We should know better! Proven dental treatments that need full adoption Jeremiah Dye, DDS

Disclaimers

- I do not have any financial arrangements or affiliations with any corporate organizations which might constitute a conflict of interest with regard to this continuing education activity.
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Trigger Warning

• This presentation contains images of plaque, tooth decay, gingivitis, blood and insects that some viewers may find disturbing.

My Educational Background

- 1997 Socorro HS, Socorro, NM
- 2001 Texas A&M University
 BS in Entomology with minor in Chemistry
- 2005 Texas A&M University

– MS in Entomology

 An evaluation of two strains of *Cyrtobagous salviniae* Calder and Sands as natural enemies of the aquatic weeds *Salvinia molesta* Mitchell and *Salvinia minima* Baker



University of Colorado School of Dental Medicine

- Graduated in 2009
- Class
 president all
 4 years



Some personal info

• 5 kids including 2 sets of fraternal twins



My Dental Journey

- Started work 3 months after finishing dental school
- Expectation to see 15 patients per 10 hour day
- "Here are your operatories. Here are your assistants. Go to it!"
- Minimal mentorship
- Minimal scrutiny
- Freedom to grow, freedom to fail

Where I work

- First Choice Community Healthcare
 - South Valley HealthCommons

- Staff dentist 2009 2012
- Dental Director 2012 present



Disease Burden Among FCCH Patients



Caries Disease Management

Cariology Texts

Monographs in Oral Science Editors: G.M. Whitford, A. Lussi Vol. 21

Detection, Assessment, Diagnosis and Monitoring of Caries

Editor



KARGER

Dental Caries

The Disease and Its Clinical Management Third Edition



Edited by Ole Fejerskov, Bente Nyvad and Edwina Kidd

WILEY Blackwell

Monographs in Oral Science Editors: A. Lussi, M.A.R. Buzalaf Vol. 27

Caries Excavation Evolution of Treating Cavitated Carious Lesions

Editors F. Schwendicke Jo Frencken N. Innes



KARGER

My Second Year





June 2011 – NMHR Provider Retreat

- Douglas Young "CAMBRA (Caries Management by Risk Assessment)"
 - Dental caries is a reversible process
 - Not every tooth with radiographic evidence of caries needs operative treatment



 Not every tooth with visual evidence of caries needs operative treatment

Restorative Spiral

Sound tooth ->Initial carious lesion -> first restoration -> larger restoration(s) -> RCT -> crown -> extraction

Minimally invasive dentistry



Minimally invasive dentistry Minimal intervention dentistry Light touch dentistry



Restorative Spiral



What is dental caries?

A bacterial biofilm mediated disease process characterized by repeated episodes of low pH resulting in net loss of mineral content from the teeth.



What is dental caries?

A bacterial biofilm mediated disease process characterized by repeated episodes of low pH resulting in net loss of mineral content from the teeth.



Do you agree?

- "It is now recognized that the caries process can be stopped at virtually any stage if the biofilm is disturbed and fluorides delivered at the lesion."
- "Thus, the central goal of carious lesion management now focuses on correcting this chronic imbalance by reducing demineralization factors and maximizing remineralization of the carious hard tissue."
 - Santamaria RM, Innes N. Caries Excavation.
 Monographs in Oral Health vol 27. 2018.

Do you believe?

- Have you ever?
 - 1. Encouraged brushing / flossing
 - 2. Encouraged diet changes
 - 3. Applied fluoride varnish
 - 4. Applied SDF
 - 5. Performed an indirect pulp cap
 - 6. Placed a sealant over caries
 - 7. Restored over a cavity without any caries removal
 - 8. Placed a Hall Crown

The Catechism of Minimal Intervention Dentistry • Surface plaque drives the demineralization process even on deep lesions. Carious lesions CANNOT progress without surface plaque and access to sugar. Infected dentin IS NOT infectious

Light Touch Dentistry Silver Diamine Fluoride



Silver Ion Mechanism of Action

- Binds to and denatures bacterial proteins
- Binds to bacterial DNA, preventing replication
- Prevents plaque stagnation
- "Zombie" effect
- Arrests caries disease process
- Arrested carious dentin is more resistant to decay than non-carious dentin

Silver Diamine Fluoride



- Elevate Oral Care, Advantage Arrest 38% Silver Diamine Fluoride (200% silver)
 - Approved for treatment of dentin hypersensitivity
 - Extensive off label use for treatment of dental caries
 - 2016 FDA "Breakthrough Therapy" designation for treatment of dental caries
 - expedites research process for full FDA approval of a new indication

What is the FCCH Protocol?

- Obtain written informed consent
- Open a unit dose fluoride varnish package
- Dispense 1-2 drops 38% SDF (aq) the brush space of the varnish package and recap the bottle
- Air dry with reasonable isolation
- Wet the lesion with SDF using micro brush
- Immediately cover with 5% fluoride varnish

That's not good!







Caries Arrest

Initial visit





+2 weeks



+ 5 months



SDF Indications

- Caries control / initial disease management
- Definitive caries arrest
- Adjunct to restorative dentistry
 - Easier, more predictable restorations
 - Stop decay now, restore
 later





Caries arrest – Pit and Fissure Sealants

 Occlusal caries into dentin can arrested through application of pit/fissure sealants





 Caries Res. 2004 May-Jun;38(3):305-13. How 'clean' must a cavity be before restoration? Kidd, EA.

Light Touch Dentistry

- Stepwise caries removal
- Indirect pulp cap



Can caries be arrested without complete excavation?

- Stepwise caries removal protocol
 - Hard perimeter, but leave soft, wet dentin where close to pulp
 - Remove all caries at a follow-up visit
- Dentin harder, drier, darker on re-entry
- Fewer or no microorganisms present on re-entry
- Similar 90%+ success at 1 year for partial caries removal vs stepwise.

Dental Caries – The Disease and Its Clinical Management. 3rd ed. 2015. O. Fegerskov, B.Nyvad, E. Kidd.

Managing Deep Cavities

How can we predictably treat cavities like this without damaging the pulp?



From Wikipedia...How (not) to do it...

- A small spot of decay visible on the surface of a tooth.
- B. The radiograph reveals an extensive region of demineralization within the dentin (arrows).
- C. A hole is discovered on the side of the tooth at the beginning of decay removal.
- D. All decay removed; ready for a filling.



What is the best pulp capping material?

- Dycal
- Vitrebond
- Ultra-Blend
- LimeLite
- ZOE or IRM
- Glass ionomer
- Resin bonding agent
- MTA
- Activa Base/Liner
- Activa Restorative



A better way...



Start to Finish



Routine Recall – 2 Years Later





~ 2.5 years later



Dr. Norna Hall – A True Believer

- Innes NPT, Stirrups DR, Evans DJP, Hall N. "A Novel technique Using Preformed Metal Crowns for Managing Carious Primary Molars in General Practice – a retrospective analysis" Brit Dent J 2006; 200(8):451-4 & 444
- In 1997, was the only dentist in her region of Scotland routinely placing preformed stainless steel crowns

Hall Crown Technique

- Place orthodontic separators 2-3 days prior to restoration
- Select an appropriately sized precrimped stainless steel crown
- Cement with glass ionomer cement
- No anesthesia
- No caries removal

What about the occlusion

- Hyperocclusion typically resolves in 30 days
- Not typically bothersome for the patient
- Avoid placing Hall Technique crowns on opposing teeth at the same visit

Caries arrest – Hall SSC

Min. 23 month recall	Hall SSC	Composite
No apparent discomfort	89%	78%
Preferred by patient	77%	23%
Preferred by dentist	81%	19%
Irreversible pulpitis	2%	15%

• Innes NP, Evans DJ, Stirrups DR. The Hall Technique; a randomized controlled clinical trial of a novel method of managing carious primary molars in general dental practice: acceptability of the technique and outcomes at 23 months. *BMC Oral Health*. 2007;7:18.

Orthodontic Separator





Initial exam

Immediate post-op

1 year recall

A case by Dr. Shirlena Waters



Initial exam

Immediate post-op

Another case by an FCCH dentist



https://en.wikipedia.org/wiki/Hall_Technique

University of Dundee

The Hall Technique

A minimal intervention, child centred approach to managing the carious primary molar



A Users Manual Version 4

The Hall Technique Guide

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Do you believe?

- Will you?
 - 1. Encourage brushing / flossing
 - 2. Encourage diet changes
 - 3. Apply fluoride varnish
 - 4. Apply SDF early and often
 - 5. Perform an indirect pulp cap
 - 6. Place a sealant over a carious lesion
 - 7. Restore over a cavity without any caries removal
 - 8. Place a Hall Crown

How do we help this 5yo today?









That's better



Let's put out this fire today!

• Glass ionomer sealant / protective restoration



Sub-antimicrobial Dose Doxycycline

Periodontal Disease

Initial Exam

1 Year Recall

T#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	I
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GM CAL MG				645	735	726	547	32 <mark>4</mark>	<mark>5</mark> 33	424	826	767	835	844			
FG TC PMB	м	м	м												м	м	
PD Bld Sup				649	847	658	554	423	322	334	677	568	765	637			
GM CAL MG				649	847	658	554	4 23	322	334	677	568	765	637			
PD Bid			545	545	446	436	734	536	337	334	535	635	566	757	436	555	
Sup GM CAL MG			545	545	446	436	734	536	337	334	535	635	566	757	436	555	
FG TC PMB	м	м															
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PD Bld			333	323	323	323	322	225	222	322	223	222	223	332		
GM CAL MG			333	323	323	323	322	22 <mark>5</mark>	222	322	223	222	223	332		
FG TC PMB	м	м	21											12	м	м
PD Bld			242	212	312	113	323	233	222	232	322	213	212	533		
GM CAL MG			242	212	312	113	323	233	222	232	322	213	212	<mark>5</mark> 33		
T#	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17

Sub-antimicrobial dose doxycycline

- Smiley, Christopher J et al. "Systematic review and meta-analysis on the nonsurgical treatment of chronic periodontitis by means of scaling and root planing with or without adjuncts." Journal of the American Dental Association vol. 146,7 (2015): 508-24.
- 72 article meta-analysis
- 11 studies documented subantimicrobial dose doxyxyline

Adjuncts to Scaling and Root Planing

- Systemic
 - Subantimicrobial dose doxyxyline
 - Antibiotics (various)
- Local
 - Chlorhexidine chip
 - Doxycycline hyclate gel
 - Minocycline spheres
 - Photodynamic therapy diode laser (660-810nm)
 - Non PDT diode laser (808/980 nm)
 - Nd:YAG laser (1064 nm)
 - Erbium laser (2.79-294 μm)

Moderate Certainty

- 0.5mm average improvement in CAL with SRP
- Additional benefit in CAL for
 - Photodynamic diode laser (660-810nm): 0.53mm
 - Toluidine blue O
 - Chlorhexidine chips: 0.40 CAL
 - Currently not available in the US
 - Systemic antimicrobials (various): 0.35 mm
 - Many different protocols

- Systemic Subantimicrobial dose doxycycline: 0.35mm

Why does it work?

- Host modulation therapy
 - Endogenous Collagenolytic Matrix
 Metalloproteinases
 - Tetracyclines inhibit synthesis, activation and activity



Image by jannoon028 on Freepik

Treatment protocol

- 20mg doxycycline hyclate 2x daily for up to 12 months
- Start on first day of SRP
- Stop when desired results achieved
 - Documented benefit for up to 12 months of use

Practicalities

- Medicaid MCO Formulary Coverage
 - BCBS
 - Presbyterian
 - Western Sky

Your prescription
20mg doxycycline hyclate (180 tablets)

Show this FREE coupon to your pharmacist at

Albertsons Market

^{\$}32.83

\$173 retail Save 81%

BIN	015995
PCN	GDC
Group	DR33
Member ID	DFX692165

GoodRx Coupon • Last updated May 30

Questions?



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