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June 2000
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Potential Productivity Effects
E-Health
The Health Care Opportunity

- 14% of GDP, $1.3 trillion ......and 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%

Hospital Care 49%
Nursing Home Care 11%
Physician Services 28%
Home Health Care 4%
Health Care Services $766 billion (70%)
Health Care Products $123 billion (11%)
Health Care Administration $89 billion (8%)
Other 115 billion 11%

Source: Health Care Financing Administration
1999 Inappropriate Care Cost Estimate

- Required Care: $560 b (49%)
- Administrative Costs: $210 b (18%)
- Adverse Drug Costs: $110 b (10%)
- Other Inappropriate Costs: $260 (23%)

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

Consumers ➔ GPs ➔ Suppliers
- specialists
- hospitals
- drugs

HEALTH CARE FINANCE

Consumers ➔ Insurers/Payers ➔ Providers
- group
- individual
- public
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
- Online 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

- E-commerce rule: convert viewers to buyers
- But would-be drug consumers cannot buy without
  - Physician prescription
  - Reimbursement (80%)
- Pharmacy benefit managers (PBM) 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 nutriceuticals 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

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<thead>
<tr>
<th>Business Model</th>
<th>Cost per unit</th>
<th>Total expenditures</th>
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<tbody>
<tr>
<td>Connectivity</td>
<td>⬇️</td>
<td>⬇️</td>
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<tr>
<td>Content – MD</td>
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<td>⬇️</td>
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<tr>
<td>Content – patients</td>
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<tr>
<td>Commerce B2B</td>
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<td>Commerce B2C</td>
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<td>Care</td>
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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