Drinks




Entrée

Hickory House Smoked Tasmanian Salmon

Avocado, Cumin Spiced Sheep's Milk Yoghurt and Salmon Crackle (gf)

Main – served alternately

Grass Fed Aged Fillet of Beef

Truffled Gnocchetti, Eschallot Butter, Spinach and Madeira Jus (gf)

Pomegranate and Honey Roasted Duck Breast

Soused Eggplant, Sugar Snaps, Pickled Plum and Pommes Allumettes (gf)

Accompanied By Freshly Baked Sourdough Rolls and Cultured Australian Butter

Dessert

Coconut Bombe

Mango and Coconut Sorbet, Toasted Meringue, Mango and Strawberry Salad (gf)

To Finish

Genovese Organic Fair Trade Coffee, 'Tea Drop' Tea Selection and Herbal Infusions

EPICURE Chocolates





Colgate
Scientific Programme

Plenary & Symposia						
Surname	First name	Abstract ID	Title	Session Number	Abstract Sequence Number	
Monday 29 Sept (P9+P10)						
WHELTON	Helen	193724	Overview of GOHIRA - A Call to Action	Plenary 1	PL1	9:00-10:00 (60 min)
					Tea Break	10:15-10:45 (30 min)
EVANS	Wendell	193686	Inequalities in dental caries	Symposium 1	S1	10:45-11:10 (25 min)
FOLEY	Michael	193711	The Politics of Water Fluoridation in Queensland	Symposium 1	S2	11:10-11:35 (25 min)
JOHNSON	Newell	193372	Inequalities in Oral Cancer	Symposium 1	S3	11:35-12:00 (25 min)
					Lunch Break	12:00-13:00 (60 min)
ABIKO	Yoshimitsu	193684	Development of the molecular targeted therapy for periodontal disease	Plenary 2	PL2	13:00-14:00 (60 min)
REYNOLDS	Eric	193691	Periodontal Microbiome and Diagnosis	Symposium 2	S4	14:00-14:35 (35 min)
SEYMOUR	Greg	193544	Genetics/Epigenetics and Periodontal Disease	Symposium 2	S5	14:35-15:15 (35 min)
					Tea Break	15:15-15:45 (30 min)
FARAH	Camile	193687	Personalized Patient Care in Oral Oncology	Symposium 2	S6	15:45-16:20 (35 min)
PECK	Chris	193592	Personalising Orofacial Pain Assessment and Management	Symposium 2	S7	16:20-16:55 (35 min)

Tuesday 30 Sept (P9+P10)						
SHANNON	Cindy	193999	Overview of Indigenous Oral Health in Australia - strategies for moving forward	Plenary 3	PL3	8:00-9:00 (60 min)
JAMIESON	Lisa	193383	Early Childhood Caries Intervention among Indigenous Children in Australia	Symposium 3	S8	9:00-9:25 (25 min)
BROUGHTON	John	193418	Early Childhood Caries Intervention Among Maori Children in New Zealand	Symposium 3	S9	9:25-9:50 (25 min)
HA	Diep	193636	Trends of Caries Experience and Associated Factors among Indigenous Children	Symposium 3	S10	9:50-10:15 (25 min)
					Tea Break	10:15-10:45 (30 min)
JONES	Kelly	193610	Self-efficacy, oral health-literacy and self-rated oral health among Aboriginal Australians	Symposium 3	S11	10:45-11:10 (25 min)



CHAND	Reshika	193664	Frames of reference underpinning Indigenous adults self-rated oral health	Symposium 3	S12	11:10-11:35 (25 min)
KAPELLAS	Kostas	193662	Health Among PerioCardio Study Participants: Does Imprisonment Exacerbate Inequalities?	Symposium 3	S13	11:35-12:00 (25 min)
				AGM	Lunch Break	12:00-13:00 (60 min)
HUTMACHER	Dietmar	193998	Biofabrication of Hard and Soft Tissue Interfaces	Plenary 4	PL4	13:00-14:00 (60 min)
IVANOVSKI	Saso	193653	Multiphasic Scaffolds for Periodontal Tissue Engineering	Symposium 4	S14	14:00-14:35 (35 min)
WARNKE	Patrick	193725	Endocultivation - from bench to bedside	Symposium 4	S15	14:35-15:15 (35 min)
					Tea Break	15:15-15:45 (30 min)
BARTOLD	Mark	193378	Induced Pluripotent Stem Cells	Symposium 4	S16	15:45-16:20 (35 min)
XIAO	Yin	193582	Signalling Pathway manipulation and periodontal regeneration	Symposium 4	S17	16:20-16:55 (35 min)

Wednesday 1 Oct (P9+P10)						
WHELTON	Helen	193723	Fluoride Research: The Knowns and the Known Unknowns	Plenary 5	PL5	8:00-9:00 (60 min)
					Lunch Break	12:00-13:00 (60 min)
RICH	Alison	193721	Curriculum Review: National and International Perspectives	Symposium 5	S18	13:00-13:25 (25 min)
ROBERTS-THOMSON	Kaye	193709	Clinical Education and Care Delivery : The Way Forward	Symposium 5	S19	13:25-13:50 (25 min)
TOWNSEND	Grant	193644	Beyond PBL – Which Simulation and Assessments?	Symposium 5	S20	13:50-14:15 (25 min)
PECK	Chris	193707	Dental Education: Is There a Future For Clinical Placements?	Symposium 5	S21	14:15-14:40 (25 min)
SAMARANAYAKE	Lakshman	193654	Research and Discovery, and Dental Education	Symposium 5	S22	14:40-15:05 (25 min)
					Tea Break	15:15-15:45



Oral Sessions						
Surname	First name	Abstract ID	Title	Session Number	Abstract Sequence Number	Time (Duration)
Monday 29 Sept (P11)						
STUTE	Ben	193640	Variations in child dental caries experience - a population-based study	Oral Session 1	O1	14:00-14:15 (15 min)
STORRS	Mark	193438	Measuring Teams-Based Interprofessional Education Outcomes in Clinical Dentistry: Psychometric Evaluation	Oral Session 1	O2	14:15-14:30 (15 min)
EL AZZI	Roland	193645	Oral Health Education at ISMHU within HNE Health	Oral Session 1	O3	14:30-14:45 (15 min)
DO	Loc	193649	Factors attributable to prevalence of dental caries in child population	Oral Session 1	O4	14:45-15:00 (15 min)
MUSLIM	Tufayl Ahmed	193698	Incentivising Health-Care Workers Towards Reducing Inequalities – Cross-National Policy Analysis	Oral Session 1	O5	15:00-15:15 (15 min)
					Tea Break	15:15-15:45 (30 min)
PERERA	Manosha	193421	The Burden Of OSCC in Rural Sri Lankan Region	Oral Session 1	O6	15:45-16:00 (15 min)
MOORE	Kelsey	193543	Coping with Oral Dysfunction Following Head and Neck Cancer Treatment	Oral Session 1	O7	16:00-16:15 (15 min)
SMITH	Michael	192799	Kinder Wide Smiles Project	Oral Session 1	O8	16:15-16:30 (15 min)
NORDIN	Norhasnida	193373	Impacts of Early Childhood Caries on Malaysian Parents' QoL	Oral Session 1	O9	16:30-16:45 (15 min)
ITINTAAKE	Karurua	193426	Oral Health Status: Special Needs Children Centre, Tarawa, Kiribati	Oral Session 1	O10	16:45-17:00 (15 min)

Tuesday 30 Sept (P11)						
EVANS	Wendell	193441	Sustained Caries Risk Reduction Following 7 Years of Preventive Treatment	Oral Session 2	O11	9:00-9:15 (15 min)
FERNANDO	Surani	193571	Assessing inherited and individual risk factors for dental caries	Oral Session 2	O12	9:15-9:30 (15 min)
EVANS	Alana	193708	Effects of combinations of oral antiseptics on oral bacteria	Oral Session 2	O13	9:30-9:45 (15 min)
ODEH	Ruba	193380	Infraocclusion: clinical features and associated anomalies in singletons and twins	Oral Session 2	O14	9:45-10:00 (15 min)
SIM	Christina	193433	<i>In vitro</i> Polymicrobial Biofilm Model of Dental Caries	Oral Session 2	O15	10:00-10:15 (15 min)
					Tea Break	10:15-10:45 (30 min)
SCOTT	Antonia	193584	Panoramic Radiographs, Bilateral Neck Calcifications and Diagnosis of Thyroid Conditions	Oral Session 2	O16	10:45-11:00 (15 min)



HANNA	Kamal	193398	Quality and Readability of Online Information concerning Wisdom Tooth Problems	Oral Session 2	O17	11:00-11:15 (15 min)
GUAZZATO	Max	193572	Implant-Supported Full-Arch Zirconia Fixed Prosthesis: A Prospective Study	Oral Session 2	O18	11:15-11:30 (15 min)
ESERA	L	193427	Prevalence of Maxillofacial fractures in Samoa :2010 -2012 Abstract Withdrawn	Oral Session 2	O19	11:30-11:45 (15 min)
CHAUHAN	Bindiya	193614	Competency based assessment: a situational analysis, Fiji National University - Abstract Withdrawn	Oral Session 2	O20	11:45-12:00 (15 min)
					Lunch Break	12:00-13:00 (60 min)
Tuesday 30 Sept (P11)						
CHRISOPOULOS	Sergio	193387	Job Satisfaction of Australian Oral Health Practitioners: a National Cross-sectional Study	Oral Session 3	O21	14:00-14:15 (15 min)
ARMPFIELD	Jason	193410	Dental fear management techniques used by Australian dentists	Oral Session 3	O22	14:15-14:30 (15 min)
TAN	Haiping	193462	Chinese dental beliefs, SES and dental visits among Chinese migrants	Oral Session 3	O23	14:30-14:45 (15 min)
BRIDGES	Susan	193537	Interpreter-mediated Dentistry	Oral Session 3	O24	14:45-15:00 (15 min)
KULARATNA	Sanjeewa	193568	Quality of Life and Utility Values in Oral Cancer Patients	Oral Session 3	O25	15:00-15:15 (15 min)
					Tea Break	15:15-15:45 (30 min)
PATEL	Jilen	193569	Qualitative study of volunteers providing oral care in the Kimberley	Oral Session 3	O26	15:45-16:00 (15 min)
SCHUCH	Helena	193595	Perceived Dental Pain: Determinants and Impacts in Brazilian Schoolchildren	Oral Session 3	O27	16:00-16:15 (15 min)
LUZZI	Liana	193608	Importance of and satisfaction with work-related attributes among Australian dentists	Oral Session 3	O28	16:15-16:30 (15 min)
CHRISTIAN	Bradley	193616	Dental service use among pre-school children from migrant backgrounds	Oral Session 3	O29	16:30-16:45 (15 min)
GUSSY	Mark	193637	An Australian story of dental caries in migrant pre-school children	Oral Session 3	O30	16:45-17:00 (15 min)

Wednesday 1 Oct (P9+P10)						
HUANG	Yu-Sheng Eugene	193437	Investigation of osteogenesis on modified titanium surfaces	Oral Session 4	O31	9:00-9:15 (15 min)
MERCADO	Tino	193456	Regenerative Therapy For Peri-implantitis With Xenograft And Enamel Matrix Derivative	Oral Session 4	O32	9:15-9:30 (15 min)
ARORA	Himanshu	193600	Immediately Placed and Restored Implants in the Maxillary Anterior Region	Oral Session 4	O33	9:30-9:45 (15 min)
HOU	Michaela	193620	Effect of Surface Topography on Osseointegration in Bisphosphonate-Treated Rat Maxillae	Oral Session 4	O34	9:45-10:00 (15 min)



CHEN	Peter	193621	Surface Modification and Survival Rates of Posterior Maxillary Dental Implants	Oral Session 4	O35	10:00-10:15 (15 min)
					Tea Break	10:15-10:45 (30 min)
LEE	Ryan	193623	Effects of titanium surface modification on osseous healing in diabetes	Oral Session 4	O36	10:45-11:00 (15 min)
BARKER	Christopher	193624	Influence of Implant Topography and Chemistry on Osseointegration	Oral Session 4	O37	11:00-11:15 (15 min)
OETTINGER BARAK	Orit	193639	Is an appropriate distance achieved between dental implants?	Oral Session 4	O38	11:15-11:30 (15 min)
TAVAZOEI	Maziar	193642	Systemic Review: Histomorphometry Of Biomaterials in Lateral Window Sinus Augmentation	Oral Session 4	O39	11:30-11:45 (15 min)
ALAYAN	Jamil	193663	Histomorphometric Assessment Collagen Stabilized Anorganic Bovine Bone in Sinus Augmentation	Oral Session 4	O40	11:45-12:00 (15 min)
					Lunch Break	12:00-13:00 (60 min)
Wednesday 1 Oct (P11)						
ELHOUSINY	Moustafa	193403	Role Of Substance P in Adhesion/Metastasis of Oral Cancer	Oral Session 5	O41	9:00-9:15 (15 min)
ALLEN	Kristine	193425	Oral Mucosal Pathology Detection: a Check-up of Australian Dentists	Oral Session 5	O42	9:15-9:30 (15 min)
KORDBACHEH	Farzaneh	193430	Molecular, pathological and autofluorescence characteristics of oral mucosal lesions	Oral Session 5	O43	9:30-9:45 (15 min)
LALLA	Yastira	193431	Tissue Autofluorescence and Reflectance for evaluating Indigenous Oral Mucosal Disease	Oral Session 5	O44	9:45-10:00 (15 min)
JOHN	Keziah	193536	Influence of NBI in Surgical Resection of OSCC	Oral Session 5	O45	10:00-10:15 (15 min)
					Tea Break	10:15-10:45 (30 min)
FORMOSA	Joseph	193555	Far north Queenslanders' awareness on oral cancer and precancer	Oral Session 5	O46	10:45-11:00 (15 min)
CURRIE	Sean	193562	Alcohol-Containing Mouthwash Exposure and Transcriptomic Changes in Oral Keratinocytes	Oral Session 5	O47	11:00-11:15 (15 min)
DOST	Fatima	193577	Recruitment experiences of a mass oral cancer screening program	Oral Session 5	O48	11:15-11:30 (15 min)
JESSRI	Maryam	193615	hMSH6: a potential diagnostic marker for oral carcinoma in situ	Oral Session 5	O49	11:30-11:45 (15 min)
VU	An	193541	Use of Narrow Band Imaging on Oral Potentially Malignant Disorders	Oral Session 5	O50	11:45-12:00 (15 min)
					Lunch Break	12:00-13:00 (60 min)
Wednesday 1 Oct (P11)						



DASHPER	Stuart	193436	Effect of Oxantel on Oral Bacterial Synergistic Polymicrobial Biofilm Formation	Oral Session 6	O51	13:00-13:15 (15 min)
DU	Zhibin	193545	The Emerging Roles of Osteocytes with Osseointegration	Oral Session 6	O52	13:15-13:30 (15 min)
RAM	Anumala	193589	Prevalence of Periodontal Disease in 15-Year Olds, in Suva, Fiji	Oral Session 6	O53	13:30-13:45 (15 min)
MATHEW	Asha	193594	Azithromycin Loaded Polymeric Membranes for Guided Tissue Regeneration	Oral Session 6	O54	13:45-14:00 (15 min)
DAN	Hongxia	193609	Effect Of Local Injection Of Lithium Chloride On Bone Regeneration	Oral Session 6	O55	14:00-14:15 (15 min)
CHAND	Priyashna	193657	Periodontal Health and Smoking Status of Frontline Hospitality Workers	Oral Session 6	O56	14:15-14:30 (15 min)
SHARMA	Chakrabhavi Dileep	193641	Cytotoxicity Of Various Bisphosphonates On Human Umbilical Cord-Derived Stem Cells	Oral Session 6	O57	14:30-14:45 (15 min)
MCINNES	Helen	193573	TLRs and Oral Microflora in Rat Mucositis: Cell Culture Model	Oral Session 6	O58	14:45-15:00 (15 min)
CHEN	Zetao	193444	Nutrient Element-based Bioceramic Coatings With Beneficial Osteoimmunomodulation for Better Osseointegration	Oral Session 6	O59	15:00-15:15 (15 min)
					Tea Break	15:15-15:45 (30 min)



Poster Sessions

Surname	First name	Abstract ID	Title	Session Number	Abstract Sequence Number
Tuesday 30 Sept (P9-P11 Foyer)					
GNANAMANICKAM	Emmanuel	193461	Oral Health and its Relationship with Prospective Dental Service Use	Poster Session 2	P1
KHATRI	Darshika	193715	Projected Cost to Restore Aesthetics Hotel Employees in Suva, Fiji	Poster Session 2	P2
MANN	Chelsea	193385	Three dimensional imaging of microwear texture in human teeth	Poster Session 2	P3
TRAN	Carol	193453	Performance of negative fluorescence diagnostic methods for caries assessment	Poster Session 2	P4
SHEN	Peiyan	193467	Food Acid Content and Erosive Potential of Sugar-free Confections	Poster Session 2	P5
SHAHMORADI	Mahdi	193557	Developing a System for Automatic Detection & Characterisation of Enamel Caries	Poster Session 2	P6
FARIHATINI	Tintin	193558	Teeth's Trace Elements as Markers of Caries and Environmental Condition	Poster Session 2	P7
GOHARI	Samin	193560	The Reasons For Replacement of Amalgam and Composite Restorations	Poster Session 2	P8
TING	Sarah	193556	Dental and skeletal maturation of cleft lip and palate children	Poster Session 2	P9
EDWARDS	Catherine	193392	Effectiveness of single-use tips for dental air-water syringes	Poster Session 2	P10
DAWOOD	Alaa	193393	The Physical Properties of CPP-ACP-modified Calcium Silicate-based Cements	Poster Session 2	P11
ALSHARIF	Alla	193554	A population-based-study of oral in-hospital treatment among Western Australian children	Poster Session 2	P12
WALSH	Laurie	193435	Non-aqueous Solvents Influence pH of Calcium Hydroxide Products	Poster Session 2	P13
HA	William	193452	Correlation of Particle Size with Setting Times in MTA cements	Poster Session 2	P14
BAGHERI	Rafat	193457	Effect of bleaching agent on the toughness of resin composites	Poster Session 2	P15
SHAKIBAIE	Fardad	193468	Deconvolution of the Particle Size Distribution of Mineral Trioxide Aggregate	Poster Session 2	P16
ALHADAINY	Hatem	193551	Micro-shear bond strength of reinforcing materials bonded to root dentin	Poster Session 2	P17
TANAKA	Hiroaki	193579	Property of new flowable composite resin with high radiopacity	Poster Session 2	P18
SIMPSON	Amelita	193585	Digital Panoramic Images, a Survey of Quality, Errors and Pathology - Withdrawn	Poster Session 2	P19
BRIDGES	Susan	193401	A Survey of International Trends in Dental Education	Poster Session 2	P20
HARESAKU	Satoru	193450	Dental Faculties' Opinions about Older Adults' Oral Health Care Education	Poster Session 2	P21
TAN	Joel	193567	Antibiotic Prescribing Practices Amongst Western Australian Dental Practitioners: Pilot Results	Poster Session 2	P22
CHIN	Owen	193673	Baseline Manual Dexterity And Perceptions Of The	Poster	P23





			Simodont Haptic Trainer	Session 2	
DUCKMANTON	Peter	193574	Endodontic techniques and practices of Queensland general dental practitioners	Poster Session 2	P24
DUCKMANTON	Peter	193576	Endodontic markers in Specialist Practice in Australia and New Zealand	Poster Session 2	P25
RIZK	Elie	193580	Failure of endodontically-treated-teeth within 12 months of treatment	Poster Session 2	P26
DUCKMANTON	Peter	193581	Meta-analysis of Endodontic Emergency Treatment	Poster Session 2	P27
HUA	Anthony	193575	Dental Anxiety in Patients Attending a University Dental Clinic	Poster Session 2	P28
MEKE	Thomas	193605	Dental Anxiety on Utilization of Dental Services, Honiara, Solomon Islands	Poster Session 2	P29
VUTIKALULU	Kuini Liku	193617	Oral Health status of participants at Hibiscus Carnival health camp	Poster Session 2	P30
LO	Jonathan	193626	Australian Hospital Admissions For Cleft Lip/Palate Over The Life-course	Poster Session 2	P31
LUI	Lily	193650	Make Your Smile a Priority: An Oral Health Promotion Program	Poster Session 2	P32
KAIMAURI	Stewart	193652	Oral Health Knowledge, Attitude and Practices of Diabetic Patients	Poster Session 2	P33



Surname	First name	Abstract ID	Title	Session Number	Abstract Sequence Number
Wednesday 1 Oct (P9-P11 Foyer)					
HWANG	Linda	193465	Effect of air-polishing on titanium surfaces, biofilm removal and biocompatibility	Poster Session 3	P34
KING	Shalinie	193538	Bioscaffold Augmentation of Bone - A Pilot Study	Poster Session 3	P35
HAMLET	Stephen	193643	Titanium Surface Modulates the Inflammatory Response During Osseous Healing	Poster Session 3	P36
SAGATOVA	Alia	193400	Erg11p Structure in Triazole Resistant and Susceptible Yeast Strains	Poster Session 3	P37
OTHMAN	Noor	193463	<i>In Vitro</i> Effect Of An Antimicrobial Peptide Against Mono-species Biofilms	Poster Session 3	P38
ARZMI	Mohd Hafiz	193570	Co-aggregation: Interaction of <i>Candida albicans</i> , <i>Actinomyces naeslundii</i> and <i>Streptococcus mutans</i>	Poster Session 3	P39
ALJOB AIR	Asma	193423	Mineral Analysis of Rat Enamel after Sugary Drinks Consumption: EDX-Study	Poster Session 3	P40
EVERSHED	Gareth	193439	The Erosive Potential of Commonly Consumed Pre-mixed Alcoholic Beverages	Poster Session 3	P41
KURY RODRIGUES	Matheus	193598	The Dentine Matrix Also Contains Fibromodulin and Collagen Type VI	Poster Session 3	P42
BAHNAM	Sara	193646	Angiogenesis-Mediated Neurogenesis in Human Dental Pulp	Poster Session 3	P43
SHOLAPURKAR	Amar	193454	Panoramic Radiographic study of Mental Foramen in South Indian population	Poster Session 3	P44
DEVI	Deepika	193719	Dental Financing Methods for Frontline Hotel Employees in Suva, Fiji	Poster Session 3	P45
MUN	Michelle	193599	Oral candidal carriage in asymptomatic patients	Poster Session 3	P46
JESSRI	Maryam	193613	Exomic components of progression of oral potentially malignant lesions	Poster Session 3	P47
LINGAM	Lavanya	193674	The Assessment of TMJ changes on Cone-Beam Computerized Tomography	Poster Session 3	P48
LIM	Michelle	193685	Osteoarthritis of the Temporomandibular Joint	Poster Session 3	P49
ARROW	Peter	191457	Evaluation of the ECOHIS in an Australian Preschool Child Population	Poster Session 3	P50
NGUYEN	Tan	191480	Revisiting The Value Of School Dental Check-up Programs	Poster Session 3	P51
KAMALENDRAN	Niveathanan	193718	Oral Microbiota of Children Undergoing Comprehensive Treatment for Severe ECC	Poster Session 3	P52
BAILEY	Denise	193720	Periodontal Diagnosis by General Dental Practitioners in Victoria, Australia	Poster Session 3	P53
MOHAMED THANI	Wan Syasliza	193716	Fluconazole Resistance Against Oral Candida in Patients Taking Antipsychotic Drugs	Poster Session 3	P54
HANNA	Victor	193603	Removable Partial Dentures: Treatment Outcomes at the University of Sydney	Poster Session 3	P55
CHOI	Joanne	193552	Continuous and Simultaneous Measurement of Intraoral pH and Temperature	Poster Session 3	P56





HOU	Leanne Xiao Li	193578	Salivary Protein Profiles of Xerostomia Subjects and Matched Controls	Poster Session 3	P57
LIANG	Ryan	193800	Low level Laser Induced Effects on Human Pulpal Nerves	Poster Session 3	P58
THALAGALA	Dinusha	193801	Alternative endodontic protocol using 980nm laser and silver colloidal compounds	Poster Session 3	P59
ABDALLA	Ali	193726	Microleakage of Composite Restorations Bonded by Desensitizing Self Etch Adhesive - Withdrawn	Poster Session 3	P60





ABSTRACTS



193379

Craving with Areca and Areca with Tobacco among Micronesian Youth

P. MILGROM¹, O.K. TUT², N. SPILLANE³, and D. RAMSAY¹, ¹University of Washington, Seattle, WA, ²Griffith University, Gold Coast, Australia, ³Brown University, Providence, RI

Objective: Areca (betel) use is common in Micronesia. Usually immature nuts are split, coated with lime, and wrapped in a betel leaf. One study reported 63.4% of 309 Saipan students (mean age 16.3±1.5) used Areca. A recent study reported 54.7-68.6% of 100 7th and 8th graders in Yap and Pohnpei used Areca at least once/month and 55% of those youth used tobacco much of the time. Areca has been stated to be addictive, but evidence is lacking. This study was to describe craving among adolescents who habitually use Areca alone or with tobacco and to test the hypothesis that craving is associated with tobacco.

Method: The data source is a survey of 151 9th graders (mean age 14.7±1.0, 75 females) in Saipan conducted in 2014. Students completed an anonymous questionnaire that asked if they ever used betel, age of first use, and frequency of use. They also were asked if they used tobacco with betel and how often. The questionnaire included 15 true/false questions on craving adapted from the U.S. National Survey of Drug Use and Health. The 15-items were summed to form a scale, range 0 to 15 ($\alpha=0.835$) where higher scores indicate greater craving.

Result: 59/151 (39%) ever used betel. First use was age 11±2. 57% used betel in the previous month or more frequently and 49% used either the week of the survey. 79% (34/44) also used tobacco much/nearly all the time with betel. The mean craving score among tobacco users was 8.2±4.0 versus 5.4±3.8 among those who used betel alone ($T=1.87$, $p=0.069$). Neither age of initiation of betel nut use nor gender were related to the craving score.

Conclusion: Results suggest a trend for craving associated with tobacco use among habitual users. If confirmed, tobacco cessation strategies may be helpful.

193383

Early Childhood Caries Intervention among Indigenous Children in Australia

L.M. JAMIESON¹, E.J. PARKER¹, K. ROBERTS-THOMSON², H.P. LAWRENCE³, and J.R. BROUGHTON⁴, ¹University of Adelaide, Adelaide, Australia, ²School of Dentistry, Adelaide, Australia, ³University of Toronto, Toronto, ON, Canada, ⁴University of Otago, Dunedin, New Zealand

Objective: Rates of early childhood caries (ECC) among Indigenous children in Australia are high. Evidence suggests four ways in which ECC can be prevented: dental care provided to mother during pregnancy, application of fluoride varnish to child, motivational interviewing and anticipatory guidance. This presentation outlines a collaborative initiative that has adopted all four intervention strategies in a





culturally-appropriate manner with the aim of reducing ECC among pre-school Indigenous children in South Australia.

Method: Recruitment of women pregnant with an Aboriginal child occurred throughout South Australia from Feb 2011 to May 2012. Recruitment was largely through hospitals, Aboriginal community-controlled health organisations and 22 other key stakeholder groups. Self-reported data were collected at baseline to evaluate self-rated oral health, self-efficacy and socio-demographic, psychosocial, social cognitive and risk factors.

Result: Data from 446 women was obtained (age range 14 to 43 years); 224 were randomly allocated to the intervention group and 222 to the control group. The sample was representative of the total population of pregnant Aboriginal woman in South Australia in the recruitment period. In an unadjusted model, those with low self-efficacy had 1.58 times the prevalence of rating their oral health as 'fair' or 'poor' (95% CI 1.26–1.98). In an adjusted model, which controlled for socio-demographic, psychosocial, social cognitive and behavioural risk factors, the prevalence of fair or poor oral health among those with low self-efficacy was attenuated by 15 percent (PR 1.35, 95% CI 1.03, 1.78).

Conclusion: Recruitment strategies yielded a representative sample of the target population. Randomisation allocated approximately equal numbers of participants to intervention and control groups. Low self-efficacy persisted as a risk indicator for poor self-rated oral health after adjusting for confounding among this vulnerable population.

193387

Job Satisfaction of Australian Oral Health Practitioners: a National Cross-sectional Study

S. CHRISOPOULOS¹, D.N. TEUSNER², J. SATUR³, and D. BRENNAN², ¹University of Adelaide, Adelaide, Australia, ²Australian Research Centre for Population Oral Health, School of Dentistry, The University of Adelaide, Adelaide, Australia, ³Melbourne Dental School, Melbourne, Australia

Objectives: To explore the factors that are associated with job satisfaction in the oral health practitioner workforce in Australia.

Methods: A questionnaire was mailed to 1,861 members of the Australian Dental and Oral Health Therapists' Association and the Dental Hygienists' Association of Australia in 2013. Items included job satisfaction, clinical scope, collegiality along with characteristics such as age, hours worked, sector of employment, length of service, number of years qualified, team size and number of practitioners in the clinic.





Results: Responses were received from 1,084 practitioners, of whom 1,034 were practising (297 Oral health therapists (OHTs); 297 dental therapists (DTs); and 440 dental hygienists (DHs)). There were no significant differences in the levels of job satisfaction across the three groups. Bivariate associations between job satisfaction and age group were found for DHs and DTs only. Length of service and number of years qualified were associated with satisfaction for DHs. Results of multiple regression analyses by practitioner group showed that practitioner characteristics accounted for between 0% and 3% of the variance in job satisfaction. Clinical scope and collegiality had the strongest association with satisfaction, accounting for 47% of the variance for DTs and DHs, and 50% for OHTs.

Conclusion: Workplaces that encourage oral health practitioners to utilise their full range of skills, as well as making them an integral part of the dental team, are likely to maintain high levels of job satisfaction.

193410

Dental fear management techniques used by Australian dentists

J.M. ARMFIELD, Australian Research Centre for Population Oral Health, School of Dentistry, The University of Adelaide, Adelaide, South Australia, Australia, H. MOHAN, University of Melbourne, Melbourne, Victoria, Australia, and L. LUZZI, Australian Research Centre for Population Oral Health, School of Dentistry, The University of Adelaide, Adelaide, Australia

Objective: High dental anxiety (DA) affects about 1 in 6 Australian adults, but there is currently no information on what psychological and pharmacological techniques are being used by dentists to manage patient DA, the reasons associated with not using various techniques, and differences in DA management by practitioner characteristics.

Method: 246 practicing dentists (adjusted response rate = 40.1%) from a random sample of registered Australian dentists completed a mailed questionnaire.

Results: Inhalation (NO₂) sedation was the most used pharmacological DA management technique, but was used at least once a month by only 14.1% of responding dentists. The most commonly used behavioural management techniques (1+ per week) were signalling (77.1%), tell-show-do (71.1%), having a relative or friend in the treatment room (67.1%), and distraction (66.5%). Hypnosis, muscle relaxation and graduated exposure were used rarely, with the main reasons being that dentists were not confidently trained in their use, they were too time-consuming, or there was no demand. A majority of dentists considered the pharmacological approaches to managing DA to be mostly or almost always effective, while most dentists considered the behavioural approaches to be only sometimes or not at all effective. Lack of training, not having the necessary equipment, no demand, and being too time-consuming were barriers to using





pharmacological DA management techniques. There were few statistically significant differences in techniques used by practitioner characteristics, although younger dentists used tell-show-do more frequently than their older counterparts and female dentists and those seeing higher percentages of anxious patients were more likely to adopt the daily use of shorter appointment sessions.

Conclusion: Despite a variety of techniques available for managing the anxious dental patient, few were actually practiced by the respondents. There are many barriers preventing dentists from utilising DA management techniques more often.

193418

Early Childhood Caries Intervention Among Maori Children in New Zealand

J.R. BROUGHTON, University of Otago, Dunedin, New Zealand

Objective: Māori do not enjoy the same oral health status as non-Māori people in Aotearoa/New Zealand including early childhood caries (ECC). An ECC intervention research project is being conducted that involves dental care provided to the mother during pregnancy, application of fluoride varnish to the child, motivational interviewing and anticipatory guidance. This presentation outlines the kaupapa Māori research (Māori philosophical approach) which aims to reduce ECC among tamariki Māori (Māori children).

Method: This project was undertaken within the tribal area of Waikato-Tainui in the central North Island. Māori woman who were hapū (pregnant) were recruited between September 2011 and December 2012. Recruitment was through the extensive community networks of the Māori health provider, Raukura Hauora O Tainui. Self-reported information was collected on sociodemographic characteristics, pregnancy details, self-reported general and oral health and health-related behaviours and oral health beliefs.

Result: Data from 222 pregnant Māori women was obtained (mean age 26-years); 110 were randomly allocated to the intervention group and 112 to the control group. Most women reported good health. Almost all were dentate, 57.7% described their oral health as fair or poor, and dental service-use was relatively low and symptom-related.

Conclusion: Mothers' important role in nurturing the well-being of the young child includes the protection and maintenance of the growing child's oral health. The findings provide important insights into Māori mothers' oral health knowledge, beliefs and practices.

193461

Oral Health and its Relationship with Prospective Dental Service Use





E.S. GNANAMANICKAM, D.N. TEUSNER, and D. BRENNAN, Australian Research Centre for Population Oral Health, School of Dentistry, The University of Adelaide, Adelaide, Australia

Objective: Routine dental visiting has been associated with better oral health quality of life. Conversely, cross-sectional data shows that poor oral health is associated with higher number of visits, although this relationship has not been studied prospectively. This study investigated the relationship between Oral Health Impact Profile (OHIP) severity as an oral health measure and dental service use over a 2 year period.

Method: A random sample of 3000, 30-61 year old adults, from across Australia, were drawn from the electoral roll in 2009. Baseline data was collected in 2009-10 using a mailed questionnaire and at 1 and 2 years through both a questionnaire and a logbook of service use. Poisson regression was used to test the bivariate relationships and adjusted associations between OHIP severity and number of visits.

Result: The baseline questionnaire response rate was 39.4%, of which 53.1% responded at 1-year follow-up and 46.8% at 2-year follow-up. Over 73% of respondents at the 2-year follow-up made at least one dental visit. Among those who made at least one dental visit, the mean number of visits was 3.97. The bivariate relationship between OHIP severity and number of visits was significant ($P < 0.05$). After adjusting for age, sex, insurance status and household income, there was a significant association between oral health and number of visits. Among those who made at least one visit, those with a higher OHIP rating visited at a 23% higher rate (Rate Ratio=1.23, 95% CIs: 1.02 – 1.49) than those with lower OHIP scores.

Conclusion: Using prospective visit data, there was a significant association between number of visits and severity of oral health impacts at baseline.

193462

Chinese dental beliefs, SES and dental visits among Chinese migrants

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Objective: To investigate the influences of Chinese dental beliefs and the socio-economic status (SES) on dental visits among Chinese migrants in Australia.

Method: The addresses of the participants were randomly selected from the White Pages of residents in Metropolitan area of South Australia, Victoria, Queensland and New South Wales by selecting people with names that appear to be Chinese. Mailed self-complete questionnaires written in both English and Chinese were used to collect data. Demographic information, SES, Chinese dental beliefs, time for the last dental visit and reason for the dental visit were asked in the questionnaire. Multivariable logistic regression was used to investigate the influences of Chinese





dental beliefs and the SES on dental visits among Chinese migrants. Outcome variables were time for the last dental visit and reason for the dental visit.

Result: To date, 836 participants completed the questionnaires. Results of multivariable logistic regression after controlling age group, sex and years living in Australia showed that Chinese migrants with weak or moderate Chinese dental beliefs and those in the highest household income tertile were more likely to see the dentist within the last 12 months compared with those with strong Chinese dental beliefs and those in the middle household income tertile ($P < 0.05$). The reason for last visit was not significantly affected by Chinese dental beliefs but the household income – those in the lowest and middle household income tertiles were more likely to make a problem-based visit compared with those in the highest household income tertile ($P < 0.05$).

Conclusion: The time for the last dental visit was significantly influenced by Chinese dental belief and household income but reason for the dental visit was mainly influenced by household income among Chinese migrants.

193537

Interpreter-mediated Dentistry

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Objective: Global movements of healthcare professionals and populations increase the complexities of medical interaction, specifically with regard to supporting effective medical interpreting. Investigations in general medicine report shortfalls in the delivery of interpreted content. Interview-based have challenged the ostensibly 'neutral' role of the interpreter arguing that the boundary between professional interpreter and advocate is a contested one. In the field of medical interpreting, Conversation Analysis (CA) research is responding to calls for studies that "analyze interpreting as a situated, locally organized activity embedded in a particular setting" (Bolden, 2000 p.415).

Method: This current study adopted CA as the analytic frame to examine patterns of interpreter mediated talk in general dentistry in Hong Kong where the assisting para-professional, a Dental Surgery Assistant (DSA), performs the dual capabilities of clinical assistant and interpreter (Bridges et al 2011). Conversation analysis (CA) of recipient design across a corpus of $n=21$ video-recorded review consultations between expatriate dentists (non-Chinese and non-Cantonese speakers) and their Chinese and Cantonese L1 patients, examined not *what* is said but rather *how* interpreted talk comes into being. **Result:** Three patterns of recipient design indicated the communicative significance of mediator-interpreted talk in





general dentistry: dentist designated expansions; dentist directed interpretations; and assistant initiated interpretations to both the dentist and patient. The latter, rather than being perceived as negative (on the grounds, for instance, that they are not faithful translations of what the dentist or patient actually said), were found to be framed either in response to patient difficulties or within the specific task routines of general dentistry.

Conclusion: The findings illustrate trends in dentistry towards personalized care and patient empowerment as a reaction to the predominant product delivery approach to patient management. Implications are indicated for both treatment adherence and the education of dental professionals.

193554

A population-based-study of oral in-hospital treatment among Western Australian children

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Objective: We sought to analyze a decade of dental admission patterns in Western Australian children under the age of 15 years, with particular focus on socio-demographic characteristics.

Method: The data was obtained from the Western Australian Hospital Morbidity Data System for ten financial years 1999/00 to 2008/09. Principal diagnosis, classified by the International Classification of Diseases (ICD-10AM) system, was obtained and analysed for 43,937 children under the age of 15 years, diagnosed and accordingly admitted for an oral health condition in Western Australia for the study period. Socio-economic status, primary place of residency, age, insurance status, hospital type and Indigenous status were also analysed.

Results: The AAR of hospitalizations for oral conditions was 1,074 per 100,000PY for the last decade. Of these, "Dental caries" and "Embedded and impacted teeth" accounted for 64% of total admissions. Approximately 1,204 per 100,000 PY of the admissions were among children younger than 9 years old, and of those, 53% were uninsured. Non-Indigenous children had 1.3 times the admission rate of Indigenous children, ($p < 0.001$). Lower percentages of admission were observed among children living in the most- and below average- disadvantaged areas (16%, 18.5%, respectively). The results have also shown a clear urban/rural divide in terms of child hospital admissions, and the estimated AAR of urban living children were two times greater than that of their rural dwelling counterparts ($p < 0.001$). Sixty-one percent of admissions were to private hospitals.



Conclusion: This study clearly indicates inequalities among Western Australian children in term of access to in-patient hospital care for oral health related conditions. Our findings identify the characteristics of those children at high risk of hospital admissions for oral health care.

193567

Antibiotic Prescribing Practices Amongst Western Australian Dental Practitioners: Pilot Results

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Objective: To investigate antibiotic prescription by dentists practicing in Western Australia.

Methods: ADA members were invited to participate via e-mail in an anonymous web-based survey about preferred antibiotics, prescribing rationale, conditions warranting prescription, utilisation of microbiological diagnostic services, awareness of professional guidelines, and views on antibiotic resistance.

Results: Seventy responses from 1,289 invitations were received for the first month of the survey. The mean age of respondents was 45 years and the majority (84%) were non-specialists. Amoxicillin was the most frequently prescribed antibiotic (65%) with clindamycin (54%) being the preferred alternative for patients with penicillin allergy; dosage varied and duration ranged from 5 to 7 days. Over 80% of clinicians routinely prescribed for facial cellulitis or gross swelling. Other conditions warranting a prescription included acute necrotising ulcerative gingivitis (60%), periodontal abscesses (36%), and bacterial sialadenitis (22%). Some dentists prescribed antibiotics for localised swellings, fungal infections, pericoronitis, dry sockets, and various endodontic conditions. Overall, 11% prescribed antibiotics daily while 8% averaged ≥ 5 prescriptions/week. Reasons for prescribing were primarily based on presenting symptoms and time pressures. The majority of clinicians (97%) had rarely utilised microbiological diagnostic services with turn-around-time being the main deterrent. While responders were unanimously concerned about inappropriate prescribing, 85% felt that dentists contributed minimally towards antibiotic resistance.

Conclusions: This survey demonstrated moderate adherence to professional guidelines for prescribing antibiotics. There was a heavy reliance on moderate- and broad-spectrum antibiotics, and antibiotics were being prescribed for conditions for which they are contra-indicated. There was little use based on laboratory diagnostics, perceived as impractical; the lack of adherence to guidelines around prophylactic and empirical use led to variance in antibiotic prescription. The main limitation of this study is non-response bias as responders are unlikely to be



representative of all survey invitees. Joel Tan was supported by an ADRF Trebitsch Research Grant.

193568

Quality of Life and Utility Values in Oral Cancer Patients

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Objective: EORTC- QLQC30 is a widely accepted QoL instrument in cancer research. It is a 30 item Likert-type scale. Though clinically useful, QLQ-C30 data cannot be used in economic evaluation as they do not employ preference-based measures. A new preference-based measure called EORTC-8D was developed recently, based upon QLQ-C30, with the ability to produce utility values for health states. It has the advantage that utilities can be estimated from the QLQ-C30 data without burdening patients with substantial extra data collection.

Method: A cross sectional study design was used. The QLQ-C30 questionnaire was applied to 151 patients with oral potentially malignant disorders (OPMDs) and oral cancer. OPMD patients were recruited at diagnosis. Oral cancer patients were recruited at various stages in the care pathway. Data collection included demographics, habits, clinical findings and responses to the QLQ-C30 questionnaire. The QLQ-C30 data were scaled to 0-100 values. An algorithm was applied to convert QLQ-C30 data into EORTC-8D data using Sri Lankan EORTC-8D coefficients.

Result: Majority of the sample were male (54.3%). There were 57 OPMD and 94 oral cancer cases. Of the cancers, 38% were stage III and IV, and 22 (23%) were awaiting treatment. The mean values were 80 (SD ±23) physical functioning. The global health status value for QLQ-C30 was 61 (±23). The mean EORTC-8D utility value was 0.78 (0.22) for the total sample. There was a significant difference ($p<0.05$) between the OPMD and oral cancer QLQC-30 scale values and also between the OPMD and oral cancer EORTC-8D utility values ($p<0.05$).

Conclusion: The quality of life and utility of OPMD and oral cancer are significantly different. These tools have application in patient care and health resource planning.

193569

Qualitative study of volunteers providing oral care in the Kimberley

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Objective: Australian Aboriginals face significant disparities in oral health and this is particularly the case in remote communities where access to dental services can be





difficult. Using volunteers to service the remote Kimberley region of Western Australia is a novel approach. This research explored the perceptions of volunteers, factors that motivated their involvement, their perspective of oral health among Aboriginal communities, and barriers and enablers to oral care in remote Aboriginal communities

Method: A mixed methods anonymous online survey of volunteers working for the Kimberley Dental Team was used in addition to semi-structured interviews. Quantitative data explored the demographic characteristics of volunteers while qualitative data was collected on the reasons behind volunteering and volunteer perceptions of Aboriginal oral health, as well as barriers and enablers to care.

Result: Preliminary results found participants (n=42, response fraction 66%) were more likely to be repeat volunteers, female with 47.5 years median age and engaged in full-time employment. Participants reported volunteering to help others in the community and also be provided with the opportunity to visit the Kimberley region. Thematic analysis found education and access to reliable, culturally appropriate care being perceived as enablers to good oral health for Aboriginal people in the Kimberley while limited access to services, poor nutrition and lack of government support were often cited as barriers.

Conclusion: Volunteers providing dental services to remote areas in Western Australia have a diverse demographic profile. However, they share similar motivating factors and views on the current barriers and enablers to good oral health in remote Aboriginal communities. This research provides a deeper understanding of volunteers in oral health and adds insight to the development of novel models of service delivery for remote communities.

193575

Dental Anxiety in Patients Attending a University Dental Clinic

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Objectives: Dental anxiety is a debilitating barrier to oral healthcare access in Australia. Its impact on patients attending a university dental clinic has yet to be investigated in detail. The purpose of this study was to describe both the prevalence of dental anxiety in a clinical setting and to explore the relationships between dental anxiety and several demographic variables.

Methods: A cross-sectional study (n=368) was conducted on patients older than 18, attending the Griffith University Dental Clinic. It included a questionnaire developed specifically to measure aspects of patient demographics, dental visits and dental anxiety. It incorporated the Index of Dental Anxiety and Fear (IDAF-4C) developed by Armfield (2010). All participants were interviewed individually.





Results: The prevalence of high dental anxiety in the study population was 25.6% (n=94). The majority of participants were middle-aged and from low socio-economic backgrounds. The greatest prevalence of high dental anxiety occurred for those with no tertiary education, who had very poor self-rated oral health, who had not visited a dental professional for over 2 years and who demonstrated symptomatic visitation patterns. Financial cost was identified as the greatest barrier to dental care. To help reduce dental anxiety, most patients wanted more information regarding the actual dental procedure.

Conclusions: Patients attending a university dental clinic have significantly higher levels of dental anxiety compared to previous studies in other clinical settings. Numerous differences between individuals with high dental anxiety and low dental anxiety in terms of education, self-rated oral health perception, dental visits and barriers to access were identified. Early identification and effective management of such patients is critical to help minimise dental avoidance and consequently poorer oral health.

193595

Perceived Dental Pain: Determinants and Impacts in Brazilian Schoolchildren

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Objective: to assess the prevalence of self-reported dental pain and associated socioeconomic, demographic and psychosocial factors in a sample of schoolchildren in Pelotas, Southern Brazil. The impacts of dental pain on children's perception of oral health, and their daily life were also investigated.

Method: A two-stage cluster procedure was used to select 1,199 children in 20 public and private schools. Children were interviewed regarding dental pain occurred in the previous 6 months of the interview, self-perception oral health and dental fear. Socioeconomic characteristics were obtained from the mothers. Clinical oral examination was conducted to assess dental caries, malocclusion and dental trauma. Data analyses used Multivariate Poisson regression models.

Result: Prevalence of dental pain was 35.7% (95% confidence interval (CI) 33.0-38.5). A higher prevalence of dental pain was observed in children from lower income families (Prevalence Ratio(PR)=1.39; 95%CI 1.10-1.76), in girls (PR=1.24; 95%CI 1.06-1.46), those living in overcrowded houses (P=1.23; 95%CI 1.01-1.49), those who reported dental fear (PR=1.19; 95%CI 1.00-1.42), and among children with caries experience (PR=1.57; 95%CI 1.34-1.84). Presence of dental pain was





associated with oral health perception (PR=2.56; 95%CI 1.55-3.29) and negatively impacted in children's daily life (PR=1.89; 95%CI 1.64-2.17).

Conclusion: This school-based survey indicates a high prevalence of dental pain, influenced by demographic, socioeconomics, psychosocial and clinical characteristics, causing negative impact on oral health perception

193605

Dental Anxiety on Utilization of Dental Services, Honiara, Solomon Islands

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Objective: This study aimed to assess the level of dental anxiety and its effect on the utilization of dental services by adults in Honiara, . Furthermore to investigate the causes of dental anxiety as perceived by participants and secondly to assess the prevalence and level of anxiety of patients, using the Corah's dental anxiety scale (DAS) and thirdly to assess the level of utilization of dental services by the participants.

Method: 200 adults aged 18 to 50 were selected from three (3) settlements in the Eastern, Central and Western parts of Honiara, Solomon Islands. Participation information sheet was provided to explain the purpose of the study before obtaining consent. The participants were invited to complete a structured questionnaire on anxiety level, level of anxiety of dental procedures and utilization of oral health services in Honiara, Solomon Islands. For those who were unable to read and write and an interview was conducted in the local language and responses recorded by the main investigator.

Result: 172 (86%) of the participants reported having dental anxiety on the DAS scale of greater than 9 (DAS \geq 9), and the other 28 (14%) were considered as mild or no anxiety (DAS \leq 8). Of the 172 anxious participants, 66% reported moderate level of anxiety (DAS: 9-12), 21% high anxiety (DAS: 13-14) and 13% reported severe anxiety levels (DAS: 15-20).

Conclusion: The study showed high levels of dental anxiety among 18 to 50 years adults seeking oral health services in Honiara, Solomon Islands.

193608

Importance of and satisfaction with work-related attributes among Australian dentists

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Objective: While job satisfaction among dentists has received some research, no studies have yet examined the concordance between facets of work-related satisfaction and the importance of those attributes among dentists. The study aim was to examine whether differences exist between the levels of importance of 10 work-related attributes (e.g. job autonomy, relationships with patients and remuneration) and satisfaction with those attributes. Differences were also examined by practitioner age groups, gender and sector of practice.

Method: A questionnaire was mailed to 2200 dentists randomly selected from the 2005 Australian Dental Association directory. In order to better understand dentist work satisfaction, 'gap analysis' was conducted, which involved comparing ratings of satisfaction with ratings of importance across each of the work-related attributes. Higher gap scores indicated that satisfaction with a work-related attribute was less than the rated importance of that attribute.

Results: An adjusted response rate 61.9% as achieved. Most attributes exhibited a gap between rated importance and satisfaction, with the largest gaps relating to personal time, relationships with staff, intrinsic satisfaction, relationships with patients and remuneration. Older dentists (55+ years) tended to have smaller gap scores for personal time, relationships with staff, community, remuneration and resources available than their younger counterparts. Private sector dentists had lower gap scores on autonomy, remuneration and resources available than public sector dentists. Gap scores were lower on administrative responsibilities and higher on resources for male compared to female dentists.

Conclusion: There are a number of work-related attributes that require attention in order to improve job satisfaction among dentists in Australia. Appropriate steps to fill or narrow the gaps should be considered.

193610

Self-efficacy, oral health-literacy and self-rated oral health among Aboriginal Australians

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Objective: Michael Marmot's statement that the key determinants of social inequality in health lie in the circumstances in which people are born, grow, live, work and age is a core principle within social epidemiology. Epidemiology shows us that these social inequalities arise from differentials in access to resources and power. Self-efficacy is a belief in one's ability to achieve at something; the confidence to carry out behaviour necessary to reach a desired goal and is seen as a key requirement to self-managing disease or illness.





Method: This presentation will address a new understanding of indigenous oral health self- efficacy, oral health literacy and self- reported oral health status using both quantitative and qualitative data

Results: Research in Australia with Indigenous populations has demonstrated a strong path from family, motivational and behavioural links to Indigenous child achievement, health outcomes and self-efficacy. Navigating health systems requires both a high level of health literacy, but also a high level of self-efficacy; both are highly correlated.

Conclusion: To achieve self-directed change, people need to be given reasons to alter unhealthful habits but also the means and resources to do so. Change is particularly difficult to engender in disadvantaged populations where 'upstream' interventions are necessary to achieve population level differences in outcomes. Effective self-regulation of behaviour is not achieved by an act of will but requires a particular set of skills. Perceived self-efficacy is concerned with people's beliefs about their capabilities affect what they choose to do, how much effort they mobilise, how long they will persevere in the face of difficulties, engagement in self-debilitating or self-encouraging thought patterns, and stress and depression they experience in taxing situations. When people lack self-efficacy, they do not manage situations effectively, even though they know what to do and possess the requisite skills: the difference between literacy and self-efficacy.

193616

Dental service use among pre-school children from migrant backgrounds

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Objective: To explore factors influencing use of dental services for 1-4 year old children from a migrant background residing in metropolitan Melbourne.

Method: Teeth Tales is an exploratory trial implementing a community-based child oral health promotion intervention. This paper reports on child dental service use for the baseline cohort as a whole. Families from Iraqi, Lebanese and Pakistani backgrounds residing in metropolitan Melbourne with children aged 1-4 years were invited to participate in the study. Purposive and snowball sampling techniques were used by trained peer educators from the respective communities to recruit eligible participants into the study. Data was collected via a self-reported parent questionnaire including information on parent and child dental service use, oral





health behaviours, knowledge, confidence and attitudes, and child dietary habits. Multivariable logistic regression adjusting for family clusters was conducted to identify independent predictors of child dental visits. Data were analysed using STATA 12.1.

Result: The analysis sample consisted of 625 children within 478 families. Most of the children had never been to a dentist (88%). Commonly reported dental visit barriers included cost (40%), long waiting lists (28%) and no reasons to visit the dentist (29%). In the multivariable logistic regression analysis 'no reason for the child to visit the dentist' remained the most significant predictor of a child dental visit. One in five children (20%) from this subgroup had caries.

Conclusion: Dental service use was very low among pre-school migrant children. This was influenced by parents' perception that there was no reason for the child to visit the dentist. Our findings suggest the need to consider both parent oral health education and culturally competent strategies, such as targeted community outreach programs, improving organisational cultural competence and service accessibility, in order to engage and support migrant families to access dental services to improve oral health outcomes.

193617

Oral Health status of participants at Hibiscus Carnival health camp

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Objective: To determine the oral health status of participants at hibiscus carnival health camp in Suva in the years 2011 and 2012.

Method: A representative sample of 316 subjects, randomly selected and proportionally assigned by age group (15-34, 35-44, 45-64 and 65 and above) was examined. The modified WHO oral health screening form was used by a few Dentists and year three, four and five students to collect information from the participants. . Each participant also went through counseling which included demonstration of tooth brushing technique suitable for the participants age group, and also received a free dental toothbrush and a report on his/her oral health status.

Result: Analysis of the data showed that in a sample of 159 adults age 15-34 years old reported a DMFT of 3.8 , in a sample of 43 adults age 35-44 years old reported a DMFT of 5, in a sample of 95 adults age 45-64 years old reported a mean DMFT of 8.46 and in a sample of 11 adults ages 65 and above had a mean DMFT of 5.09 .Results had also showed that the DMFT was higher in the I-taukei ethnic group, in females and in those living in the urban areas. Periodontal disease is prevalent amongst adults with only 14.3% reported with healthy periodontal structures.





Presence of calculus (72.4%) remained to be common in adults, followed by bleeding on probing (3%) and presence of shallow pockets (1%).

Conclusion: DMFT is a measure of lifelong caries experience, and as reflected from the results, the DMFT increases with age.

193626

Australian Hospital Admissions For Cleft Lip/Palate Over The Life-course

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Objective: Orofacial clefts are among the most commonly observed congenital malformations. Typical management for this condition requires multiple hospital admissions over an affected individual's lifespan. To date, there has been minimal research that describes the impact these admissions have on a developed health care system, particularly post childhood. The purpose of this study was to analyze the rate of admission to hospitals across Australia for those with a diagnosis of orofacial cleft with the aim of better defining their age groups, gender and average duration of stay.

Methods: Separation data of 11,618 admissions from public and private hospitals were obtained from the Australian Institute of Health and Welfare (AIHW) National Hospital Morbidity Database for the inclusive financial years from 2000 to 2010. The dependent variable examined was hospital admission rates with the primary diagnosis of isolated cleft palate (CP), isolated cleft lip (CL) and concurrent cleft lip and palate (CLP) classified according to ICD-10-AM codes Q35-Q37 using estimated resident population figures for each year.

Results: Throughout the 11-year period - 4,913 admissions for CLP (4.18 per 100,000 people per year), 4,454 admissions for CP (3.79 per 100,000 people per year) and 2,251 admissions for CL (1.91 per 100,000 people per year) were recorded throughout Australia. In total, males were more likely to be admitted to hospitals than females and the minimum average duration of stay in hospitals was one day. The majority of admissions occurred prior to adolescence in CP and CL while CLP continued showing admissions until late teens. Admissions continued across the lifespan for all groups, showing a steady decline in rate after ages 20≤24.

Conclusion: This study will help provide total population level data on admissions for oro-facial clefts in Australia, and may also be useful reference for oro-facial cleft data in Australia and internationally.

193636





Trends of Caries Experience and Associated Factors among Indigenous Children

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Objective: Recent marked improvement in child oral health in Australia has not been observed among Indigenous children. Data collected from Indigenous children are scarce, limiting proper evaluation of trends of caries in this high-risk population. This study aims to explore time trend of caries experience and its associated factors among Indigenous children.

Method: Data of the Child Dental Health Surveys 1999-2010 were used to calculate caries experience: dmft (5-10-yo) and DMFT (8-15-yo). Only South Australian data could be used for this analysis.

Postcodes with 5+ individual records for each of 3+ time points were included. The outcome variables, age- and sex-adjusted mean dmft/DMFT, were estimated for each postcode at each time. Longitudinal models were generated using SAS ProcMixed to estimate area-level variance and slope of time. Fluoridation, remoteness status, and quintiles of Socioeconomic Index for Areas (SEIFA) score were used as fixed effects. Data were weighted using standard methods.

Result: The longitudinal models showed significant positive slopes of time for both dmft/DMFT scores, 0.09 (SE: 0.02) and 0.04 (SE: 0.01) respectively, indicating modest but increasing trend of caries experience. The trends were similar between areas by fluoridation status or SEIFA quintiles. Children in non-fluoridated and more disadvantaged areas had higher caries experience than children in fluoridated and less-disadvantaged areas across time. The overall difference between non-fluoridated vs fluoridated areas was 0.61 (SE: 0.27) and 0.34 (SE: 0.15) for the primary and permanent dentitions respectively. Similar estimates for the lowest SEIFA vs the highest quintile were: 0.86 (SE: 0.29) and 0.54 (SE: 0.17).

Conclusion: The evidence of an increasing trend of dental decay in Indigenous children was more evident in disadvantaged areas. There is a pressing need for well-organised data collection among Indigenous children at national and state/territory levels to understand reasons for and eliminate inequality in child oral health.

193637

An Australian story of dental caries in migrant pre-school children

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Objective: To describe and identify risk factors for dental caries among migrant pre-school children in Melbourne, Australia.

Method: An analysis of the baseline data from Teeth Tales, a community-based exploratory health promotion intervention trial. The target population were families from Iraqi, Lebanese and Pakistani backgrounds residing in metropolitan Melbourne with children aged 1-4 years. Caries was measured using ICDAS II and reported as d1mfs which included both non-cavitated and cavitated lesions. A self-administered questionnaire was used to collect data on socio-demographic-economic status and oral health related knowledge and behaviours. Partially and fully adjusted odds of experiencing dental caries were computed using multivariable logistic regression. Data were analysed using STATA 12.1.

Result: The final analysis sample included 630 children within 481 families. Mean age of children was 3 years (SD=1.09). For 82% of children the respondent was the mother. The mean age of the parent was 33 years (SD=6.22). The distribution of children by cultural group was 37% Iraqi, 29% Lebanese and 34% Pakistani. Child caries prevalence was 34%, the mean d1mfs was 1.90 (SD=4.63) and the median d1mfs score was 0 (IQR=0-2). In the bivariable analysis of child oral health behaviours by ethnicity, several significant associations were observed. In the fully adjusted regression model parent's length of stay in Australia, the frequency of consumption of cariogenic drinks and parent education remained as significant predictors of caries.

Conclusion: This study provides information on and factors predicting dental caries among pre-school children from migrant backgrounds in Australia. In this population, approximately 1 in 3 children experienced dental caries. Comparable national data for this age group is non-existent. From our results it appears that the early years following family migration to Australia are the period of greatest risk of poor child oral health.

193640

Variations in child dental caries experience - a population-based study

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Objective: To document inequality in child oral health in Queensland and to investigate factors associated with such inequality.

Method: Queensland school children were selected through a stratified random sample selection in 2009–2011. Oral epidemiological examinations provided individual-level outcomes: decayed, missing or filled primary (dmfs) (among 5–8-year-olds) and permanent tooth surfaces (DMFS) (9–14-year-olds). Explanatory factors at the individual-level, school-level and area-level were derived. Data were weighted to represent the population. Three-level multilevel multivariable models were sequentially specified for the extent of dental caries to estimate rate ratios (RR) associated with explanatory factors.

Result: Data from 2,214 5–8 year-olds and 3,186 9–14 year-olds from 207 schools in 16 areas were analysed. Queensland's average dmfs was 4.23 and DMFS 1.47. Indigenous children, children from low income households or where parental education was school only, had significantly higher mean dmfs/DMFS scores in bivariate analysis. After adjustment for oral health behaviours and practices in the multivariable models, being in low-income households was associated with 1.62 times the rate of dmfs score (95%CI: 1.24-2.11) compared with those from the high-income households. Being from families with parental education at school level was associated with significantly higher rates of primary and permanent dmfs/DMFS scores than those from families with parental education at university level, (1.33 (95%CI: 1.07-1.66) and 1.33 (95%CI: 1.10-1.61) respectively.

Conclusion: There existed unequal distribution of dental caries in the Queensland child population. The evidence supports programs distributing subsidised dental care to children from low socioeconomic background.

193645

Oral Health Education at ISMHU within HNE Health

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Objective:

The importance of oral health is usually misunderstood and often neglected compared to other health issues. Evidence suggests that individuals with mental illnesses are classified at high risk for poor oral health. The aim of this program was to raise oral health awareness and knowledge among clients and staff at the Intermediate Stay Mental Health Unit (ISMHU), James Fletcher Hospital.

Method: A Needs Analysis was performed following a literature search, staff interviews, client observation, and meetings with key local figures. The program consisted of two complementary workshops targeting both clients and staff. The





clients' workshop included a booklet with illustrative diagrams relating to key oral health topics. A sustainable train-the-trainer workshop was designed and implemented for ISMHU staff comprised of: a presentation; a facilitator's guide; tooth-brushing instructions; and questionnaires. Process and impact evaluations of the program were conducted utilising a post-presentation questionnaire.

Result: A total of 18 clients participated in the program. Verbal feedback from clients indicated that their knowledge and understanding of oral health had increased. Staff confidence in their understanding of oral health knowledge increased from a mean confidence score of 1.74 (neutral-some confidence) to 3.45 (confident-very confident).

The results demonstrated short-term effectiveness of a multidisciplinary all-inclusive approach to oral health education at ISMHU. The challenge that health promotion workers face when implementing programs is compounded by manifold limitations such as: conspicuous time constraints; varying mental health disorders among clients; and cognitive levels of clients. Nonetheless, both staff and clients programs were successfully introduced.

Conclusion: Awareness and knowledge of oral health problems among staff was increased following an oral health promotion program.

193649

Factors attributable to prevalence of dental caries in child population

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Evidence of the population impact of water fluoridation on child dental caries is still lacking.

Objective: To investigate factors associated with the prevalence of dental caries in children and to estimate the population impact of water fluoridation on the prevalence of dental caries.

Methods: Australian children were selected through a stratified random sample selection in 2009–2011. Oral epidemiological examinations provided individual-level outcomes: prevalence of dental caries in the primary (among 5–8-year-olds) and permanent dentitions (9–14-year-olds). Socioeconomic status, oral health behaviours and practices and dietary patterns were explanatory factors at the individual-level, school-level while fluoridation status was the explanatory factor at the area-level. Data were weighted to represent the population. Three-level multilevel multivariable models were sequentially specified for the prevalence of dental caries to estimate prevalence ratios (PR) associated with explanatory factors, adjusting for covariates and between- and within-group variances. Population Attributable Fraction (PAF)





was estimated as population impact of the statistically significant explanatory factors.

Results: Data from 2,214 5–8 year-olds and 3,186 9–14 year-olds from 207 schools in 16 areas were analysed. The prevalence of dental caries in the primary and the permanent dentitions was 47.1% (43.9-50.4) and 38.8% (36.1-41.6) respectively. The lowest prevalence of dental caries was observed in the fluoridated areas. In bivariate associations, factors at three levels were associated with prevalence of dental caries. In the full models, children in the non-fluoridated areas had significantly higher prevalence of dental caries (PR for the primary: 1.29 (1.11-1.50); PR for the permanent 1.49 (1.01-2.21)) compared with children in fluoridated areas after controlling for other factors. PAF estimates indicated that lack of water fluoridation attributed to 21% and 31% of primary and permanent dental caries respectively in the child population.

Conclusion: Water fluoridation had significant population impact on the prevalence of dental caries in children.

193650

Make Your Smile a Priority: An Oral Health Promotion Program

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Objective: Neami National is a non-government organisation that supports Australians living with a mental illness. The objective of our student placement was to develop an oral health promotion program which aimed to address the oral health needs and concerns of Neami consumers.

Method: An initial needs analysis was conducted at Ashfield & Pagewood with Neami National consumers. Staff members were encouraged to identify key areas of concern regarding consumers' oral health. The findings were used to develop a 30 minute staff presentation and resource package. Impact evaluation was determined via pre- and post-presentation questionnaires in which staff selected responses distributed along a five-point Likert scale.

Result: 20 staff attended the presentation. 65% of respondents "Strongly Agreed" and 35% "Agreed" that their knowledge and understanding of how risk factors affects oral health had improved, versus the pre-test values of 15% and 50%, respectively. The post-evaluation reported no "Uncertainty" with knowledge and understanding amongst staff post-presentation. Staff felt the resource package provided to them would benefit the consumers and staff alike. Staff commented it was important to create a program that gave purpose and was relatable for Neami consumers.

Multiple sites, time constraints, initial staff uncertainty with communicating oral health advice to consumers and willingness of consumers to be interviewed were





barriers to achieving outcomes. Furthermore, it was reported that some participants were overly confident in their ranking of knowledge in the pre-questionnaire which obscured true changes in knowledge improvement.

Conclusion: Implementation of the oral health program gave staff more confidence with providing oral health advice and has increased their knowledge and understanding of oral health promotion.

193652

Oral Health Knowledge, Attitude and Practices of Diabetic Patients

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Objective: Diabetes mellitus was rare in Fiji over 80 years ago but recently it has become a major public health problem. The relationship between oral health and diabetes is well established. Oral self-care which is influenced greatly by perceptions regarding oral health, is central to successful management of periodontal disease. This study investigated the Oral Health knowledge, attitudes and practices and sources of Oral Health information received by diabetic patients in Suva, Fiji

Method: A cross-sectional study was conducted at the National Diabetic Center, Suva, Fiji. A questionnaire was utilised to interview sixty adult (> 18 years of age) participants who were selected through convenience sampling. The inclusion criteria's were: patient must be suffering from type 1 or 2 diabetes, has been diagnosed with diabetes for at least 6 months and is over the age of 18 years.

Result: This study showed that 43% of participants lacked knowledge of the relationship between diabetes and oral health. Participants however reported good oral hygiene care, use of mouth wash and 80% brushed twice a day. Oral health information received is mostly (60%) from TV, radio, internet, and friends while only 19% is from received dentists and 21% from the diabetic center. Patients in this study showed a positive attitude and had good perception about oral health. This also does not conform to similar studies

Conclusion: The major findings from this study are a lack of knowledge about the relationship between diabetes and oral health or its oral complications. Major sources of oral health information come from television and other media and the minority receive this from oral health professionals. Main source of oral health information after being diagnosed with diabetes comes from the diabetic center. The lack of health information being obtained from oral health professionals is consistent with similar research.

193698



Incentivising Health-Care Workers Towards Reducing Inequalities – Cross-National Policy Analysis

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Objective: To undertake a cross-national policy analysis of a developed country (Australia) and a developing country (South Africa) in order to extract lessons that could be learnt to improve policy development, implementation, reform and service delivery, thus reducing inequalities and disparities in oral health care provision.

Method: A cross-national policy analysis of the incentives and regulations made available to oral health-care workers (OHCWs) was undertaken for the period 2001-2011. A policy analysis framework was developed and used to comparatively analyse the various constructs and policy actors that were involved in oral health policy making. Primary and secondary data from a desktop literature search, and key stakeholder interviews were comparatively analysed using thematic content analysis, and a Strengths, Weakness, Opportunities and Threats (SWOT) analysis was used to identify lessons that could be applied cross-nationally.

Result: The results revealed that both countries have lessons to offer that could be applied cross-nationally. Both countries have a history of inequalities to indigenous persons, and to remote and rural dwellers. Australia offers a number of incentives to encourage OHCWs to serve in rural areas and indigenous people, such as a volunteer internship programme for dentists, the development of unique visa and professional body registration categories to facilitate the migration and registration of foreign OHCW's to serve in these areas of need, and the Graduate Rural Incentive Scheme (GRIS). South Africa offers the Scarce Skills Allowance and an Occupational-Specific Dispensation (OSD) incentive scheme to attract OHCW's to serve in rural areas. Additionally there is compulsory post-qualification internship and community service regulations that ensure that OHCWs serve in rural areas.

Conclusion: Both Australia and South Africa's oral health-care workforce challenges are historically embedded within the countries unique social contexts. Both countries offer incentives that could be applied cross-nationally to reduce disparities and inequalities.

193715

Projected Cost to Restore Aesthetics Hotel Employees in Suva, Fiji

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Objective: this study estimates the accumulated cost of dental treatment needs of selected tourism employees working in Suva. The research is centred mainly on the concept of the Bula Smile. The Bula smile is perceived as a warm friendly smile and is a signature for the island of Fiji. It is widely used in marketing and advertising campaigns.





Method: The design utilises a modified costing process using some components of a standardised micro-costing study in which the identified cost differences will reflect the actual cost of the treatment needs of the employees. Only one clinic site will be used in this study for estimating costs. The oral health status of the employees will be used to reflect treatment needs, and this will be done using an oral examination form. Based on this, the cost of dental care will be calculated.

Result: The high oral disease burden in Fiji poses a threat to this perception. Figures are as alarming as 67.5% of dental caries in 15-19 year olds and 99.5 % of dental caries in 35-44 year olds in the year 2010. Thus in order to rehabilitate oral disease in front liner staff of the tourism industry, a significant investment in terms of dental care cost will be required.

Conclusion: This reflects that the cost of dental care is high and income is less to afford it. Thus, in order to maintain the integrity of the smiles of its people, Fiji needs to see a reflection of the cost that is necessary to re-establish the Bula smile to what it once was in order to develop an action plan to combat this issue.

193453

Performance of negative fluorescence diagnostic methods for caries assessment

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Objective: Dental caries in its early stages is recognized clinically as a white spot lesion (WSL), however there is no agreement for the identification of pre-WSL, which represent caries at an earlier stage. This study examined several negative fluorescence systems for caries detection, using light sources of different wavelengths as diagnostic methods that could be undertaken in clinical practice for detecting WSL and pre-WSL.

Method: The study compared the performance of traditional visual examination under white light to negative fluorescence using narrow band blue or green LED light, and broad band visible blue and green light, using quantitative light fluorescence (QLF) as a control. Smooth surfaces of 100 extracted teeth were scored for absence of fluorescence. Experimentally created WSL served as positive controls for mineral loss.

Result:

For the positive controls, there was a linear relationship between the extent of demineralisation and the QLF fluorescence change (ΔF) values. Violet and blue lights could detect mineral loss by the 2nd day of demineralisation, but not green lights. On extracted teeth, ultraviolet and blue light sources showed the highest sensitivity





(54.7 - 66.9%), specificity (87.1 - 95.0%) and accuracy (74.8 - 78.2%), and green light the worst, with poor sensitivity (2.7 - 7.8%).

Conclusion: Blue and violet lights, particularly blue LED lights used for curing resins, when used with an appropriate filter, may provide a simple adjunct to conventional white light examination methods for the earlier detection of WSL

193571

Assessing inherited and individual risk factors for dental caries

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Objective:

To quantify risk factors for dental caries in a population of Queensland children: social; environmental; behavioural; physiological and inherited.

Method:

The Oral Health Sub-study began in November 2012 by examining mothers and their 6 year old children, these being the first (2006) birth cohort: examination of subsequent years is progressing. Detailed questionnaire data of families is available and new primary data on knowledge, attitudes and practices towards oral health are gathered. Height, waist circumference and stride length of mother and child are measured. They are weighed with an electronic Bio-Impedance balance, thereby recording body fat and water and body mass index. Caries is scored using the International Caries Detection and Scoring system (ICDAS II, 2007). Saliva is collected for physiological measures and DNA extracted for genetic studies. A pilot of the latter concentrates on potential epigenetic markers of risk based on methylation sequencing on the Roche SeqCap Epi platform.

Result: Results of the first 52 mother/child dyads shows significant correlations between the child's caries experience and the mother's BMI ($p=0.02$, $r=+0.354$). Child's caries experience and that of the mothers was closely associated, though statistically not significant ($p=0.064$, $r=+0.264$).

Conclusion: The correlations found so far between maternal and child oral health indicators and disease experience give confidence in the protocol, justifying the search for genetic influences.

193557



Developing a System for Automatic Detection & Characterisation of Enamel Caries

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Objective: The purpose of this study was to develop an automated method for precise caries detection and characterization of x-ray micro computed tomography (microCT) images based on machine-based recognition and image processing methods and to quantify different parameters of enamel lesions

Method: Images of natural and artificial enamel lesions were obtained using a microCT machine (XRADIA). Imaging was undertaken using continuous mode exposures at 0.5 s intervals and binning value of 2, resulting in a resolution of 14.8 μm . The stacked file of reconstructed images was produced using reconstruction software (XRADIA) and exported images were saved in TIFF format. An algorithm was developed based on research needs and the algorithm was coded into machine language using MATLAB software. Multilevel thresholding was used for segmentation of the images based on gray level values which were normalized using hydroxyapatite phantoms. The developed program was used for batch processing of TIFF images.

Result: Processing of the images created characteristic mineral maps of various types of lesions which visualized specific pattern and morphology of different zones of the lesions. The program quantified the lesion parameters for both natural and artificial lesions based on the imaging resolution and the number of color pixels. The quantified parameters included the number of each color pixel, surface area and volume of each zone of the lesion, amount of mineral loss or gain for each zone of the lesion by weight and volume percent and finally the speed of remineralisation/demineralisation for each zone and the whole lesion.

Conclusion: The developed algorithm and program proved to be a reliable method for visualization, segmentation and quantification of enamel caries lesions. This method can be used for a variety of research applications including cariology and remineralisation studies and also can be used for visualization and quantification of clinical CBCT images.

193708

Effects of combinations of oral antiseptics on oral bacteria

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Objectives: The aims of this study were to compare the effects of oral antiseptics and fluoride solutions on the growth of *Streptococcus mutans* and non-mutans bacteria (*Streptococcus sanguinis* and *Lactobacillus acidophilus*).





Methods: The agar diffusion assay was used to examine the antibacterial activity of combinations of oral antiseptics and fluoride solutions. Zones of bacterial inhibition were measured using a micrometer gauge.

Results: The mouth rinses containing 2% chlorhexidine gluconate, 0.05% cetylpyridinium chloride and 0.05% sodium fluoride produced antibacterial effects against *S. mutans*, *S. sanguinis* and *L. acidophilus*. Of the pure compounds, 0.01% chlorhexidine produced the greatest zone of growth inhibition against *S. mutans*; while, pure solutions of sodium fluoride or sodium monofluorophosphate, at concentrations up to 10%, had no antibacterial effects.

The addition of 0.1% sodium fluoride to 0.01% cetylpyridinium chloride interfered with the antibacterial effects of pure 0.01% cetylpyridinium chloride against *S. mutans* and *S. sanguinis* ($p < 0.001$). The combination of 0.1% sodium fluoride with 10% povidone iodine produced synergistic antibacterial effects against *S. mutans* and *S. sanguinis* compared to either compounds used alone ($p < 0.001$). The combination of 10% povidone iodine with 0.5% sodium hypochlorite interfered with the antibacterial effects of the pure compounds against *S. mutans* and *S. sanguinis* and resulted in no bacterial inhibition. This combination, however, produced an additive antibacterial effect against *L. acidophilus* compared to pure 0.5% sodium hypochlorite and 10% povidone iodine used alone ($p < 0.01$ and $p < 0.001$, respectively).

Conclusion: Mouth rinses containing chlorhexidine, sodium fluoride and cetylpyridinium chloride have growth inhibitory effects against *Streptococcus mutans*, *Streptococcus sanguinis* and *Lactobacillus acidophilus*. The combinations of povidone iodine with sodium hypochlorite and povidone iodine with sodium fluoride produced additive and synergistic effects respectively.

193723

Fluoride Research: The Knowns and the Known Unknowns

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Objective: This presentation considers the impact of water fluoridation and fluoride toothpaste on oral health using survey data from Australia, Ireland, UK and other regions. The rationale for current guidance on use of fluorides is considered and gaps in our knowledge identified.

Method: Guidelines reviews and large studies of water fluoridation and fluoride toothpastes are considered and international policy is compared.

Result: Australia, Ireland and the UK all commenced water fluoridation in the 1960s and introduced fluoride toothpastes in the 1970s. An estimated 70% of the population currently receive fluoridated supplies in Australia, 73% in Ireland and





10% in the UK. Epidemiological studies have illustrated the impact of fluorides over time both before and after the introduction of fluoride toothpaste, with a decline in caries prevalence and an increase in the prevalence of fluorosis. To minimise the development of enamel fluorosis, some countries have moved to lower the level of fluoride in water and provide guidance on the use of fluoride toothpastes. Wide variation exists in guidance on the age to commence tooth brushing, the method of use and the concentration of fluoride in toothpaste. Much of the difference can be attributed to contextual issues such as the availability of fluoride from other sources, for example domestic water fluoridation in the case of toothpaste and differing climate in the case of water fluoridation. Some of the variation is due to gaps in our knowledge and different interpretations of the available evidence.

Conclusion: Fluoridation is effective in preventing dental caries; guidance on the appropriate use of fluoride toothpaste for children varies. Further research is needed to address the gaps in our knowledge to improve oral health policy.

193467

Food Acid Content and Erosive Potential of Sugar-free Confections

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Objective: Dental erosion is an increasingly prevalent problem with the frequent consumption of acidic foods and beverages as a risk factor. The aim of this study was to measure the food acid content and the erosion potential of a variety of sugar-free confections.

Method: Thirty-two confections were selected and a water extract analysed to determine pH, titratable acidity, chemical composition and apparent degree of saturation with respect to apatite. The erosive potential on human tooth enamel was also determined using an *in vitro* assay.

Result: Many sugar-free confections were found to contain high concentrations of food acids and produced solutions that were highly undersaturated with respect to hydroxyapatite and produced erosion of human tooth enamel *in vitro*. Confections with fruit flavours were significantly more acidic and contained more citrate (calcium chelator) than non-fruit flavours.

Conclusion: Many sugar-free confections even some with "tooth friendly" certification contain high contents of citric acid and may have erosive potential.

193686

Inequalities in dental caries





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Objective:

Inequalities in dental caries experience in Australia and New Zealand are evident.

Method: Literature on inequalities in dental caries was searched.

Result: For example, in New Zealand, the prevalence of untreated coronal decay is 12.2 for the least deprived but 27.2 for the most deprived children aged 2-11 years. The proportions of European, Asian, Pacific Island, and Maori Adults aged 18+ years experiencing oral health impacts (OHIP-14) often or very often are 15, 14, 24, and 23% respectively.

In Australia, 41% of 5 year-olds have dmft scores of >0. Their mean dmft is 1.8, but 10% of them have mean scores 9.9. 45% of 12-year-olds have DMFT scores >0. Their mean DMFT is 1.1 but 10% have 5 times that level at 4.8. The percentages of Australians age 15+ years with untreated decay who live in major cities, inner regional, outer regional, and remote/very remote localities are 24, 30, 30, and 38% respectively.

However, the gaps can be closed. For example, in New Zealand, mean DMFT scores for 20-24-year olds have decreased markedly; the 1976, 1988, and 2009 scores were 17.2, 9.7, and 4.1.

Conclusion: Inequalities can be addressed.

193441

Sustained Caries Risk Reduction Following 7 Years of Preventive Treatment

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Objective: The Monitor Practice Program (MPP) is a multicentre clustered randomised controlled trial of preventive intervention according to the Caries Management System (CMS). The CMS is a risk-specific non-surgical intervention designed to arrest and remineralise non-cavitated carious lesions and prevent new incident lesions. At three years, the mean DMFT increment was 35% less among patients attending intervention practices compared with those attending control practices ($p < 0.001$). The aim was to determine whether the outcome achieved at three years would be sustained.

Method: Following publicity about the MPP, 22 dental practices were recruited and randomly assigned to the control group where patients received usual care or the intervention group. During the first three years, investigators established frequent contacts with practices to monitor diagnostic standards at all practices and to





facilitate the implementation of the CMS protocol at the intervention practices. Contacts with practices during years 4-7 were much less frequent.

Result: The mean DMFT increments at year 7 for the intervention and control patients were 4.98 and 6.86 respectively ($p < 0.0160$) as per the intention to treat principle. In a sensitivity analysis in which one intervention practice was excluded because the CMS protocol was not, the respective control and intervention mean DMFT increments 4.11 and 6.86 ($p = 0.0035$), indicating a reduction in caries risk of 40%.

Conclusion: Decreased caries risk at three years was sustained at seven years.

193558

Teeth's Trace Elements as Markers of Caries and Environmental Condition

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Objective: To identify trace elements in the teeth of schoolchildren, to associate levels with caries experience and the quality of local drinking water in communities with distinctive environmental conditions

Method: Laser Ablation Inductively Couple Plasma Mass Spectrometry (LA-ICPMS) was used to measure trace elements in 30 exfoliated deciduous teeth from children aged 6-7 and 11-12 years, in 20 villages, 3 districts in South Kalimantan Province, Indonesia. Data of environmental situation in headwater, midstream, hilly and estuary areas were collected through observation and questionnaires. Drinking water from these villages was analysed by the public health authority

Result: Enamel from a child of the Barito River's estuary to the Java Sea, who consumes predominantly rain water, had high concentrations of manganese, cobalt, chromium, copper and very high concentrations of mercury, zinc and nickel. High concentrations of manganese and mercury were also found in samples from resident aside the Barito River in 3 Districts, and those who live close to coal mining sites in Tapin District. A high concentration of lead was found in dentine of a tooth from a child who mostly consumed piped water, living close to the busy road connecting South and Central Kalimantan.

Bivariate analysis showed significant ($p < 0.05$) but moderate correlations between dental caries index and concentrations of tin, mercury and uranium in dentine and inversely with copper in enamel. Concentration of fluoride in water inversely correlated with selenium, tin, cerium, lead in enamel, selenium and lanthanum in dentine and positively with, samarium, erbium in dentine. Water pH is positively





correlated with arsenic and uranium in enamel and with samarium in dentine, and inversely with selenium in enamel and dentine.

Conclusion: Teeth provide an excellent record of heterogeneous trace elements from environmental exposure and can be used as an evidence of pollution episodes, and as a predictor of caries risk.

193560

The Reasons For Replacement of Amalgam and Composite Restorations

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Objective: Replacement of restorations occupies half the general practitioners time and represents substantial expenditure. These are not only financial loss for patients but also further destruction of the teeth. The aim of this study was to report the reasons for replacement of Amalgam and Composite restorations which provides useful guidance on treatment planning and future material development.

Method: The study was based on cross-sectional method and non-probability sampling. 70 patients were being studied whose secondary tooth repair were necessary. The information recorded in questionnaire reported the patients age, tooth number, the class of restorations, the restorative material used, oral hygiene level and the reasons for replacement of amalgam and composite restorations. The data were statistically analyzed through T-student test.

Result: The average age of the patients were 37 years, 70 patients had 82 teeth needed restoration replacement. 68/89% of amalgam restored teeth belonged to the lower jaw and 31/11% to the upper jaw. In composite restored teeth 51.85% belonged to the upper jaw and 48/15% to the lower jaw. In both jaws 77.78% restored teeth were in anterior region and 22/22% were in posterior region. Of the amalgam restorations, most were replaced to restore Class I and Class V and class II preparations (47.82%, 42.03% and 10.15% respectively). Of the composite restorations, most were replaced in Class II, class I, class III cavities (35.14%, 32.43% and 16.22% respectively). The reasons of restoration replacement in amalgam group was 43.59% secondary caries, 5.13% crack in tooth structure, 16.67% crack in filling material, 14.10% tooth structure fracture, 11.54% filling material fracture. In composite group 27.45% secondary caries, 84% crack in filling material, 17.65% tooth structure fracture, 23.53% filling material fracture and 21.57% color changing.

Conclusion: The results indicates that secondary caries was the most prevalent reason for replacement of restorations, regardless of material. This information stresses the importance of selecting a better treatment plan and also the need for the optimal oral hygiene necessary for patients receiving the restorations.



193385

Three dimensional imaging of microwear texture in human teeth

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Objective: Severe tooth wear can require extensive and expensive treatment, but current methods lack sensitivity to detect small changes in tooth wear. By calculating microwear characteristics of worn surfaces from high-resolution 3D reconstructions, the aim of the present study was to characterize the worn surfaces associated with attrition and erosion.

Method: Thirty-six extracted human anterior teeth with pre-existing attrition, erosion and combined wear were selected (n=12 per group). Only one tooth with attrition had wear extending into dentine, whereas both enamel and dentine were present in other teeth. The worn surfaces were scanned using confocal microscopy to generate three-dimensional models (at an optical resolution of 0.15µm) that were subjected to complex mathematical modelling to calculate microwear complexity (i.e. measurement of peak to valley distances) and anisotropy (i.e. measurement of the degree of scratch orientation in various directions).

Result: Kruskal Wallis one way ANOVA showed an overall effect of wear type on both microwear complexity and anisotropy for enamel. Enamel complexity in both the erosion group (median, IQR; 4.1, 1.8-5.9) and the combined wear group (4.9, 2.0-6.2) was significantly greater than that in the attrition group (0.7, 0.4-2.9) (p<0.05). There was a trend for complexity in the erosion group to be lower in enamel (4.1, 1.8-5.9) than dentine (5.7, 4.0-12.1) (p=0.06). Mann Whitney U test showed that anisotropy was greater in enamel than dentine in both the erosion group (0.0030, 0.0023-0.0037 vs 0.0014, 0.0010-0.0018) (p<0.001) and the combined wear group (0.0025, 0.0018-0.0026 vs 0.0015, 0.0012-0.0018) (p<0.05).

Conclusion: This is the first report on quantitative assessments of attrition, erosion and combined wear in the form of microwear complexity and anisotropy values. Further refinement of this technique has the potential to provide a new sensitive diagnostic clinical tool for longitudinal assessment of tooth wear.

193380

Infraocclusion: clinical features and associated anomalies in singletons and twins

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Objective: The aim of this study was to investigate the prevalence of selected dental anomalies, timing of dental development and tooth size in singletons and twins with infraocclusion.

Method: Two samples were analysed. The first sample comprised 1,454 panoramic radiographs of singleton boys and girls aged 9-10 years. The second sample comprised study models of 202 members of monozygotic and dizygotic twin pairs aged 8-11 years. Adobe Photoshop CS5 was used to construct reference lines and measure the extent of infraocclusion (in mm) of primary molars on the panoramic radiographs and on 2D images obtained from the study models. The panoramic radiographs were examined for the presence of selected dental anomalies and to assess dental development following the Demirjian and Willems systems. The twins study models were measured to assess mesiodistal crown widths.

Result: In the singleton sample there was a significant association of ectopic canines and the lateral incisor complex with infraocclusion ($P < 0.001$), but no significant association was revealed between infraocclusion and agenesis of mandibular premolars. Dental age assessment revealed that dental development was delayed in infraocclusion patients compared to controls. The primary canines and the primary mandibular first molar were significantly smaller in size in the infraoccluded group ($P < 0.05$).

Conclusion: A possible pleiotropic effect was reflected by the presence of other associated dental anomalies with infraocclusion. Early diagnosis of infraocclusion and associated dental anomalies should help clinicians provide better counselling for patients and care-givers and also improve clinical management.

Acknowledgements: The support of the following funding agencies is gratefully acknowledged: National Health and Medical Research Council of Australia, Australian Dental Research Foundation, and The University of Adelaide.

193556

Dental and skeletal maturation of cleft lip and palate children

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Objective: To investigate the dental and skeletal development of isolated unilateral cleft lip and palate (UCLP) children in an Australian population.

Method: This is a retrospective longitudinal cohort study of 83 isolated UCLP children treated at the Cleft and Craniofacial Department of Princess Margaret Hospital, Perth. Orthopantomogram (OPG) and lateral cephalogram (LC) radiographs were taken at 3 years interval between the ages of 6-15 years old. Children with





significant medical history and diagnosed syndromes were excluded. The non-cleft control samples consisted of 306 age and gender-matched children from the University of Queensland School of Dentistry and four private orthodontic practices in Brisbane. Dental age was determined from the OPG using the Demirjian et al (1973) method and skeletal maturity assessed from the cervical vertebrae seen on the lateral cephalogram as described by Baccetti et al (2005). Differences between UCLP and control children were tested using paired t- test and Chi square test with a significance level of $p < 0.05$.

Result: There was no significant difference in skeletal and dental maturity between UCLP and control girls. UCLP boys had significant dental delay at 9 years of age with a mean delay of 0.5 ± 1.2 years ($P < 0.05$) and a delay of skeletal growth at 12 years of age ($P < 0.05$) compared to controls. However, by 15 years old, this difference ceased to be significant.

Conclusion: UCLP boys showed significant dental and skeletal delay but eventually caught up to their non-cleft counterparts.

193452

Correlation of Particle Size with Setting Times in MTA cements

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Objective: To determine the mathematical correlation between standard reference points of particle size distribution and the setting time (t) for MTA cements, using methods defined by ISO 6786 and 9917.1. The standard reference points of particle size are the 10th percentile (d10), median (d50) and the 90th percentile (d90) representing the smaller, middle and larger particle sizes.

Method: Samples from eleven commercial MTA-type cements were used: Avalon Biomed (Bradenton, USA), Angelus, (Londrina, Brazil), BioMTA (Seoul, Republic of Korea), Dentsply Tulsa Dental (Johnson City, USA), Maruchi (Wonju, Republic of Korea), MicroMega (Besancon, France), Septodont (Saint Maur des Faussés, France) and VladMiVa (Belgorod, Russia). Two grams of each cement was employed for particle size analysis using laser diffraction. The refractive index was determined by using the weighted average of the refractive indices of ingredients of each cement. The standard reference points of particle size were compared between samples, and linear correlation coefficients the logarithmic relationship with setting time calculated. Setting time data was received from manufacturers who performed indentation setting time tests as specified by ISO 6786 (n=9) and ISO 9917.1 (n=2).

Result: No correlation existed with d10 ($r=0.067$) and a weak positive correlation was found for d50 ($r=0.219$). In contrast, a strong positive correlation ($r=0.554$) exists for d90 in the logarithmic regression model with the matching equation for setting time being $t=103.59\ln(d90)-184.43$.



Conclusion: Commercial MTA-type cements contain components that may accelerate or retard the setting time of the cement. Nevertheless, the larger boundary of the 90th percentile of particle size shows a strong positive correlation with the setting time of MTA.

193468

Deconvolution of the Particle Size Distribution of Mineral Trioxide Aggregate

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Objective: MTA is a mixture of Portland Cement (PC) and radiopaque agents such as Bismuth Trioxide (BO), typically in a ratio of 4:1. Since the particle size distribution (PSD) of the PC component in MTA influences its setting behavior, it is of interest to determine how the PC and BO components contribute to the overall PSD of MTA.

Method: One gram samples of MTA Angelus, BO and three types of PC (raw, sub-14 μm and sub-8 μm for the largest particles in the 90th percentile) were placed into distilled water mixed with 1g/L sodium hexametaphosphate undergoing continuous ultrasonic agitation, and immediately analysed using laser diffraction particle size analysis with a Malvern MicroPlus analyser. The nonlinear least squares method determined the PSD constituents in MTA in accordance to the library of the four pure standards.

Result: MTA Angelus had a bimodal PSD with the two maxima located at 9 μm and 30.53 μm . These correspond to the BO modal particle size of 10 μm and the PC modal particle size of 19.31 μm . There were no PC particles sub-14 μm or sub-8 μm in this commercial MTA product.

Conclusion: When assessing the particle size distribution of MTA, the smaller particles in the bimodal distribution are BO and the larger ones are PC. This needs to be considered when exploring methods such as ball milling to lower the mean particle size of MTA.

193457

Effect of bleaching agent on the toughness of resin composites

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Objective: To compare the fracture toughness (K_{Ic}) of resin composites on a four-point bending test and to assess the effect of distilled water and a home bleaching agent on the resistance of the materials to fracture.





Method: Seventy-two bar-shaped specimens were prepared from three materials: Rok (SDI), Estelite (Tokuyama), and Vit-I-escence (Ultradent) and divided into three groups. Two groups were assigned as "control" and conditioned in distilled water at 37°C for 24 hours or 21 days, respectively. The specimens in the third group (treatment) were stored in distilled water for 21 days and bleached using Polanight (SDI) for 2 hours daily. For each material, a total of 24 disc-shaped specimens were prepared and after each time interval loaded in a four-point bending test using a universal testing machine with a crosshead speed of 0.5 mm/m. The maximum load to specimen failure was recorded and the K_{Ic} was calculated.

Result: Statistical analysis using two-way ANOVA showed a significant relationship between materials and treatment ($p < 0.05$). Tukey's test showed that after 24 hours of immersion in distilled water, K_{Ic} was not significantly different between materials; Rok revealed the highest value followed by Estelite and Vit-I-escence. The bleaching agent significantly decreased the K_{Ic} values of Estelite and Rok while it did not affect that of Vita-I-escence. Immersion in distilled water for all resin composites caused a significant decrease in K_{Ic}.

Conclusion: The fracture toughness of the resin composites was affected by the bleaching agent and 21day immersion in distilled water.

193392

Effectiveness of single-use tips for dental air-water syringes

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Objectives: To evaluate the effectiveness of different single-use syringe (SUS) dental tips, firstly by measuring the pressure output. Secondly, to investigate their drying effectiveness, recording the peak force at failure during tensile testing of dentine specimens bonded to glass fibre reinforced composite posts.

Methods: The air-water syringe was set and calibrated to 50 PSI. The pressure of the air expressed from the syringe with no tip attached was measured. SUS tips were then attached (with adapter if applicable). The output air pressure was measured. Six SUS tips were tested, Seal Tight, Pro-Tip Plus, FASTips, Sani-Tips, Crystal Tips and Safe Tips EZ. Ethical approval for the use of human teeth was granted. Twenty unrestored, caries free, third molar teeth were sectioned to produce 60 specimens, stored in phosphate buffered saline and randomly allocated into six groups of ten specimens. They were mounted in acrylic and polished. Specimens were dried with a specific SUS tip under standardised conditions, treated using a 3-step etch, prime, bond technique and then had a post bonded perpendicular to the exposed dentine surface. Posts were attached to a microtensile testing machine and the force to detach them measured.





Results: One of the tip delivered output pressure lower than the input pressure: Pro-Tip 42 PSI (SD 5.07). The average tensile force at failure was significantly different between groups ($P = 0.019$) ANOVA analysis.

Conclusions: The pressure output of the syringe is influenced by the SUS tip. The drying effectiveness of the SUS tips was different.

193551

Micro-shear bond strength of reinforcing materials bonded to root dentin

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Objective: : To determine the bond strength of reinforcing materials (nano-composite, microhybrid composite, nano- glass ionomer, conventional glass ionomer) to root dentin using the micro-shear bonding test.

Method: Root halves of one-rooted lower premolars were used. Forty root halves were individually embedded in acrylic block and randomly divided into four equal groups ($n=10$) according to the materials bonded to root dentin surfaces. Group I: Nano-composite (Grandio Flow NR, Voco, Germany) was bonded to root dentin surface, group II: bonded with Microhybrid composite (Esthet X Flow, Dentsply, Maillefer, Switzerland), group III: bonded with light cured Nano-ionomer (Ketac™n100 restorative material, 3M ESPE) and group IV: bonded with conventional glass ionomer (Ionofil Molar, Voco, Germany). Each acrylic block with the embedded root slice and reinforcing material was loaded in a testing machine. A shearing load with tensile mode force was applied via materials testing machine at a crosshead speed of 0.5 mm/min. Mode of failure was observed under stereomicroscope. One-way ANOVA and Tukey's test were used at 5% significant level for statistical analysis.

Result: Nano-composite group recorded the highest μ -shear bond strength mean value (23.52 ± 3.997 MPa) followed by μ -Hybrid composite group (16.88 ± 3.356 MPa) then nano glass-ionomer group (8.77 ± 1.341 MPa) while conventional glass-ionomer group showed the lowest μ -shear bond strength mean value (4.062 ± 0.9623 MPa). The difference was statistically significant in μ -shear bond mean values between all groups ($P < 0.05$). Failure modes indicated that high bond strength showed cohesive or mixed modes, while low bond strength groups tended to exhibit adhesive, cohesive or mixed modes.

Conclusion: It is more favorable to use nano-composite resin rather than glass ionomer for reinforcement of weakened root dentin.

193435

Non-aqueous Solvents Influence pH of Calcium Hydroxide Products





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Objective: Since release of hydroxyl ions is critical for the antimicrobial actions of calcium hydroxide (CH), there is interest in using co-solvents in medicament pastes and irrigants to achieve greater dissolution of CH and sufficiently high pH to impair microbial viability. This study assessed three non-aqueous solvents which have suitable viscosities and known biocompatibility.

Method: CH was dissolved for 15 seconds into test solutions (ultrapure water, polyethylene glycol (PEG) 200, PEG 400, glycerol, and 50/50 mixtures of each with water) to give a final concentration (w/v) of 2%, which is just above the solubility in pure water (1.85%). pH data was recorded every 60 seconds for 20 minutes using a precision analytical pH meter (Hanna HI4221) fitted with an Orion electrode specifically designed for non-aqueous fluids. The system was calibrated at pH values of 4, 7, 10 and 12, and verified against known buffers at pH 14. Calibration was checked between sample runs using known pH standards. Data sets were analysed using RMANOVA.

Result: Inclusion of either version of PEG into water significantly increased the pH elevation from baseline caused by addition of CH into water alone or PEG alone. Using other solvents increased the maximum pH which could be achieved above the pH 12.40 limit for pure water. The final pH achieved at 20 minutes, which represented the point of stability for all mixtures, was ranked from greatest to least as follows: water/PEG200 13.06, water/PEG400 12.79, PEG200 12.60, water/glycerol 12.49, water 12.40, glycerol 12.32, and PEG400 11.77.

Conclusion: Use of non-aqueous solvents overcomes the common ion effect which restricts the pH to 12.40, and allows higher pH values to be achieved. Of the materials examined, the greatest potential was seen for the polyethylene glycols. Combinations using such materials may have value for eventual clinical application.

193444

Nutrient Element-based Bioceramic Coatings With Beneficial Osteoimmunomodulation for Better Osseointegration

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A paradigm shift has taken place in which bone implant materials has gone from being relatively inert to having osteoimmunomodulatory properties, emphasizing the importance of immune response when these materials interact with the host tissues. It has therefore, become important to endow the implant materials with osteoimmunomodulatory properties favouring osteogenesis and osseointegration.





Strontium, zinc and silicon are bioactive elements that have important roles in bone metabolism and that also elicit significant immune responses.

Objectives: To prepare Sr, Zn and Si-containing bioactive $\text{Sr}_2\text{ZnSi}_2\text{O}_7$ (SZS) ceramic coating and evaluate its osteoimmunomodulatory properties on inflammation, osteoclastogenesis and osteogenesis.

Methods: SZS ceramic coating on Ti-6Al-4V were prepared by a plasma-spray coating method. Its osteoimmunomodulatory properties was evaluation using a immune cells/osteoblastic cells/biomaterials biomimic system. Ionic concentrations were detected by MS-ICP. Cell viability was detected by MTT. RT-qPCR and western blot were applied to detect the gene and protein expression respectively.

Results: The SZS coatings exhibited slow release of the bioactive ions, with significantly higher bonding strength than hydroxyapatite (HA) coatings. SZS coated Ti-6Al-4V elicited significant effects on the immune cells, inhibiting the release of pro-inflammatory cytokines and fibrosis-enhancing factors, while upregulating the expression of osteogenic factors of macrophages. It could also inhibit the osteoclastic activities. The RANKL/RANK pathway, which enhances osteoclastogenesis, was inhibited by the SZS coatings, whereas the osteogenic differentiation of BMSCs was significantly enhanced by the SZS coatings/macrophages conditioned medium, probably via the activation of BMP2 pathway.

Conclusion: SZS coatings can be a promising material for orthopaedic implant applications, and the strategy of manipulating the immune response by a combination of bioactive elements with controlled release has the potential to endow biomaterials with beneficial immunomodulatory properties.

193579

Property of new flowable composite resin with high radiopacity

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Objectives: Clinical Utilization of flowable composite resins (FCR) have recedntly increased due to, improved variety of mechanical properties. In 2011, G-aenial Universal Flo (GC) was released in Oceania, as an injectable type, applicable to occlusal surface, with high flexural strength, high wear resistance, excellent gloss retention and good handling/shaping properties. Subsequently in 2014, G-aenial Flo X (GFX, GC) was developed as a low viscosity type, higher radiopacity for lining floor of cavity preparation (cavity liner). The purpose of this study was to compare GFX and other conventional FCR with their flexural strength and radiopacity properties.



Methods: GFX, Filtek Supreme XTE Flowable (XTE, 3M ESPE), Tetric Evo Flow (TEF, Ivoclar/Vivadent), Grandio Flow (GRA, voco) were examined in this study as FCR. Flexural strengths of each material were measured by three-point bending test. Flexural strength and radiopacity were tested according to ISO 4049:2009. Data were statistically analyzed (ANOVA, Tukey's test, $p < 0.05$). As to evaluate radiopacity close to clinical situation, each material was filled in cavity of human molar ($5.0 \times 4.0 \times 2.5$ mm) and radiographed. Filling of each material was controlled to thickness of about 0.5 mm. Each material then was cured by light irradiation for 10 seconds prior to radiographing.

Results: GFX showed the highest flexural strength and radiopacity. In radiograph of human molar, XTE and GRA showed similar radiopacity to enamel. GFX and TEF showed higher radiopacity than human teeth.

Conclusions: These results suggested that GFX has superior flexural strength and radiopacity which may indicate clinical advantages.

	GFX	XTE	TEF	GRA
Flexural strength /MPa (S.D)	166.8 (5.1) ^a	134.3 (4.3) ^b	107.0 (3.5) ^c	116.0 (6.1) ^c
Radiopacity/ Al%	303 ^a	201 ^b	290 ^a	201 ^b

Distinct superscript letters show statistical differences in same line

193393

The Physical Properties of CPP-ACP-modified Calcium Silicate-based Cements

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Objective: To evaluate the mechanical and handling properties of casein phosphopeptide-amorphous calcium phosphate (CPP-ACP)-modified calcium silicate-based cements and to compare the properties of a GC trial MTA (GCMTA) with commercially available calcium silicate-based cements (Biodentine[®] and Angelus[®]MTA).

Method: Various amounts of CPP-ACP (0.5%, 1%, 2% and 3% w/w) were added to each test material. Setting times and compressive strengths were determined according to the ISO 9917-1 standard. Solubility was evaluated using the American Dental Association specification #8, and the Vickers surface microhardness (HV) was also measured. The data were analysed by one way analysis of variance followed by Tukey's test. The level of significance was $P < 0.05$.





Result: The incorporation of 0.5% and 1% CPP-ACP into Biodentine[®] and 0.5% CPP-ACP into Angelus[®]MTA and GCMTA did not affect the cements' physical properties except for increasing setting time. The incorporation of higher CPP-ACP concentrations into the test cements adversely affected the mechanical properties and increased the solubility in a concentration-dependant manner ($P < 0.05$). Biodentine[®] showed the shortest setting time and the highest compressive strength, surface microhardness and solubility amongst the test materials ($P < 0.05$). Angelus[®]MTA exhibited shorter setting time in comparison with GCMTA ($P < 0.05$) and the lowest solubility compared with Biodentine[®] and GCMTA ($P < 0.05$). The compressive strength and surface microhardness of Angelus[®]MTA and GCMTA were similar.

Conclusion: Low concentrations of CPP-ACP powder can be incorporated into calcium silicate-based cement without significantly compromising the mechanical properties and solubility of the modified cement. GCMTA showed similar mechanical properties to commercially available MTA.

193584

Panoramic Radiographs, Bilateral Neck Calcifications and Diagnosis of Thyroid Conditions

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Objective: The recognition of carotid calcifications and the link with cardiovascular disease has been well established in the dental literature; however the description of Thyroid changes in panoramic images is very limited and has not been previously reported as an indicator of Thyroid disease or malignancy in symptomatic patients. Patients with undiagnosed Thyroid disease pose a potential threat of adverse outcomes following dental treatment, particularly when undergoing surgical procedures. Thyroid disorders are predominantly female conditions, especially in patients over 50 years. The prevalence rate of diagnosed Thyroid disease in Australia is estimated to be 7.5% of women and 1.5% of men. A prevalence study in Colorado reported average prevalence of 9.5% Hypothyroid and 2.2% Hyperthyroid; these studies excluded Thyroid cancer and Goitre. Dentists have been encouraged to detect early signs and symptoms of systemic disease and refer the patient for treatment based on history, clinical and radiographic examinations. Bilateral neck calcifications on panoramic images often give false positive results for carotid calcification, even though calcification or ossification of the thyroid cartilage has been recognised as a possible misdiagnosis of carotid calcification

Method: This study presents patient case reports and panoramic images of bilateral calcifications at C4 level observed on patient images taken in student Radiology clinics.





Result: Images and medical reports illustrating subsequent medical diagnosis of patient cases of Carotid calcification associated with significant cardiac atherosclerotic disease; Hypothyroidism; Hashimoto's thyroiditis; Thyroid nodules and malignant thyroid nodule calcification associated with subsequent detection of breast cancer. Four of those patients had a co-existing autoimmune disease.

Conclusion: The recognition of bilateral neck calcifications as pathological Thyroid gland change when detected on panoramic radiographs, followed by referral for medical treatment, can assist the patient to obtain an earlier correct medical diagnosis, an improved quality of life and possibly the saving of a life

193401

A Survey of International Trends in Dental Education

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Objective: Differing world cultures and backgrounds have undoubtedly influenced the teaching in dental schools. With increasing globalisation and mounting educational evidence, movements have been made towards standardisation of dental curricula and developing a student-centred approach to teaching. The inclusion of virtual reality simulation technology in modern curricula has been strongly advocated as a potential way to improve undergraduate skill-based learning. This survey aims to assess the current trends in dental curricula with particular interest in virtual reality haptic simulation.

Method: An Internet survey engine was used to gather data from dental schools regarding their curriculum, with particular interest in virtual reality haptic simulation. The survey consisted of 16 questions regarding background of dental students, curriculum design, phantom head simulation and haptic simulation.

Result: 31 dental schools completed the survey, (response rate 24%) showing a statistically significant increase in course length in North America compared to Asia ($P=0.01$), significantly less graduate students in Asia than North America and Australia/NZ ($P=0.03$) and a significant difference between Asia compared to North America and Australia/NZ regarding haptic use in the first year ($P=0.04$). Other trends were suggested a more traditional style of curriculum and caries teaching in North America, increased class sizes in North America and a general increased acceptance of virtual reality haptic simulation in Australia/NZ.

Conclusion: Results show international dental curricula are highly varied with more traditional teaching occurring in North America, although all other regions had at least one third of teaching being carried out purely by traditional means. For improved learning effectiveness, further progress needs to be made by





implementing more integrated teaching methods as has been suggested in many published reports. Such publications also advocate the increased use of virtual reality simulation technology in dental schools, something seemingly well accepted by Australian/NZ dental schools but lacking in North American.

193673

Baseline Manual Dexterity And Perceptions Of The Simodont Haptic Trainer

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Background: An evolving dental curriculum, increasingly restricted resources and a generational change in the student cohort, the MOOG® Simodont Haptic Dental Trainer presents an opportunity to address many limitations of conventional teaching methodologies in contemporary dental education. The recent history of virtual reality haptic dental trainers offers limited information in this expanding field.

Objective: This study aimed to establish the character and range of manual dexterity skills, identify variables at an individual level that may influence performance scores, and gather perceptual information with regards to the Simodont and its feedback system.

Method: First year Dental (n=48) and Oral Health Therapy (n=31) students for 2013 performed manual dexterity training tasks on the simulators for 120 minutes over two sessions. Parameters recorded include time taken to achieve competency and target area removal percentages, from which error rates and performance scores were calculated. Questionnaires were completed immediately prior to and following simulator use, the first covering background information and expectations of the Simodont, while the second revisiting expectations and experiences of the Simodont.

Result: Participants with higher reported map reading abilities ($p=0.050$), higher reported navigation abilities ($p=0.016$), a preference to follow instructions rather than experiment ($p=0.029$), and used smartphones ($p=0.028$) showed statistically better performance scores. Participants who expected to enjoy the Simodont sessions ($p<0.001$), expected the Simodonts to be fair ($p=0.003$), and felt the Simodont sessions were stressful ($p=0.027$), showed a statistically lower score. Gender, age, and past times including tinkering and painting did not have significant predictive value.





Conclusion: The Simodont platform provides a novel teaching methodology, however without acceptance, support and correct implementation, the success of this technology is limited. The collected baseline data and insight into cohort characteristics provide the foundations for future studies to best understand and integrate this system.

193644

Beyond PBL – Which Simulation and Assessments?

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Objective: We consider that the introduction of Problem-Based Learning (PBL) in the 1990s was a defining event in dental education – a revolution. We need another revolution and it is likely that more effective use of simulation and assessment will be key aspects of this revolution. In this presentation we consider how to move forward 'beyond PBL'.

Method: By drawing on educational theory and developments in educational research, we propose ways to use simulation and assessment tasks to make future dental curricula more flexible, with greater student responsibility, leading to a cohesive conception of minimally-invasive dentistry and patient-centred care.

Results: An educational theory proposed by Marton, Variation Theory, provides one possible framework for developing a learning environment that maximises opportunities for discernment by structuring simulation and assessment experiences throughout dental curricula. We also need to think of simulation more broadly, i.e. not only operative, surgical, radiological and CPR skills. Simulation can also be used for learning patient-care activities, including examination, judgment and decision-making, patient-centred communication and team skills. We need to make use of evidence from other health professions and, where needed, develop our own evidence to inform our approaches, particularly as the quality of care our graduates provide is likely to be related to their education. Furthermore, different types of simulation provide opportunities to develop more coordinated, integrated and sophisticated approaches to both formative and summative assessment.

Conclusion: Simulation should not replace clinical patient contact but its expanded use may form the basis of the next revolution in dental education. However, this needs to be based on evidence and not just represent a knee-jerk response to pressures to cut staff and save money. We must become more effective advocates for high quality dental education otherwise, ultimately, the oral health of the communities we serve will suffer.



193709

Clinical Education and Care Delivery : The Way Forward

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Introduction: Clinical education and care delivery by students in dentistry and oral health is faced with a number of challenges.

Objective: To outline the challenges and risks to the current model of clinical education and to suggest models related to efficiency and to patient recruitment.

Method: Reflection on experience.

Results: Issues to be addressed include costs, efficiencies in the clinic, sources of patients, relationships with Health Departments, simulations vs clinical experience, timing of clinical experience and appropriate supervision.

Conclusion: Many challenges exist and new models or at least modifications of clinical education will need to be developed for future students.

193721

Curriculum Review: National and International Perspectives

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Objective: The dental curriculum needs to have the flexibility to reflect change in focus in dental care in a timely manner. Contemporary dental care has shifted to emphasize disease prevention and health rather than disease management and involves active participation from increasingly skilled members of the dental team.

Method: The Faculty of Dentistry, University of Otago has responded to this challenge in a number of ways including involvement in a health sciences interprofessional education programme.

Result: This interprofessional education programme is set in a rural environment, with a high Māori population and involves senior dental students living and working with dietetics, nursing, pharmacy, physiotherapy and medical students for six week placements.

Conclusion: The evaluation of this programme and its contribution to a holistic dental curriculum will be discussed.

193707

Dental Education: Is There a Future For Clinical Placements?

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Objective : To understand better the benefits and costs of clinical placements

Methods: A comparative review of clinical placements across health profession schools at the University of Sydney.

Results: Clinical placements are an integral component to dental education in Australia. They provide work integrated learning opportunities and enable dental graduates to be “work ready” on graduation. Comparisons of clinical placements across health profession education provide opportunity to develop dental curricula that are contemporary and best practice. The clinical placement model varies across the health professions and between Universities and this is partly a result of each profession’s capacity to practice autonomously on graduation and the level that clinical placements are embedded in curricula.

The move to activity-based funding in the health system has put pressure on the cost of education activities and in particular the costs of clinical placements. In many cases, this assessment has not included the benefits of clinical placements. These are extensive and include extra clinical service delivery, the development of innovative practice through research and the development of well-rounded professionals who can easily and rapidly fit into the health system.

Conclusion : To ensure Australia’s dental education maintains a world class standard, clinical placements are essential. Universities, through the analysis of clinical placement costs and benefits need to lead the development of agreements with health providers.

193450

Dental Faculties’ Opinions about Older Adults’ Oral Health Care Education

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Objective: Since “Oral care and pneumonia” was published by Yoneyama et al in 1999, “Oral health care” has been used widely as the meaning of oral health care for older adults in Japan. Pneumonia was the third leading cause of death in 2011 in Japan. Therefore, the promotion and improvement of older adults’ oral health care education will contribute to health promotion in Japan’s ageing society. This study aimed to identify opinions and attitudes toward the development of new oral health care courses in dental schools.

Method: Data were collected in seven Japanese dental schools from May to September 2013 via online questionnaire survey.





Result: 558 dental faculties (428 male, 130 female) participated with response rate of 57%. The average number of year after they completed a universities degree was 20.2 ± 10.2 years. The majority of participants indicated that oral health care should be provided either at nursing homes (99%); or residential homes (95%); or recovery phase wards (91%); or at hospices (90%). The majority indicated that it should be implemented as a type of home dental care (94%); as a part of overall preventive care (92%); or as a part of overall rehabilitation (91%). Most of them (84%) indicated that oral health care education should be integrated in one course.

Conclusion: Findings indicated that most faculties recognized that oral health care should be provided to older adults and, the majority suggested oral health care education should be integrated as a course. However there remains a need to define what the content of this course should be. And to design new oral health care courses, we need to coordinate some departments such as geriatric dentistry, preventive dentistry, and prosthodontic dentistry which at the moment are all teaching elements of dental health care independently.

193438

Measuring Teams-Based Interprofessional Education Outcomes in Clinical Dentistry: Psychometric Evaluation

M.J. STORRS, Griffith University, Southport, Australia

Objective: The Griffith University School of Dentistry and Oral Health (DOH) introduced teams-based treatment planning (TBTP) in 2009 to facilitate interprofessional education (IPE) through student teamwork, peer learning and development of appropriate assessment methods. A literature search failed to identify any relevant pre-validated instruments to evaluate the impact of this approach on the quality of clinical dental education received. This study aims to conduct a psychometric evaluation on the new Interprofessional Clinical Dental Educational Outcomes Scale (ICDEOS) to establish its validity and reliability.

Method: In 2012, ICDEOS was developed and evaluated to measure 'IPE student team processes' and the 'quality of clinical dental education' received amongst dentistry, oral health therapy and dental technology undergraduate students. A face validity analysis by IPE experts confirmed that items within the scale reflected the entire meaning of relevant concepts. Piloting was conducted amongst 158 undergraduate students (61% response rate) involved with TBTP.

Result: An exploratory factor analysis using the principal component method retained twenty-three items with a total variance of 64.6% suggesting high content validity. Three subscales accounted for 45.7%, 11.4% and 7.5% of the variance respectively. Internal consistency of the scale (Cronbach's $\alpha = .943$) and subscales 1 ($\alpha = .953$), 2 ($\alpha = .897$) and 3 ($\alpha = .813$) were high. A reliability analysis yielded moderate (Spearman's rho 0.43) to high correlations (0.81) with the remaining items





in the scale. Removal of any items resulted in a lower internal consistency for the entire scale. Confirmatory factor analyses verified convergent validity and substantiated that this structure has a good model fit.

Conclusion: The validity and reliability of ICDEOS to evaluate the impact of interprofessional teams-based processes on the quality of clinical dental education received has been established. Further study within comparable educational institutions, nationally and internationally, is required.

193654

Research and Discovery, and Dental Education

L.P. SAMARANAYAKE, University of Queensland, Brisbane, Australia

Objective: To evaluate the association and links between research and discovery, and dental education, and how these could be successfully integrated

Method: A learned inquiry

Result: Research and discovery, and dental education are intimately linked in myriad ways. Whereas many a clinician often considers research as an esoteric subject that can only be undertaken by experienced researchers, they lose sight of the fact that the mere action of investigating a patient's illness and the ensuing thought process are analogous to a research inquiry process. For instance, on confronting a patient, the clinician has to question the reason for the patient's illness, then make an intelligent inquiry into the underlying cause and arrive at a differential diagnosis, and subsequently a final diagnosis. This analytical pathway is almost identical to a research inquiry. As the thinking and rationalization process of a skilled dental clinician and a scientist follow similar algorithms, research and dental education are profoundly intertwined.

Our understanding of basic disease mechanisms is improving in leaps and bounds in the current exciting era of genomics, proteomics and microbiomics. The latter -omic sciences together with the regenerative stem cell sciences are currently revolutionizing the landscape of clinical dentistry to an extent we never envisioned a few years ago. Advances in material sciences are truly phenomenal and has already had a major impact on the way we practice dentistry.

Conclusion:

It is, therefore, critical that budding clinicians have the training, tools and the wherewithal to evaluate new scientific advances and appropriately integrate these into their practice that may last over some four decades into the future. This presentation will address key issues we face in popularizing research in dental schools, and propose considered solutions to obviate these, from the authors own perspective.



193724

Overview of GOHIRA - A Call to Action

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Objective: To define a research agenda to address global inequalities in oral health. Dental caries and periodontal diseases are among the most common chronic diseases known to man. These and other oral diseases remain a major public health issue for both high-income and low-to-middle income countries where there are insufficient funds to prevent and treat them. Over the last sixty years the prevention of oral disease has been revolutionised, in particular caries levels and tooth loss have decreased. However population statistics mask the major inequalities in oral health as most of the disease is now born by the less well-off members of our society. Inequalities in oral health persist both within and between countries.

Method: Because the determinants of oral disease are rooted in psychological, social, environmental, economic, cultural, political, and other highly relevant determinants of health, reducing oral health inequalities will require creativity, diligence and a strong commitment to partner with those involved in promoting global health. The International Association for Dental Research (IADR) is committed, through the IADR Global Oral Health Inequalities Research Agenda (GOHIRA) initiative to eliminating discriminative inequities in oral health through research and application of research findings. IADR is committed to accepting leadership in locating the appropriate and optimal avenues of achieving this goal and has published a Call to Action, to give effect to its mission.

Results: Three key challenges have been identified. These are:

1. Gaps in knowledge and specifically insufficient focus on social policy
2. The separation of oral health from general health
3. Inadequate evidence-based data (including: research driven programs, capacity-building strategies, standardized systems for measuring and monitoring, etc.).

Conclusion: The IADR GOHIRA Call to action prioritises ten key research objectives to address these challenges. The development of GOHIRA, work to date, challenges identified, key research objectives and timelines will be discussed.

193662

Health Among PerioCardio Study Participants: Does Imprisonment Exacerbate Inequalities?





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As a population, Indigenous Australian adults are among the least likely to receive dental care. Over 80% of adults imprisoned in the Northern Territory (NT) identify as Indigenous Australians.

Objective: This symposium presentation compares the oral and general health status of Indigenous Australian adults involved in the PerioCardio study, a third of which were incarcerated at the time of recruitment. Comparisons will be used to discuss how current legislation and policies in the NT may unequally impact Indigenous Australians.

Method: When enrolled, participants had moderate/severe periodontal disease as defined by the Centres for Disease Control & Prevention/American Academy of Periodontology definition. Oral assessments additionally obtained information relating to DMFT and non-invasive cardiovascular assessments measured carotid artery intima-media thickness [IMT] (arterial structure) and carotid-dorsalis pedis pulse wave velocity [PWV] (central arterial function). Comparisons of incarcerated versus non-incarcerated participants were conducted using parametric and non-parametric methods.

Result: 273 participants were recruited; 96 of which were incarcerated (male = 93 [96.9%]) while the 177 non-incarcerated study participants consisted of 65 males [36.7%], $P < 0.001$. Incarcerated participants were significantly younger [mean (SD) 35.6 (7.4) years] compared to those non-incarcerated [42.6 (10.7) years], $P < 0.001$. Although number of teeth with untreated caries did not vary among incarcerated compared to non-incarcerated, prison-stratified analysis showed that participants from Darwin's prison had almost twice [4.0 (3.8)] the mean number of teeth with caries compared to Alice Springs [2.1 (2.4)], $P = 0.004$. Despite the younger age, incarcerated study participants had a greater extent of periodontal pocketing of $\geq 4\text{mm}$: 17.6% (14.1) versus 12.0% (13.3), $P = 0.001$; but equivalent PWV: 8.3 (1.1) m/s versus 8.4 (1.3) m/s, $P = 0.845$; and IMT 0.77 mm (0.13) versus 0.78 mm (0.17), $P = 0.909$.

Conclusion: In this disadvantaged population, a difference in access to dental services between prisons may exist. Vascular health of imprisoned participants was comparable despite being significantly younger.

193372

Inequalities in Oral Cancer

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Objective: To demonstrate the wide variation in incidence and outcomes for oral cancer worldwide and suggest ways to reduce these inequalities.





Method: Interrogations of national and international databases, especially Globocan 2012. Knowledge of major risk factors from published surveys and suggestions for changes in Government policies at national and international levels.

Result: Age-standardised incidence rates, both sexes combined, for lip+oral cavity cancer range from 25.0 cases per 100,000 population pa in Papua New Guinea [the highest in the world], to less than 2, eg in much of central and northern Africa. In Australia and New Zealand the rates are 6.3 and 4.0 respectively. Mortality rates range from <1 in parts of Africa to 16/100,000 pa in PNG. ANZ rates are 1.0 in both countries.

Cancer of the oropharynx is a different disease: Australian incidence/mortality rates/100,000 pa are 2.0/0.7 & for NZ, 1.4/0.6.

In Australia rates are falling for cancers of the mouth and lip but rising in the oropharynx.

These ~30-fold variations in incidence are mostly explained by differences in behavioural risk factors: abuse of alcohol, tobacco use, poor diet and dentition and, for cancers of the oropharynx, exposure to high-risk human papillomaviruses. Limitations in access to care influence mortality rates in poorly resourced countries and in lower SES groups the world over.

Conclusion: Intense efforts are required to introduce policies which reduce abuse of risk factors; in health education and promotion; and in access to early diagnosis and care for all sectors of the population. Modern surgery, radiotherapy and cytotoxic chemotherapy have improved outcomes in specialised centres. Biotherapies and individualised patient treatment so far rely on monoclonal antibodies to block overexpression of epidermal growth factor receptors but many others are under study. Personalised medicine is clearly the way of the future.

193538

Bioscaffold Augmentation of Bone - A Pilot Study

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Objective: To establish a model to determine the surgical and tissue processing protocols for testing the use of a synthetic bone graft material to augment the contour of a reduced alveolar ridge. To qualitatively analyse bone tissue growth within the grafted region.

Method: β -tricalcium phosphate grafts (Vitoss®) with the following dimensions 6mm width x 3mm height x10mm length- were placed directly onto decorticated cortical bone on the lateral aspect of the left maxillary diastema of New Zealand white





rabbits (n=6). The graft was secured to the underlying bone using an 8mm titanium screw, covered with a resorbable collagen membrane and the surgical site closed over. Tissue blocks were harvested at 3 weeks and 6 weeks.

Two non-decalcified sections were scanned using a micro tomographic imaging unit. Four sections were embedded in resin, stained with Pyronin-G and evaluated histologically. Graft vascularisation was examined on one decalcified frozen section labelled with anti-CD31 monoclonal antibody.

Result: All six sites healed well with one site showing some minor wound dehiscence. The micro-CT analysis demonstrated that the central screw appeared to help retain the graft material in place with the graft height around the titanium screw being maintained. The periphery of the graft however showed some loss of height.

Histological evaluation demonstrated cellular invasion of the graft with osteoblasts and connective tissue infiltration noted. The anit-CD31 labelling demonstrated vascular infiltration of the grafted region.

Conclusion: The study concluded that the model was appropriate for testing the use of a synthetic bone graft material for augmentation of a reduced alveolar ridge. The histological examination demonstrated evidence of colonisation of the graft by bone forming cells. A longer observation time period with a greater number of test sites using a centrally placed titanium implant in place of the screw is recommended for further evaluation of bone tissue regeneration.

193465

Effect of air-polishing on titanium surfaces, biofilm removal and biocompatibility

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Objectives: The aims of this project were to (i) evaluate the effect of air-polishing titanium discs with a specialized periodontal tip on surface morphology and on biofilm removal from these surfaces and; (ii) evaluate the effect of air-polishing on the biocompatibility of titanium surfaces with tissue culture cells.

Methods: A total of 57 titanium discs (7.5mm x 2.0mm, Southern Implant, Irene, South Africa; ASTM-F67-95 grade 4 pure titanium) were randomly allocated into six treatment groups. *Streptococcus mutans* biofilms were grown on discs in brain-heart infusion broth for three days. Discs were treated with AIR-N-GO PERIO (Acteon, France) using glycine powder (PERIO AIR-N-GO Powder, Acteon, France) for 5 s and





then rinsed for 20 s with an air-water syringe. Scanning electron micrographs were taken before and after the treatment. A crystal violet assay was performed to quantify the reduction in bacterial biofilms. Biocompatibility was evaluated by measuring the viability of L929 fibroblast cells grown on titanium discs.

Results: Air-polishing for 5 s reduced the amount of biofilm 8.6-fold compared to the untreated controls ($P < 0.05$, Mann-Whitney test) and the reduction was visible under SEM. Coverage of air-polished and rinsed discs by fibroblasts was half that of untreated discs (20.4% and 41.0% respectively, $P < 0.05$, ANOVA). Sterile, air-polished discs, without rinsing, had the lowest fibroblast coverage (5.07%). Less than 1% of the area of air-polished and rinsed discs was covered with dead cells, whilst discs that were only air-polished showed no dead fibroblasts.

Conclusions: Air-polishing with a specialized periodontal tip removed a significant amount of biofilm from titanium surfaces. It appears that the 'polishing' reduced the biocompatibility of the disc surface. The reduced fibroblast cell growth on disc surfaces could have been caused by the presence of glycine powder, and this requires further investigation.

Acknowledgements: Financial support from Acteon, Satelec, France

193620

Effect of Surface Topography on Osseointegration in Bisphosphonate-Treated Rat Maxillae

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Objective: To evaluate the influence of surface topography on osseointegration of titanium implants in rat maxillae following systemic bisphosphonate use.

Method: Twenty Sprague-Dawley rats were divided into two groups - test (systemic bisphosphonate use) and control (no bisphosphonate administered). Bisphosphonate administration began three weeks prior to implant placement with thrice-weekly doses of zoledronic acid ($66 \mu\text{g}/\text{kg}$). 40 endosseous implants (two per animal placed bilaterally) with a moderately rough surface (20 implants) or a turned surface (20 implants) were placed in the extraction sockets of maxillary molars. Animals were sacrificed at postoperative times of 14 and 28 days and the implant and surrounding material harvested for histological and histomorphometric analysis. Statistical analysis consisted of unpaired t-test with a level of significance of $P \leq 0.05$.

Result: The quantitative Bone-To-Implant ratio (BIC) analysis (mean \pm standard error of measurement) of moderately rough surfaced and turned surfaced implants at 14/28 days were: test group - 18.94 ± 2.92 , 11.42 ± 0.37 / 28.23 ± 2.76 , 13.66 ± 2.43 ; control group - 46.36 ± 2.27 , 33.29 ± 3.97 / 72.99 ± 2.95 , 47.62 ± 8.14 . Histomorphometric analysis indicated higher BIC values on moderately rough





compared to turned surfaced implants. Higher BIC values in control group compared to test group was demonstrated to be statistically significant in both implant surfaces and at all time points. Histological observation within control and test groups demonstrated initial bone formation around moderately rough surfaced implants not only at the parent bone, as was the case with the turned surfaced implants, but also along the implant surface itself. Test group specimens illustrated less bone remodeling activity at 14 and 28 days after implants placement, compared with control specimens.

Conclusion: Surface topography influences osseointegration in pristine bone and following systemic bisphosphonate use. Osseointegration occurs at a higher rate and to a greater extent adjacent to moderately rough surface implants than to turned surface implants.

193623

Effects of titanium surface modification on osseous healing in diabetes

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Objective: To characterise the early inflammatory reaction and osseous healing in response to Ti surface modification in a systemically compromised condition i.e. diabetes type I.

Method: Large grit sandblasted and acid-etched microrough (SLA) or hydrophilic-modified SLA (modSLA) Ti surfaces were used in this study. Critical-sized calvarial defects were created in streptozotocin (STZ) induced type I diabetic Sprague-Dawley rats. The intracranial aspect of each defect was covered with a PTFE membrane while a titanium disc covered the extra-cranial defect. The titanium discs were secured with titanium pins to prevent lateral movement during the healing process. The defect was allowed to heal for a period of up to 28 days. Samples of the exudate within the calvarial defect and beneath the titanium discs was collected 1, 4 and 7 days post-surgery for inflammatory cytokine profiles, which were then analysed by using ELISA. The macrophage phenotypes on the Ti disc surfaces were determined by CD11c (M1) and CD163 (M2) immuno-fluorescent staining. Samples of the healing defects were also prepared for histomorphometric analysis.

Result: In the diabetic group, at day 1, immuno-fluorescent results demonstrated the dominant macrophage phenotype was M1 on both Ti surfaces. By day 7, more M1 macrophage phenotype driven inflammation remained on SLA surface compared to modSLA. This is in contrast to the healthy animals where there was minimal remaining inflammatory reaction on modSLA, while on SLA, although there was still significant inflammatory reaction, it was shown to be predominantly a M2 (i.e. reparative) macrophage phenotype driven inflammation by day 7. These changes of macrophage phenotype correlated with the levels of pro-inflammatory and pro-regenerative cytokines in the exudates.



Conclusion: The present study demonstrates in a systemically compromised condition the Ti surface modification modulates the early inflammatory reaction with respect to the macrophage phenotype expression.

193663

Histomorphometric Assessment Collagen Stabilized Anorganic Bovine Bone in Sinus Augmentation

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Objective: histomorphometrically compare collagen stabilized anorganic bovine bone (Bio-Oss Collagen) in maxillary sinus floor augmentation to anorganic bovine bone + autogenous bone (Bio-Oss + autogenous bone) in human and animals.

Method: Patients and animals were randomly assigned to either Control group – deproteinised bovine bone mineral (Bio-Oss) + autogenous bone (1:1) or test group – deproteinised bovine bone mineral + collagen (Bio-Oss Collagen).

Animals Nine sheep underwent bilateral sinus augmentation. Each sinus was randomized to receive either control or test bone graft. Three animals were then sacrificed at 8 weeks and another six animals sacrificed at 16 weeks after grafting. The sinuses were then processed for histology and histomorphometry.

Humans Forty patients were randomly assigned to either the test group (20 patients) or control group (20 patients) and underwent lateral sinus floor elevation. Five months later, bone biopsy was harvested during the osteotomy preparation and collected (x20 from test group and x20 from control group).

Histological preparation and Histomorphometry Undecalcified tissue sections were prepared and then stained with 0.1% toluidine blue for light microscopy. Histomorphometric analysis assessed the percentage area fraction of mineralized bone, residual graft, and soft tissue components as well as graft particle osseointegration.

Result: Significantly greater bone volume was seen in regions proximal to resident bony walls regardless of the grafting material used. Significantly greater graft particle integration was also seen in regions proximal to resident bony walls regardless of the grafting material used. No significant differences in remaining parameters were noted when comparing test and control grafting materials.

Conclusion: Bio-Oss Collagen is a suitable grafting material for the purposes of maxillary sinus grafting in humans and animals. Also, proximity of bone grafting materials to resident bone walls had a greater positive impact on bone regenerative outcomes than the type of grafting material used.



193600

Immediately Placed and Restored Implants in the Maxillary Anterior Region

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Objective: This study evaluated the peri-implant tissue response following extraction and immediate placement and restoration of an implant in the maxillary aesthetic zone. Changes in the soft tissue dimensions were the primary treatment outcome that was investigated.

Method: Thirty patients (9 males, 21 females) with an age range of 20 – 78 years, with immediately placed and restored implants were included in the study. All participating patients underwent the same treatment strategy that involved removal of the failed tooth, flapless surgery, immediate implant placement, grafting of the implant-socket gap and connection of a screw-retained provisional restoration. An intact socket wall and primary stability $>30\text{Ncm}^{-1}$ was a pre-requisite for proceeding with the treatment protocol. Three months following implant placement, the temporary crowns were replaced by the definitive restorations. Radiographs and photographs were taken before implant placement (baseline) and at follow-up appointments to measure hard and soft tissue changes around implants. Jemt's papilla index was used to assess the papillary fill at follow-up appointments.

Result: All implants remained osseointegrated during the follow up period of 2-7 years (mean 49 ± 18 months). Changes in the mesial and the distal papilla were less than 0.5 mm. Mid-facial gingival recession was also limited; the mean scores being less than 0.7mm. Papilla index scores were also favourable with more than 50% of the mesial and distal papillae achieving a score of 3 for a complete papilla.

Conclusion: The study results suggest that, in addition to a favourable implant success rate and peri-implant bony response, the soft tissue levels around single immediately placed implants can also be maintained when proper three-dimensional implant positioning is achieved and bone is grafted into the implant-socket gap.

193624

Influence of Implant Topography and Chemistry on Osseointegration

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Objective: The aim of the investigation was to evaluate the effect of implant topography and chemistry on osseointegration in poor quality bone. The study also evaluated a novel ovine mandible model to simulate poor quality trabecular bone.





Method: 36 implants, consisting of two commercially pure (cp) titanium implants (Ti) with different topography (Sand-blasted Large-grit and Acid-etched (SLA) and SLA-modified surface (SLA-mod)) and one titanium-zirconia-alloy (Ti-Zr-alloy) implant with SLA-modified surface, were implanted bilaterally into the angle of the mandible of six sheep. The implants and surrounding tissue were collected at 2,5 and 10 weeks and was analyzed with micro-computed tomography (Micro-CT) analysis, histological/ histomorphometrical analysis and Scanning electron microscopy (SEM). Statistics analysis consisted of 2-way ANOVA ($P \leq 0.05$).

Result: The quantitative Bone-To-Implant contact (BIC) analysis (mean±standard deviation) of the central 4 threads of the implants at 2/5/10 weeks were as follows: cp-Ti SLA 19.02 ±16.68/ 45.43±381/ 49.58±5.88, cp-Ti SLA-mod 35.57±9.52/ 50.54±13.48/ 74.70±10.35, Ti-Zr-alloy SLA-mod 29.31±10.46/ 52.65±15.29/ 66.51±13.81. There were statistically significant increases in BIC for all surfaces between 2 and 10 weeks, however no statistically significant differences were found between BIC values for the different implant types at any time point. The trend however was for higher BIC values with SLA -mod surfaces for both the cp-Ti and Ti-Zr-alloy implants compared to cp-Ti SLA surface implants. The BIC results were supported by qualitative SEM and Micro-Ct assessment of new bone formation. Histological assessment indicated poor quality trabecular bone in the retro-molar region of the ovine mandible.

Conclusion: Our results show that the change in core material from cp-Ti to Ti-Zr-alloy had no effect on implant osseointegration in poor quality bone.

193437

Investigation of osteogenesis on modified titanium surfaces

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Objective: To investigate the osteogenic properties of surface modified titanium *in vitro* and *in vivo*.

Method: 3 different titanium surface modifications (6.25mm in diameter): machined (M), titanium oxide blasted (TOB, TiOBlast, Dentsply Implants), and titanium oxide blasted and etched with hydrofluoric acid (OSS, Osseospeed, Dentsply Implants) were used. Surfaces were examined under high power SEM and surface chemistry analysed with XPS. Osteogenesis was investigated *in vivo* in the mandible of 9 sheep. The sheep were sacrificed at 2, 5, and 10 weeks with an overdose of sodium-pentothal, and histomorphometric analysis was carried out. *In vitro* experiments were utilized to determine the molecular mechanisms promoting osteogenesis. PCR array and RT-PCR were used to interrogate the expression of major markers of Wnt pathway and osteoblast differentiation. Western blot and immunofluorescence were used to confirm the location and expression of β -catenin protein.





Result: SEM and XPS analysis demonstrated different surface characteristics between the three implant types. *In vivo* experiments showed new bone formation on the OSS surface as early as 2 weeks post healing, but not on TOB or machined surfaces. At 5 weeks the bone to implant contact (BIC) was $7.4\% \pm 2.8$ for M, $26\% \pm 3$ TOB and $52\% \pm 14$ for OSS; while at 10 weeks it was $18\% \pm 4.3$ for M, $25\% \pm 1.3$ for TOB and $70\% \pm 5.8$ for OSS. At both 5 and 10 weeks BIC was significantly higher for Osseospeed and Tioblast than machined surfaces. Expression of β -catenin and key osteoblast markers are detected in human mesenchymal stem cell (hMSC) cultured on modified titanium surfaces. β -catenin protein is also detected via immunofluorescence and western blot.

Conclusion: Osseospeed and TiObblast surfaces demonstrated superior osteogenesis when compared to machined surfaces *in vivo*. Expression of β -catenin suggests that it plays a role in the signalling events leading to the expression of osteoblast markers.

193639

Is an appropriate distance achieved between dental implants?

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Objectives: In the anterior, aesthetic zone, patients consider the aesthetic outcome of implants as an essential factor often priming over the functional factor. Implant positioning in relation to the mesio-distal dimensions of the alveolar ridge is a factor influencing the degree of bone remodelling following implant placement. This may in turn negatively influence the soft-tissue topography and the aesthetic outcome of the implant therapy, and compromise the implant longevity at later stages. Ideally, the distance between a tooth and an implant should be 1.5mm, and between two implants, 3mm.

Our aim was to evaluate the actual distance achieved between dental implants and adjacent teeth/implants in different areas of the mouth.

Methods: Data of dental implants conducted by experienced periodontists was retrieved. Utilizing computer-based software, the patient's OPG radiographs were used to measure the distances of implants in relation to adjacent teeth and to adjacent implants when present, and compared between different implant positions.

Results: Data was collected from 219 implants in 50 patients. These implants were evenly distributed between arches (114 maxillary, 105 mandibular) and were mainly positioned posteriorly (110 molars, 68 premolars, 41 incisors). The mean distance





between implants and teeth was 2.79 ± 1.7 mm while distance between implants was 4.18 ± 1.7 mm ($P < 0.001$). In the maxilla, the distances were closer to optimal than the mandible: maxillary distance between implants and teeth 2.22 ± 1.2 mm and between implants 3.99 ± 2.4 mm ($P < 0.001$), while In the mandible, the distance from teeth was 3.28 ± 1.9 mm and between implants 4.41 ± 2.1 mm ($P = 0.003$).

In the anterior area, implants were positioned closer to teeth (1.98 ± 0.9 mm) than in the pre-molar (3.05 ± 1.6 mm) and molar (4.97 ± 1.7 mm) regions ($P < 0.001$).

Conclusion: While implants inserted in the anterior area tend to be in ideal position to maintain aesthetic and longevity, posterior implants are placed more distant, which might affect implant long term survival.

193456

Regenerative Therapy For Peri-implantitis With Xenograft And Enamel Matrix Derivative

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Objective: Comparative biology of chronic and aggressive periodontitis vs. peri-implantitis notes there are similarities but also differences, particularly regarding the rapid progression of peri-implantitis when compared to periodontitis (Heitz-Mayfield L, Lang N 2010). This highlights the need for a surgical approach at its earlier stages of bone loss. However, experimental and clinical studies show no reliable regenerative treatment of peri-implantitis. The current study aimed to examine the regenerative capacity of xenograft and enamel matrix derivatives in the management of peri-implantitis clinically.

Method: Peri-implantitis found at 12 patients referred by dentists were treated. The patients were systemically healthy and non-smokers. The patients gave written consent to the treatment after explanation of the protocol. The measurements obtained were probing depths, recession and radiographic bone fill. The minimal probing depth requirement and initial bone loss were 4mm and 20%. The presence of gingival inflammation, bleeding on probing and suppuration were also noted. The implants were debrided using mild-ultrasonic power. The implant surfaces were decontaminated with a saline EDTA solution used in the enamel matrix derivative preparation. The defects were filled with the cocktail of materials. The materials used were Bio-Oss, Bio-Gide, Emdogain and doxycycline powder. The defects were covered with a resorbable membrane.

Result: An average probing depth reduction of 4 mm was noted on all the implants. There is no difference in the clinical parameters at 6 and 16 months. The average bone fill was 80%, with three cases having 90-100% bone fill. The clinical





symptoms of peri-implantitis such as gingival inflammation and bleeding on probing also improved.

Conclusion: The result of this regenerative treatment of peri-implantitis appears to be promising. More cases done in multi-center practices are needed to measure the predictability of this protocol.

193621

Surface Modification and Survival Rates of Posterior Maxillary Dental Implants

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Objective:

Maxillary posterior sites have traditionally demonstrated lower survival rates due to poor bone quality and quantity. Implants with rough surface have been developed to improve the rate and degree of osseointegration. The present systemic review aims to determine differences in the survival rates of machined and rough surface implants in the posterior maxilla.

Method: Multiple electronic data bases (MEDLINE, Web of Science, Scopus, and The Cochrane Central Register of Controlled trials) were searched from 1966 to April 2013 for articles reporting on the survival or success rates of maxillary implants. Screening of eligible studies was done according to the inclusion criteria in duplicate. Data extraction and analysis were completed.

Result: 3818 articles were identified, and the titles and abstracts were screened according to the inclusion criteria. 149 articles had the full text retrieved and screened. 4 articles reporting on the results of 811 machined titanium implants and 809 rough or micro rough implants were considered to be suitable for inclusion. The included implants had follow up periods ranging from 3 to 100 months, and the survival rates were 92.6% for machined surface implants and 96.4% for rough implants.

Conclusion: Rough surface implants appeared to show more favourable survival rate in posterior maxillary sites compared to machined surface implants.

193642

Systemic Review: Histomorphometry Of Biomaterials in Lateral Window Sinus Augmentation



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Objective: To systematically review the literature to compare the histomorphometric outcomes of various grafting materials used in lateral sinus augmentation in human. We tested the null hypothesis that the use of different bone substitute/grafts doesn't influence the histomorphometric or histological features of regenerated bone after maxillary sinus floor elevation in humans

Method: A comprehensive approach was adopted employing searching of electronic databases including the Cochrane Library, Pubmed, Scopus, OVID, EMBASE, ISI Web of Knowledge (MeSH headings and free text terms used). The time frame was from 1990 and final date for searching for studies was 16th April 2013. The inclusion criteria were: original articles in English, human studies, lateral window sinus graft only, studies with ≥ 10 sinuses, biopsies collected from implant osteotomy site, or an immediately neighboring site and histomorphometric analysis presented. The primary outcomes investigated were histomorphometric measurements of the regenerated bone, namely percentages of soft tissue, residual graft material and new bone.

Result: The initial search resulted in 797 articles. Titles and abstracts were screened according to the inclusion criteria. Full texts of 172 articles were retrieved and screened. Data extracted from 52 studies were included for analysis. Xenogenic grafts (of bovine origin), alone or their combination with autogenous bone were found to be the most documented bone substitute used with clinically and histologically predictable results. However, histomorphometric analysis of other classes of biomaterials used in lateral sinus augmentation resulted in a similar amount of new bone formation.

Conclusion: Predictable histological results of various bone substitutes in lateral window sinus floor augmentation suggest that contained space and good stabilization provided by the anatomy of the area are conducive to new bone formation regardless of graft type. Therefore the null hypothesis was accepted.

193545

The Emerging Roles of Osteocytes with Osseointegration

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Objective: Osteocytes, the most abundant cells in bone, have multiple functions including acting as mechanosensors and regulating mineralization. Recently, osteocytes have been found to play a commanding role in bone metabolism process — regulating the activities of both osteoblasts and osteoclasts and therefore urging the need for further research. Determining the relationship(s) between titanium implants and osteocytes may therefore benefit our understanding of the process of





osseointegration. The aim of this study was to observe the relationship between osteocytes and the titanium implant surface following osseointegration *in vivo*.

Method: Titanium implants were placed in the maxillary first molar area of eight female Sprague Dawley rats, aged 3 months old. The animals were sacrificed 8 weeks after implantation and undecalcified tissue sections were prepared. Resin-cast samples were subsequently acid-etched with 37% phosphoric acid prior to examination using scanning electron microscopy (SEM).

Result: Compared with mature bone where the osteocytes were arranged in an ordered fashion, the osteocytes appeared less organized in the newly formed bone around the titanium implant. Further, a layer of mineralization with less organic components was observed on the implant surface. This study has shown for the first time that osteocytes and their dendrites were directly connected with the implant surface.

Conclusion: This study shows the direct anchorage of osteocytes via dendritic processes to a titanium implant surface *in vivo*. This suggests an important regulatory role for osteocytes in maintaining long term osseointegration.

193643

Titanium Surface Modulates the Inflammatory Response During Osseous Healing

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Objective: The aim of the study was to characterise the early *in vivo* inflammatory cytokine response to modified titanium surfaces during osseous healing.

Method: Titanium discs with a large grit sandblasted and acid-etched microrough (SLA) or hydrophilic-modified SLA (modSLA) surface were used to cover critical-sized calvarial defects in female Sprague-Dawley rats. Samples of the exudate within the calvarial defect and beneath the titanium discs were collected for inflammatory cytokine (IL-1a, IL-1b, MCP-1, IL-10, IL-12p40, MIP-2, RANTES and TNFa) analysis 1, 4 and 7 days post-surgery. The phenotype of macrophages adherent to the titanium surfaces were determined by CD11c (M1) and CD163 (M2) immunofluorescent staining. Samples of the healing defect were also prepared for histological analysis.

Result: After one day of healing, high levels of all the inflammatory cytokines were observed. These levels fell by day 4, apart from MCP-1 which decreased only on the modSLA surface. The level of TNFa decreased on both surfaces, however the extent of the decrease was significantly ($p < 0.05$) more so on the modSLA surface. At day





7 of healing, the level of MCP-1 on the modSLA surface decreased further while the levels of this cytokine on the SLA surface were maintained at the levels seen at day 1 and 4. The levels of TNF α at day 7 on both surfaces were maintained at that seen at day 4. Compared to modSLA, more CD11c+ve (M1) macrophages were also seen on the SLA surface at days 4 and 7. These results correlate with increased new bone formation on the modSLA surface by day 7.

Conclusion: This study demonstrates that the modSLA titanium surface modulates the adherent macrophage phenotype, the secretion of the pro-inflammatory cytokines TNF α and MCP-1 and bone formation in the early stages of osseous wound healing.

193592

Personalising Orofacial Pain Assessment and Management

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Objective: Orofacial pain is common in the community with approximately 10% of the population seeking care for persistent pain. As health professionals, we manage acute pain very well. Pain which persists is not as well managed and consideration of the biopsychosocial context is essential. Much of the management for persistent pain is non-specific, targeting the consequences including emotional impairment and pain related disability.

Method: Recent research has focused on developing valid and reliable diagnostic criteria for orofacial pain conditions and exploring their neurophysiological aspects. Recently, valid and reliable diagnostic criteria for the more common temporomandibular disorders have been established and an expanded taxonomy for these disorders has been developed. This provides opportunities to clearly identify specific conditions which will allow the assessment of individualised management strategies.

Result: Brain changes associated with persistent orofacial pain have been explored and demonstrate unique changes associated with different pain conditions. For neuropathic pain, this research suggests there is this dysfunction within the thalamocortical pathway. This research provides opportunities to target central nervous system changes in such specific pain conditions.

Conclusion: The impact of pain on motor function is complex and related to a number of factors including pain location, intensity and duration; and level of catastrophic thinking and depression. Identifying an individual patient's "biopsychosocial" pain profile will enable directing strategies more directly in a personalised approach to management.



193433

***In vitro* Polymicrobial Biofilm Model of Dental Caries**

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Objective: The aim of this study was to develop an *in vitro* polymicrobial biofilm model of dental caries.

Method: A six-species supragingival plaque community model composed of *Actinomyces naeslundii*, *Fusobacterium nucleatum*, *Lactobacillus casei*, *Streptococcus mutans*, *Streptococcus sanguinis* and *Veillonella parvula* was cultured in a constant depth film fermenter (CDFF). The CDFF consisted of a rotating turntable containing 15 removable polytetrafluoroethylene pans, each holding three enamel plugs as substrata for the biofilm. The CDFF was maintained at 37°C under anaerobic conditions and fed with Artificial Saliva Medium (ASM) at a flow rate of 30 mL/h. In order to mimic *in vivo* oral conditions with food intake and carbohydrate challenge, 1% (w/v) sucrose solution in ASM was pumped into the CDFF four times daily at four hourly intervals. Sampling was carried out on Days 6, 12 and 19 after inoculation. Bacterial biofilm species composition was determined by 16S rDNA genomic sequencing. Lesion development and mineral content of enamel substratum was determined after sectioning using transverse microradiography.

Result: Polymicrobial biofilms established rapidly on the enamel substrata. 16S rDNA sequencing analysis showed that by Day 19, four of the six bacterial species had abundances above 10% of the total bacteria. The proportion of *A. naeslundii* increased from < 1% to > 20% over the 19 days. *L. casei* doubled from 2% (Day 6) to 4% (Day 19). *S. sanguinis* decreased from 49% (Day 6) to 15% (Day 19). Enamel lesion depth increased from 15 ± 5 µm at Day 6 to 81 ± 9 µm at Day 19.

Conclusion: We have developed a robust *in vitro* model where a polymicrobial biofilm initiates subsurface enamel demineralization in a reproducible manner. This six-species polymicrobial biofilm model will be useful for screening of novel anti-cariogenic compounds.

193463

***In Vitro* Effect Of An Antimicrobial Peptide Against Mono-species Biofilms**

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Objective: To determine if an antimicrobial peptide has antimicrobial activity against dentine biofilms of common endodontic pathogens.





Method: The strains *Enterococcus faecalis* JH2-2, *Streptococcus gordonii* DL1 and *Streptococcus mutans* NG8 were grown from glycerol stocks in closed tubes containing Todd Hewitt Broth (THB) for 24 hours. Mono-species biofilms were grown in 96-well microtitre plates for 72 hours before exposure to antimicrobial agents. Dilution series of the synthetic antimicrobial peptide BM2 (D-NH₂-RRRFWWFRRR-CONH₂) and the widely-used endodontic disinfectants sodium hypochlorite (NaOCl) and saturated calcium hydroxide (Ca(OH)₂) were prepared as aqueous solutions. The efficacy of BM2, NaOCl and Ca(OH)₂ at causing biofilm disruption was measured using a crystal violet assay after 24, 48 and 72 h exposure. More clinically relevant biofilms formed on sterile root canal surfaces was exposed to BM2, NaOCl and Ca(OH)₂, stained using a LIVE/DEAD assay™ kit and visualized using confocal laser scanning microscopy (CLSM).

Result: Both the crystal violet assay and CLSM showed BM2 had antimicrobial activity against all microorganisms tested. BM2 at 40µg/mL was as effective as NaOCl (1%) and saturated Ca(OH)₂ against *S. gordonii* and *S. mutans* (P < 0.05). After 72 h mean biofilm mass was reduced ≥75% and the remaining cells mass was ≤50% viable. BM2 at 40µg/mL showed antimicrobial activity similar to 0.25% NaOCl and saturated Ca(OH)₂ in disrupting the *E. faecalis* biofilm.

Conclusion: BM2 at 40µg/mL showed robust antimicrobial activity against biofilms of major endodontic pathogens comparable to current endodontic disinfectants. BM2 should be further investigated as an alternative antimicrobial agent in endodontic treatment.

193570

Co-aggregation: Interaction of *Candida albicans*, *Actinomyces naeslundii* and *Streptococcus mutans*

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Introduction: Microbial interactions have been found to be associated with the development of oral biofilms. Inter-kingdom co-aggregation within biofilms may be important in enhancing adherence, altering epithelial cytokines, which may ultimately be involved in carcinogenesis.

Objective: Our aim was to determine co-aggregation of *C. albicans* (CA), *A. naeslundii* (AN), and *S. mutans* (SM).

Methods: Four *C. albicans* ATCC strains (32354, MYA-2876, 90234, and 18804), two HIV isolates (genotype-A and genotype-B), 2 oral cancer isolates (OC1 and OC2), *A. naeslundii* (NCTC 10301) and *S. mutans* (Ingbritt) were used in this study. In-auto-aggregation assay, *C. albicans* was grown in RPMI-1640 and artificial saliva medium





(ASM) to produce hyphae and yeast forms respectively, whereas bacteria were grown in BHI. *C. albicans*, *A. naeslundii* and *S. mutans* were standardised to give 10^6 cells/mL, 10^7 cells/mL and 10^8 cells/mL respectively, in co-aggregation buffer followed by a 1h incubation at 25°C. The absorbance difference (Δ Abs) between 0h and 1h was recorded. To study co-aggregation, the same protocol was repeated, except combinations of microorganisms were inoculated in the same vial.

Results: The mean Δ Abs percentage of *C. albicans* was significantly higher in ASM than RPMI-1640. The mean Δ Abs percentage of CA-AN, CA-SM and CA-AN-SM was 25.6%, 23.2% and 42.1% lower than *C. albicans* alone, respectively, in RPMI-1640, whereas in ASM, only CA-AN had a lower Δ Abs percentage by 15.3%. CA-SM and CA-AN-SM in ASM increased Δ Abs percentage by 6.5% and 23.6%, respectively.

Conclusion: This study demonstrates that inter-kingdom aggregation of *C. albicans*, *A. naeslundii* and *S. mutans* is dependent on the morphological form of *C. albicans*. Co-aggregation occurs much more in the yeast than the hyphal form, which may have a relevance to the development of oral biofilms and ultimately oral carcinogenesis.

193436

Effect of Oxantel on Oral Bacterial Synergistic Polymicrobial Biofilm Formation

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Porphyromonas gingivalis, *Treponema denticola* and *Tannerella forsythia* exist in a polymicrobial biofilm strongly associated with chronic periodontitis disease progression. These species rely on complex anaerobic respiration of amino acids and synergistic interactions to proliferate. The anthelmintic drug Oxantel has previously been shown to inhibit fumarate reductase (Frd) activity in some bacteria and inhibit *P. gingivalis* homotypic biofilm formation.

Objectives: To determine synergistic interactions and polymicrobial biofilm formation by these bacteria and determine the effect of Oxantel.

Methods: To determine homotypic and polymicrobial biofilm formation flow cell and static systems were employed. The biofilms were imaged by confocal scanning laser microscopy and SEM. Bacterial interactions were determined using a range of transcriptomic, metabolomics and proteome approaches on co-cultured bacteria.

Results: *P. gingivalis* and *T. denticola* responded metabolically to each other by altering gene transcription which resulted in synergistic growth. *T. denticola* gene products of the glycine catabolic pathways were significantly up-regulated during co-culture with *P. gingivalis*. *T. denticola* rapidly metabolized this amino acid and free glycine production by *P. gingivalis* was stimulated by *T. denticola*. In a flow cell all three species attached and grew synergistically as a polymicrobial biofilm. Oxantel





directly inhibited *P. gingivalis* Frd activity and planktonic growth of *P. gingivalis* and *T. forsythia*, but had no effect on *T. denticola*. Oxantel disrupted the development of polymicrobial biofilms composed of *P. gingivalis*, *T. forsythia* and *T. denticola* in a concentration dependent manner. In these biofilms all three species were inhibited to a similar degree demonstrating dependence of *T. denticola* on the other species. In a murine alveolar bone loss model of periodontitis Oxantel addition to the drinking water of *P. gingivalis*-infected mice eliminated bone loss.

Conclusion: Oxantel disrupts pathogenic polymicrobial biofilm formation and have efficacy in the treatment of chronic periodontitis.

193400

Erg11p Structure in Triazole Resistant and Susceptible Yeast Strains

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The monospanning membrane protein lanosterol 14 α -demethylase (Erg11p) catalyses the rate limiting step of ergosterol biosynthesis in fungi and is the target of triazole drugs. Inhibition of Erg11p depletes cell membranes of ergosterol, inhibiting fungal growth. Resistance to triazoles can arise due to mutations in Erg11p that reduce the binding affinity of the drug.

Objective: This project aimed to understand how mutations in Erg11p affect the binding of triazoles.

Methods: Mutations Y140F and G73E were introduced into *S. cerevisiae* Erg11p6 \times His (ScErg11p) overexpressed from the *PDR5* locus of yeast strain AD2 Δ . The endogenous *ERG11* was deleted. ScErg11p was solubilised with N-decyl- β -D-maltoside and purified by Ni-NTA affinity chromatography and size exclusion chromatography using a Superdex 200TM column.

Results: X-ray structures of ScErg11p Y140F and G73E mutants in complex with itraconazole (ITC) and wild type ScErg11p and the Y140F mutant in complex with fluconazole (FLC) were determined. The *Candida albicans* Erg11p Y132F mutation in clinical isolates and the equivalent Y140F mutation in ScErg11p conferred resistance to FLC. The *Aspergillus fumigatus* Erg11p G54E mutation gives resistance to long-tailed triazoles. Paradoxically the equivalent G73E mutation in ScErg11p gave increased susceptibility to all triazoles tested.

Conclusions: The bent conformation of ITC in the ScErg11p G73E mutant structure allowed interaction between the tail of the drug and the E73 carboxylate. This may explain increased susceptibility to ITC. The ScErg11p Y140F structure revealed normal binding to ITC, with the introduction of a water molecule at the mutation site. The wild type FLC structure showed polar interactions of a water with Y140, FLC and the carboxylate groups of the heme. The disruption or weakening of interactions between the drug and the enzyme may explain FLC resistance in the



Y140F mutant. This study was supported by grants from the Marsden Fund and the HRCNZ.

193573

TLRs and Oral Microflora in Rat Mucositis: Cell Culture Model

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Mucositis is a common side-effect of cytotoxic cancer therapy, affecting both oral and gastrointestinal mucosa. Clinical consequences range from mild discomfort to severe pain and debilitation, frequently necessitating higher levels of supportive care. Toll-Like Receptors (TLRs) are immune system activators, and are thought to play a role in the initiation and ulceration phases of mucositis.

Objectives: To investigate:

1. Expression of TLRs in chemotherapy-induced mucositis
2. The role of oral microflora in TLR expression

Methods: Non-transformed rat intestinal epithelial cells (IEC-6) were seeded into two 12-well culture plates and incubated until confluent. Transwell® permeable membrane inserts were suspended over each well. Saliva samples (healthy patient) in BHI broth were added to the inserts, and SN-38 (irinotecan active metabolite) was added to the wells, in the following configurations for each plate:

- 3 wells with saliva sample and SN-38
- 3 wells with saliva sample, but no SN-38
- 3 wells with SN-38, but no saliva sample
- 3 double negative controls

Cells were incubated for 24 or 48hrs (37°C, 5% CO₂) prior to harvesting. Samples were prepared and SYBR-Green based RT-PCR testing was performed. Pfaffl's model for relative quantification was used. Results were subjected to two-way ANOVA and Tukey's multiple comparison tests.

Results: At 48hrs, there was significantly greater expression of TLR4 in samples with salivary microbes compared to their microbe-free counterparts, in both the SN-38 negative and positive groups (95% CI, $p < 0.05$). The presence of SN-38 did not result in significantly different TLR4 expression.

At the 24hr timepoint, differential expression of TLR4 between groups did not reach significance.



Conclusions: Preliminary results suggest that the presence of microbes is more influential in TLR4 expression than irinotecan. Testing of TLRs 2, 5, and 9 is yet to be finalised.

193423

Mineral Analysis of Rat Enamel after Sugary Drinks Consumption: EDX-Study

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Objectives: To investigate the effect of the consumption of different sugary drinks on the mineral element content of rat molar enamel using an energy-dispersive X-ray (EDX) system.

Methods: One hundred Sprague-Dawley rats were divided randomly into 3 experimental groups (flavored milk, carbonated drink and fruit drink) which were further subdivided into 3 subgroups; 10 rats/subgroup. Rats were offered one of the following drinks ad libitum: chocolate milk, strawberry milk, banana milk, cola carbonated drink, citrus carbonated drink, orange carbonated drink, apple fruit drink, orange fruit drink, and mango fruit drink. In addition, 10 rats were offered distilled water to serve as a control group. By the end of the experiment; rats were scarified and the right mandibles were removed and defleshed. Three hundred molar teeth were available for analysis. Mineral element contents (Na, Mg, P, Ca, Cl, K and Ca/P) of the enamel for all the lower right molars were analyzed using energy-dispersive X-rays (EDX). Data were analyzed using ANOVA and Tukey test.

Results: Among the experimental groups, enamel of the rats that consumed flavored milk contained more Ca, less P and had a higher Ca/P ratio than the rats consumed carbonated drinks and fruit drinks with significant differences. However, within the experimental subgroups, Ca and Ca/P ratio were found to be higher in the enamel of the rats consuming strawberry milk with significant difference to all other subgroups.

Conclusion: Consumption of different sugary drinks might affect and alter the mineral element content of the teeth enamel.

193598

The Dentine Matrix Also Contains Fibromoduline and Collagen Type VI

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Objective: Collagen type-I, non-collagenous proteins and proteoglycans compose a three-dimensional network forming the dentine organic matrix. Although the presence of collagen type-I and proteoglycans such as decorin, biglycan and lumican have been extensively studied in the dentine literature, fibromodulin and collagen type-VI have been poorly characterized. The objective of this work, therefore, was to determine the presence and immunolocalization of fibromodulin and collagen type-VI in permanent healthy human dentine.

Method: Extracted 3rd molars (N=8) were placed in 10% formalin solution for 48h, stored in 70% (v/v) ethanol solution and demineralized with formic acid (10 vol%) for 7 days. Teeth were sectioned in 5µm slices and mounted onto glass slides. Samples were either stained with toluidine blue, for unspecific glycosaminoglycan visualization, or immunolocalized using antibodies specific for fibromodulin, biglycan, lumican, collagen type-I and -VI. Images of coronal and radicular dentine were obtained at 16x and 200x magnification for each specimen.

Result: In low magnification, fibromodulin and collagen VI were stained in the mid-coronal regions of dentine, showing similar distribution to lumican and biglycan, despite the lower staining intensity. In contrast, toluidine blue staining was sharply concentrated in the circumpulpal region, possibly indicating the presence of chondroitin sulphate rich decorin in these locations. Collagen type I had homogenous distribution throughout the tissue. Interestingly, regions where toluidine blue staining intensity was lower matched precisely regions where PG immunostaining intensity was higher.

Conclusion: In summary, our results suggest that, although in lower concentration, fibromodulin and collagen VI also compose the organic dentine matrix. Furthermore, images suggest a novel and specific pattern of distribution of individual PGs and collagen type VI in human dentine.

193439

The Erosive Potential of Commonly Consumed Pre-mixed Alcoholic Beverages

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Objective: The aim of the study was to determine the erosive effects of pre-mixed alcoholic beverages on extracted human teeth.

Method: Beverages were tested for their individual pH. Net weight loss was recorded following a 24-hour incubation period. Clinical effects were also determined by scanning electron microscopy





Result: The results demonstrate that pre-mixed alcoholic beverages possess pH's below the critical pH of 5.5 and possess the ability to cause erosion. Gordon's Gin and Schweppes Indian Tonic Water, Vodka Cruiser Mixed Berry Sugar Free, and Elevate Alcoholic Soda with Guarana had pHs of 2.2, 3.2 and 3.6 respectively. All samples showed a significant decrease in net loss of tooth structure. The greatest reduction was seen in specimens incubated in Gordon's Gin (4.71%), followed by Vodka Cruise (3.55%) and Elevate (1.13%). Scanning electron microscopy showed that Gordon's Gin and Vodka Cruiser showed similar etching patterns with numerous large porosities whereas Elevate showed small multiple porosities.

Conclusion: This study demonstrates that commonly consumed pre-mixed alcoholic beverages possess low pHs and the ability to cause dental erosion.

193646

Angiogenesis-Mediated Neurogenesis in Human Dental Pulp

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Objective: Odontoblasts show a gene expression profile analogous to neurons in addition to functional similarities. Dental caries triggers neurogenesis in human peripheral dental pulp. The objective of present study is to investigate origin of odontoblast-like cells *in situ* in reactionary dentinogenesis following carious insult.

Method: Carious and non-carious human teeth were obtained with consent of patients. Teeth were subsequently split, fixed in 2% paraformaldehyde, demineralized with 10% EDTA, and embedded in OCT freezing medium. Samples were cryosectioned (12 μ m) and prepared for immunohistochemistry. Tissue sections were incubated with primary antibodies (IgG, collagen IV, PDGFR β , ki-67, NeuN, DCX, DMP-1, Tubulin β 3, GFAP) and secondary antibodies (Goat anti-mouse and anti-rabbit, Alexa 488 and 594 conjugated) sequentially and examined using fluorescent microscope.

Result: Over-expression of PDGFR β , ki-67, NeuN, DCX, GFAP was observed in the odontoblastic cell layer of carious samples, where differentiating cell clusters were noted. The same markers were observed in reactive pericytes of the remodelling microvasculature, migrating towards the odontoblastic layer. These pericytes initially expressed PDGFR β without neuronal markers. In the odontoblastic layer, the expression of neuron-specific markers including NeuN, DCX, GFAP was noteworthy.

Conclusion: Carious insult triggers angiogenesis in human dental pulp and promotes the expression of neuron-specific markers demonstrating a reprogramming cascade that allows differentiation and proliferation of odontoblast-like cells from pericytes to replace the odontoblasts.



193725

Endocultivation - from bench to bedside

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Objective: In recent decade the main improvements in the field of tissue engineering have been highlighted within the areas of stem cell reprogramming for gaining ethically acceptable access to pluripotent stem cells and probably by further advancement of functional biomaterials. But have we really satisfied the high promises for clinical applications set by tissue engineers and stem cell scientists yet?

There are still major challenges to be overcome for engineering large tissue constructs ready for implantation into the human body. These challenges might be biological, ethical or may relate to requirements for Good Manufacturing Practices. At the end of the day the clinical feasibility of any procedure or material will determine if any regenerative medical practitioner will use such technology.

Method: This presentation will revisit the core aspects and bottlenecks of tissue engineering and show cases where a translation into clinical practice has been successful in an area of in vivo bone tissue engineering (ENDOCULTIVATION).

Result: Tissue engineering of complex structures has entered clinical practices but still remains experimental in various aspects.

Conclusion: Further research is mandatory to improve tissue engineering protocols to align with clinical requirements.

193454

Panoramic Radiographic study of Mental Foramen in South Indian population

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Objective: This study aimed at documenting information on appearance, size, horizontal and vertical locations of Mental Foramen (MF) in Panoramic Radiograph. We also analyzed the age and gender differences with radiographic appearance and location of MF. Since the appearance and location varies with geographical location, this study was done to evaluate these findings in our population and co-relate with the results of previous studies.

Method: 662 panoramic radiographs were evaluated, out of which 245 fulfilled the inclusion criteria. Each radiograph was traced to record the horizontal and vertical locations. The size of MF was recorded using digital Vernier caliper and its





appearance was determined by visual examination. Chi-square and t-test were employed.

Result: The most common appearance of MF was continuous type and the tests showed significant difference with age and gender. The most frequent horizontal location of MF was "location c" with no statistical significant difference with age and gender. The MF was most commonly positioned mesially in relation to the apex of respective second premolar with no significant differences with gender. Our study indicated that the vertical location of the foramen varied drastically with no statistical significant difference in both the sides. The difference in dimensions on the left and right sides were not statistically significant. Our results supported few (not all) previous studies which clearly indicated that MF has variation in different populations.

Conclusion: Determining the morphological appearance and positional variation of MF is important for isolation of mental nerves and vessels when administering local anesthesia and performing periapical surgeries. We therefore stress the importance of thorough radiographic interpretation before administration of local anesthesia or conducting any surgery of mandible in the vicinity of mental foramen. Our research findings can be used as reference material by the dental practitioners while performing clinical procedures that involve MF.

193398

Quality and Readability of Online Information concerning Wisdom Tooth Problems

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Background: Providing guidance about the quality and accessibility of online patient information for people suffering from wisdom teeth problems is not only medically and legally important, but could also enable better engagement in shared clinical decision-making.

Objectives: (1) to conduct quality and readability assessments for online information concerning wisdom teeth problems; (2) to validate a readability software (Readability Studio Professional 2012) in measuring information comprehension and (3) to explore predictors for the scientific information quality (SIQ scale that assesses the scientific information quality of treatment options, risks/benefits and other information aspects).





Methods: A cross-sectional sample of websites was retrieved via Internet searches for “wisdom tooth removal”, “wisdom tooth extraction”, or “impacted wisdom tooth problems” using Google, Yahoo and Bing search engines. The first 50 websites of each engine output were considered in the study. After filtering websites, the retained websites were evaluated using a standard set of items to assess their characteristics, usability, accessibility, trust, readability, SIQ, health information credibility tools (DISCERN, HoNCode), and an open comment section.

Results : A total of 50 websites were retained for final evaluation. Websites’ mean sub-scale scores varied significantly across website affiliation groups such as governmental, commercial, and treatment provider bodies. The SIQ scale had a good internal consistency ($\alpha=0.85$) and was significantly correlated with DISCERN ($r=0.82$, $p<0.01$) and HoNCode ($r=0.38$, $p<0.01$). Less than 25% of websites had SIQ scores above 75%. The mean readability grade=10.3 (SD=1.9) was above the level recommended by health authorities. The mean readability grade was significantly correlated with scientific information comprehension scale ($r=0.45$, $p<0.01$) which provides evidence for convergent validity. Website affiliation explained more than 90% of SIQ variance.

Conclusion: Readability Studio Professional is a valid readability software application for assessing health websites comprehensibility. Website affiliation, DISCERN and HoNCode significantly predicted SIQ.

193719

Dental Financing Methods for Frontline Hotel Employees in Suva, Fiji

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Background information: Tourism industry in Fiji has become the platform for growth and development. Oral health plays a key role since employees are required to present themselves well to the visitors. Frontline employees are a critical group in the competitive tourism market. By enabling access to preventive and restorative dental care, the oral health and the smile of these employees can be improved.

Objective: The primary aim of this study was to establish how front line hotel employees pay for dental consultations or treatment.

Method: Hotels in the Suva area were categorized according to star rating. The study type used was descriptive in which the dependent variable was methods of dental financing and Independent variables included gender and ethnicity. The tool used for data collection was questionnaire survey (n = 100) on hotel employees reporting findings. Descriptive statistics were used.





Result: The type of funding method for dental services amongst hotel employees is mostly out-of-pocket. In Fiji, a dental fee that is charged in public hospitals is heavily subsidized by the Government. In 2011, the dental fees had risen tremendously leading to problems in accessing care. However, in 2012 the fees reduced by almost 35% which allowed for an increase in people accessing dental care to about 85%.

Conclusion: With the single source of dental financing being out-of-pocket, there is a need for further evaluation and collaboration between the Government of Fiji and Tourism stakeholders in assisting people for better oral health care.

193664

Frames of reference underpinning Indigenous adults self-rated oral health

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Objectives: This study aimed to quantify differences between self-rated general health and self-rated oral health amongst Indigenous Australian adults and to quantify differences between Indigenous self-rated general health and self-rated oral health compared to the general Australian population.

Methods: Data were from four studies involving Indigenous Australian adults and one national study. The national study was further separated into indigenous and non indigenous respondents. Studies had sample sizes of n=468, 446, 289, 317, 15414 and 229 respectively. Self-rated oral health and self-rated general health were both dichotomised into excellent/very good/good and fair/poor respectively. Cross-tabulations were conducted to produce prevalence's and 95% CI of the outcome variables. Missing data was not included in the analysis.

Results: In the first Indigenous study 63% reported excellent/very good/good oral health and 73.5% reported excellent/very good/good general health. In the second study 45.8% reported excellent/very good/good oral health and 89.6% reported excellent/very good/good general health. In the third study 54.9% reported excellent/very good/good oral health and 75.7% reported excellent/very good/good general health. In the final study 47.9% reported excellent/very good/good oral health and 74.4% reported excellent/very good/good general health.

In the general population study 82.4% reported their oral health as excellent/very good/good, 87.7% reported their general health as excellent/very good/good. When Indigenous respondents were analysed, 72.8% reported their oral health as excellent/very good/good and 85.6% reported their general health as excellent/very good/good.

Conclusion: Generally it appears that within Indigenous samples a higher proportion of respondents are reporting high general health than those reporting





high oral health. In the general population study it is more equal. When Indigenous respondents are separately analysed the same trend appears as in the other Indigenous samples. A lower percentage of Indigenous respondents rate their oral health and in most cases their general health highly compare to the general population.

193426

Oral Health Status: Special Needs Children Centre, Tarawa, Kiribati

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Objective: The purpose of this study was to establish the oral health status, which include caries, and periodontal status of special needs children in the only School and Centre for Special Needs, Tarawa, Kiribati.

Method: A cross-sectional descriptive study was done with clinical screening of the sample group under natural light with a mirror and a probe using the WHO criteria. Participants included all 109 students enrolled with the School and Centre for Special Needs in Tarawa, Kiribati with an age range of 6-33 years.

Result: The total number of students screened who attended school on the day of screening was 57 out of 109, i.e. about 50% of enrolled students. The average dmft/DMFT score was 4 and sic index of 9, the major contributor to the dmft is the d component. The CPI score 2 and above was almost 70% with CPI -2 of 50% having calculus, CPI- 3 and 4 of 16% having pocketing 4mm and above.

Conclusion: The oral health status of the students of the School and Centre for Special Needs in terms of DMFT/dmft and CPI is very poor and in great need of intervention schemes.

193421

The Burden Of OSCC in Rural Sri Lankan Region

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Objectives: Sri Lanka is a developing middle income country with a dominant public health care delivery model. However, oral cancer is an important public health problem in the country. The Uva Province is predominantly rural and remote, socioeconomically disadvantaged region in the country with a high oral cancer burden. This study aims to describe the burden of oral cancer in this region, to describe socio-demographic attributes, to illustrate disparities that compound the burden of oral cancer,



Methods: The patient-statistics were collected for the year 2013 and Jan-March 2014 from the Oral & Maxillo-Facial Unit of the main public hospital. The socioeconomic data were accessed from the National Census of Population and Housing 2011 and poverty statistics issued by the Department of Census and Statistics Sri Lanka. Descriptive statistics used. These findings highlight the population specific demographic pattern; topography influenced particular risk factors for oral cancer as applied to Sri Lankan context.

Results: A total of 178 oral cancer cases reported. The majority 79.2% was Sinhalese, 19.1% was Tamil and the rest was Muslim. Males dominated the affected cases (78.1%) and three age groups dominated, 60-69 years (32%), 50-59 years: (25.3%) and 70-79 years (24.2%) followed by 30-49 years (16.7%). The buccal mucosa was the most common sub-site affected 40.5% followed by tongue 14%. The overwhelming majority consisted of well differentiated squamous cell carcinomas (60.1%) and moderately differentiated squamous cell carcinomas (8.4%). Social disadvantage disparities were evident in the region.

Conclusions: There is a high burden of oral cancer in the Uva Province of Sri Lanka with socioeconomic disadvantage leading to disparities which need to be considered in finding solutions.

193711

The Politics of Water Fluoridation in Queensland

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Objective:

This study provides a qualitative analysis of state and local government political decision making on water fluoridation in Queensland over recent years.

Method:

The author describes political considerations associated with decisions on water fluoridation by state and local governments in Queensland, and the public health ramifications of those decisions.

Result:

Most Australian states and territories introduced widespread water fluoridation in the 1960s and 70s. Queensland was the exception. Legislation that labelled fluoridation a local government issue rather than a health issue ensured that by 2007 less than 5% of Queensland's population had access to water fluoridation. In 2008 the Bligh government mandated fluoridation in all towns and cities with populations >1,000 people, and commenced a massive fluoridation roll-out across the state. However, in 2012, the incoming Newman government amended this legislation and removed





the mandatory element. Once again, fluoridation decision making was in the hands of local councils, who were instructed to make their decision "in the best interests of the community". Eighteen Queensland councils, including those of many major regional cities, have since decided to cease or not commence water fluoridation. A wide variety of reasons have been cited.

Conclusion:

Recent research in Queensland confirms the effectiveness of water fluoridation, and recent history reinforces the need for fluoridation decision making to reside at state or federal level where the greatest public health expertise lies.

193403

Role Of Substance P in Adhesion/Metastasis of Oral Cancer

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Objective: Metastasis is the leading cause of fatality in 90 % of cancer and approximately 60 % of patients will have metastasis at initial diagnosis. Furthermore, early detection of several types of cancer meant longer survival periods for patients and consequently higher incidence of recurrence. Understanding the mechanisms of metastasis, in particular extravastation and adhesion as rate limiting steps, will help in developing novel treatments and therefore improve outcome of cancer. We hypothesized that cancer utilizes the same method of leukocytes extravastation in the inflammation to disseminate to distant organ through substance P.

Method:

- 1- To examine the expression of binding legends of endothelial adhesion molecules in different oral cell lines and determine the effect of SP on this adhesion, using Immunocytochemistry.
- 2- To examine the adhesion of different oral cell lines to endothelial cells and determine the effect of SP on this adhesion.
- 3- To examine the effect of SP on the release of MMP in oral cell lines.
- 4- To develop *in vivo* 3D tumour/endothelial cell adhesion model.

Result: Treatment of oral cancer cell lines with 10µg of substance P for 30 minutes significantly increased staining for VLA-4 integrin both in the number of subjects and intensity. Whereas the treatment for 10 minutes increased the expression but it was not significant. Further confirmation of the results is being done with adhesion assay. Experiments were all done in duplicates and repeated with proper positive and negative ISO controls.

Conclusion: detecting the expression of endothelial adhesion molecules binding legends and the effect of substance P on this expression will provide an insight into the mechanism of oral cancer metastasis. The results can be integrated to develop





an *in vivo* 3D tumour/endothelial cell adhesion model which can be ultimately provide the basis to develop a novel anti-metastatic therapy.

193425

Oral Mucosal Pathology Detection: a Check-up of Australian Dentists

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Objective: Oral squamous cell carcinomas and oral potentially malignant disorders can be detected early by visually inspecting the oral soft tissues. This study aimed to determine Australian dentists' opinions and practices regarding oral mucosal screening, referral and oral cancer prevention.

Method: Nine hundred and ninety nine randomly selected general dentists were mailed a questionnaire. The questionnaire queried practitioners' opinions and perceptions of oral mucosal screening and referral practices and their beliefs regarding detection and prevention of oral cancer.

Result: A total of n=640 individuals responded, yielding a response rate of 70.2%. Data were analysed using chi square tests. Most Australian dentists routinely perform oral mucosal screening. Dentists who had graduated less than 10 years ago were more likely to target screening (49.4%) than those who had graduated more than 10 years ago (37.6%) ($p < 0.05$). Lack of training, confidence, time and financial incentives were seen as barriers to performing mucosal screening to at least some degree by participants in this study. Lack of training was perceived as the most prevalent barrier to oral mucosal screening by 44.2% of participants. Most dentists manage referrals for oral mucosal pathology appropriately, and most believe in following up with referred patients (89.0%). Most participants referred solely to a specialist in either oral medicine, oral pathology or oral surgery (77.7%), while others reported that they referred to a variety of specialists (21.3%). Most participants felt that they should deliver smoking cessation advice to patients (69.4%), yet only about half of participants believed that they could influence a patient to quit smoking (56.7%).

Conclusion: Australian dentists place importance on oral mucosal screening. Changes to dental education and training could be made to further improve confidence and ability of dentists in detecting and referring oral mucosal pathology.

193430

Molecular, pathological and autofluorescence characteristics of oral mucosal lesions





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Objective: Direct tissue autofluorescence can be detected to identify potentially malignant disorders of the oral mucosa at an early stage. Loss of autofluorescence (LAF) has been reported to be associated with dysplasia and OSCC conditions. This study utilised whole transcriptome analysis of archived oral mucosal biopsy specimens to determine differential gene expression profiles and their relation to autofluorescence characteristics of oral mucosal lesions.

Method: Frozen tissue samples from archival material were correlated with clinical data regarding VELscope fluorescence characteristics. Total RNA was extracted and relative gene expression was then assessed using Next Generation Sequencing (NGS). Moreover, relative expression of deregulated genes was confirmed using RT-qPCR.

Result: Forty-five samples were retrieved from biopsies performed between February 2008 and June 2013. These included 5 cases of oral squamous cell carcinoma with LAF; 11 cases of oral lichen planus (5 LAF with no blanching, 5 LAF with partial/complete blanching, 1 with no LAF); 15 cases of oral epithelial dysplasia (5 LAF with no blanching, 5 LAF complete/partial blanching, 5 no LAF) and 15 cases of benign keratosis/hyperplasia (5 LAF with no blanching, 5 LAF complete/partial blanching, 5 no LAF).

Conclusion: Assessment of relative gene expression profiles using NGS is a novel approach to identify molecular pathways which contribute to different phenotypes of the same disease process, and similar phenotypes of different disease processes. Therefore, this study provides insight into the association of the altered level of gene expression of oral mucosa conditions and their autofluorescence ability.

193431

Tissue Autofluorescence and Reflectance for evaluating Indigenous Oral Mucosal Disease

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Objective: To document the oral mucosal burden in an urban Indigenous community and to evaluate the efficacy of an adjunctive optical device (Identafi™) in a general dental practice.

Methods: Three hundred and forty-two patients who presented to an urban Aboriginal and Torres Strait Islander Community Health Service (ATSICHS) were examined using conventional oral examination (COE) and with a multispectral device (Identafi™). Loss of autofluorescence (LAF), and the visibility of diffuse vasculature were noted.





Results: The urban Indigenous community assessed did not display significantly higher rates of smoking, alcohol consumption or lesion prevalence compared to non-Indigenous counterparts. The white and violet light functions of Identafi™ provided excellent lesion visibility in 84.5% and 77.9% of cases respectively compared to 75% with COE, and were capable of highlighting new lesions not seen during COE.

Conclusions: The urban Indigenous community does not appear to display a significantly higher prevalence of risk factors such as smoking and alcohol consumption compared to their non-Indigenous counterparts living in the same region, nor are they more likely to have oral mucosal lesions. The incidence of intra-oral pigmentation has the potential to complicate use of autofluorescence screening devices, emphasising the importance of skill and training when using this technology.

193536

Influence of NBI in Surgical Resection of OSCC

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Objective: Up to 20% of patients with oral squamous cell carcinoma (OSCC) undergoing ablative surgical resection develop local recurrence. One of the reasons for this is minimal residual disease (MRD) which is undetected by routine histopathological examination of the surgical margins of the resected tissue. We hypothesise that resection of surgical margins determined by Narrow Band Imaging (NBI) rather than conventional white light (WL) examination leave less potentially malignant residual tissue and thereby increase the success of OSCC resection surgery.

Method: This study used gene expression profiling (GeneChip® U133-plus-2.0) to compare molecular divergence between biopsies radiating out from tumour to WL and NBI defined surgical margins in 18 patients with OSCC.

Result: Relative to tumour core, the numbers of differentially expressed genes was 25.6% higher for NBI (4387) than for WL (3266), signifying that NBI placed margins into less involved tissue than WL examination, with fewer molecular abnormalities. Principal Component Analysis effectively segregated tumour, WL and NBI tissues appropriately based solely on mRNA tissue profiles. Unsupervised hierarchical clustering defined a primary partition between tumour and non-tumour mRNA profiles; 4 out of 18 (22%) WL but 0 NBI samples clustered with the tumour samples. Gene ontology enrichment portrayed a pattern of increasing cell phenotypic diversity at biopsy sites radiating out from the tumour core; this phenotypic diversity being influenced by both the overall numbers of differentially expressed genes and





the breadth of their molecular actions. Upon follow-up, all patients but one were alive, and none had local cancer recurrence.

Conclusion: These results fully support our hypothesis. Greater uptake of narrow band imaging (NBI) diagnostic techniques may improve OSCC surgical success since it invariably defines broader tumour boundaries than conventional white light (WL) examination.

193541

Use of Narrow Band Imaging on Oral Potentially Malignant Disorders

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Objective: To evaluate the diagnostic accuracy of Narrow Band Imaging™ (NBI) for detecting and monitoring oral potentially malignant disorders (OPMDs) in patients presenting to a specialist oral medicine and pathology clinic.

Method: New and existing patients with suspicious white, red, or red-white oral lesions were prospectively examined first by conventional oral examination (COE), then with the white light (WL) mode followed by the NBI mode of a NBI system. Records of the clinical presentation, intrapapillary capillary loop (IPCL) pattern as observed by NBI, and if taken, histopathology of all lesions were taken.

Results: A total of 272 lesions from 95 patients were identified by the end of the examination. NBI had a sensitivity, specificity, positive predictive value, negative predictive value and accuracy of 100%, 74.63%, 92.38%, 100% and 93.77% respectively for aiding the detection of OPMDs and oral squamous cell carcinoma (OSCC) when compared with COE. The IPCL pattern had no statistical association with the clinical diagnosis when diagnoses were classified into 'OPMD or OSCC' and 'benign pathology'.

Conclusions: NBI has high diagnostic accuracy for the detection and surveillance of OPMDs. Whilst there is no distinct correlation between microvascular IPCL pattern of OPMDs and pathological diagnosis, NBI is a great visualisation adjunct as it can aid the detection of lesions not identified by COE or WL examination.

193543

Coping with Oral Dysfunction Following Head and Neck Cancer Treatment

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Objective: Treatment for cancers of the head and neck typically result in acute and chronic changes to oral health and function. Treatment toxicities may be compounded by multimodal treatment regimens involving surgery, chemotherapy





and radiotherapy. This presentation aims to explore how patients appraise and cope with the acute and permanent oral health consequences of head and neck cancer treatment, and the resulting impact on quality of life.

Method: Semi-structured interviews were held with six participants, six months post treatment. Participants were recruited from a larger prospective study using convenience sampling methods. Interview data was analysed using inductive and deductive content analysis. Key concepts from the Transactional Model of Stress, Appraisal and Coping and the University of Washington Quality of Life Survey were used as a coding framework for analysis.

Result: Participants described using a range of problem focused coping strategies to adjust to functional and sensory deficits post treatment. Participants used positive reappraisal to adjust to outcomes of treatment as recovery improved and they returned to a normal life post treatment. Increased oral hygiene practices were used to cope with chronic xerostomia and to manage the risk of adverse oral health outcomes post treatment.

Conclusion: The role of meticulous oral hygiene post head and neck cancer treatment is not only linked to preventing dental disease, but may also influence the coping potential of patients in adjusting to the permanent side effects of treatment. It is noted that the outcomes presented are likely to be a representation of the best outcomes in well-resourced people. As such it underestimates the issues.

193555

Far north Queenslanders' awareness on oral cancer and precancer

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Objective: To assess the awareness of oral and pharyngeal cancers (OPC), precancer and their risk factors among hospital attending patients in far north Queensland (FNQ).

Method: A self-administered questionnaire was distributed among 300 randomly selected patients attending the James Cook University dental clinic during the period from 31 July to 6 September, 2013. The questionnaire consisted of relevant questions to gather data on socio-demographic information, awareness and knowledge of OPC, precancer and their risk factors. Descriptive analysis and chi-square test was employed to compare groups.

Result: Only 52.3% the respondents were aware that cancer could occur in the mouth. Awareness was not significantly influenced by gender ($\chi^2=1.466$, $P=0.226$) and age ($\chi^2=8.330$, $P=0.160$). Educated people had more awareness on OPC ($\chi^2=9.340$, $P=0.009$). Awareness on precancer was very low (19.0%) and this was





not influenced by gender ($\chi^2=1.553$, $P=0.213$), age ($\chi^2=0.197$, $P=0.906$), and level of education ($\chi^2=1.664$, $P=0.435$). Those who were aware of OPC identified smoking (92%), use of smokeless tobacco (84%) as strong risk factors. However, their awareness on heavy alcohol, Human Papilloma Virus and age as risk factors on OPC were relatively poor with 33%, 23% and 34% respectively.

Conclusion: This study highlights the awareness on OPC, precancer and their associated risk factors among the FNQ patients attending the hospital are poor. Given the significance of education on the level of awareness, this study recommends for more awareness campaigns to educate the public on OPC and precancer, early signs of the disease and their risk factors. Moreover, in order to understand the true picture among the general public in FNQ, a community based study is warranted.

193562

Alcohol-Containing Mouthwash Exposure and Transcriptomic Changes in Oral Keratinocytes

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Objective: While alcoholic beverages have been recognised as a risk factor in the development of oral squamous cell carcinoma (OSCC), the effects of alcohol-containing mouthwashes (ACMs) remain under-researched. This study aimed to investigate alterations to gene expression and other mRNA transcriptome changes induced in oral epithelial cells by repeated ACM exposure utilising next-generation sequencing.

Method: Cultured normal (OKF6) and dysplastic (DOK) oral keratinocytes were treated twice-daily with a solution of alcohol-containing mouthwash (ACM) or non-alcoholic mouthwash (NAM) from one of two parent brands (A-ACM, A-NAM, B-ACM, B-NAM). After 1 week, RNA was extracted and the mRNA transcriptomes were sequenced with Ion Proton™. Unexposed cells were also collected and RNA extracted at Day 0 as a control. Sequencing data was then analysed through hierarchical gene clustering, principal component analysis and differential expression analysis.

Result: Analysis of raw data showed good quality reads with an average call error of 0.398% and an average of 90% of reads mapping to the human reference genome. Hierarchical clustering of highly expressed genes and principal component analysis revealed the most significant clustering occurred according to the origin of the cell line (normal vs dysplastic), indicating distinctly different transcriptomes. Secondary clustering was noted corresponding to exposure length (Day 0 vs Day 7). The greatest number of differentially expressed genes were noted between the Day 0





and Day 7 samples, followed by differences in expression between the "A-brand" samples to "B-brand" samples.

Conclusion: Overall, the number of repeated exposures was the tested variable found to have the greatest effect on differences in the mRNA transcriptome and gene expression profile, followed by brand of mouthwash. The high quality and versatility of the produced data supports the use of next-generation sequencing as a valid investigative tool to evaluate changes in the gene expression profile of oral keratinocytes.

193577

Recruitment experiences of a mass oral cancer screening program

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Objectives: Mass screening programs which promote early disease detection are effective in reducing the burden of disease associated with a number of cancers and chronic diseases. The efficacy of screening for oral cancers and their preceding lesions appears promising in high risk groups. The objective of this study is to report on the recruitment experiences and outcomes of a multicentre oral mucosal screening program developed in South East Queensland.

Methods: Ten screening sites were established within public and private dental clinics, indigenous health clinics and a community pharmacy. Risk assessment was undertaken through a semi-structured interview and self-directed questionnaire. Oral mucosal examination was completed by one of 11 trained and calibrated dentists or oral health therapists, under conventional operatory parameters. Participants at selected sites were also examined with adjunctive optical diagnostic aids.

Results: The study ran for 24 months from April 2012 to April 2014. A total of 1,498 participants consented to oral mucosal screening, with complete data available for 1,252 (83.6%). Almost half (n=561; 44.8%) were from a background of high disadvantage, and 59.9% reported annual household incomes below \$40,000AUD (n=750). Participants from backgrounds experiencing the highest level of disadvantage were more likely to have a history of tobacco use (p=0.04), and present with suspicious oral mucosal lesions (p=0.01). Examiners reported difficulties in recruitment, which stemmed mainly from patient refusal due to time constraints, disinterest or embarrassment relating to their oral condition. Clinician outreach also proved inefficient in participant recruitment.

Conclusion: Mass screening for oral cancers and their preceding lesions has been shown as a viable public health initiative in high risk populations. In the Australian context, participant recruitment appears to be a significant barrier in



implementation, and further efforts to improve uptake of the program is needed for its success.

193599

Oral candidal carriage in asymptomatic patients

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Objective: Interest in the association between oral cancer risk and promotion of mucosal dysplasia with presence of *Candida* continues. These yeast can be detected quantitatively in salivary samples by means of culture. The purpose of this prospective cross-sectional clinical study was to ascertain the prevalence and degree of carriage of *Candida* in the oral cavities of a non-cancer population, with reference to a range of parameters affecting the oral environment, such as smoking status, as well as dental and periodontal health.

Method: Oral rinse samples were collected from 203 patients attending the Royal Dental Hospital of Melbourne and analysed for the presence, degree of colonisation, and pattern of Candidal species, phenotypically identified as *albicans* and non-*albicans* species.

Result: Candidal carriage was found in 98/203 patients (48.3%) and of these, 83 (84.7%) patients carried *C. albicans*. There was no statistical difference when comparing gender, age, or presence of a removable prostheses. Significant variation was found in the prevalence and degree of *Candida* colonisation in patients who were current or past smokers, and patients with active carious lesions were found to be 3 times more likely to carry *Candida* than those with no active carious lesions.

Conclusion: These results indicate the degree of variation in oral yeast carriage that exists in asymptomatic, non-oral cancer patients and indicates a potential correlation between smoking, caries and oral yeast colonisation.

193613

Exomic components of progression of oral potentially malignant lesions

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Objective: To compare the exomic profile of patients with progressive oral potentially malignant lesions (POPML) with non-progressive oral potentially malignant lesions (NPOPML).





Methods: A total 56 archival formalin fixed paraffin embedded (FFPE) samples inclusive of 5 patients with POPML (total of 15 samples), 9 patients with NPOPML (total of 34 samples) and 7 normal oral epithelium were included in this study. Subsequent to genomic DNA isolation, exomic DNA libraries were constructed according to the SureSelect^{XT} target enrichment system for SOLiD 5500 multiplexed sequencing, with slight modifications. Enriched libraries were sequenced on SOLiD 5500XL platform and ColorSpace fastq sequences were extracted from each of the sequence XSQ sequence libraries using proprietary methods and formatted sequence reads were mapped to the human genome. The mean depth-of-coverage across the sequence collection was 250X coverage and from the complete Exome target size of 50,621,019 bp, at least 85 % was covered to a minimal level of at least 50X. Genetic variants in sequenced exomes were identified relative to the reference human genome using a pipeline based on the GATK software.

Result: Trends and functional pathways of exomic variations will be discussed

Conclusion: Observed differences in nature and number of mutations amongst POPML and NPOPML samples could be of potential benefit in formulating treatment plans as part of personalized patient care in oral oncology.

Funding: Queensland Government Smart Futures Co-Investment Fund, Cancer Australia, Agilent Technologies, Life Technologies.

193615

hMSH6: a potential diagnostic marker for oral carcinoma in situ

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Objective: To compare the immunohistochemical expression of mismatch repair (MMR) proteins in oral lesions.

Method: A total of 274 formalin fixed paraffin embedded samples inclusive of 113 oral squamous cell carcinoma (OSCC), 34 moderate/severe dysplasia (SD), 37 mild dysplasia (MD) and 90 normal oral mucosa were retrieved from the Oral Oncology Research Program archival tissue bank. Slides were immunohistochemically stained for hMLH1, hPMS2, hMSH2 and hMSH6 and immunohistochemical scores for the percentage and intensity of positive cells were recorded. Pearson Spearman's product-moment correlation coefficient was used to evaluate the lesion severity relationship to MMR protein expression. MMR expression combined with patients' age and sex were included in a backward stepwise multinomial logistic regression.

Result: A readily apparent inverse correlation between oral disease severity and both obligatory and non-obligatory components of MutLa and MutSa was observed (hMLH1, $\rho = -0.715$; hPMS2, $\rho = -0.692$; hMSH2, $\rho = -0.728$; and hMSH6, $\rho = -$





0.702). Amongst 11 carcinoma in situ cases included in SD category, 9 showed a conspicuous loss of hMSH6 expression from the stratum basale.

Conclusion: Once independently validated, these findings would be a great asset to oral pathologists for diagnosis of oral dysplasia and cancer. In addition, the two-dimensional nature of H&E staining and the ambiguity among the more severe grades of oral epithelial dysplasia, carcinoma in-situ and early OSCC, highlights the imminent need for more robust diagnostic standards for these lesions.

Funding: Australian Dental Research Foundation

193674

The Assessment of TMJ changes on Cone-Beam Computerized Tomography

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Objective: The present study's aim was to develop a valid and reliable method for the qualitative analysis of the radiographic appearance of the temporomandibular joints (TMJ) captured by cone-beam computed tomography (CBCT). The developed method is more comprehensive for TMJ bony changes and is standardised and simple.

Method: The developed method, based on a study by Koyama et al (2007), used 5 assessors who independently performed qualitative analyses of forty-two randomly selected de-identified CBCT images. Statistical analyses were performed to assess the inter-examiner variability.

Result: Normal TMJ anatomy was observed in 3 of the 42 study subjects whereas a range of bony defects with various levels of severity was observed in the remainder. There were statistically significant ($p < 0.05$) correlations between all assessors in interpreting the radiographical appearance utilizing the developed method.

Conclusion: The method developed in the current study for the interpretation of CBCT images of TMJ is capable of the generating consistent, valid and reliable qualitative data on the bony changes of the TMJ.

193685

Osteoarthritis of the Temporomandibular Joint





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Objective: The objective of the present study was to determine the natural history of 80 consecutive patients diagnosed with OA-TMJ treated with a jaw rest program and occlusal splint therapy.

Method: Patients with Group IIIb OA-TMJ were included. Pain and joint noises were assessed using a reverse visual analogue scale and interincisal opening and compliance recorded. Reverse VAS scores for pain and joint noises and interincisal opening were statistically analysed.

Results: Five subjects were excluded due to incomplete data. 75 patients were seen an average of 8.1 visits over 28.5 months. Over the course of this treatment there was no significant change in interincisal opening or joint noises. 94.6% (71/75) of patients reported high levels of pain resolution (> 70%) with 84% very high levels of pain resolution (> 90%).

Conclusion: Irrespective of gender, joint noise and interincisal opening, 94.6% had resolution of their pain

193687

Personalized Patient Care in Oral Oncology

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Objective: Personalized medicine customizes health care based on an individual's unique environment, clinical profile, and genetics. Until recently, it was reasonable to assume that modification of oral care according to a patient's needs constituted personalized oral health.

Method: Advances in the management of patients with head and neck cancer (HNC) have not significantly changed the prognosis of this tumour over the past five decades. Molecular heterogeneity of HNC and its association with HPV, in addition to the increase in the number of cancers arising in traditionally low-risk patients, are among some of the obstacles to the successful management of this group of tumours. Massively parallel sequencing, otherwise known as next generation sequencing (NGS), is rapidly changing conventional patient management by providing detailed information about each patient's genome and transcriptome. Despite major advances in technology and a significant reduction in the cost of sequencing, NGS remains mainly limited to research facilities, although this is rapidly changing.



Result: There are only a few published studies that have utilized NGS technology in HNC. This session will discuss the clinical applications, ethical considerations, and utilization of NGS in personalized patient care, particularly as this relates to HNC.

Conclusion: The next generation of clinicians will be expected to personalize their management according to the molecular profiles of their patients. At this stage, head and neck cancer appears to be the primary beneficiary of this change.

191457

Evaluation of the ECOHIS in an Australian Preschool Child Population

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Objectives: Early childhood caries has significant impacts on the child and the child's family. Standard clinical measures of counts of affected teeth and tooth surfaces are useful but provide an incomplete assessment of the complex multi-dimensional nature of children's oral health. The early childhood oral health impact scale (ECOHIS) is an instrument developed to capture the complex dimensions of preschool children's oral health. The objective of this study was to evaluate the reliability and validity of the ECOHIS among Australian preschool children.

Methods: Parents/children dyads (n = 286) recruited as part of a randomised controlled trial on the treatment of early childhood caries completed the ECOHIS at baseline, and 33 parents repeated the questionnaire some 2-3 weeks later. The validity and reliability of ECOHIS was determined using tests for convergent (Spearman's correlation) and discriminant validity (regression analyses), internal reliability of the instrument (Cronbach's alpha) and the test-retest reliability (ICC).

Results: ECOHIS scores were strongly correlated with global oral health ratings (Spearman's correlations; $r = 0.53$, $p < 0.001$ total score; $r = 0.41$, $p < 0.001$ child impact; and $r = 0.54$, $p < 0.001$ family impact). Regression analyses found significant associations with children's caries experience after controlling for age, $p < 0.001$ for total ECOHIS score, child impact sub-domain and the family impact sub-domain. Cronbach's alpha values were 0.87 for the entire scale, 0.87 and 0.74 for the child function and the family function domains, respectively. Test-retest reliability ICC was 0.92 for the entire scale and 0.89 and 0.78 for the child function and the family function domains, respectively.

Conclusions: The ECOHIS instrument demonstrated acceptable validity and reliability for assessing the impact of early childhood caries among Australian preschool children.

193373





Impacts of Early Childhood Caries on Malaysian Parents' QoL

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Objective: Research on the effects of Early Childhood Caries (ECC) on day-to-day living activities has been carried out for almost two decades. Most has focused on the affected children, with very little exploring the impacts on families. The aim of the study was to explore the impacts of ECC (and its treatment) on Oral-health-related Quality of Life (OHRQoL) of affected children's families in hospital-based and community-based samples in Malaysia.

Method: The study used a mixed methods design, combining quantitative and qualitative approaches using a concurrent triangulation strategy. Eighty parents with children aged 2-5 years old (either with ECC or caries-free) were recruited from hospital-based and community-based dental clinics. They were invited to complete the short-form Family Impact Scale (FIS-8) questionnaire and then underwent a 30 minute in-depth interview. The samples were grouped as (a) hospital-based with ECC, (b) community-based with ECC and (c) community-based caries-free. Quantitative data were analysed using SPSS version 21. Qualitative analysis was carried-out using the deductive content-analysis method, assisted by NVivo.

Result: The respective mean FIS-8 scores before and after treatment were: 16.1 and 3.4 for the hospital-based with ECC group ($p < 0.001$); 14.3 and 4.1 for the community-based with ECC group ($p = 0.001$) and 4.2 and 2.8 for the community-based with caries-free group ($p = 0.002$). The latter group showed a "small" effect size (0.4) while the other two groups showed "large" effect sizes (1.8 and 1.3 respectively). The most severely affected subdomain at baseline was parental functions and activities.

Conclusion: ECC has a pervasive impact on affected children's families, especially the parents. Treating ECC improves OHRQoL for the affected family. The FIS-8 scale is valid, reliable and responsive in assessing the impacts of ECC on affected children's families in Malaysia.

192799

Kinder Wide Smiles Project

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Background: The Barwon Region is a large diverse regional/rural area of Victoria. Some communities are situated approximately 100 km or more from the nearest dental clinic. Many Kindergarten children in the Barwon Region of Victoria have required emergency dental appointments or treatment under general anaesthesia. To complement the 'Smiles-4-Miles' Oral Health Promotion program, and following-on from the 'Healthy Smiles' Northern Territory project, the 'Kinder





Wide Smiles' project was developed by the Barwon Health and Colac Area Health Oral Health Services.

Objectives: The objective of the study is to improve access to dental services for pre-school children, identify and remineralize early "white spot" lesions and improve parents/guardians dental awareness and knowledge of oral health.

Methods: An outreach service was developed for Kindergarten children (aged 3 – 5 years) named Kinder Wide Smiles during 2013. Sixty Kindergartens throughout the Geelong (44) and Colac-Otway (16) region were visited. Participant Information and Consent Forms for dental examinations and fluoride application were distributed to parents/guardians. Children received three dental check-ups during the year, given toothbrushes and toothpaste at each visit and concentrated fluoride applied (0.25 ml/tooth of Duraphat® Colgate-Palmolive Pty. Ltd.) to white spot lesions. Parent engagement sessions were conducted during Visit 2.

Results: During 2013, 2,371 children received dental examinations. A snapshot of preliminary results from 13 Kindergartens (Geelong region comparing visits 1 – 2) has shown that 110 individual tooth surfaces improved. Positive responses from parents/guardians have been received regarding the effectiveness of the engagement sessions (92.5% of parents found the session helpful). Two virtual chairs have been created as two dental teams visit Kindergartens throughout the Barwon Region, significantly easing pressure at Community dental clinics.

Conclusion: The Kinder Wide Smiles program has proved to be effective in achieving its objectives and has been extended to Primary School (Prep year) children in 2014.

193718

Oral Microbiota of Children Undergoing Comprehensive Treatment for Severe ECC

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Introduction: Early Childhood Caries (ECC) is the presence of one or more decayed, missing, or filled tooth surfaces in any primary tooth in a child <6 years old. ECC is one of the leading oral health problems that affect the growth, development and quality of life of many New Zealand pre-school children. However, in severe ECC (S-ECC) cases, recurrence of carious lesions can occur despite comprehensive restorative treatment.

Objectives: The aim of this preliminary study was to determine changes in the oral bacterial compositions of young children before and after comprehensive restorative treatment for S-ECC.





Methods: Plaque samples were obtained from 5 children 2-6 years old with S-ECC. Children were sampled at three time points, pre-treatment, 2 weeks post-treatment and 3 months post-treatment. Microbiological analysis was performed on plaque samples, targeting the potentially-cariogenic streptococci using mutans selective agar.

Results: The microbiological analyses of plaque samples from the five S-ECC patients not only revealed the presence of the expected cariogenic culprits such as *Streptococcus mutans*, *Streptococcus sobrinus*, *Lactobacillus casei* and *Lactobacillus rhamnosus* but also other streptococcal species (e.g., *Streptococcus mitis*, *Streptococcus anginosus*). *S. mutans* was detected at all three time points in one patient.

Conclusion: Mutans streptococci are indeed present before and after comprehensive restorative treatment, and further studies will reveal whether certain strains survived the restorative treatment. These isolates will be of further interest if any of the 30 patients experience a recurrence of S-ECC.

191480

Revisiting The Value Of School Dental Check-up Programs

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Objectives: To investigate whether a targeted pilot school dental check-up program can increase dental access and retain child patients using public dental services.

Methods: A convenience sample (n=465) of enrolled school children aged between 3 and 12 years old were invited to participate between February and April, 2013. The preschool and primary school are located in suburbs ranked in the lowest 10th percentile in Victoria, Australia, based on the Socio-Economic Index for Areas (SEIFA). Two dental examiners were calibrated using the two-digit modified International Caries Detection and Assessment System II (ICDAS); caries code 1 excluded. Data analysis evaluated children receiving: a school dental check-up (intervention) or a conventional dental check-up (control). The null hypothesis ($H_0=0.50$) tested the return rate for children attending their referred follow-up dental appointment. The ICDAS codes were transformed using the Decayed, Missing and Filled Tooth Surfaces/Teeth (DMF-S/T) index (decay defined as ICDAS caries code >2).

Results: The intra-rater and inter-rater reliability achieved good agreement (Weighted-Kappa ≥ 0.80). There was a child participation rate of 34%. Almost half (48%) of the children reported never having had a dental check-up. A moderate proportion of children (67%) have never used the local public dental service compared to the control group (31%). The intervention increased child dental access





using public dental services ($p < 0.0001$). A total of 84 children (56%) were referred for dental treatment; 62 children (74%) attended their follow-up dental appointment ($p < 0.0001$; 95%CI, 0.64, 0.83). The mean dental caries prevalence for the deciduous and permanent teeth is dmf-s 3.4, dmf-t 1.9, and DMF-S 0.5, DMF-T 0.2, respectively.

Conclusion: The targeted school dental check-up program proved beneficial. A larger sample size is recommended to affirm the findings. Further research is required to improve child participation using positive consent methods.

This research was supported by Dental Health Services Victoria Research and Innovations Grant 2013.

193594

Azithromycin Loaded Polymeric Membranes for Guided Tissue Regeneration

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Objective:

This project aims at addressing a significant issue in periodontal regeneration: bacterial contamination on the sites of undergoing Guided Tissue Regeneration (GTR). It is hypothesised that the local delivery and sustained release of azithromycin will significantly reduce any bacterial infection. For this purpose, the primary objective of the project is to engineer and assess a biocompatible and biodegradable polymeric matrix for the controlled delivery of azithromycin.

Method: PCL membranes are fabricated via solution electrospinning. The PCL membranes are then subjected to a calcium phosphate (CaP) coating process by successive immersion into specific reagents and solutions. Azithromycin encapsulation, release, antibacterial and cellular response when loaded onto PCL and PCL-CaP membranes are assessed on different doses of azithromycin.

Result: Azithromycin was successfully loaded onto PCL/PCL-CaP membranes using a novel ethanol evaporation technique. This method enables to reproducibly load azithromycin onto the electrospun membranes with a very high loading efficacy (around 75%), which is unprecedented for such a poorly water soluble compound. PCL membrane surface topography has shown to have an effect on azithromycin encapsulation and efficiency. CaP coating on PCL membranes increased the surface area of the material leading to higher loading efficacy and more uniform distribution of the antibiotic throughout the fibrous membrane. *In-vitro* release profile of





azithromycin from the membrane demonstrated around 90% release from CaP coated and non-coated PCL membranes after 14 days of incubation with PBS at 37°C. Antibacterial activity of azithromycin loaded membranes on staphylococcus aureus suggest that the electrospun membranes loaded with azithromycin are capable to inhibit bacterial growth even after 14 days of release.

Conclusion: In conclusion hydrophobic azithromycin was successfully encapsulated on to PCL/PCL-CaP membranes using ethanol evaporation technique. Our results have shown excellent encapsulation efficiency with a controlled release of 90% along with efficient antibacterial effect even after 14 days of release.

193684

Development of the molecular targeted therapy for periodontal disease

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Objectives: To develop molecular target therapy, we isolated mRNA from bacterial samples and amplified cDNA, hybridized with a custom-made DNA microarray to monitored therapeutic targets. Vaccine, single-chain variable fragment (ScFv) and human type whole antibody were mass-produced in bacterial system.

Methods: Bacterial cDNA was amplified using random DNA primers coupled with RNA polymerase promoter region. Fluorescence label cRNAs were amplified by IVT, and hybridized with custom-made DNA microarray of virulent factor genes, and monitored therapeutic targets. To develop passive immunotherapy, hybridoma against *P. gingivalis* virulent factors were constructed. Then, ScFv genes were molecular cloned and functionally expressed in *Bacillus brevis* hosts. Human type mAb was also constructed using transgenic mice carrying human immunoglobulin gene loci. To develop the mucosal immunization, we used *P. gingivalis* outer membrane protein and hemagglutinin as vaccine to mice models.

Results: DNA microarray analysis can determined the virulent factor gene expression in periodontal pocket. ScFv functionally expressed in *Bacillus brevis* hosts and capable to inhibited heamagglutinin and aggregation activity. Human type mAbs treatment reduced the alveolar bone in loss caused by oral infection with *P. gingivalis* in mice experimental model.

Conclusion: Identification of gene expression of virulent factors using microarray and recombinant passive antibodies might be useful for molecular target therapy against periodontal diseases.

193609

Effect Of Local Injection Of Lithium Chloride On Bone Regeneration



H. DAN, Griffith University, Gold Coast, Australia, C. VAQUETTE, Queensland University of Technology, Brisbane, Australia, and S. IVANOVSKI, Griffith University, Gold Coast, QLD, Australia

Objective: Lithium chloride (LiCl) is an activator of the canonical wnt signaling pathway. Previous studies indicated that systemic delivery of LiCl could enhance bone mass formation *in vivo*. The aim of this study was to investigate the effect of local injection of LiCl on bone regeneration in a rat periodontal defect model.

Method: Fenestration defects were created in Sprague-Dawley rats on the buccal side of the mandible (n=4 per group). Local daily injection at the defect site was carried out using different concentrations of LiCl (10mM, 100mM, 1000mM diluted in 0.9% NaCl solution). Defects without any treatment and defects injected with saline alone were used as controls. Three weeks later, the mandible samples were collected and subjected to micro CT and histomorphometric analysis.

Result: Three weeks after the treatment, new bone formation was observed in all of the groups. Bone coverage percentage of the defect area in each group was as follows: Blank, 3.75 ± 4.15 ; NaCl, 5.75 ± 5.63 ; 10mM LiCl, 10.75 ± 8.61 ; 100mM LiCl, 20.75 ± 5.63 ; 1000mM LiCl, 5.00 ± 3.08 , respectively. The animals in the 100mM LiCl group had the greatest amount of new bone formation ($P < 0.05$ compared to blank group), while injection with other concentrations of LiCl didn't show significant difference of new bone formation compared with the control groups.

Conclusion: Local injection of LiCl could enhance bone formation in a periodontal defect model. Further studies on the underlying mechanisms as well as methods for controlled release of LiCl in the local environment are needed.

193544

Genetics/Epigenetics and Periodontal Disease

G.J. SEYMOUR, T. MILNE, and M.P. CULLINAN, University of Otago, Dunedin, New Zealand

Objective: The aim of this talk is review data on genetic and epigenetic factors which may enable individual patient susceptibility to be determined.

Method: The role of smoking and specific IL-1 and IL-10 gene polymorphisms was investigated in the 5-year University of Queensland Longitudinal Study. Subsequently, focused gene arrays were used to investigate the salivary and peripheral blood transcriptomes and to determine the pattern of growth factor gene expression in gingival fibroblasts of smokers and non-smokers. The EpiTect Methyl II PCR assay (SABioscience) is being used to determine the DNA methylation status of CpG islands in the VEGF-A, HIF-1 α , and BMP-2 genes in smokers, former-smokers, and non-smokers.





Result: There was no direct effect of specific IL-1 and IL-10 gene polymorphisms on the progression of periodontal disease over 5-years while smoking had a direct effect on disease progression and significantly inhibited innate tissue healing. While the level of bacterial DNA contamination was a major issue in determining the salivary transcriptome, BMP8B and IFN- γ genes were found to be under-expressed in the peripheral blood of periodontitis subjects. There were significant differences in the pattern of growth factor gene expression in gingival fibroblasts of smokers and non-smokers and the DNA methylation of three specific genes is being investigated.

Conclusion: Both IL-1 and IL-10 gene polymorphisms are secondary risk factors for periodontal disease progression, while smoking is a primary risk factor. Currently the salivary transcriptome is not suitable to identify patient susceptibility but further longitudinal studies investigating BMP8B and IFN- γ gene expression in peripheral blood are warranted. Smoking leads to dysregulation of growth factor genes in the gingival tissues which may be a result of DNA hyper- or hypo- methylation. The relevance of these results to personalised oral health care and the determination of individual patient susceptibility will be discussed.

193378

Induced Pluripotent Stem Cells

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Objective: To present an overview of induced pluripotent stem cells

Method: The realisation that adult somatic cells can be reprogrammed into pluripotent cells is revolutionising the way diseases are researched and is set to transform the way diseases are treated. In recent years the use of induced pluripotent stem cells (iPSC) in dentistry has begun to be investigated. While this work is still in its infancy, iPSC are demonstrating great potential for use in the regeneration of dental tissues.

Result: While this work is still in its infancy, iPSC are demonstrating great potential for use in the regeneration of dental tissues.

Conclusion: In this presentation an introduction to iPSC properties and their potential application as therapeutic agents in medical research will be presented. In addition and overview of recent developments in the use of iPSC in dental tissue regeneration will be presented.

This work was funded by the National Health & Medical Research Council of Australia.

193653



Multiphasic Scaffolds for Periodontal Tissue Engineering

S. IVANOVSKI, Griffith University, Gold Coast, QLD, Australia

Objective: To review the available literature on the topic of multiphasic scaffolds for periodontal tissue engineering.

Method: A narrative review of the literature was carried out based on a literature search and critical evaluation of the available literature describing the use of multiphasic scaffolds for periodontal tissue engineering applications.

Result: For successful clinical outcome, periodontal regeneration requires the coordinated response of multiple soft and hard tissues (periodontal ligament, gingiva, cementum, bone) during the wound healing process. Tissue engineered constructs for regeneration of the periodontium must be of a complex three-dimensional shape, of adequate size and demonstrate biomechanical stability over time. A critical requirement is the ability to promote the formation of functional periodontal attachment between regenerated alveolar bone and newly formed cementum on the root surface. This review outlines the current advances in multiphasic scaffold fabrication and how these scaffolds can be combined with cell and growth factor based approaches to form tissue engineered constructs capable of recapitulating the complex temporal and spatial wound healing events that will lead to predictable periodontal regeneration. This can be achieved using a variety of approaches, with promising strategies characterized by the use of scaffolds that are able to deliver and stabilize cells capable of cementogenesis onto the root surface, provide biomechanical cues that encourage perpendicular alignment of periodontal fibers to the root surface, and provide osteogenic cues and appropriate space to facilitate bone regeneration.

Conclusion: Progress on the development of multiphasic constructs for periodontal tissue engineering is in the early stages of development, and these constructs need to be tested in large animal models and ultimately human clinical trials.

193720

Periodontal Diagnosis by General Dental Practitioners in Victoria, Australia

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Objective: To determine the criteria used by general dental practitioners to establish periodontal diagnosis in Victoria.

Method: Following ethics approval a scenario-based questionnaire was placed online in the "Members only" section of the ADAVB website for general dental practitioners (GDP) to complete. They were asked a series of demographic questions including





the year and place of graduation, type of practice, number of practitioners and post graduate training including recent continuing dental education in periodontics. Five text-based clinical scenarios from a total of 10 were randomly presented and corresponded to periodontal health/gingivitis (2), mild periodontitis (2), moderate periodontitis (2), severe periodontitis (2) and recurrent periodontitis occurring at a single (1) and multiple sites (1). The respondents were asked what examinations are typical and customary to be performed in response to the scenario. Based upon the results of the periodontal and radiographic examinations a periodontal diagnosis was requested.

Result: 135 GDPs attempted the survey. Most were in a group practice and based in Melbourne. Most had completed no formal advanced training. 22.5% of respondents worked in a practice that employed a hygienist. The clinical parameters most commonly measured to diagnose periodontal disease were pocket depth and mobility, closely followed by bleeding-on-probing, suppuration and furcation involvement. The majority of respondents diagnosed health, gingivitis and mild periodontitis correctly compared to the American Academy of Periodontology guidelines. However, moderate periodontitis tended to be diagnosed as severe. There was no effect of age, gender, year or place of qualification, type of practice, postgraduate training or CPD on the outcomes.

Conclusion: GDP in Victoria use the appropriate clinical parameters in their assessment of periodontal disease and are accurate in their diagnoses. However, the over diagnosis of severe periodontitis may lead to inappropriate treatment or referral.

193657

Periodontal Health and Smoking Status of Frontline Hospitality Workers

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Objective: Cigarette smoking is a risk factor for several diseases and has detrimental effects on periodontal health. The aim of this study is to assess the level of periodontal disease severity among cigarette smokers working in the front line hospitality industry in Suva, Fiji.

Method: A cross sectional study will examine the periodontal status and smoking habits in randomized samples consisting of 120 participants between the ages of 21 - 70 years working as frontline hotel workers in the hospitality industry in Suva, Fiji. The participants will be divided into four groups: Smokers with periodontitis, Smokers without periodontitis, non-smokers with periodontitis and non-smokers without periodontitis, each group will consist of 30 participants respectively.





The following clinical variables will be recorded using the split mouth periodontal charting technique: clinical attachment level, mobility, bleeding, gingival recession, furcation involvement and number of missing teeth. In addition, a questionnaire will be utilised to determine the following demographic details: age, sex, socioeconomic status, education level, tobacco use, oral hygiene habits and alcohol consumption.

Results: The results indicate the prevalence and severity of clinical attachment loss ≥ 3.5 mm.

Conclusion: Cigarette smoking is a contributing factor to the increase in severity of periodontal disease and this is proportional to quantity of tobacco use. This supports previous studies which have concluded that smoking is a significant risk factor for tooth loss, increased clinical attachment loss and mobility. The *bula* smile is signature mark for the people of Fiji Islands therefore needs to be persevered in all ways possible. Appropriate and early management of periodontal disease will contribute to saving the *bula* smile.

193691

Periodontal Microbiome and Diagnosis

E.C. REYNOLDS, University of Melbourne, Parkville, VIC, Australia

Chronic periodontitis is a chronic inflammatory disease associated with a polymicrobial biofilm that results in the destruction of periodontal tissues in susceptible individuals.

Objectives: We are entering an era of "Precision or Personalised Medicine" where large molecular data sets can be obtained for individual patients. These data sets will allow individual patient risk-assessments for oral disease based on genomic, oral microbiomic and other analyses. This information will allow patient and site-targeted preventive and/or therapeutic interventions that will be more cost effective and produce better outcomes for the patient.

Methods: Advances in the determination of the periodontal microbiome has led to a new paradigm of disease centred around the disruption of homeostasis (dysbiosis) by the emergence of a "keystone" pathogen or pathobiont in subgingival plaque that leads to disease initiation and progression. One such keystone pathogen is *Porphyromonas gingivalis* that through its extracellular proteinases, that are released into the host's tissues, dysregulate the immune response to cause tissue destruction and allow proliferation of the subgingival biofilm community.

Results: In prospective clinical trials the percentage levels of *P. gingivalis* in subgingival plaque have been shown to predict disease progression at that site. This has resulted in the development of a chairside diagnostic for *P. gingivalis* that can rapidly and accurately determine the level of the organism in saliva and plaque samples with a sensitivity of 92% and specificity 96%.



Conclusion: Chairside diagnostics for patient and site-specific risk assessment are being developed to allow targeted and personalised preventive interventions.

193589

Prevalence of Periodontal Disease in 15-Year Olds, in Suva, Fiji

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Objective: To determine the prevalence of periodontal disease in 15 year olds in Suva.

Method: A cross-sectional study was carried out on 281 15-year old children from four randomly selected high schools in Suva, Fiji. Participants were randomly selected from each school using the school registers. The participants were examined for periodontal health status using the community periodontal index of treatment needs (CPITN) index. The assessment procedure was carried out using a WHO periodontal probe and in natural light. Ethical approvals were obtained from the National Health Research Committee and Ministry of Education; and informed consent was obtained from the participant's parents/ guardians before commencement of the study. All data was entered and analyzed in Epi-Info (3.5.1).

Result: 64.4% (n=181) of the participants had Code 2 (calculus and other plaque retentive factors) as their highest score. 16.40% (n=46) of the participants had Code 0 (healthy periodontium) as highest score and 18.85% (n=53) of the participants had Code 1 (gingival bleeding) as their highest score. 2.93 sextants per person were healthy, 3.04 sextants per person had gingival bleeding and 1.93 sextants per person had calculus or other plaque retentive factors. None of the sextants had periodontal pockets of 4mm and above and 0.03 sextants per person were excluded.

Conclusion: The most common periodontal problem was calculus deposits, found in about three sextants.

193582

Signalling Pathway manipulation and periodontal regeneration

Y. XIAO, Queensland University of Technology, Brisbane, Australia

Objective: Periodontitis is an inflammatory disease of the periodontium caused by microorganisms and calculus accumulation on the oral biofilm, which leads to destruction of tissues supporting the tooth. The destruction of periodontal tissues involves the detachment of periodontal ligament (PDL) fibres, concomitant with resorption of bone and cementum, and ultimately resulting in premature tooth loss. Regeneration of the periodontal region is challenged by the complex immune-





inflammatory response of the host, resulting in unsatisfactory clinical outcomes when using the currently available therapeutic approaches.

Method: Using cell signalling manipulation methods and developing cell signalling activation biomaterials, periodontal cells can be differentiated in vitro and in vivo (periodontal defect model) to cementoblasts and osteoblasts to regenerate periodontal tissues

Result: In a recent study we have shown that cementum is incapable of repair without proper intervention and we were able to demonstrate robust cementum repair and regeneration mediated via the activation of Wnt/ β -catenin signalling pathway on the root surface. We further showed that a novel bioscaffold, with properties that enhance Wnt/ β -catenin signalling, was able to induce osteogenic/cementogenic differentiation of human periodontal ligament cells (hPDLs). These findings are particularly relevant in terms of periodontal tissue regeneration, in which the ultimate aim is to repair and regenerate the damaged periodontal structures, including the cementum, periodontal ligament and alveolar bone. Considering the complex three dimensional environment of the tooth, we found that the Wnt/ β -catenin signalling pathway provide important cues to hPDLs, which then adapt to the nature of the bone-periodontal ligament-cementum complex and differentiate into location specific cell lineages.

Conclusion: This study demonstrated the role of the Wnt/ β -catenin signalling pathway in periodontal tissue regeneration and its application in the treatment and management of periodontitis.

193641

Cytotoxicity Of Various Bisphosphonates On Human Umbilical Cord-Derived Stem Cells

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Objective: Bisphosphonates (BPs) are a group of drugs primarily used to prevent bone resorption in a variety of clinical situations including osteoporosis, Paget's disease and invasive malignancy-related bone resorption. BP use has been associated with osteonecrosis of the jaw (BRONJ) and the biological mechanisms leading to this condition are not fully understood. This in vitro study aimed to evaluate the effect of different classes of BPs (non-nitrogen containing clodronate, and the nitrogen containing BPs alendronate and zoledronate) on human umbilical cord-derived stem cells (UCSCs).





Method: UCSCs were cultured in-vitro with clodronate, alendronate and zoledronate at 0.25 μ M, 0.5 μ M, 1 μ M, 2 μ M and 3 μ M in culture media for 10 days and an Alamar Blue assay was conducted to assess the effects of the drugs on cell proliferation. To assess the cytotoxicity of the drugs, live/dead staining was used at 24 and 48 hours' time point. Further, to evaluate the effects of these drugs on cell migration, scratch wound healing assays were conducted at 6 and 24 hours.

Result: All of the BPs tested were found to negatively affect UCSC cell proliferation with the lowest effect shown by clodronate (0.25 μ M) and the highest with zoledronate at 5 μ M concentration. Live/dead staining also revealed a similar trend with the high potency drug zoledronate causing the highest cytotoxicity. Further, the scratch wound healing assay showed that zoledronate significantly inhibited cellular migration at both time points compared to minimal or no effect of clodronate at any concentration.

Conclusion: The non-nitrogen containing BPs are less cytotoxic and have minimum inhibition of proliferation and migration of UCSC as compared to the more potent nitrogen-containing BPs alendronate and zoledronate.

193716

Fluconazole Resistance Against Oral Candida in Patients Taking Antipsychotic Drugs

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Objective: To determine the Candida species present and colonisation level of the oral mucosa in people taking antipsychotic drugs relative to healthy individuals and other xerostomic patients. To investigate Candida resistance to fluconazole and antipsychotics, as the antipsychotic fluphenazine is known to induce fluphenazine resistance in Candida albicans.

Method: Consented participants aged between 20 to 70, who were on antipsychotic drugs were enrolled. Xerostomia symptoms were determined from the Xerostomia Inventory (XI) and from clinical examinations. Saliva rinses were collected and smears were taken from the buccal mucosae and tongue, and other suspicious mucosa. Smears were examined for candida hyphae and yeast identification. Saliva samples were plated onto Chromagar Candida agar plates, and incubated at 37°C for 48 hours. The colony-forming units (CFU) and species (from the colony colour) were recorded. The susceptibility of C. albicans isolates towards fluconazole was measured using the E-test according to the manufacturer's instructions

Result: Current findings showed that although 75% of participants had evidence of dry mouth clinically, they did not necessarily have symptoms (only a third had high





XI scores). More than 60% were positive for oral candida hyphae and candida colonies. Susceptibility testing is currently being undertaken.

Conclusion: Many antipsychotic drugs are known to cause xerostomia and lead to increased incidence of candida infections. Investigating the resistance of Candida isolates from patients taking antipsychotic medications to fluconazole may lead to more appropriate treatment.

193572

Implant-Supported Full-Arch Zirconia Fixed Prostheses: A Prospective Study

M. GUZZATO, A/Professor of Oral Rehabilitation at The University of Sydney, Westmead, Australia; Prosthodontist in Private Practice, Pyrmont, NSW, Australia, and L. QUACH, Dentist - Private Practice, Pyrmont, NSW, Australia

Objectives: Yttria-stabilized tetragonal zirconia polycrystal (Y-TZP) has been used for almost a decade to manufacture implant-supported full arch fixed prostheses. Frequent chipping of the veneering porcelain and fracture of the Y-TZP frame have been reported. The objective of this study was to evaluate clinical outcomes of implant-supported Y-TZP full arch FDPs fabricated with a protocol which aims to prevent frame fracture and porcelain chipping.

Materials and Methods: Twenty-eight patients (18 males and 10 females) with at least one fully edentulous arch were restored with fixed Y-TZP implant-supported FDPs. Four patients received 2 FDPs, 20 patients received one FDP (34 FDPs). The FDPs were fabricated with Y-TZP ceramic with Zirkozahn (CAD-CAM). Only the labial wall of the anterior teeth and the anatomical gingival surfaces were layered with porcelain. The remaining part of the FDP was manufactured from a monolithic block of Y-TZP including the occlusal surfaces. The veneering porcelain was fired with a slow cooling cycle. The FDPs were screw-retained on multi-unit abutments and evaluated at baseline and every 12 months. The follow up ranged from 7 to a minimal of 2 years.

Results: At the last review all FDPs were in use and all patients were satisfied with outcomes. No mechanical (frame fracture, porcelain chipping, screw loosening, wear of the opposing dentition), or biological (implant loss, mucositis, peri-implantitis, excessive marginal bone loss) complications were recorded. Four implants in 4 patients recorded marginal bone loss greater than expected. However this bone loss was noted prior to issuing definitive Y-TZP FDPs.

Conclusion: The lack of complications and repairs indicate that the use of a single block implant-supported semi-monolithic Y-TZP with minimal porcelain layering of the aesthetic zone may be an ideal solution for patients with one or more fully



edentulous arches. More studies with larger sample size and longer follow-ups are required.

193603

Removable Dental Prostheses: Treatment Outcomes at The University of Sydney

C.M. KLUNER, V. HANNA, S. KING, A. ELLAKWA, and I. KLINEBERG, University of Sydney, Sydney, Australia

Objective: The aim of this pilot study is to evaluate the clinical outcomes of the year three removable partial denture (RPD) program at the University of Sydney Faculty of Dentistry. The study includes patients from three consecutive years of the program (2012-2014).

Method: Data for each patient was gathered prior, during, and at one-year post denture construction. Information across three broad domains was collected to identify the success rate of the dentures: patient profile, oral health status and denture outcomes. Patient profile data included age, gender, significant medical history, and smoking history. Oral health status included a sulcus bleeding index (SBI), approximal plaque index (API), and odontogram identifying the number of remaining teeth. Denture outcome data included previous denture history, denture base material, Kennedy Classification, and denture use or non-use.

Result: Analysis of the patient profile data showed that the mean age of patients in the program was 69 years (n=70), with 32 male and 38 female patients. At initial presentation the mean SBI was 29%, and mean API was 67%. The mean number of teeth remaining was nine. One-year follow-up data at this stage is available only for the 2012 cohort of nineteen patients, of which seventeen patients are reported as still wearing their dentures. Denture non-use in the remaining two patients was due to ill-fitting dentures and poor aesthetics.

45 of the 67 maxillary dentures were complete dentures, and 33 of the 58 mandibular dentures were Kennedy class I. 34% of all dentures (43/125) had cobalt chrome frameworks.

Conclusion: This investigation has provided a patient profile and information about the type and classification of the dentures made through the RPD program at University of Sydney. Ongoing follow-up will provide insight into the outcomes of the program and highlight patient factors which may help predict denture use or non-use.

193576

Endodontic markers in Specialist Practice in Australia and New Zealand





P. DUCKMANTON, Sydney Dental Hospital, Sydney, Australia, R. DUKE, Private Practice, Stanthorpe Gardens, Australia, and L. BROWN, Private Practice, Yepoon, Australia

Objective: To survey endodontic specialists in Australia and New Zealand in both private and public sectors re materiel and techniques.

Method: A paper-based questionnaire addressing choice of endodontic materials and techniques was mailed to all specialists registered with the Australian Dental Board and the NZ Dental Council.

Result: 97 surveys were returned from the 126 Endodontists contacted. All respondents routinely use rubber dam isolation and 90% use additional isolation aids. Only 5% of endodontists reported no use of rotary endodontics. Of those who do use rotary instrumentation, 74% reported its use in every case. When hand instrumentation is used, the most common technique applied is the crown-down method. This was also commonly used in combination with other techniques.

Fifty-nine percent of respondents showed a preference for a combination of lateral and vertical filling techniques. In addition, 84% of surveyed endodontists preferred to use a resin based sealer whilst 11% preferred to use a zinc oxide based sealer.

It was found that all respondents used NaOCl in their irrigant regime, most commonly (52%) 4% solution. In addition 85% used supplementary irrigant activation. EDTA and chlorhexidine were other popular irrigants.

Conclusion: Techniques and materials used varied. Most reported using newly introduced methods and materials.

193574

Endodontic techniques and practices of Queensland general dental practitioners

P. DUCKMANTON¹, A. TUFFIN², M. EL-TITI², and A. LINDSAY-WALKER², ¹Sydney Dental Hospital, Sydney, Australia, ²University of Sydney, Surry Hills NSW, Australia

Objective: To establish the endodontic techniques and practices commonly used by private general dental practitioners in Queensland, Australia.

Method: A paper-based questionnaire that addressed demographics, and choice of endodontic materials and techniques was mailed to 937 general dental practitioners registered with the Australian Dental Board in Queensland.

Result: The response rate of the survey was 28%. The majority of respondents that performed endodontic treatment used: EDTA as the irrigant of choice, crown-down as the instrumentation technique, Ledermix and calcium hydroxide as the dressing





materials of choice, and lateral condensation as the root filling technique. Rubber dam use was confirmed by 86% of respondents, whilst rotary use by only 76%.

The response rate of the survey was 28%. The majority of respondents that performed endodontic treatment used: EDTA as the irrigant of choice, crown-down as the instrumentation technique, Ledermix and calcium hydroxide as the dressing materials of choice, and lateral condensation as the root filling technique. Rubber dam use was confirmed by 86% of respondents, whilst rotary use by only 76%.

Conclusion: The majority of respondents are using techniques that are supported by current guidelines and are generally interested in educational courses. However, a minority are using out-dated techniques and are reluctant to adhere to more modern methods and techniques of endodontic treatment

193580

Failure of endodontically-treated-teeth within 12 months of treatment

P. DUCKMANTON¹, E. RIZK², G. CUNNINGHAM², and R. DAGHLER², ¹Sydney Dental Hospital, Sydney, Australia, ²University of Sydney, Surry Hills, Australia

Objective: To quantify the reasons for failure of those teeth extracted within 12 months of root-filling in a large metropolitan teaching facility

Method: Cases were selected from the patient pool at the Sydney Dental Hospital and other associated health services. Selection criteria were based on teeth that had undergone root canal therapy and subsequently extracted within one year after completion. Associations between tooth extracted, age, gender, smoking status, coronal restoration and the reason for failure were collected from patient files and explored.

Results: The most commonly extracted tooth due to endodontic failure was the 2nd maxillary premolar and the temporary filling material with the highest failure rate was glass ionomer cement. This study identified the highest failure rate was that of prosthetic modality (unrestorability) with 44.12% of endodontically treated teeth being extracted. More specifically, crown or root fracture, rather than failure of the endodontics was the most likely reason for the extraction of endodontically treated teeth within 12 months of obturation.

Conclusions: The success rate of root canal treatment on 4318 teeth within the Sydney South West Oral Health Service between 2008-2013, was 98.4% within one year of completion. This study found that the majority of failures of endodontically treated teeth were due to un-restorability because of extensive tooth destruction, such as, root and crown fracture. Clinically, this data supports the need for clinicians to place definitive restorations as soon as possible after root canal treatment to increase the likelihood of tooth survival.



193581**Meta-analysis of Endodontic Emergency Treatment**

P. DUCKMANTON¹, H. TENG², J. TRAN², and A. TRUONG², ¹Sydney Dental Hospital, Sydney, Australia, ²University of Sydney, Surry Hills, Australia

Objective: To evaluate the success in an acute emergency setting of :‘single visit pulpectomy and pulpotomy,’single vs multiple visit endodontic therapy’ and ‘trephination’ vs ‘no trephination’.

Methods: The MEDLINE and EMB Reviews: Cochrane Databases were searched using the OvidSP PubMed search engine, and Embase.com search engines. All articles published in dental journals in English from their inception to 2014. Citation mining also identified,388 studies dealing with emergency endodontic treatment

Results: 23 eligible RCTs and prospective studies were identified but only 7 included: Single visit pulpectomy vs pulpotomy; 1 RCT and 1 prospective study representing 972 patients found no statistically significant differences. One-visit pulpotomy vs multiple visit pulpotomy: 3 RCTs compared one-visit versus multiple visits pulpotomies in 382 patients and found no statistically significant differences in success rates.Trephination: in the 2 RCTs evaluating trephination, as an augmentation technique, no statistically significant difference was observed.

Conclusion: These conclusions are based on small numbers of studies and patient pools. There is insufficient reliable evidence refuting or supporting the various emergency endodontic procedures. Pulpotomy procedures with Ca(OH) cement were found to be just as successful as pulpectomy. Pulpotomy may be a viable option for clinicians with time restraints. Single appointments were found to be no better or worse than multiple visit appointments (P value = 0.430). In regards to trephination, there is not enough evidence to support or refute this treatment option. In some cases trephination may cause more pain post-operatively.

193552**Continuous and Simultaneous Measurement of Intraoral pH and Temperature**

J.E. CHOI, J.N. WADDELL, M. FARELLA, and J.A. KIESER, University of Otago, Dunedin, New Zealand

Objective: To develop a novel approach capable of continuously and simultaneously measuring the intraoral pH and temperature of individuals for 24 hours, while carrying out normal daily activities.

Methods: We designed and constructed a custom made appliance fitted with a pH probe (ResTech Corp, USA) and a thermocouple (Lascar Electronics Inc., USA). Five healthy subjects wore the appliance for 2 non-consecutive days, 24 hours on each



day and pH and temperature were measured. One subject wore the appliance for an additional 4 days. For 3 nights out of the 6, she had her nose blocked with cotton rolls at night to simulate mouth-breathing conditions during sleep.

Results: There was a significant difference in the pattern of variation of pH between day and night. For all days of the study, the average pH of 7.38 was maintained while the subject was awake except after consumption of acidic food or drinks. However, the intraoral pH decreased slowly over the hours of sleep. When sleeping with forced mouth breathing, intraoral pH showed a greater fall over a longer period of time and remained below the pH 5.5, four times longer. The average intraoral temperature was 34.7 °C, which showed minor fluctuation during 24 hours except while talking and exercising. Mouth breathing did not affect the intraoral temperature significantly.

Conclusions: The intraoral pH and temperature measurement system we present is reliable, easy to construct and may serve as a future research and diagnostic tool in a number of applications. The evidence from this study suggests that there is a strong relationship between the intraoral pH and mouth breathing.

Implications: Intraoral pH measurement, especially during sleep is able to provide valuable information on saliva dysfunctions and erosion of teeth.

193578

Salivary Protein Profiles of Xerostomia Subjects and Matched Controls

L.X. HOU¹, R.D. CANNON², K.M. LYONS³, and A.R. HOLMES³, ¹University of Queensland, Brisbane, QLD, Australia, ²Sir John Walsh Research Institute, University of Otago, Dunedin, New Zealand, ³University of Otago, Dunedin, New Zealand

Objective: The objectives of this study were to investigate if there is a difference in the saliva proteins detected in xerostomia subjects with increased oral yeast carriage compared to those from age- and gender-matched controls and to see if any particular salivary protein(s) is associated with an increased prevalence of oral yeast carriage.

Method: This was a cross-sectional study (ethical approval: LRS/10/09/034) in which saliva proteins were investigated in saliva rinse samples obtained from 20 individuals with self-reported dry mouth and from matched controls. Saliva samples were subjected to polyacrylamide gel electrophoresis analysis and were visualized with a Coomassie Blue-based stain (EZBlue™) and a more sensitive silver stain. Protein profiles were analyzed and compared both by visual comparison to an internal standard and by using an automated image analysis system (Gel Doc™EZ).

Result: Protein profile analysis confirmed the utility of an automated image analysis system. Although the Gel Doc™EZ system allowed rapid comparison of gels and





determination of the molecular weights of individual proteins, it had less sensitivity than the use of a digital imaging system and visual analysis of images. However, neither method revealed any consistent differences between the salivary protein profiles of the two subject groups, or those that were yeast carriers.

Conclusion: No significant differences in the salivary protein profiles of xerostomia subjects and healthy controls were observed, and the correlation of increased prevalence of oral yeast colonisation with salivary protein profiles in individuals with xerostomia requires further study.

193800

Low level Laser Induced Effects on Human Pulpal Nerves

R. LIANG¹, L.J. WALSH², R. GEORGE¹, ¹School of Dentistry and Oral Health, Griffith University, Australia, ²The University of Queensland, Australia

Objectives: Laser irradiation has been demonstrated to induce analgesia in previous studies, however this effect has yet to be validated with a variety of laser parameters in clinical settings. The objective of this study is to evaluate if a 904nm diode laser is capable of inducing changes in pulpal response in healthy teeth.

Methods: The study followed a double-blind split mouth design, with a randomly selected maxillary first premolar acting as a sham-irradiated control tooth and the contralateral tooth receiving the corresponding laser treatment. Two coded but otherwise identical laser probes (Irradia™, SpectraMedics Ltd., Stockholm, Sweden) were used to deliver the sham (placebo) and laser radiation, with both the operator and patient unaware of each probe's identity. The electric pulp test (EPT) was performed twice on the isolated teeth; once immediately prior to laser exposure and again two minutes following laser exposure. The difference in EPT scores represented treatment effect and was used in paired statistical analysis (Wilcoxon Test). The laser unit utilised was a 904nm GaAs diode laser (3.6J/cm², 60mW, 25Hz, 1min exposure time).

Results: The sample consisted of 30 dental students who fulfilled the inclusion/exclusion criteria and provided written consent for this study. No significant difference found between the treatment effects of the laser and sham. Most (N=20, 66.7%) participants demonstrated an analgesic effect following LLLT; however 9(30%) participants reported increased sensitivity following LLLT. One participant demonstrated a complete absence of treatment effect. The laser induced analgesia and sensitivity effects were statistically significant compared to the placebo (p<0.001 and p=0.008 respectively).





Conclusion: LLLT with a 904nm GaAs diode laser, operated at the presently utilised parameters, appears to induce discrete analgesic and sensitivity effects.

193801

Alternative endodontic protocol using 980nm laser and silver colloidal compounds

D.K. THALAGALA¹, G. ULETT², R. GEORGE¹, ¹School of Dentistry and Oral Health, Griffith University and ²School of Medicine, Griffith University

Objectives: Inadequate bacterial biofilm eradication from the canal space during chemo-mechanical preparation is one major contributor to poor root canal treatment outcome. This study evaluated the efficacy of two different concentrations of colloidal silver and 980nm diode laser therapy to eliminate *Enterococcus faecalis* across the depth and surface of the root canal, using 3D ex vivo fluorescence model.

Methods: Eighty-seven extracted human single rooted teeth were chemo-mechanically prepared according to standard root canal protocol, prior to establishing an *E. faecalis* biofilm on the external root surface of each sample over six days. This external root surface model provided the treatment protocols with a challenge to diffuse through the internal root canal anatomy and establish bacterial kill on the external root surface. This study used seven different intra-canal treatment protocols to evaluate efficacy of bacterial kill; Group 1 (5.2ppm electrolyte silver colloid), Group 2 (10ppm silver citrate colloid), Group 3 (980nm laser irradiation for 15s - laser control), Group 4 (Group 1+ laser for 15s), Group 5 (Group 2+ laser for 15s), Group 6 (Negative control - no treatment), Group 7 (Calcium hydroxide). To evaluate the viability of *E. faecalis* on the external root surface over different time period (24hrs, 48hrs and 72hrs) all samples were stained with BacLight™ (Invitrogen Corporation, Carlsbad, CA, USA) containing SYTO9 and propidium iodide and assessed using confocal fluorescent microscopy.

Results: Groups 1-5 showed significant bacterial kill ($p < 0.001$) when compared to Group 6 and 7 over 72hrs. Group 4 showed significantly ($p < 0.01$) greater bacterial kill at the 72hr time point, when compared to Groups 3, 6, 7.

Conclusions: The result of this study indicates that colloidal silver compounds and 980nm laser therapy may provide an alternative to current endodontic disinfection protocols. The 3D fluorescence model allows for real time evaluation of bacterial kill over different time periods.

193998



Biofabrication of Hard and Soft Tissue Interfaces

D. HUTMACHER, Queensland University of Technology

How does one make a medical implant that integrates seamlessly with surrounding tissue and can actively assist the healing process? An implant that mimics both the form and function of the body part it is designed to replace, and degrades naturally so that it does not have to be removed? One that may, in fact, be gradually replaced using living cells derived from the patients themselves?

These are the kinds of astounding questions tissue engineers have begun to ask in the past two decades. Coalescing tissue engineering strategies with 3D printing technologies has led to an entirely new field of research, dubbed 'biofabrication'. The drive to develop bone grafts for the filling of major gaps in the skeletal structure has led to a major research thrust towards developing biomaterials for bone engineering. Unfortunately, from a clinical perspective, the promise of bone tissue engineering which was so vibrant a decade ago has so far failed to deliver the anticipated results of becoming a routine therapeutic application in reconstructive surgery. This talk will present a bench to bedside concept, the first clinical results and a detailed analysis of short and long-term bone regeneration studies in preclinical animal models of biofabricated bone grafts. In the second part of the talk, a regenerative medicine concept targeting reconstruction of breast tissue by using a holistic biofabrication technology platform will be presented. In summary, this talk will deliver innovative new strategies for Biofabrication for Hard & Soft Tissue Interfaces whilst contributing to the education at QUT and Queensland in large of a new generation of bioengineers, clinician scientists and tissue engineers with a strong international profile.

193999

Is there a coherent plan to reduce inequalities in Indigenous oral health outcomes as a result of the commitment to "Close the Gap" in Aboriginal and Torres Strait Islander health?

C. SHANNON, University of Queensland

The oral health status of Aboriginal and Torres Strait Islander peoples is consistent with their poorer general health: they experience greater levels of disease and disability, lower life expectancy and poorer quality of life due to ill health. The causes of these outcomes are complex and interrelated. Like any population sub-group, these inequities in terms of health outcomes are reflected in a range of measures, including socio economic determinants of health, access to primary and specialist care needs, poor self-care capacity and lack of effective preventive programs.





A policy focus on the importance of good oral health in improving overall Indigenous health outcomes is relatively recent in Australia. However, given that many of the factors contributing to oral health inequities lie outside of the scope of the health system, a comprehensive approach that facilitates the required collaboration and integration across a range of sectors and services is needed.

The example of the response by the Institute for Urban Indigenous Health (IUIH) in South East Queensland will be provided. Established in 2009 as a strategic response to the COAG Close the Gap commitments, IUIH has drawn upon the opportunities provided by the Tackling Indigenous Chronic Disease Package to respond to oral health care needs within a large Indigenous population. The inclusion of oral health in the implementation of health education and prevention programs, health assessments, care co-ordination, workforce development programs, data quality initiatives and the social health program has addressed a significant gap in Indigenous health. The model demonstrates improved access to services and growing evidence of success in terms of health outcomes and a sustainable funding model for service delivery.



List of Delegates

Surname	First Name
Abiko	Yoshimitsu
Alayan	Jamil
Alhadainy	Hatem
AlJobair	Asma
Allen	Kristine
Alsharif	Alla
Ariyawardana	Sinhe
Armfield	Jason
Arora	Himanshu
Arrow	Deborah
Arrow	Peter
Arzmi	Mohd Hafiz
Bagheri	Rafat
Bahnam	Sara
Bailey	Denise
Barker	Christopher
Bartold	Mark
Bertassoni	Luiz
Bridges	Susan
Broughton	John
Cartwright	Susan
Chai	Lei
Chand	Priyashna
Chand	Reshika
Chen	Peter
Chen	Rebecca
Chen	Zetao
Chin	Owen
Choi	Joanne
Choi	Yunsun Jane
Chrisopoulos	Sergio
Christian	Bradley
Cunningham	Garret
Currie	Sean
Dan	Hongxia
Dashper	Stuart
Dawood	Alaa
Devi	Deepika
Do	Loc
Dost	Fatima

Du	Zhibin
Duckmanton	Peter
Edwards	Catherine
Ehrlich	Lewis
El Azzi	Roland
Elhousiny	Moustafa
Escobar	Karen
Evans	Alana
Evans	Wendell
Evershed	Gareth
Farah	Camile
Farihatini	Tintin
Fernando	Surani
Foley	Michael
Formosa	Joseph
Forsyth	Cathryn
Gnanamanickam	Emmanuel
Gohari	Samin
Grehan	Amy
Guazzato	Max
Gussy	Mark
Gyulai	Melanie
Ha	Diep
Ha	William
Hamlet	Stephen
Hanna	Kamal
Hanna	Victor
Harcourt	John
Haresaku	Satoru
Haynes	Stephen
Hou	Leanne Xiao Li
Hou	Michaela
Hua	Anthony
Huang	Boyen
Huang	Yu-Sheng Eugene
Hutmacher	Dietmar
Hwang	Linda
Itintaake	Karurua
Ivanovski	Saso
Jamieson	Lisa





Jenkins	Nicolie		Nguyen	Tan
Jennings	Ernie		Nordin	Norhasnida
Jessri	Maryam		Odeh	Ruba
John	Keziah		Oettinger-Barak	Orit
Johnson	Newell		Olivier	Jessica
Jones	Kelly		Olivier	Venessa
Kaimauri	Stewart		Osborne	Peter
Kamalendran	Niveathanan		Othman	Noor
Kapellas	Kostas		Patel	Jilen
Kazoullis	Andrea		Peck	Chris
Kazoullis	Steven		Perera	Manosha
Khatri	Darshika		Peres	Marco
King	Nigel		Prihastuti	Christiana
King	Shalinie		Ram	Anumala
Kordbacheh	Farzaneh		Raphael	Sarah
Kroon	Jeroen Kroon		Reher	Peter
Kularatna	Sanjeewa		Reher	Vanessa
Kury Rodrigues	Matheus		Reynolds	Coralie
Lalla	Yastira		Reynolds	Eric
Lee	Ryan		Rich	Alison
Leishman	Shaneen		Richards	Lindsay
Liang	Ryan		Rizk	Elie
Liku	Kuini		Roberts-Thomson	Kaye
Lim	Michelle		Sagatova	Alia
Lingam	Lavanya		Samaranayake	Lakshman
Lo	Jonathan		Sandham	John Andrew
Lui	Lily		Schuch	Helena
Luzzi	Liana		Scott	Antonia
Maimanuku	Leenu		Seymour	Greg
Mann	Chelsea		Shahmoradi	Mahdi
March	Sandra		Shakibaie	Fardad
Mathew	Asha		Shannon	Cindy
Mathew	Shibu		Sharma	Chakrabhavi Dileep
Matias	Marie Tess		Shen	Peiyan
Mayat	Munir		Shetty	Sowmya
McInnes	Helen		Sholapurkar	Amar
Meke	Thomas		Short	Leonie
Mercado	Tino		Sim	Christina
Mohamed Thani	Wan Syasliza		Simpson	Amelita
Moore	Kelsey		Slack-Smith	Linda
Morgan	Mike		Smith	James
Mun	Michelle		Smith	Michael
Muslim	Tufayl Ahmed			



Colgate

Storrs	Mark
Stute	Ben
Tan	Haiping
Tan	Joel
Tanaka	Hiroaki
Tavazoei	Maziar
Thalagala	Dinusha
Thomson	David
Thomson	Wendy
Ting	Sarah
Townsend	Grant
Tran	Carol
Vu	An
Walsh	Laurie
Warnke	Patrick
Whelton	Helen
Woodford	Valerie
Xiao	Yin





Program: 54th Annual IADR ANZ Conference Inequalities to Personalized Medicine: A Tale of Disparities															
Sunday 28th September			Monday 29th September			Tuesday 30th September			Wednesday 1st October						
	Plenary/Symposium	Concurrent	Poster							Plenary/Symposium	Concurrent	Poster			
	Traditional Welcome to Country (Dugwaywa Marwocky) Opening Ceremony (Camille Farih) Venue: PMP10				Plenary 2 - Venue PMP10 Indigenous Oral Health Overview of Indigenous Oral Health in Australia - strategies for moving forward Clady Shenton (Dawsonville) Chairperson: Camille Farih				Plenary 3 - Venue PMP10 Racial Research Helen Whetton (CVR & Leeds) - Immediate Past IADR President Chairperson: Michael Foley						
8:30-9:00 am				8-9 am				8-9 am							
9-10:15 am	Plenary 1 - Venue PMP10 Inequalities in Oral Health Overview of GCHRA - A Call to Action Helen Whetton (CVR & Leeds) - Immediate Past IADR President Chairperson: Camille Farih			9-10:15 am	Symposium 3 - Venue PMP10 Indigenous Oral Health Chairperson: Fethiye Dost Speakers: Lisa Ambrose (Melbick) Early childhood caries intervention among Indigenous children in Australia Julia Braggins (Stago) Early childhood caries intervention among Maori children in New Zealand Deyan (Melbick) Time trends and factors associated with time trends of Indigenous child caries from 1999 to 2013 Bobby Anwar (Melbick) Social cognitive theory and its role in Indigenous oral health outcomes Austliie Chant (Melbick) Frames of reference underlying Indigenous adults' self-rated oral health Gunter Kasper (Melbick) Health Among Peri-Cardio Study Participants: Does Improvement Occure? (Inequalities?)			9-10:15 am	Plenary 4 - Venue PMP10 Advanced Themed Engineering Constructs for Personalized Regenerative Medicine Dietmar Hutmacher (DUT) Chairperson: Neo Yamamoto			9-10:15 am	Plenary 5 - Venue PMP10 Dental Education at Crossroads Chairperson: Naveed Johnson Speakers: Allen Bell (Stago) Curriculum review: national and international perspectives Kaye Roberts-Thomson (Melbick) Clinical education and care delivery: The Way Forward Grant Townsend (Melbick) Beyond PGD - What's simulation and assessment? Chris Peck (Stago) Wither clinical placement and outcome based education? Lakshmi Sureshmoorthy (Dawsonville) Research and discovery and dental education		
Tea Break 10:15-10:45 am	Symposium 1 - Venue PMP10 Inequalities in Oral Health Chairperson: Helen Whetton Speakers: Wassil Fares (Sydney) Inequalities in Dental Caries Michael Foley (Dawsonville) The Factors of Dental Caries in CJD without Florida Saeed Johnson (Sydney) Inequalities in Oral Cancer			Tea Break 10:15-10:45 am	Tea Break			Tea Break 10:15-10:45 am	Tea Break						
10:45-12 pm	Poster Session 1 - Venue P11 Oral Session Colgate Poster Presentations & Judging (2 sessions: Poster and Senior concurrent)			10:45-12 pm	Lunch Break 12-1pm			10:45-12 pm	Lunch Break 12-1pm						
Executive Meeting Arbor Boardroom (Closed Meeting)				Executive Meeting Arbor Boardroom (Closed Meeting)				Executive Meeting Arbor Boardroom (Closed Meeting)							
1-2:00 pm	Plenary 2 - Venue PMP10 Personalized Diagnostic Medicine Personalized Patient Diagnostics - a paradigm shift in healthcare Nashwan Akbar (Melbick - IADR President) Chairperson: Camille Farih			1-2:00 pm	Symposium 4 - Venue PMP10 Personalized Regenerative Medicine Chairperson: Steve Hensler Speakers: Neo Yamamoto (DUT/SH) Multi-phasic constructs for periodontal tissue engineering Patrick Wenzel (DUT/SH) Endochondration - from bench to bedside Mark Barak (Melbick) Induced Pluripotent Stem Cells The Allos (DUT) Signaling pathway manipulation			1-2:00 pm	Symposium 5 - Venue PMP10 Dental Education at Crossroads Chairperson: Naveed Johnson Speakers: Allen Bell (Stago) Curriculum review: national and international perspectives Kaye Roberts-Thomson (Melbick) Clinical education and care delivery: The Way Forward Grant Townsend (Melbick) Beyond PGD - What's simulation and assessment? Chris Peck (Stago) Wither clinical placement and outcome based education? Lakshmi Sureshmoorthy (Dawsonville) Research and discovery and dental education						
2:00-3:15 pm	Symposium 2 - Venue PMP10 Personalized Diagnostic Medicine Chairperson: Carl Tim Speakers: Eric Reynolds (Melbourne) Periodontal Microbiome and Diagnostic Drug Response (Stago) Genetics/epigenetics in diagnosing Periodontal Disease Camille Farih (Dawsonville) Personalized Patient Care in Oral Oncology Chris Peck (Sydney) Diagnosis & Management of Oro-facial pain			2:00-3:15 pm	Tea Break 3:15-3:45pm			2:00-3:15 pm	Tea Break 3:15-3:45pm						
3:45-5pm	Concurrent Session 1 - Venue P11 10 Free Papers Behavioral, Epidemiological and Health Services Research, Education, Pediatric Oral Health Chairperson: Lou De			3:45-5pm	Tea Break 3:45-4:15pm			3:45-5pm	Concurrent Session 2 - Venue P11 10 Free Papers Behavioral, Epidemiological and Health Services Research, Education, Pediatric Oral Health Chairperson: Naveed Johnson						
5-6pm	Social Event Colgate Welcome Reception Place North Terrace Brisbane Convention & Exhibition Centre			5-6pm	Social Event Colgate Welcome Reception Place North Terrace Brisbane Convention & Exhibition Centre			5-6pm	Social Event Colgate Welcome Reception Place North Terrace Brisbane Convention & Exhibition Centre						
6:00-10:00pm				6:00-10:00pm				6:00-10:00pm							
	Closing Ceremony (Camille Farih) Announcements of 54th Annual Meeting Date 2018								Closing Ceremony (Camille Farih) Announcements of 54th Annual Meeting Date 2018						