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Proactive Primary Prevention:

Evidence of $avings through use of supplements to treat dietary deficiencies
Daily Value Dietary Deficiencies Confirmed

NHANEs III & NHANES IV surveys

• 87% people had 1 or more deficiency
• 58% people had 2+ deficiencies
• Omega 6: Omega 3 :: 50-100:1 [4:1 goal]
• Daily Value Deficit (not optimum intake)

Dietary deficiencies common & growing

http://www.cdc.gov/nchs/nchs/nhanes.htm
Background on supplements and savings

- *Limited* studies, data, support & incentive
- Savings observed *when sought*
- Absence of data *often* taken as data of absence
- Product quality standards / GMP
- Dietary deficits common *or* rare
- Adverse events compared to Rx medications
FDA Disclaimer

- These statements have not been evaluated by the Food and Drug Administration.
- This *information* is not intended to diagnose, treat, cure, or prevent any disease.
Von Leibig’s Law: Limiting Factor

Growth is controlled not by the total amount of resources available but by the scarcest resource (limiting factor).

Justus von Leibig / Carl Sprengel, 1828; updated by Jaffe, 1990

Von Leibig’s Update: Deficits Rule

Deficit of any essential part of multi-part system controls biological system efficiency, resilience & health.

Justus von Leibig / Carl Sprengel, 1828; updated by Jaffe, 1990

Health care savings (> $50-100 Bn):

- **Calcium with vitamin D**: Hip fracture decrease *alone* can save health care by reducing hospital, nursing facility & physician costs: ~ $13.9 Bn
- **Folate** (less neural tube defects): $ 0.25 bn
- **Omega-3 EFA** (less CHD): $ 0.6 Bn
- **Glucosamine** (less Osteo): $ 0.5 Bn
- **Saw Palmetto** (less BPH): $ 0.1 Bn
- **Lutein + zeaxanthin** (eye-sight saved, AMD): $ 2.5 Bn
- **Multivitamin** (Daily): $15 Bn
- **Ascorbates** (Daily for scurvy): $17-70 Bn

Source: The Lewin Group, Health Impact Study IV & $50-100 Bn http://intelegen.com/ImmuneSystem/vitamin_c.htm
Glucosamine sulphate in knee osteoarthritis: Save $1-2 Bn in Europe

**Abstract INTRODUCTION:**
Explore cost-effectiveness of glucosamine sulphate (GS) with paracetamol & placebo (PBO) in treatment of knee osteoarthritis. For this purpose, a 6-month time horizon and a health care perspective was used.

**MATERIAL AND METHODS:**
Cost & effectiveness (Western Ontario & McMaster U Osteoarthritis Index of Glucosamine Unum In Die; once-a-day) efficacy trial by Herrero-Beaumont et al. Clinical effectiveness converted into utility scores allow computation of cost per quality-adjusted life year (QALY). 3 treatment arms. Incremental Cost-Effectiveness Ratio calculated & statistical uncertainty explored using bootstrap simulation.

**RESULTS:**
Considering mean mobility score changes, no difference at 3 months; significant difference from at 6 months (p = <0.047). Comparing GS & paracetamol, mean baseline incremental cost-effectiveness ratio (ICER) dominant & mean ICER after bootstrapping was -1376 euro/QALY... better outcome (79% probability). Comparing GS with PBO, mean baseline & after bootstrapping ICER were -3617.47 & -4285 euro/QALY, respectively.

**CONCLUSION:**
The results of the present cost-effectiveness analysis suggests GS is highly cost-effective therapy alternative compared with paracetamol and PBO to treat patients diagnosed with primary knee OA.

Diabetes: Supplements benefit

- Diabetics taking dietary supplements regularly (34%) report themselves in radically better health than diabetics who do not (66%). Diabetic supplement users also report being in better health than year ago compared to diabetics who do not take supplements.

- Incremental & avoidable healthcare costs: $135 Bn (2010) [Diet, supplements, & activity]  
  ↑ 2.5% faster than overall healthcare costs (+20%)

Source: CDC (Economics of diabetes an annotated bibliography)
Diabetes Kills, Costs & is a Choice

- **Adequate protective antioxidants:**
  Ascorbates, polyphenolics, carotenoids, vitamins E, B complex, D3, minerals, carnitine, choline, Omega 3 EFAs, prebiotics, probiotics & CoQ10…
  75-95% ↓ diabetes risks & consequences

- **Add 15’ walking & 15’ stretching** each day…
  80-98% reduction diabetes risks & morbidity.

Diabetes Kills, Costs & is a Choice

Remember von Leibig’s Law in personalized care:

**Daily:** Calibrated **ascorbates, polyphenolics** (quercetin dihydrate & LMW OPC, 1-10 g), **carotenoids** (fruits & veggies colors, 50 mg), **vitamins E** (tocopherols/tocotrienols, 400-3600 IU), **B complex** (Bs, folates, PABA, Biotin), **D3** (2-10,000 IU), **minerals** (K, Ca, Mg, Zn, Cu, Cr, V, Mo, Mn, I, 1st AM Ur pH 6.5-7.5), **carnitine fumarate** in MCT (250-750 mg), **choline citrate** (1.3-6.5 g), **Omega 3 EFAs** (EPA/DHA 3-9 g/day), **prebiotics** (40 g fiber), **probiotics** (40 Bn bugs) & **CoQ10** (60-1200 mg)...

75-85% reduction diabetes risks & consequences

Add 15’ walking & 15’ stretching each day…

80-98% reduction diabetes risks & consequences


http://www.healthyamericans.org/
Individual ascorbate calibration from 8,496 people

- 8% (682) < 4 gm (healthy)
- 10% (848) from 5-10 gm (usual)
- 80% (2,796) from 10-180 gm (walking worried/wounded)
- 5% (166) > 180 gm (multiple chronic diseases)

Based on Jaffe protocol 1957-2008
Glucose / Insulin / Energy Regulation: RCT NIDDM Type 2 study results...

<table>
<thead>
<tr>
<th>Results</th>
<th>Experimental</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>after 6 mos.</td>
<td>T+6</td>
<td>T+6</td>
</tr>
<tr>
<td>Glucose (Fasting)</td>
<td>↓20%</td>
<td>↑9%</td>
</tr>
<tr>
<td>Glucose (2° PP)</td>
<td>↓13%</td>
<td>↓6%</td>
</tr>
<tr>
<td>(both p&lt;0.05)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insulin (Fasting)</td>
<td>↓18%</td>
<td>↓12%</td>
</tr>
<tr>
<td>HbA1c (p &lt; 0.01)</td>
<td>↓13%</td>
<td>↓3%</td>
</tr>
</tbody>
</table>

Type 1 Diabetes Study: LRA tests

Diabetes: 84% Risk Reduction

- Nurses Health Study suggests that women, maintaining desirable body weight, eating healthy diet, exercising regularly, not smoking, & consuming moderate alcohol account for **84% risk reduction**, yet only **3% of women** studied were in that category. Clearly, majority of causes of cardiovascular disease are known & modifiable.


PERQUE Whey Guard & Whey Guard Repair: Lowest Glycemic Load: < 10

PERQUE Whey Guard compared to equivalent carbs from food

- Blood Glucose values after 56g carbs from bread and jam
- Blood Glucose values after 56g carb from PERQUE Whey Guard

Blood Glucose values (mg/dL)

<table>
<thead>
<tr>
<th>Time</th>
<th>PERQUE Whey Guard</th>
<th>Blood Glucose from Food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fasting</td>
<td>94</td>
<td>97</td>
</tr>
<tr>
<td>15 min</td>
<td>109</td>
<td>102</td>
</tr>
<tr>
<td>30 min</td>
<td>130</td>
<td>137</td>
</tr>
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<td>45 min</td>
<td>137</td>
<td>125</td>
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<td>60 min</td>
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<td>105</td>
</tr>
<tr>
<td>90 min</td>
<td>96</td>
<td>92</td>
</tr>
<tr>
<td>120 min</td>
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</tbody>
</table>

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Supplements pre & post op GI Surg

Abstract / Background:
• Postoperative oral nutritional supplementation shown to be of clinical benefit. This study examined the clinical effects and cost of administration of oral supplements both before and after surgery.

Methods:
• RCT Patients undergoing lower gastrointestinal tract surgery randomized into four groups: group CC received no nutritional supplements, group SS took supplements both before and after surgery, group CS received 1 month postoperative supplements only, and group SC were given supplements only before surgery ~ 1 month. Data collected included weight change, complications, length of stay, nutritional intake, anthropometrics, quality of life and detailed costs covering all aspects of care.

Results: N = 179; 27 withdrew and 152 analyzed (CC = 44, SS = 32, Cs = 35, SC = 41)
• Dietary intake similar in all 4 groups throughout study. Significantly less postoperative weight loss in SS group than CC & CS groups (P < 0.050), & significantly fewer minor complications in SS & CS groups than CC group (P < 0.050). No differences in major complications rate, anthropometrics & quality of life. Mean overall costs greatest in CC group, although differences between groups not significant.

Conclusion:
• Perioperative oral nutritional supplementation started before hospital admission for lower gastrointestinal tract surgery significantly diminished the degree of weight loss and incidence of minor complications, and was cost-effective.

Benign prostatic hyperplasia (BPH): 45-90 million affected NA & EU = $90-$180 MM/year

Abstract

OBJECTIVES: Pharmacoeconomic study BPH F/U compare 2 drugs: Alpha-blocker (tamsulosin) & lipido-sterolic extract of Serenoa repens (Permixon).

MATERIAL AND METHODS: Direct BPH costs (diagnosis & treatment) were determined according to International Prostate Symptom Score (IPSS): mild, moderate & severe. Clinical efficacy obtained from PERMAL clinical study, where therapeutic equivalence between 2 studied drugs was observed.

RESULTS: BPH average annual cost of diagnostic tests & medical visits related to mild (Eu 124), moderate (Eu 207) or severe (Eu 286) symptoms; cost of drugs, including adverse effects treatment = Eu 211 for Permixon & Eu 346 for tamsulosin.

DISCUSSION: BPH costs increases with symptoms. Permixon more cost-effective than tamsulosin, ave yearly savings Eu 135 / patient.

RESULTS of efficacy from same group: 12 months, total IPSS decreased by 7.8 (Permixon) & 5.8 (tamsulosin) (p=0.051); irritative symptoms improved more (p=0.049) Permixon (-2.9 versus -1.9 with tamsulosin) at 3 and more so 12 (p=0.03) months.

CONCLUSION: Permixon 320 mg/day slightly superior to tamsulosin 0.4 mg/day in reducing LUTS in severe BPH patients after 3 months & 12 months.

Men affected in US and EU: 60% of men over 60 and 14% of men 40-60


Cell Metabolic Deficits Create Risk: Supplements Essential

- *Scant* data *strongly* suggests opportunity

Chronic, degenerative, autoimmune ills
Stress of high tech living & soil depletion
add cells & systems at risk from acquired, avoidable or reversible 2º deficits

- *Added costs*: Essential nutrient *deficits*
  increase morbidity, mortality & expense
Supplement Quality: Safer & Effective Means...

1. Full good manufacturing practices (GMPs)
2. Production certification NSF, USP
3. 3rd party post production assays
4. Full disclosure labels
5. Use evidence source & quality ingredients
6. Participate in CBRCT, DBPCT & case registries
7. Safer means always mixed natural forms
Supplements *do* save $ & Lives

- *Limited* studies, data, support & incentive
- Concurrent *savings observed*
- Absence of data *often* taken as data of absence
- Quality standards *inconsistent*
- Adverse events *rare* relative to Rx medications
- Available data is *strongly support available savings of $135 Bn for diabetes + $50-$100 Bn from other deficit corrections*
America can save lives & treasure

By correcting essential nutrient deficits from limited studies & data for diabetes alone $135\text{ billion annually}$ can be saved while improving quality of life & health status. Evidence based supplements can save an additional $50\text{-}100\text{ billion}$ while improving human function. Limitations to benefits from supplements include products whose quality control is undocumented, use of borrowed science where ingredients look alike yet do not work alike, & lack of research resources to further document potential benefits. Deficit in nutrients are common. Adverse events to dietary supplements are rare.
Your body is 70% Water:

You are what you eat & drink, think & do

- **Urine**: 1st AM pH, Specific Gravity
- **Stool**: transit time, digestive analysis
- **Saliva**: free cortisol/DHEA hormones,
- **Blood**: LRA by ELISA/ACT immunomics
...a few references

Jaffe... a few more references


Questions and Answers

We make our world significant by the courage of our questions and the depth of our answers.

--Carl Sagan
Thank you for your time and attention.

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