

D3G DISPATCH

News about Developmental Dental Defects (D3s), The D3 Group, and the Chalky Teeth Campaign.

COMMENT ——— FROM THE CUSP

With the end of 2018 looming, I'm surely not alone in thinking "wow, that one flew past quicker than ever before". But equally, looking back at D3G's wonderful list of accomplishments, I feel excited about what's to follow – so roll on 2019! Before then however, December's hectic juggle of parties and work deadlines must be navigated followed by some time off to recharge the batteries and reboot the addled brain.

As the year-ender, this issue embraces some rounding-up of 2018's activities and acknowledgement of those who've helped us along the way. Now with a **UK-based international ambassador** and further **wins in the USA**, D3G seems well on its way to becoming an international movement. Besides the geo-social challenges that internationalisation brings, we also need to deal (*better*) with the diverse audiences that comprise, and are served by, D3G. So we share some of these experiences in educational spirit, hoping it'll inspire as well as inform you readers.

And just when we were getting used to pumping out a 4-page newsletter, your compliments about the educational elements and requests for more have been heeded with a new clinical segment – please let us know what you think.

Finally, a special thanks to **Sharon Dunn** who has helped so ably on numerous fronts throughout the year.

D3-Mike | Mike Hubbard
D3G Founder-Director



IN THIS ISSUE

PG 2. CATCHING THE EAR OF USA DENTAL PROFESSIONALS

PG 2. COMMUNICATING ACROSS THE D3 FAMILY

PG 3. WE'RE GETTING THERE!

PG 3. BERNADETTE DRUMMOND,
INTERNATIONAL AMBASSADOR FOR D3G

PG 4. NOW YOU SEE IT...

PG 5. D3 LITERATURE: KEEPING YOU CURRENT

HIGH IMPACT: Catching the ear of USA dental professionals

What might be described euphemistically as “**patchy awareness**” of Molar Hypomineralisation (MH) is a worldwide problem, but perhaps nowhere moreso than in the USA – for example, [Uncle Sam](#) has yet to publish any prevalence studies on MH. Why isn't the US amongst those [36 countries that do have such data](#)? Does this reflect relatively “**widespread ignorance**” (the blunt version of patchiness), or might MH be less prevalent than in other countries? Unsurprisingly, the rumour mill has it that 2 yet-to-be published US studies will reveal similar prevalences as elsewhere. And D3 happenings since May, when we raised these questions in the [Journal of the American Dental Association](#), have strengthened both sides of the awareness equation – we now know more MH-savvy folk in the US than before (several who now are [members](#)) but equally, the existence of mass ignorance has been verified (e.g. [shock report about amalgam use below](#)). Although challenging, this situation provides D3G with a fertile opportunity to advance our [mission of doing social good](#) around the world.

Enter **Colgate America** who kindly invited D3G to do a **webinar** about **the Molar Hypomineralisation problem** and our **Chalky Teeth Campaign** (available [free here](#)). In the run-up, Colgate polled registrants about “**How familiar are you with the condition Molar Hypomineralization?**” Of 542 replies, only 18% said “very”, 46% said “somewhat”, and a whopping **36% said**



“not at all”. The great news is that this depressing picture has likely improved because the webinar attracted **1,700 live views** (an **all-time record** says Colgate) and another **1,200 views since**. Although watched around the world, 80% of live views came from the US – explaining why **USA topped D3G's website traffic last month**, leaping past usual leaders Australia and New Zealand. We think the webinar will hold interest for many D3ers because D3G-NZ rep **Erin Mahoney** provides an elegant summary of clinical aspects sandwiched between **D3-Mike's** latest translational take on MH definitions, terminology and social impact. Our thanks go to **Barbara Shearer** and her team at Colgate America for making this wonderful advance possible.

REPORT: Communicating across the D3 family

Besides **geographic considerations** as with the USA above, it's important that our messaging is effective across all **parts of the 'D3 family'** wherever they reside. Some may say the D3 family is [unusually diverse, or eclectic](#) even (noting our many stakeholders including **academic, dental, medical, public health, industry and consumers**) whereas others may think more translationally and say D3G comprises “[Uncle Tom Cobley and all](#)”. Translationally, from one perspective (i.e. *outgoing*) we must deploy a **consistent message** that applies across all subgroups, yet tailor its presentation so that each subgroup “gets it” at a level they're comfortable with – hence D3G's efforts on [translational terminology](#) and multi-level education for [Kids through to Researchers](#). And in the other translational direction (*incoming*), we must assimilate inputs from all stakeholder types when developing our message. As it happens, the last couple of months have seen important wins across multiple subgroups, opening the door to broader dissemination internationally.

continued on pg 3 >



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Achieving massive **public exposure** across New Zealand, D3-NZ rep **Dorothy Boyd** and **D3-Mike** were interviewed on **Radio New Zealand** about about Molar Hypomin (which they termed "**A distressing dental condition**"). Second, D3-Mike rubbed shoulders with **paediatric specialists** and **children's dentists** at back-to-back meetings of **AAPD** and **ANZSPD-NSW** in Sydney. Next he gave talks to **orthodontists** and **general dentists** from the Victorian branches of **ASO** and **ADA**, respectively. Then came the "**oral health professionals**" (**OHPs**), by which we mean the **dental therapists, dental hygienists** and **oral**

health therapists who play a major frontline job dealing with Molar Hypomin. In Australia we were pleased to have **D3G update articles** published in newsletters of **ADOHTA** and **DHAA**. And "**over the ditch**" in New Zealand it was great to have **NZDHA** come aboard as **D3G endorsers** and also to formulate educational plans with **NZDOHTA** whose endorsement we've enjoyed for several years. Now rolling with **OHP-friendly communications**, we plan to co-opt other D3 colleagues to extend this initiative across the D3 family – both **Down Under** and **abroad** (volunteers welcomed!).

THANKS SO MUCH: We're getting there!

Nearing the end of 2018, it's timely to reflect on the past 20 months since we "**bit the bullet**" aimed at getting D3G on its own feet financially. As reported in the previous issue (**Dispatch 7**), a key part of this endeavour **involved expanding our D3 family internationally** and another was development of revenue channels including subscription memberships (for **individuals** and **specialist practices**) and the new "chalky molar" edition of **Sam's storybook**. Our self-written report card says "**great start, keep up the good work Sharon and Mike**". Unsurprisingly however, our **bean-counters** caution that, although the **forecast looks fine**, the current reality is that **D3G has yet to break even** – so our survival, and everyone's benefits, still depend on a few personal back pockets. We hope this frank portrayal spurs your further support just as it does our continuing optimism.

The reflections also uncovered some overdue public **thankyous** to those who've helped launch this exciting trajectory. So here's a shout-out for your substantial

individual donations (**Garry Nervo, Karen Kan, Philippa Sawyer, Paul Schneider, Chris Theodosi, Alwyn Wong, Hubbard-McElroy family**), Chalky Teeth Campaign contributions (**Dental Hygienist Association Australia, Australasian Academy of Paediatric Dentistry**), talk honorariums (**Pacific Smiles Group, Australian Dental Industry Association, Australian Dental Association Group H, Colgate America**), 'Sam book' sponsorships (**NZ Dental Association-WBOP branch, Victorian and New South Wales branches of Australian Dental Association, Australasian Academy of Paediatric Dentistry, Colgate Australasia, GC Australasia**), conference and continuing education promotions (**GC Australasia, ADA-NSW**), plus our growing network of **We Fight Chalky Teeth practices** and **individual subscribers**. Additionally we gratefully acknowledge heaps of in-kind contributions from a multitude of D3 family members **Down Under** and **abroad**. Our apologies for any omissions – just let us know and we'll pick them up next time.

INTRODUCING: Bernadette Drummond, International ambassador for D3G

We're pleased to introduce **Bernadette Drummond** as our third international ambassador (*United Kingdom*), joining **Vidal Perez** (*Latin America*) and **Rami Farah** (*Middle East*). Now Professor and Honorary Consultant in Paediatric Dentistry at the **University of Leeds**, Bernadette was influential in **D3G's genesis** having discussed medico-dental research needs with **D3-Mike** over many years. Their talk about enamel defects started "back home" in New Zealand and then focussed on **Molar Hypomin** prevention once Mike started his translational research job in Australia. Bernadette subsequently supervised several postgraduate studies into Molar Hypomin (including **Rami's**) and helped conceive the **Practitioner section** of **D3G's website**.

continued on pg 4 >



Having originally trained as a dentist in New Zealand, Bernadette travelled to the USA and England to specialise in paediatric dentistry. She has enjoyed a career-long interest in enamel defects seeking to extend compatriot **Grace Suckling's wonderful legacy** in this blossoming

field. Testament to Bernadette's accomplishments comes from over 70 academic publications including editorship of a [recent textbook](#), and leadership of several professional organisations. [Contact Bernadette](#).

WOW FACTOR: Now you see it...



First examination



4 months later

Offices have their "casual Fridays" and scientists have their "Friday afternoon experiments", so in that vein we've decided to casually introduce an experimental new segment to this, our last-quarter newsletter of 2018.

Indeed many readers have suggested we highlight **interesting D3 cases** and, having recently seen one that made us say "wow", we're thrilled to share it here (in educational fashion of course).

The issue

We all know that severely **hypomineralised molars can crumble rapidly** (so-called "post-eruptive breakdown") and progress to **rampant decay**. But just how rapidly? And how can we impress this concern on others?

The wow

The left picture shows a "chalky 6-year molar" on first examination. The same tooth **just 4 months later** is shown on the right. Much of the chalky enamel has disappeared in this short period, exposing the underlying dentine which is softer and full of nerves – a perfect recipe for rapid decay leading to extraction.

Questions arising

If the first exam hadn't happened when it did, **how many clinicians would diagnose this correctly as Molar Hypomin** – as opposed to **decay** or "**hypoplasia**"? The discoloured (yellow/brown) enamel is one persisting clue. A second indicator is that another 6-year molar was similarly afflicted, whereas the other two were unaffected (normal). Additionally, looking at the "**2-year molars**", 3 had stainless steel crowns (e.g. right picture) and the 4th was normal. **Can this be fixed?** – potentially yes, if discovered early enough and subject to orthodontic considerations, such teeth may be restored with fillings and/or crowns. **Translational message?** – when "back teeth" are erupting into the mouth (typically at 2, 6 and 12 years), everyone (parents, dentals, medicos) should be on the lookout for discoloured, painful molars.

Many thanks to Melbourne paediatric dentist **Daniel Andreasen-Cocker** for sharing this case. If it's agreed this "educational experiment" should continue, then those of you in a position to supply informative D3 cases please do so. And for the rest, any tips on how to make this segment more useful to our broad readership will be welcomed ([contact Sharon](#)).

D3 LITERATURE: Keeping you current!

Clinical Feature: US paediatric dentists' knowledge about Molar Hypominin

A **shock finding** from a survey of **paediatric dentists in the US Midwest** is that nearly **half use amalgam to restore hypomineralised 6-year molars (MH)** – for 24% this is their most-used material and 21% use it sometimes. **D3G member Azza Tagelsir** and colleagues from Indiana University found that, of the 251 respondents (*98% postgrad qualified, 75% board certified, 25% involved in academia/teaching*), **nearly all were aware of MH** and 85% regarded it a significant clinical problem. **Diagnostic confidence** was self-reported as high (*65% very confident, 34% confident*), yet 44% **erroneously linked this condition to excessive fluoride**. Opinions about **prevalence**, and whether this is on the increase, varied with time since graduation, but not so for the use of amalgam. With the glaring exception of amalgam, these findings largely mirror those from similar surveys done elsewhere (*Europe, Australasia, South America, Middle East*). We think, when comparing to the **Colgate America poll** above (*i.e. 36% not at all aware of MH*), these findings give cause for optimism – surely with D3G's help this sizeable patch of MH savviness (*3.3 paedodontists per 100,000 children*) can spur greater awareness across the US profession and beyond? Read more [here](#).



Clinical Feature: Alleviating psychosocial impacts of Molar Hypominin

It seems logical that, if kids are upset by abnormal appearance of their front teeth, then dental interventions to ameliorate that abnormality should lead to happier kids – right? Well yes. But, when turning to research, this story becomes much more complicated and so today's paucity of studies that can be used to reassure concerned families perhaps isn't surprising. Building on their previous research into other enamel defects, researchers at the University of Sheffield (*led by D3G member Helen Rodd*) have now switched to Molar Hypominin and undertaken a ground-breaking prospective study. Selecting cases where the permanent incisors were disrupted to the extent that cosmetic treatment had been requested, a survey was done to establish the child's opinion about his/her "quality of life" before and after procedures were done to improve appearance. A well-established survey protocol that considers the child's self-perceptions, and also their reaction to external perceptions (*e.g. appearance-related bullying at school*) was used. The findings showed a strong improvement in quality of life across 93 subjects, establishing that relatively straight-forward interventions (*microabrasion, resin infiltration, bleaching*) can provide major benefits to susceptible kids. We think this study provides a useful start in a needy area where several major questions remain (*read more here*).



QUICK QUIZ: Delving into D3s

QUESTION 1 (easy)

'Hypomineralisation' is not the same as 'hypoplasia' of enamel – true or false?

QUESTION 2 (harder)

Molar Hypominin might have a genetic cause, like Amelogenesis Imperfecta - true or false?

Answers: see Suggestions Box on pg 6.

Other New Reports: Spotlighting Molar Hypomin and DDEs

Developmental defects of the enamel and its impact on the oral health quality of life of children resident in Southwest Nigeria. Folayan MO, Chukwumah NM, Popoola BO, Temilola DO, Onyejaka NK, Oyedele TA, Lawal FB. *BMC Oral Health*. 2018; 18(1):160. PMID: [30261858](#)

Dental hypomineralization treatment: A systematic review. da Cunha Coelho ASE, Mata PCM, Lino CA, Macho VMP, Areias CMFGP, Norton APMAP, Augusto APCM. *J Esthet Restor Dent*. 2018; [Epub ahead of print] PMID: [30284749](#)

Molar incisor hypomineralisation (MIH) - an overview. Almualllem Z, Busuttill-Naudi A. *Br Dent J*. 2018; [Epub ahead of print] PMID: [30287963](#)

Molar Incisor Hypomineralization and Its Prevalence. Padavala S, Sukumaran G. *Contemp Clin Dent*. 2018; 9(Suppl 2):S246-S250. PMID: [30294152](#)

Efficacy of Intraosseous Local Anesthesia for Restorative Procedures in Molar Incisor Hypomineralization-Affected Teeth in Children. Dixit UB, Joshi AV. *Contemp Clin Dent*. 2018; 9(Suppl 2):S272-S277. PMID: [30294157](#)

Superficial infiltration to treat white hypomineralized defects of enamel: clinical trial with 12-month follow-up. Giannetti L, Murri Dello Diago A, Silingardi G, Spinass E. *J Biol Regul Homeost Agents*. 2018; 32(5):1335-1338. PMID: [30334435](#)

Validity and reproducibility testing of the Molar Incisor Hypomineralisation (MIH) Index. Ghanim A, Mariño R, Manton DJ. *Int J Paediatr Dent*. 2018; [Epub ahead of print] PMID: [30350324](#)

Comproving the multifactorial etiology of molar incisor hypomineralization. Teixeira RJPB, Andrade NS, Queiroz LCC, Mendes FM, Moura MS, Moura LFAD, Lima MDM. *Int J Paediatr Dent*. 2018; [Epub ahead of print] PMID: [30351524](#)

Global prevalence of molar incisor hypomineralisation. Dave M, Taylor G. *Evid Based Dent*. 2018; 19(3):78-79. PMID: [30361661](#)

On the genetics contribution to molar incisor hypomineralization. Vieira AR. *Int J Paediatr Dent*. 2018; [Epub ahead of print] PMID: [30367537](#)

Association of molar incisor hypomineralization with premature birth or low birth weight: systematic review and meta-analysis. Wu X, Wang J, Li YH, Yang ZY, Zhou Z. *J Matern Fetal Neonatal Med*. 2018; 1-9. [Epub ahead of print] PMID: [30369281](#)

Molar Incisor Hypomineralization: Prevalence and Risk Factors Among 7-9 Years Old School Children in Muradnagar, Ghaziabad. Rai A, Singh A, Menon I, Singh J, Rai V, Aswal GS. *Open Dent J*. 2018; 12:714-722. PMID: [30369981](#)

Prevalence of molar incisor hypomineralization and regional differences throughout Japan. Saitoh M, Nakamura Y, Hanasaki M, Saitoh I, Murai Y, Kurashige Y, Fukumoto S, Asaka Y, Yamada M, Sekine M, Hayasaki H, Kimoto S. *Environ Health Prev Med*. 2018; 23(1):55. PMID: [30382812](#)

Microshear bond strength of different restorative materials to teeth with molar-incisor-hypomineralisation (MIH): a pilot study. Arab M, Al-Sarraf E, Al-Shammari M, Qudeimat M. *Eur Arch Paediatr Dent*. 2018; [Epub ahead of print] PMID: [30406461](#)

For more Molar Hypomin reports see 2018 editions of D3G Dispatch and also go [here](#) >

Dental enamel defects predict adolescent health indicators: A cohort study among the Tsimane' of Bolivia. Masterson EE, Fitzpatrick AL, Enquobahrie DA, Mancl LA, Eisenberg DTA, Conde E, Hujuel PP. *Am J Hum Biol*. 2018; 30(3):e23107. PMID: [29399912](#)

Enamel defects and dental caries among children attending primary schools in Poznań, Poland. Opydo-Szymaczeka J, Gerreth K, Borysewicz-Lewicka M, Pawlaczyk-Kamieńska T, Torlińska-Walkowiak N, Śniatała R. *Adv Clin Exp Med*. 2018; [Epub ahead of print] PMID: [30066500](#)

Developmental defects of enamel increase caries susceptibility in Chinese preschool children. Li Y, Chen X, Chen S, Janal MN, Sarnat H. *Community Dent Oral Epidemiol*. 2018; 46(5):500-510. PMID: [30028027](#)

The prevalence of developmental defects of enamel, a prospective cohort study of adolescents in Western Sweden: a Barn I TAnadvarden (BITA, children in dental care) study. Jälevik B, Szigyarto-Matei A, Robertson A. *Eur Arch Paediatr Dent*. 2018; [Epub ahead of print] PMID: [29761341](#)

The higher prevalence of developmental defects of enamel in the dioxin-affected region than non-dioxin-affected region: result from a cross-sectional study in Vietnam. Ngoc VTN, Huong LT, Van Nhon B, Tan NTM, Van Thuc P, Hien VTT, Dung TM, Van Toan N, Anh LQ, Son LH, Chu-Dinh T, Chu DT. *Odontology*. 2018; [Epub ahead of print] PMID: [29752597](#)

Diagnosing Developmental Defects of Enamel: Pilot Study of Online Training and Accuracy. Dabiri D, Eckert GJ, Li Y, Seow K, Schroth RJ, Warren J, Wright JT, Zhao S, Fontana M. *Pediatr Dent*. 2018; 40(2):105-109. PMID: [29663909](#)

Dental caries and developmental defects of enamel in individuals with chronic kidney disease: Systematic review and meta-analysis. Limeira FIR, Yamauti M, Moreira AN, Galdino TM, de Magalhães CS, Abreu LG. *Oral Dis*. 2018; [Epub ahead of print] PMID: [30338628](#)

Early-life events and developmental defects of enamel in the primary dentition. Pinto GDS, Costa FDS, Machado TV, Hartwig A, Pinheiro RT, Goettens ML, Demarco FF. *Community Dent Oral Epidemiol*. 2018; 46(5):511-517. PMID: [30080266](#)

Towards better understanding and care of people with D3s.

SUGGESTIONS BOX

In D3 family spirit, please **contact us** to share your thoughts on how we might improve this newsletter and other communications.

Answers to quiz:

Q1: True (*more about this [here](#)*)

Q2: False, a primarily genetic cause is inconsistent with isolated patches of chalky enamel in just one or two molars, as often happens (*learn more [here](#)*)