

## Economics of Work and Health and OEM

- New England College of Occupational and Environmental Medicine
- March 11, 2003
- George Anstadt MD FACOEM, OH+R Rochester Medical Director



## My Biases:

- Corporate Clinical OEM practice (Kodak)
- Freestanding Clinical OEM practice (OH+R)
- Clinical Toxicology (Kodak Director Clinical Tox)
- Pharmaceutical Medicine (Eastman Pharmaceutical)
- Medical Device Medicine (Lucid Medical Director)
- Corporate Administration of OEM (Kodak)
- Benefits (Director, Health Plans, Kodak)
- Kellogg mini-MBA
- ACOEM President
- ACPM Board
- AMA House of Delegates
- Consultant to many Pharmas, Start-ups

## FOLLOW THE MONEY:

- Hard to follow the money: Interactions between health, health care, and business is complex, different metrics; Challenge: convert health status to dollar value
- Goal: To give everyone here one useful thought
- Premise: If you can't get paid for a service, you can't provide it, no matter how great it is.

## Key Themes:

- o Disease Treatment is the basis of the current US financial model.
- o Health is valuable to individual and business, but hard to get paid for; Link between health and productivity is best prevention "hook"
- o Disease treatment and clinical preventive services require a license to practice medicine, is a protected space that most Occ Docs should stay close to, & leverage
- o Digital systems are now critical to quality, efficiency, integration, prevention, and getting paid; don't practice medicine without them
- o Focus is critical to business success in the 21<sup>st</sup> century
- o Crisis in the US Healthcare system demographics, finance, and consumer expectations are impacting all MD

## Occupational Medicine Economics

- Health Economics
  - Demand
  - Trends: Cost Crisis!
  - Tools
  - Supply
  - Incentives
  - Health Status
  - Quality Issues
  - Workers Comp
- Business Economics
  - Competition
  - Productivity
  - Integration of internal budgets
  - Outsourcing
  - Supplier cost and quality control
  - Statistical process control of quality

## Economics of OEM: History

- Scientific observations of the link between work and health began in antiquity e.g., Agricola's observations of poor health in slave miners; but, slaves were fungible to the mine owners and couldn't pay out of pocket, so no practice of OEM began
- Ramazzini's job: professor of medicine; he hid his interest in Diseases of Workers from his wealthy patients. He never made any money doing OEM because the working class couldn't pay
- Workers' rights caused owners to hire doctors who were competent, cheap, and biased (the company doctor stereotype)... fewer Workers Comp death benefits (about \$250,000 in CA now)

### Economics of OEM: History continued

- Railroads hired surgeons; American Association of Railway Surgeons was first US OEM organization, a specialty was born.
- Early Industrialists, e.g. Eastman, Du Pont recognized the value of healthy and satisfied workers, hired doctors and funded the specialty of OEM, provided on-site medical care and clinical prevention.
- Specialty interest in OEM followed the volume of occupational diseases of early industry (economic demand): Pulmonary Docs, Dermatologists, and finally, Preventionist.
- The specialists tended to run residencies, teach what they knew.
- Concentra doesn't usually hire residency trained OEMs because most clinical jobs now require good musculoskeletal Dx & Rx skills.

### A LICENSE TO PRACTICE MEDICINE IS VALUABLE

- Early Occ Docs pioneered safety, industrial hygiene, ergonomics, audiometry, spirometry, EAP; however, few made money in this aspect of practice and now lower cost folks do nearly all of this work
- Recently, I unsuccessfully opposed the name change of ACOEM to ACOEM, because I realized that few physicians would practice environmental medicine.
- Administrative OEM positions now largely held by business professionals (Few Sr. VP MDs in big companies now)
- Hard to earn \$125K as an individual contributor in a field that you have not specifically trained in.

### LICENSE TO PRACTICE MEDICINE IS VALUABLE

- Owning the clinic was financially smart; now, owned by "roll up" chains, hospitals, not an MD; too many moving parts.
- Stock options in the right company have been great for a few MDs
- Medical Training cost: tuition + deferred income + time value of \$ + risk premium = \$\$\$; so, exclusionary license to protect high salary.
- MD: not competent to do other things, but feels like it: a danger.
- OEM training; too little emphasis on clinical skills, financial savvy.
- Encroachment on Practice: Occ Health RN, NP, PA, Chiropractor, EAP, SAP, Physical Therapy, Massage Therapy, Optometrist, etc. Join the AMA!

### Physician Trends: Total, Specialist Increase

Year	Population per Physician*	Primary Care 1	Primary Care 2
1965	807	NA	NA
1970	798	28.5%	40.2%
1975	741	25.0%	36.8%
1985	555	24.2%	36.1%
1999	267	17.8%	33.4%

\* Civilian population per non-Federal patient care physician.

PC 1 includes non-Fed patient care GP, FP, + PED.

PC 2 includes active Fed and Non-Fed, PC 1 + IM and OBGYN.

Source: AMA Physician Characteristics and Distribution, 2002.

### PHYSICIAN SUPPLY

#### AMA's Richard Corlin says a physician shortage, began in 2001

- o Growth in demand for medical care
- o MDs practice fewer hours (females a larger percentage of MD)
- o Employed MDs don't work as hard
- o Malpractice costs reduce number "tapering" practice
- o Disgusted by the practice environment, many retire young, switch

#### Specialty practice is where the growth and money are

- o Hedgehog Concept, "Good to Great" by Jim Collins, 2001
- o Focused Factory: refine your process, based upon data fed back
- o Impossible-to-master volume of medical information
- o Some Shortages: Radiologists leaving Rochester for jobs paying \$500K + 12 weeks vacation

### OEM a small, complex specialty:

- 6,000 Active ACOEM members / 700,000 active US MDs = .9%
- Income about \$125 K, about average MD pay
- Only about 2,000 Active with OM boards
- Much OEM care provided by generalists
- OEM outcome results better than generalist: Atlantic Mutual said it found that claims handled through an occupational clinic were 52 percent less expensive than those handled either by a general practitioner or the emergency room. Average indemnity costs on lost-time injuries were 49 percent lower; average medical costs were 29 percent lower; and the number of lost-time claims fell by 14 percent 2003 Study\*
- \$125 Billion total WC dollars (not all medical care of course, but "at play") = 9% of \$1,400 Trillion Total US Healthcare
- 9 / .9 = Occ Docs 10x, potentially, the 'influence' of average doc

\* NU Online News Service, Feb. 20, 2003 (claims analysis very powerful)

### NONSPECIALTY OEM CARE: Good Bad Example

- The medical care of the injured employees is often provided by practitioners with little or no expertise in occupational medicine, with little or no concern for the productivity and economic costs of prolonged disability, and with the knowledge that all the medical costs are defrayed by the employers or their insurance carriers indefinitely. There is no incentive to contain costs by limiting the number of visits and diagnostic tests. Since the attending physician legally controls the length of disability and the time the employee can and should return to work, the motivation of both the employer and the physician are paramount considerations. Collusion between employer and physician conspire to increase costs and to prolong disability.

- A second large factor in the escalating costs of workers' compensation is the absence of any well-defined standards of care. (Milliman and Roberts, Reed disability guidelines)

[Archives of Internal Medicine Editorial, Vol. 158 No. 2, 1998](#)

### ROLE OF HEALTH INSURANCE:

- o "There was never any money in medicine before health insurance", MD old in '70s who took chickens for pay in the '30s.
  - o Health is most important asset, true; but few around the world will pay cash: Our insurance system pays for disease Rx, mainly
  - o Insurance is pooling of risk for catastrophic events, not routine expense; first dollar coverage inappropriate use of insurance
  - o Insurance started in the US by physician groups
  - o An essential part of the health care industry, of getting paid; game is played with aggregated data. Know the rules or lose money.
  - o Community power balance between providers, insurers and institutions varies: dominance by any one is bad, but common.
- Access to data and monopoly power are key
- Business community should be a critical player in local balance.  
By an accident of WWII price controls, US business pays part of the nation's health insurance bill, and thus gets a seat at this table.

### HEALTH INSURANCE USUALLY STIMULATES DEMAND:

- o Insurance Premium actuarially driven by spending experience of plan members; experience driven by coverage: chicken or egg?
- o Coverage decisions shared by the community in many places
- o Fee schedules another lever, often set by State agency: lowering psych eval rates solved exploding CA WC "mental/mental"
- o Premium paid by government in most countries, rationing results
- o Bureaucratic coverage in US: Fed, State, Business, and Individual pay, so "voice of the customer" heard from each: Good!

#### Problems:

- o Many systems of health insurance, integrated poorly (HMO or WC?) US system is not really a system, just evolved
- o Not population based, so 40 million uninsured
- o Very difficult for patients and providers to know all the rules
- o Demand for medical care is practically infinite if care is free; no grocery insurance (everyone wants lobster); rather, food stamps

### DEMAND FOR HEALTH INSURANCE EXPLODING AGAIN:

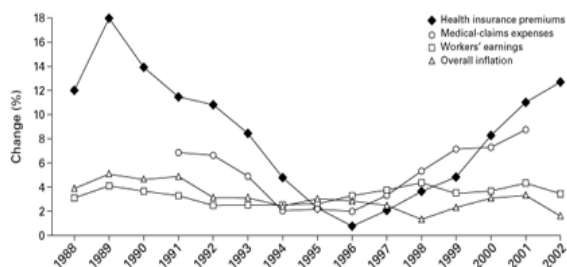
- Medical insurance premiums / costs in the US are again wildly increasing, 10-15%
- Nearly two-thirds of those costs go toward treating chronic illnesses like congestive heart failure. (New York Times 2/16/03)
- Spiral in early '90: Clinton's 100 lawyer proposal failed
- Corporate response was HMOs: In '92, I took \$20M out of Kodak premium, had no increase in '93 or '94, resulting in: increased satisfaction with the plan (zero complaints), no complaints from management, strong support of the Rochester IPA; strategy was to move people into HMOs with increased prevention benefits, increased co-pays, and demand management tools
- Worked, but didn't improve health; barriers, shift, good float
- Projected to increase from current 14.1% of GDP (\$10T), or \$1.4T, to 17% of GDP in 2012.

### US Health Expenditures by Service and % of GDP:

	1960	1980	2001	2012
Hospital	34.6%	41.3%	31.7%	
Physician	19.7%	19.2%	22.0%	
Nursing Home	3.0%	7.1%	6.9%	
Drugs	15.6%	4.9%	9.8%	
Other	27.1%	24.3%	29.5%	
<b>NHE/GDP</b>	<b>5.1%</b>	<b>8.8%</b>	<b>14.1%</b>	<b>17%</b>

Source: Health Care Financing Administration, 2002

NEJM Sept 19, 2002, Inlehart



## WHO PAYS FOR HEALTHCARE:

### Insurance Coverage

- 171 million (11 million retirees) have employer based insurance coverage (tax write offs make this the third most expensive Federal expenditure, after Medicare and Medicaid)\*
- 80 million Medicare, Medicaid, Military, WIC, Veterans, etc. \*
- 16 million purchase health care insurance directly (no tax benefits) \*
- Workers Comp Insurance about 10% of total dollars

### Uninsured Payment

- Insured individuals pay many out of pocket costs
- 41 million uninsured; pay out of pocket, charity, and bad debt (gov't tax reduction)

\* Source: NEJM Sept 19 2002 John Iglehart (hard to get good numbers)

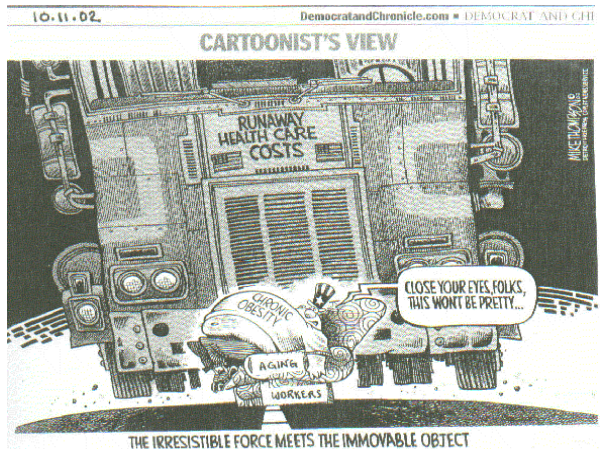
## HEALTH INSURER BIG PICTURE:

- Goals: (1) attract and retain people who do not use any health insurance... healthy and happy people in ads, not sick people, and (2) make money on the "float"
- Typical HMOs do not invest enough in prevention and disease management because their membership typically turns over every 18 months (need fast payback)
- Employers, on average, keep their employees for more than 12 years, and have many gains from healthier employees, but have not yet learned to buy health status; HEDIS, etc. are an employer led start in right direction; HMOs still mostly sell disease treatment
- Aggregated claims, and soon aggregated clinical data will be the key to effective purchasing of health- better medical digital system
- Self insurance / (ASO) add more complexity...E.RISA

## DEMAND + COST CONTROL: DEFINED CONTRIBUTION, E.G. MSA

Medical Savings Account based system (ideally, for all Americans)

- Population Based, everyone is included, cheap data systems enable
- Catastrophic Coverage, gov't funded for indigent & working poor
- Selected Prevention Services free for all, recorded by data system
- First dollar payment for Rx from the account pre tax, for all
- Payment out of pocket when account spent, up to catastrophic
- Tools and incentives for self-care, primary prevention, reminders
- Roll over unused portion to next year: incents using care wisely
- Work, school, community center etc., become venues for service
- Patient empowerment and responsibility a central design feature
- Quality and efficiency improved by shared data infrastructure
- Data allow reimbursement based upon both volume and quality
- Realistic funding system remains intact



## - The "Perfect Storm" in Healthcare: Crisis or Opportunity?

By Francine R. Gaillour, M.D., for HealthLeaders News, Jan. 6, 2003

1. The growing population of aging adults
2. The increasing demand for "friction-free" experience: no wait, no errors, no delay
3. The self-forming communities of like-minded individuals made possible by the Internet
4. The disintermediation of the priest class: Priests, doctors, and other "experts" are being bypassed by "consumers" who are getting their needs met from other sources
5. The increased discernment and sophistication on the part of consumers and their "advocates" (CORPORATE PURCHASING)

## THE CORPORATE HEALTH BIG PICTURE:

- In an economy dominated by knowledge workers, employers know that they must invest in the human capital of their workforce; capital can replace manual workers, but not knowledge workers
- Source of competitive advantage: "The 21st century belongs to the companies and countries that can innovate fastest". Peter Drucker; simply lower costs a big advantage
- "Companies that field the best teams win" Jack Welch
- Health issues are becoming a larger part of that human capital equation as workers age. Companies would love to stop funding health benefits, but these are both popular and now a necessary part of competitiveness
- Companies are seeking value: Health / dollar
- "The RIGHT people are our most important asset", Jim Collins, author of "Good to Great" (Eastman: People are our...

**THE CORPORATE HEALTH BIG PICTURE:**

- No new spending on health programs: defined benefit \*
- Integration of 25 internal health related efforts (non-MD)
- Specs for plan quality: NCQA's HEDIS; Leapfrog Group
- Specs for plan health status improvements: productivity
- Human Capital "dashboard" a competitiveness issue e.g., Military "Readiness"; most wars won by sanitarians
- Outsource: 80% ACOEM 1970 corporate Ees; 20% now

\* Sept 19, 2002 NEJM; John Iglehart, Bob Galvin, Arnold Milstein

**THE CORPORATE HEALTH BIG PICTURE:**

- Ee satisfaction: attract and retain top people
- Greater incentives on individual to stay healthy and to use health care wisely; smoking and hypochondria costly in new plans for the individual
- Supply Ee tools, e.g., demand management
- Supply Ee data, e.g., intranet data about hospitals, docs; amazing value from easily done MD specific claims analysis
- Aging workers, immigrants growing part of workforce

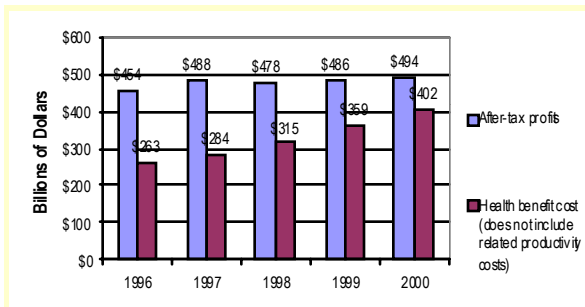
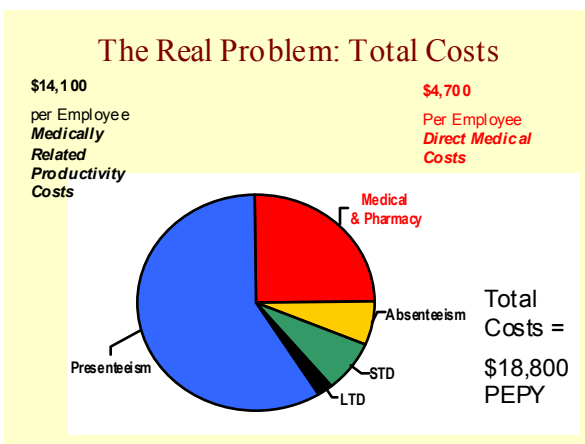


Figure 1: After-tax Profits and Health Benefit Costs - All U.S. Corporations 1996-2000  
Source: The National Data Book: 2001 and IRS Data Reports

**Differences in Health Economics Matter to business competitiveness**

- Rochester NY construction project bid won by Dublin Ohio Firm. Got a waiver from NYS WC Board, and brought in all labor from outside NYS.
- Not many sources of competitive advantage in many industries... all buy from same suppliers, bid the same contracts, etc.
- Good health strategy can be a major source of competitive advantage



**Link between health and productivity**

- For every \$1 an employer spends on health care cost (currently \$4,750 per employee per year), on average they spend \$3 (or nearly \$15,000 per employee per year) on related lost productivity costs (absenteeism, presenteeism, disability)\*
- Very different for different industries: Entry level, high turnover, low skill industries are less Vs. high salary, high company-specific knowledge, long service specialists with tight labor supply
- Cost of a lost work day (\$200-\$1800 estimates) key variable

\* Brady, Loeppke, Anstadt, et al., JOEM, 1997

**PRESENTEESIM:** employees present at work but limited in some aspect of job performance by health problem(s). This can range from slight deconditioning in a competitive athlete to mania in a stock trader to a demented world leader (Lenin to Stalin).

- **quantity of work:** e.g., not working, working slowly
- **quality of work** – incidence and magnitude of mistakes (injury rates, product waste, product defects - probably the most important category)
- **creativity:** speed of innovation is key to knowledge worker success
- **executive functions:** working on the right problem: initiative
- **peak performance capacity:** “winner take all” competitions common
- **social function-** impact of addictions, personality disorders, mood disorders and motivational issues on other workers
- **work culture** - the creation of a culture that has a positive or negative feedback on the health of the group.

**ABSENTEESIM:** employees not present at work

**Types:**

- Turnover
- STD
- LTD
- Early Retirement due to poor health
- Death (Premature Mortality Costs)
- FMLA and other unpaid leave
- PTO (commonly, companies are combining categories now)

**Impact:** Large

- Human Capital Method (firm specific knowledge a driver)
- Friction Method (Replacement worker costs)
- Better valuation methods needed

**MEASURES OF HEALTH AND PRODUCTIVITY: Self-Report**

“Eastman Kodak has no idea who is productive, who is not”, Lane Ryland PhD

Frederic Taylor, the father of productivity improvement, is said by Peter Drucker to be the American who has made the greatest contribution to the modern world. The work that he did in organizing manual labor will now be repeated for the knowledge worker in our century. I believe that physical health and mental health will prove to be a bigger part of knowledge worker productivity than manual worker productivity. The resulting metrics will cause huge problems as well as huge improvements, now as it did in Taylor’s era. Self-report will

Experience and intuition, but not hard data yet, tells me that self-report instruments to ask the workers how productive they are will prove to be increasingly valuable to management science. So I see some elements of the process we are advocating on the health side coming together with the management side in the future. We may want to seek partners to develop tools that work well together.

Briefly, my beliefs are based upon the observation that patients usually know that they are becoming nonproductive well before management. Constructing a set of incentives and protections that will allow them to communicate this information in a win / win for the individual and the business is the central challenge to implementation\*

\* GWA note to the author’s in press JOEM article on measure of health related productivity.

**DISEASE SPECIFIC H&P**

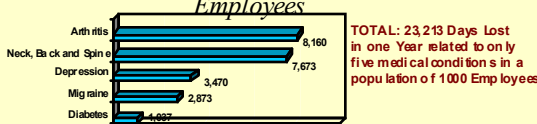
- **Diabetes:** The annual cost climbed from \$98 billion in 1997 to \$132 billion in 2002. Direct medical costs of **diabetes** more than doubled, from \$44 billion in 1997 to \$91.8 billion in 2002. Indirect costs included lost work days, restricted activity days, death and permanent disabilities, and they totaled \$39.8 billion (No presenteeism costs) Am Diabetes Assn

- **Malaria** is thought to have cost Africa alone \$100B in lost GDP over the past 35 years. The Economist, Aug 24, 2002

- **Nonsedating antihistamines:** Pharmas’ support of ACOEM efforts

- **Heart Disease:** - In 2002, cardiovascular disease and stroke cost an estimated \$329.2 billion in medical expenses and lost productivity in the United States - more than double the economic cost of cancer. American Heart Association

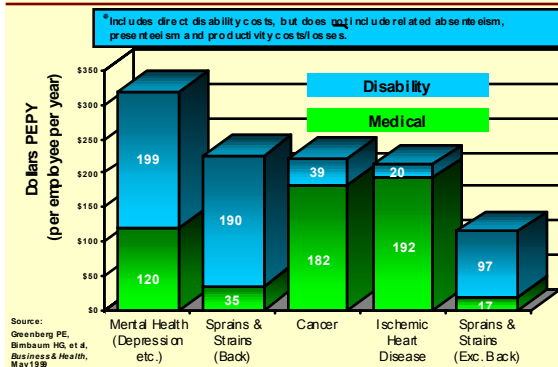
**Absenteeism and Presenteeism**  
*Estimated Days of Productivity Lost per Year for the Number of Employees with these Dx per 1000 Employees*



Medical Condition	Avg Days Lost per Month per EE	# EE with Condition per 1000 Employees in Population	Days Lost per Month	Days Lost per Year
Arthritis	3.4	240	6.80	81.60
Neck, Back and Spine	4.6	130	6.30	75.50
Depression	4.9	59	2.90	34.70
Migraine	5.7	42	2.40	28.80
Diabetes	2.4	36	0.86	10.30

\* Muller factors, are adapted from the Employer Health Condition & Temporarily Disabled Healthy People Productivity Community Survey Data

**Medical and Disability Costs\* Related to Medical Conditions**



Source: Greenberg PE, Bannum HC, et al. Business & Health, May 1998

### WC management represents a unique niche market of approximately \$125 billion annual expenditure for HPM

Like general health, for every \$1 spent on direct medical treatment of work related injuries, there is ~~\$3-\$6~~ in related costs to the employer in lost productivity (absenteeism and presenteeism)\*

\* Milliman Robertson at IHPM Conference, Sept 25, 2002

### Health and Productivity is on many radar screens

- A recent study by the Institute for Health & Productivity Management found that 53 percent of companies (1,500+ employees) are measuring and using productivity information  
- Another 29% are planning to do so.

- Pharmaceutical companies see the value in selling their products, e.g., the non-sedating antihistamine

- Large non-profit sector using H&P analysis to show the total impact of their disease of focus

### EMPLOYERS GET SAVINGS FROM PREVENTION

- Major trauma, pulmonary injury, Occ cancer, and occupational dermatitis are much decreased: too expensive!
- NYS Workers' Comp Claims:
  - '89 6.5%
  - '99 3.9%
- Recently visited a chemical manufacturing plant of 1200 that had no OSHA recordables
- "Work-ability" is the WC word for health and productivity
- Learn health special needs of customers, serve them creatively
- Traditional injury model of OEM is in decline

### THE CONSUMER: DEMAND MANAGEMENT

#### **Who's to Blame for the Health Care Crisis in the US? And How Can You Fix it?**

By Allen S. Josephs, M.D.  
President, Vitacost.com

**We are all aware of the health care crisis in this country. But are you aware of the effect your health has on the overwhelming problem we are facing? We can all play a role in fixing the problem, and it can start by taking control of our own health.**

### THE CONSUMER SEEKS BETTER QUALITY OF CARE:

- A powerful state workers' union has put pension fund trustees on notice that they would fight any health insurance premium increases unless CalPERS can prove the rate hikes would lead to better care Feb 20, 2003

- Patient safety, sins of commission: 100,000 DEATHS from poor quality medicine (10,000 common meds)- IOM

- Patient safety, sins of omissions: only 25% of most chronic diseases treated to minimum national goals

- The Midwest Business Group on Health and the Juran Institute report that one-third of health care costs today are related to poor quality; unnecessary surgeries, duplication of services, inadequate disease management, as well as poor communication and coordination among physicians and other providers. Midwest Business Group on Health 2002

### Prevention Pays

- A meta-analysis of 42 studies published in refereed journals comprising 350,000 employees found that the newer health and productivity initiatives yielded a cost-benefit-ratio of 1-to-6\*

- Disease Management programs are gaining momentum:\*\*

- o save more than they cost
- o increase Ee, patient and subscriber satisfaction
- o increase productivity

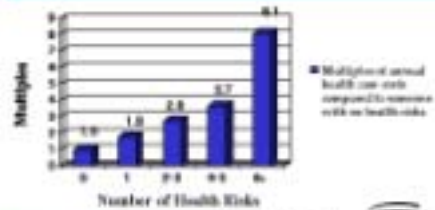
\* Larry Chapman, Summex Corporation presentation at IHPM Conference, September 25, 2002

\* Healthleaders Magazine Cover Story May 2002

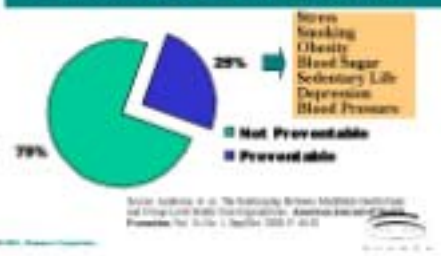
### Effects of Single Risk Factors



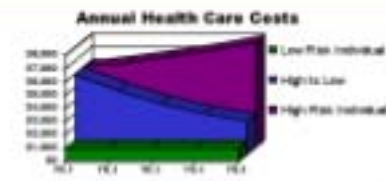
### Effects of Multiple Risk Factors



### Preventable Health Costs



### Health Risks and Cost Over Time



### Changing Hospital Delivery Patterns

non-Federal ST general hospitals

	1946	1975	1985	2000
Admissions/ per 1000	97	156	141	120
Average LOS	9.1	7.7	7.1	5.8
Occupancy Rate	72.1%	74.8%	64.8%	63.9%
Outpat. visits/per 1000	N/A	911	936	1899
Total Beds (1000s)	473	947	1003	825
Non-profit	301	659	708	583
Proprietary	39	73	104	110
State and Local	133	215	191	131

Source: American Hospital Association, 2002

### Health Economics in Every Country Different

- Kodak China has an endless supply of healthy young women for assembly work
- Kodak Rochester has a lot of older women and men
- Kodak France has state mandated OEM physicians on site with legally defined and limited roles
- English Occ Docs are discovering cost pressures,

- GENERAL AWARENESS OF HEALTH AND PRODUCTIVITY ECONOMIC ISSUES

The incidence of diabetes and obesity among Americans are up sharply in the past decade, putting millions more Americans at higher risk for heart disease, stroke and other related medical conditions. Diabetes alone costs the nation nearly \$100 billion each year in direct medical costs as well as indirect economic costs, including disability, missed work and premature death. Medical studies have shown that modest lifestyle changes -- such as getting more exercise and losing weight -- can reduce an individual's risks for developing these serious health conditions.

Tommy Thompson 2003

## Medical Practitioner Advantages

- Availability
- Affability
- Affordability
- Ability

### OEM Physician Directions:

- Practice High Quality Medicine: The patient come first
- Seek to improve the health and productivity of your patients
- Subspecialize: Identify & address the OEM needs of employers and employees, leading to in depth understanding of problems of your special groups, e.g. MRO, DOT, FFA, Firefighter. Seek to leverage your specialized knowledge to other similar populations
- Learn the insurance rules, contracts, etc. and adapt to them
- Learn digital tools of medical and business practice- improve processes by feeding aggregated data back to the process
- Consider a radiology residency