What is ‘Ergonomics’?
Ergonomics is a discipline that involves arranging the environment to fit the person in it. When ergonomics is applied correctly in the work environment, visual and musculoskeletal discomfort and fatigue are reduced significantly.

In recent years, CDC’s Office of Health and Safety has identified repetitive motion injuries as a factor in employee injuries. These injuries are caused by excessive and repeated physical stress on the musculoskeletal system - the hands, wrists, elbow, shoulders, neck, and back.

Following ergonomic principles helps reduce stress and eliminate many potential injuries and disorders associated with the overuse of muscles, bad posture, and repeated tasks. This is accomplished by designing tasks, workspaces, controls, displays, tools, lighting, and equipment to fit the employee’s physical capabilities and limitations. [http://www.cdc.gov/od/ohs/Ergonomics/ergodef.htm](http://www.cdc.gov/od/ohs/Ergonomics/ergodef.htm)

Factors associated with increased injury

**Force**
- Grip is 65% reduced when wrist is flexed or extended instead of in neutral position

**Repetition**
- Repeated performance of a task can increase the risks of injury

**Posture**
- Injury risks increase whenever work requires a person to perform tasks with body segments outside of their neutral range in a deviated posture

Ergonomics and the Dental Care Worker
Denise C Murphy, DrPH, COHN 1998

**Time Management**
- Control the Appointment from beginning to end
  - Reorganize your daily schedule
    - Vary your tasks
    - Give yourself a break and the office a BOOST!
  - Value of your time if you change your tasks
Consider what you do and add a $$ to those tasks

Now consider the total you could produce with the time changes in your schedule

**Physical complications**

Create a Work Envelope

“Keep all frequently used instruments within a range of about 20 inches to maintain a neutral work envelope.”


(State Fund Compensation Insurance)

- **Carpal Tunnel Syndrome**
  Carpal tunnel syndrome is compression of the median nerve at the wrist, which may result in numbness, tingling, weakness, or muscle atrophy in the hand and fingers.

- **Thoracic Outlet**
  Compression of the neurovascular bundle (brachial plexus, subclavian artery and subclavian vein) as it passes from neck to arm

- **DeQuervain’s**
  Painful disorder affecting the tendons at the base of the thumb, one of the most common kinds of tendon lining inflammatory diseases

- **Low back pain**
  Disables approximately 6 million Americans per year and is the most frequently filed workers’ compensation claim

**Exercises**

Basic exercises you can perform in the office while working and between patients

Vary your ‘out of the office’ activities

**Instrument Selection**

Weight / Diameter / Coordination for efficiency

Anatomically coded handles
Newer Instrument designs
Montana Jack    Montana Jack Explorer
Montana 4-5    ACE probe
O’Hehir Millennium    Queen of Hearts

PDT Paradise Dental   www.pdtdental.com/hyg
XP     Double Gracey
American Eagle   www.am-eagle.com

Numerous curette options
G.Hartzell & Son   www.ghartzellandson.com
EverEdge
SmartSharp™
Premier Dental   www.premusa.com

Implant Scalers
ImplantPro
Brasseler USA   www.Brasselerusa.com
ImplaMate
Nordent   www.nordent.com
Wingrove Implant Scalers
PDT Paradise Dental   www.pdtdental.com/hyg
Suwan-O’Hehir Implant curette
G.Hartzell and Son   www.ghartzellandson.com

Ultrasonic Inserts and extras!
Thinsert
Dentsply   www.dentsply.com
Swivel XT     SWERV3 - Magnetostrictive Scaler

Symmetry IQ 4000 piezoelectric unit and insert with illumination
Scorpion Tips     With built on efficiency indicator
PDT Paradise Dental   www.pdtdental.com/hyg
Visual Enhancement Systems  The better to see you with, My Dear!

Benefits

Visual Acuity
Ergonomics

Product choices:

Through the lens

Through the Flip

Flip up

Illumination:

Foot c andle illumination

Hours of charge

Consistency of illumination

Perioptix  www.perioptix.com
Q-Optics  www.q-optics.com
Surgitel  www.surgitel.com
Orascoptic  www.orascoptic.com
Designs for Vision  www.designsforvision.com

Delivery choices

- Operatory design

- Chairs
  - Patient Chairs
    - Patient positioning
  - Patient ‘Demands’ and how to hear them!

- Clinician Chairs / Stools
  - Body Support
. Positioning

. Arm / Elbow rests

**DentalEZ** [www.dentalez.com](http://www.dentalez.com)
**Crown Seating** [www.crownseating.com](http://www.crownseating.com)
**Evolution Chair** [www.evolutionchair.com](http://www.evolutionchair.com)
**Posiflex** [www.posiflex.ca](http://www.posiflex.ca)

- Additional Equipment
  - Arm Add-ons / Extensions

- Add-on Trays

- Lighting

**Good ergonomic design is the solution to prevent musculoskeletal injuries**

1. Educate and involve employees
2. Take a look at all of the available data to find problems
3. Encourage early reporting of problems
4. Find quick fixes to get momentum going
5. Some problems are more complex than others
6. Focus on eliminating the risk factors if possible
7. Don’t just throw money and equipment at the problem
8. Make ergonomics part of purchasing and planning
9. Expect results but be patient
10. Ask for help

Washington State Department of Labor and Industries
ASSESSMENTS

CAMBRA CAries Management By Risk Assessment

A methodology of identification of the cause of disease by assessment of risk factors for each individual patient. Risk factors are then managed through behavioral, chemical and minimally invasive procedures.

Segmented into 0 – 5 years of age and 6 through adult.

California Dental Association Journal issues October & November 2007

http://cda.org/library/cda_member/pubs/journal/journal_1011.pdf Page 711
http://cda.org/page/Library/cda_member/pubs/journal/jour1007/ramos.pdf
http://cda.org/library/cda_member/pubs/journal/journal_1111.pdf
http://cda.org/page/Library/cda_member/pubs/journal/jour1007/featherstone.pdf


http://www.ada.org/sections/professionalResources/docs/topics_caries_under6.doc
http://www.ada.org/sections/professionalResources/docs/topics_caries_over6.doc

ADA Recommendations for Topical Fluoride Use – 2006

Will this become the Standard of Care?

How will insurance companies view this?
**Some Products meeting various CAMBRA guidelines ~**

**Varnishes and Rinses**
- **Vella Varnish** 5% Sodium FL varnish with Xylitol
  Preventech [www.preventech.com](http://www.preventech.com)

**Gluten free Fluoride Varnishes**
- **KolorozClearshield**
  [www.dmg-america.com](http://www.dmg-america.com)
- **Duraflor® Halo**
  [www.duraflorhalo.com](http://www.duraflorhalo.com)
- **Enamel Pro® Varnish**
  [www.premusa.com](http://www.premusa.com)
- **Zooby Turtle Melon™**
  [www.denticator.com](http://www.denticator.com)

**No Mix Varnish**
- **Gelato**
  [www.keystoneind.com](http://www.keystoneind.com)

**Gluma® Desensitizer PowerGel**
- **Heraeus**
  [www.heraeus-dental-us.com](http://www.heraeus-dental-us.com)

**Cervitec Plus** Contains a combination of 1% chlorhexidine and 1% thymol
- **IvoclarVivadent**
  [www.ivoclarvivadent.us.com](http://www.ivoclarvivadent.us.com)

**PerioRx Chlorhexidine Gluconate Oral Rinse -- Mint flavored rinse**
- **Philips**
  [www.philipsoralhealthcare.com](http://www.philipsoralhealthcare.com)

**G U M Alcohol free Chlorhexidine Gluconate Oral Rinse**
- **Sunstar**
  [www.sunstaramericas.com](http://www.sunstaramericas.com)

**Xylitol**
- **Benefits**

- **Dr. John’s Xylitol Candies**
  [www.drjohns.com](http://www.drjohns.com)
- **Xywater**
  [www.drinkxywater.com](http://www.drinkxywater.com)
- **Xlear**
  [www.xlear.com](http://www.xlear.com)
Sensitivity / Remineralization
An Effective System Must...
- Be soluble to release calcium and phosphate ions
- Not remove fluoride from the oral cavity
- Not produce calculus
- Not prevent remineralization

Recaldent (CPP-ACP) - MI Paste, MI Paste Plus™ & Trident Chewing Gum
GC America  www.gcamerica.com

NovaMin (CSP) - Nupro® Sensodyne NU Solutions™ Prophy Paste and toothpaste, Topex Renew, Oravive, Burt's Bees toothpaste
Dentsply  www.nupro-sensodyne.com
SultanHealthcare  www.sultanhealthcare.com
Burt's Bees  www.burtsbees.com

Amorphous Calcium Phosphate (ACP) - Relief ACP, Day/Night White, Enamel Pro™ Prophy Paste & Varnish, Nuvora
Philips  www.philipsoralhealthcare.com
Premier Dental  www.premusa.com
Nuvora  www.nuvorainc.com

Tri-Calcium Phosphate: (TCP) - Clinpro 5000; Vanish™ 5% Sodium Fluoride White Varnish with Tri-Calcium Phosphate (TCP)
3M ESPE  www.3mespe.com/preventivecare

Colgate Sensitive Pro-Relief Pro-Argin™ Technology
Colgate  www.colgate-sensitive-pro-relief.colgateprofessional.com

HOME USE PRODUCTS

Salese / Dentiva
Nuvora  www.nuvorainc.com

Sonicare for kids!

Tricia Osuna, RDH, BSDH, FAADH  www.professionalinsightsinc.com  Professional Insights, Inc.
AirFloss “Floss Alternative!”

Diamond Clean
Philips [www.philipsoralhealthcare.com]

Crest ProHealth Rinse no alcohol rinse; ProHealth paste and rinse
Procter & Gamble [www.crestprohealth.com]
Oral-B Professional Care Smart Series 5000 [www.oralb.com/products]

Sensodyne Iso-Active Potassium Nitrate 5% (for antihypersensitivity), Sodium fluoride 0.15% w/v fluoride ion (for anticavity)
GlaxoSmithKline [www.sensodyne.com]

Salivary Diagnostics Testing, Testing … Can you treat them a different way?

SALIVA-CHECK M UTANS Monitor and Identify Streptococcus Mutans
GC America [www.gcamerica.com]

CRT System = Caries Risk Test
IvoclarVivadent [www.ivoclarvivadent.us.com]

MyPerioPath sm Tests for 11 pathogens (13 bacteria) that cause periodontal disease.
4-5 day turnaround time
MyPerioID sm PST™ Genetic susceptibility test that analyzes two interleukin-1 (IL-1) genes for variations that identify an individual’s predisposition for over-expression of inflammation and increased risk for periodontal disease.
4-5 day turnaround time
OralDNA Labs [www.oraldna.com]

Going Green??
Research to find what products are available that are “green” / decide where you want to begin the process ~
“Dental Industry’s first Environmentally Friendly and Socially Responsible Dental Supply Company” From Gloves, Gauze, Evacuation System Cleaner, Prophy Angles, Paper towels to Amalgam Separators, Waste Compliance

What does ‘Green’ mean?

**Install an Amalgam Separator.** The ADA estimates that 25% of amalgam waste still makes it to the wastewaters even after the use of chairside traps and other capturing methods. The ADA’s best management practices (BMP) 
http://www.ada.org/sections/publicResources/pdfs/topics_amalgamwaste.pdf recommend the use of amalgam separators which are certified to collect over 98% of amalgam waste.

Amalgam separators are solids collectors installed on the vacuum lines of dental offices. They capture the amalgam before it reaches the sewers. Currently 12 states have mandated the use of amalgam separators in dental offices and we expect this trend to continue. The states with current regulations are: CT, MA, ME, MI, MN, NH, NJ, NY, OR, RI, VT, WA. Another 4 states have local regulations (CA, CO, OH, WI).

ADA Amalgam Waste brochure
www.ada.org/sections/professionalResources/pdfs/topics_amalgamwaste_brochure.pdf
ADA Best Management Practices (BMP’s) www.ada.org/1540.aspx

PureLife Dental www.PureLifeDental.com
Medidenta www.medidenta.com

**ORAL CANCER ADJUNCTIVE SCREENING DEVICES**

Important Statistics

- One person dies every hour from oral cancer
- Survival rate has not changed significantly in over 40 years
- Late detection: 70% of oral cancer lesions identified during visual exam are detected in stages III and IV

Oral Cancer Risk Profile

- Increased risk
  - Patients age 40 and older (95% of all cases)
  - 18-39 years of age combined with the following:
    - Tobacco use
    - Chronic alcohol consumption
    - Oral HPV infection
- Highest risk
  - Patients age 65 and older with lifestyle risk factors
  - Patients with history of oral cancer
Cancer Screening
“A means of detecting disease early in asymptomatic people”.

“Positive results of examinations in cancer screenings are usually not diagnostic but identify persons at increased risk for the presence of cancer who warrant further evaluation.”

National Cancer Institute www.cancer.gov

VELscope Vx - Fluorescence Visualization

LEDDental www.velscope.com

Identafi ™ Multi-Spectral Fluorescence and Reflectance
Star Dental / DentalWZ www.dentalez.com/stardental

Vizilite with TBlue chemiluminescence
Vizilite www.vizilite.com

Not yet here ~

Oral cancer screening app for Smart Phone
Oscan http://med.stanford.edu/ism/2012/april/vodaphone-0417.html

http://www.huffingtonpost.com/2012/04/20/oscan-oral-cancer-stanford_n_1438868.html

Oral Fluid NanoSensor Test (OFNASET)

Saliva testing for genetic patterns linked with oral cancer is an emerging area of research.

Four specific patterns of messenger RNA, identified by a research team at the University of California, Los Angeles, appeared in the saliva of patients with oral squamous cell carcinomas. The team created an assay that pinpointed those mRNAs with 91 percent accuracy, and sensitivity and specificity—comparable or better than blood samples.

To date, the saliva-based testing has not been incorporated into a commercial product, but researchers are hopeful that the technology will come to the marketplace.

The Oral Fluid NanoSensor Test (OFNASET) Cartridge is a hands-free, disposable, “lab-on-a-chip” currently being tested at UCLA for saliva-based oral cancer diagnostics.


The Wong Lab, UCLA www skb.ucla.edu/wonglab/index.htm

ANESTHETIC OPTIONS
OnSet ~Anesthetic buffering product
Onpharma www.onpharma.com

Tricia Osuna, RDH, BSDH, FAADH www.professionalinsightsinc.com Professional Insights, Inc.
St. Renatus www.St-Renatus.com
Nasal Anesthetic Spray
“positive results for its Phase II clinical trial of Kovacaine, a nasal spray dental anesthetic designed to substitute for injections in dental procedures involving the upper arch.”
March 5, 2009 http://www.buffalo.edu/news/9911 Possible launch in 2013

Le Eject www.leeject.com
Side-loading and self-aspirating Le Eject dental syringe and needle system

**NEAREST AND FUTURE PRODUCT LAUNCHES**

Crosstex www.crosstex.com
- i-Barrier

PureLife www.purelifedental.com
- The 50-second solution (BIOSURF)

Mouthwash developed that is highly successful in targeting the harmful Streptococcus mutans bacteria http://www.dentistry.ucla.edu/news/new-mouthwash-targeting-harmful-bacteria-may-render-tooth-decay-a-thing-of-the-past

**~ Some other cool stuff to have ~**

- Academy of General Dentistry (AGD) www.agd.org
- American Academy of Dental Hygiene (AADH) www.aadh.org
- American Academy of Facial Esthetics (AAFE) www.facialaesthetics.org
- American Academy of Periodontology (AAP) www.perio.org
- American Association of Public Health Dentistry (AAPHD) www.aaphd.org
- American Dental Association (ADA) www.ada.org
- American Dental Assistant’s Association (ADAA) www.dentalassistant.org
- American Dental Hygienists’ Association (ADHA) www.adha.org
- American Heart Association www.americanheart.org
- Army of Women www.armyofwomen.org
- Center for Disease Control www.cdc.gov
- National Institute of Dental Research (NIDR) www.nidr.nih.gov
- Occupational Safety & Health Administration www.osha.gov
Article on Magnification  
http://www.adha.org/downloads/sup_magnification.pdf

Article on Elbow Supports  
http://www.rdhmag.com/display_article/338089/56/none/none/Feat/Elbow-Room

Mind your Body-Pilates for the Seated Professional  
Juli Kagan, RDH  
www.mindyourbodybook.com

Pain Free at Your PC  
Pete Egoscue, Roger Gittines

Posturedontics/ Bethany Velachi, PT, MS  
www.posturedontics.com

OSHA on Ergonomics  
www.osha.gov/SLTC/ergonomics/index.html

A-dec  
www.a-dec.com

Dentech, Corp.  
www.dentechcorp.com

Kavo America Corp.  
www.kavousa.com

Marus  
www.marus.com

Patterson Dental  
www.pattersondental.com

Pelton & Crane  
www.pelton.net

Prodentec  
www.zila.com

Sullivan Schein  
www.henryschein.com

Zirc  
www.zirc.com

**Suggested Reading**

The Four Agreements  
Don Miguel Ruiz

Who Moved My Cheese?  
Spencer Johnson, MD

FISH!  
Stephen C. Lundin, Ph.D., Harry Paul, John Christensen

Thanks to the course sponsors!

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PDT  
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