



E-Health: Potential Productivity Effects

Patricia M. Danzon
The Wharton School
University of Pennsylvania
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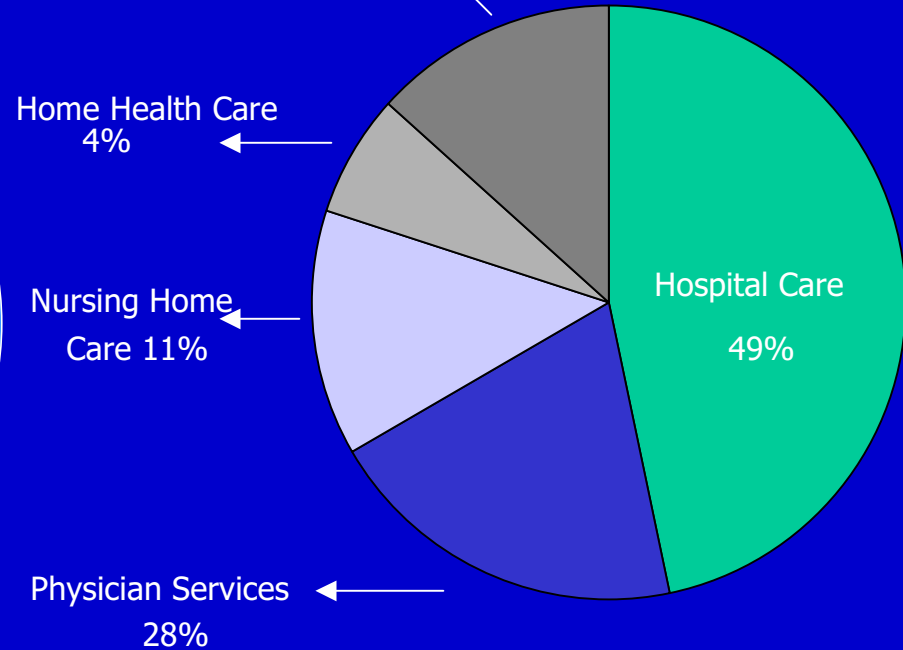
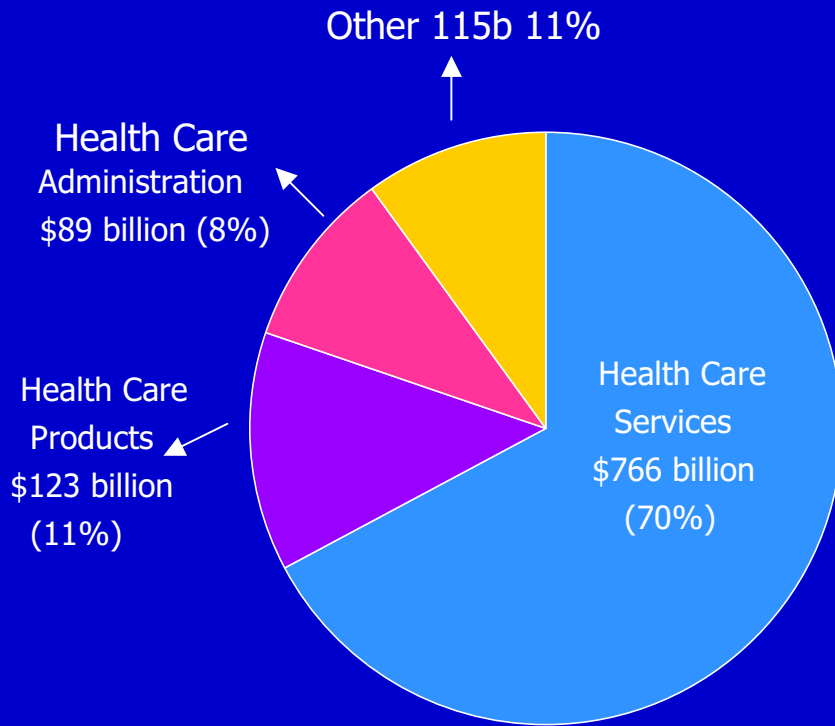


The Health Care Opportunity

- 14% of GDP, \$1.3 trillionand growing
 - demographics
 - income
 - ✓ technology
- Importance in public budgets
 - Medicare: looming revenue shortfalls.....
 - before adding a drug benefit
- High administrative expense and waste

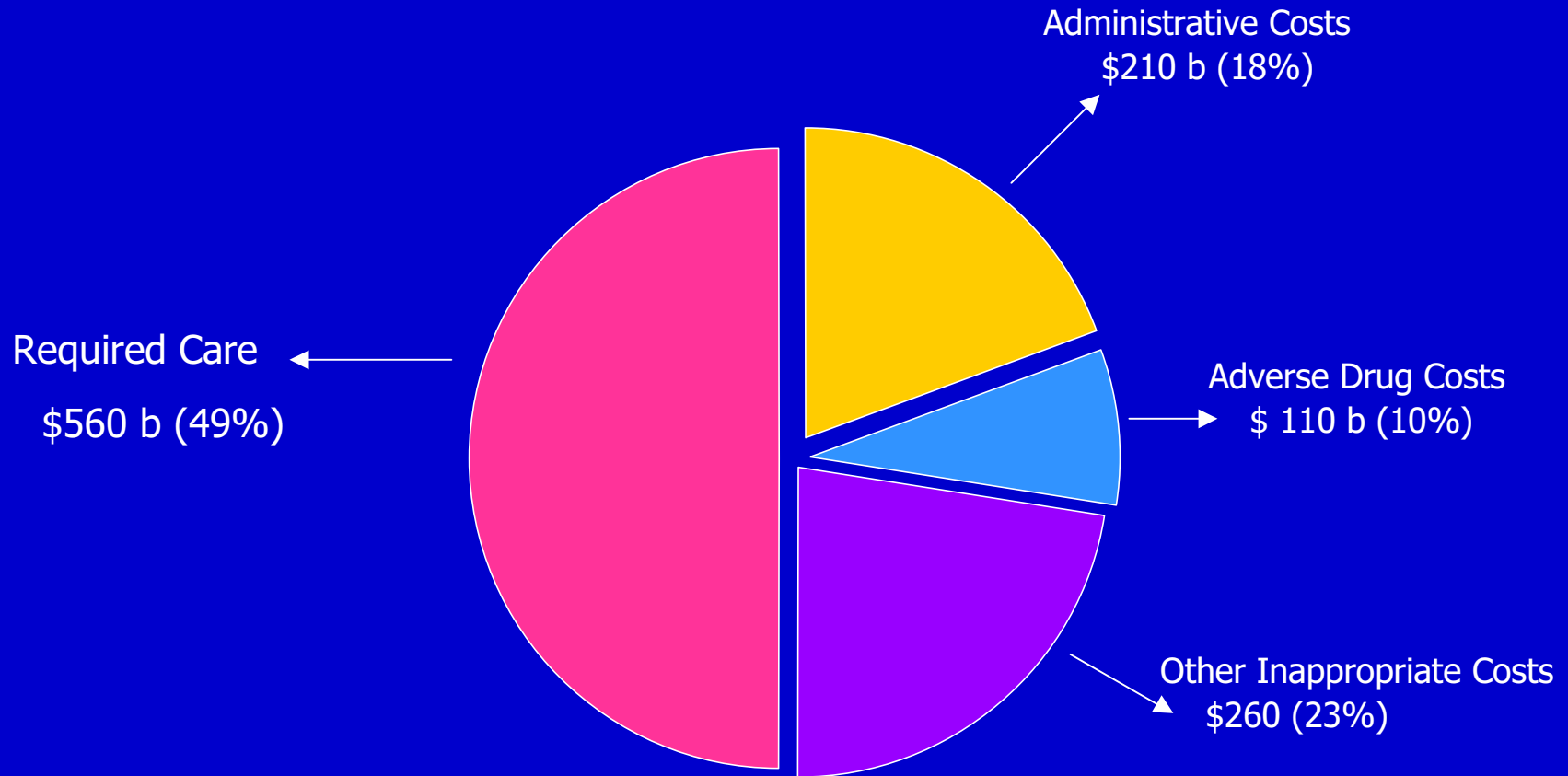
Health Care Expenditure - 1997

1997 U. Health Care Services
Expenditures = \$766 billion
7 Other Services 8%



Source: Health Care Financing Administration

1999 Inappropriate Care Cost Estimate



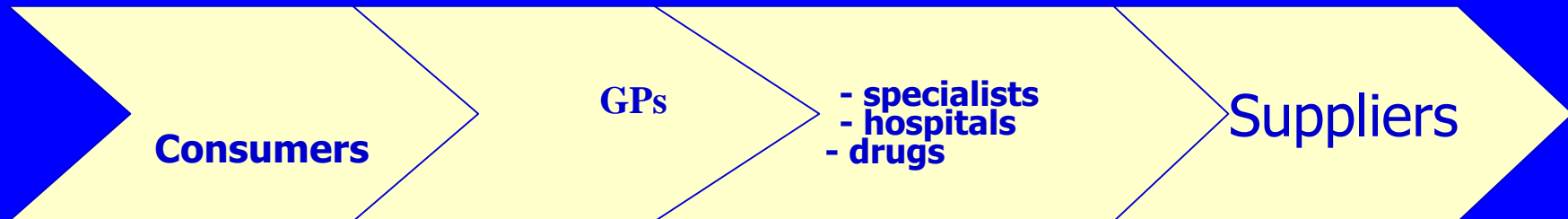
Source: Health Care Financing Administration; Senate Labor Relations Committee; Bear, Stearns & Co. Inc. estimates.



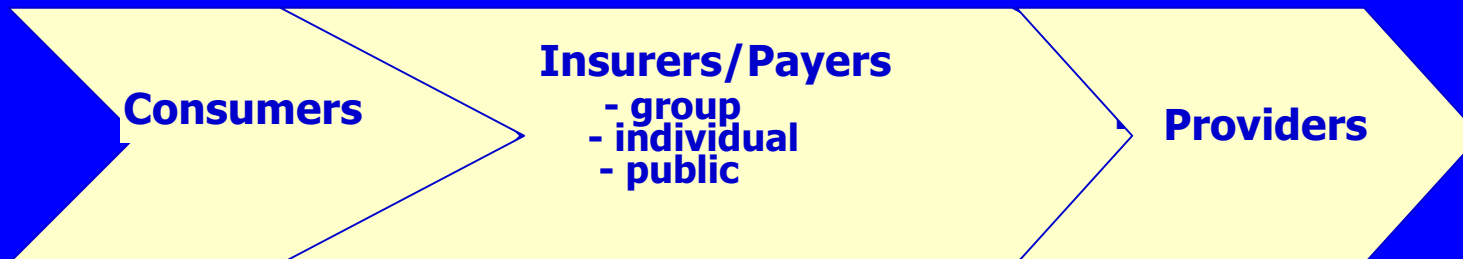
What makes health care different

- Uninformed consumers (traditionally)
- Complex and changing technology
 - specialization of providers; highly fragmented
 - co-ordination of care a major challenge
- Outcomes and quality are hard to measure
 - what is best practice?
- Third party payment: a mixed blessing
 - financial protection erodes cost-consciousness
 - admin. expense of cost control and reimbursement

HEALTH CARE PROVISION



HEALTH CARE FINANCE





Health Care vs. Health Production

- **Health Care** is an input in producing **Health**
- GDP measures some health care inputs
 - hospitals = h (personnel; capital; supplies)
 - physician services = m (personnel; capital; supplies)
- Patient time is an unmeasured input
- **Health** is not measured in GDP
 - Health = f(health care; patient life-style; compliance; environment etc.)



Bias in Measuring HC Prices and Productivity

- Measured medical prices and expenditures have increased
- But recent studies of cost of treatment for major diseases show price decline, controlling for outcome
 - Heart attack; Depression
- Upward bias in price indexes => downward bias in productivity measures
 - the Baumol problem may not exist
- The “freeway problem”: New medical technology may reduce cost/effect and cost/patient treated, but
- Total expenditures increase due to increased utilization
 - laparoscopic cholecystectomy



“Inefficiency” implies opportunity

- Administrative costs - \$399b. (1998 HCFA,BBRS)
 - Insurers – 16% of revenue
 - Hospitals – 22% (some patient care, QA?)
 - Physician – 60% (some patient care?)
 - Unmeasured physician time
 - Unmeasured patient time
- Inappropriate/unnecessary care
 - 25-33% of all care, > \$250b. (whose preferences?)
 - medication errors are real and costly
- Paper/phone/fax-based supply and ordering
- Note: estimates are rough, but point is valid



Internet Activities in Health Care

- Commerce
- Connectivity
- Content
- Community
- Care



1.B2B: Medical supplies to institutions (Hospitals, physicians, long term care)

- Med/surgical supplies \$85b.
- Drugs (ex.retail) \$13b.
- Office, food, cleaning \$102
- Total \$200b.
- Fragmented purchasers, except
 - hospital group purchasing orgs. (GPOs)
- Concentrated distributors, but
- Paper/fax/phone ordering



Estimates of B2B savings

- \$11b. estimate
- On line catalogs and ordering
- Inventory tracking avoids waste and off-contract ordering
- Auctions for some new and used equipment?
 - Routine supplies are already commoditized
- Medical devices: personalized experience goods
- Incumbent suppliers collaborate to counter attackers
- Note: don't double count in connectivity/admin. savings



When/will savings be realized?

- Hospitals:
 - autonomous hospitals and departments
 - incompatible legacy systems for other functions
- Physician offices and nursing homes: fragmented
 - IT priorities: connectivity to payers and other providers; content/advertising



2: Connectivity: The Ideal

“A data driven model that enables on-line:

- scheduling, referrals
 - electronic medical record (EMR)
 - prescribing, test ordering and reports
 - real time checks on eligibility, claims processing
 - clinical decision support, guidelines
 - patient education and interaction
 - home monitoring and provider intervention
- => savings in personnel, paperwork, physician and patient time
- => savings in much larger costs of waste and inappropriate care
- => increased productivity in medical services and production of health



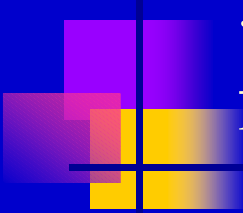
Progress and obstacles to connectivity

- previous hopes have ended as hype
 - supermeds, HMOs, PPMs, IDS, HCIS, CHINs
- web provides one missing link: low cost connectivity, improved functionality, more uniform standards
- ASPs vendors take risk, convert fixed to variable cost
- wireless hand held devices for physicians
 - with voice recognition
- no universal clinical and reimbursement conventions
- privacy concerns
- payers may prefer to keep the float?



An example: outpatient prescribing

- Physician hand-held device
 - identifies patient, Dx, medications, contra-indications
- Real time formulary checking
- Script transmitted to patient's pharmacy or mail order
- Avoids pharmacy call back
 - avoids reimbursement and clinical errors
- Cuts physician, pharmacist and patient time



3. B2C Commerce: On-line Drugstores: A flawed business model?

- E-commerce rule: convert viewers to buyers
- But would-be drug consumers cannot buy without
 - Physician prescription
 - Reimbursement (80%)
- Pharmacy benefit managers (PBMs) already use mail order for chronic medications
- Winning strategy: On-line drug store+ pharmacy + PBM
 - Express Scripts + PlanetRx; CVS + Soma
 - Modest savings over traditional mail order?
- Vitamins and nutraceuticals predominate



4. Content

- Consumer information portals: free content, chat, support groups, life style management
- More targeted, effective pharma advertising
 - Patient recruiting for clinical trials
- Will a partially informed patient increase or decrease physician productivity?
 - How to see an “informed” patient in a 5 minute visit?
- Physician information portals should increase productivity
- Long run: health productivity should increase, as consumers get better information
- Health care expenditures could increase or decrease



5. E-Health Insurance

- Web-based distribution 70% lower cost than traditional agents (Booz, Allen and Hamilton Inc.)
- Marketing and underwriting costs are significant mainly for individual/small group health insurance
- Greater potential if employers drop group plans or switch to defined contribution
- Also supplemental and disability policies
- Medicare?



6. Pharmacos and the internet

- R&D: Recruit patients and physicians for clinical trials
 - data tracking; electronic FDA submissions
- Manufacturing: B2B procurement of supplies
- Sales: sales force tracking; e-detailing
 - Are new channels complements or substitutes?
- Overall effects
 - accelerated launch, lower cost per new drug
 - total drug expenditures may increase
 - increased health benefits
- Conclusion: productivity improvement in producing new technologies could increase total health spending



Internet Impact

Business Model	Cost per unit	Total expenditures
Connectivity	↓	↓
Content – MD	↓	?
Content – patients	?	↑
Commerce B2B	↓	?
Commerce B2C	↓	?
Care	↓	?



Conclusions on Productivity Effects

- Traditional health care productivity measures biased:
 - outcomes multidimensional, unmeasured
 - traditional price indexes are biased
- B2B: large savings eventually
- Connectivity: huge potential
 - short run: reduce measured admin. costs
 - long run: reduce real waste due to inappropriate care, errors, duplicative services
- Total health spending and total health may increase
 - improved productivity in producing new technologies; more informed consumers