

Medical Technology: Helping Patients and Society

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Objectives

- Describe the medical technology industry
- Highlight the clinical, economic and societal benefits of medical technology
- Look into the future of innovation

What is Medical Technology?

- Devices
- Diagnostics
- Health information systems

NOT

- Pharmaceuticals

A Glimpse of Medical Technology



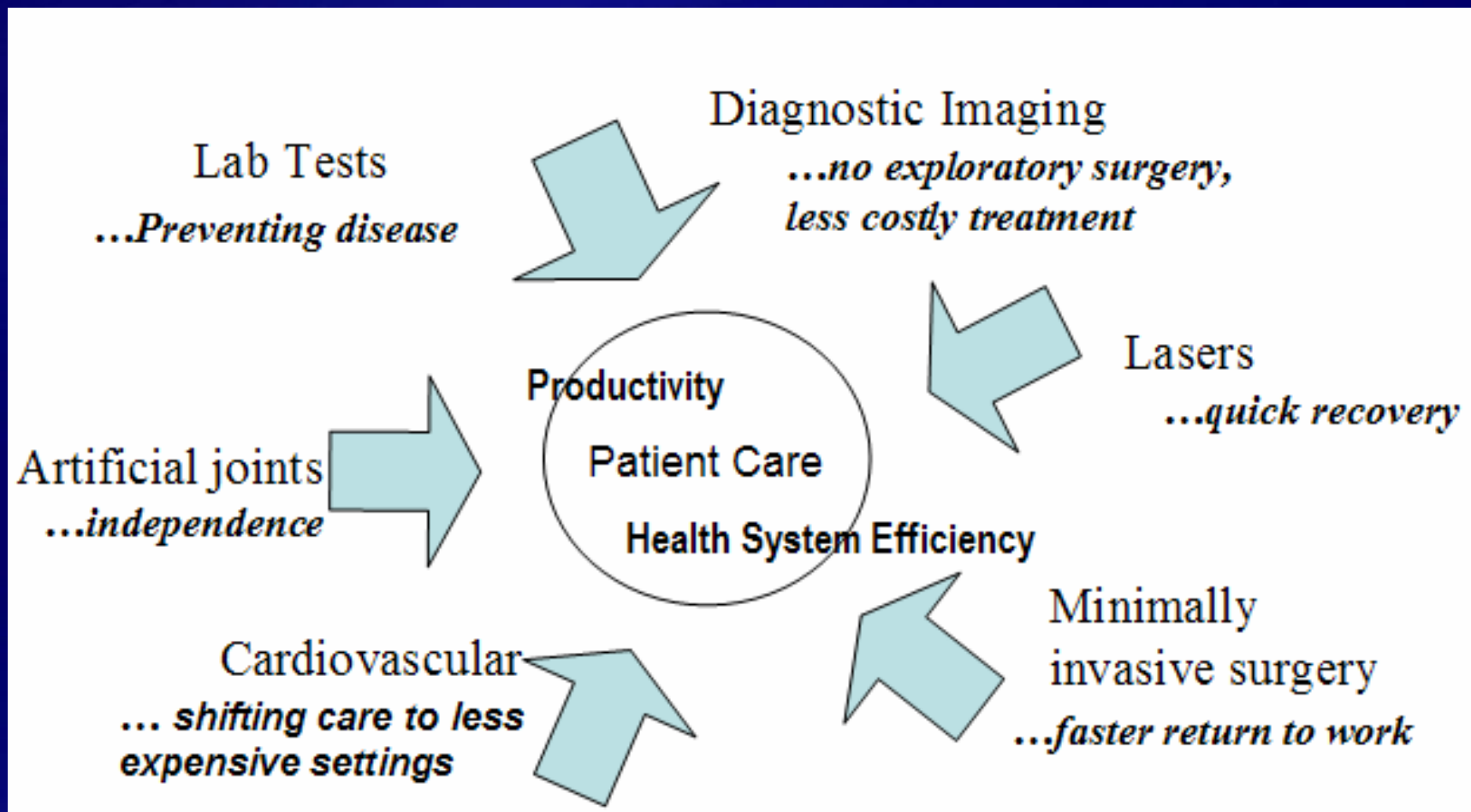
Characteristics of Medical Technology

- Short product life cycles
- Largely incremental innovations
- Innovation requires contributions of many fields of science and extensive education and training
- Highly competitive industry
- Small companies fuel innovation
- Product price declines over time
- Significant after-sales component

Medical Technology in the U.S.

- 6,000 companies
- 350,000 jobs
- Highly-skilled, high-paying jobs – average wage is approximately 50% higher than the average manufacturing wage

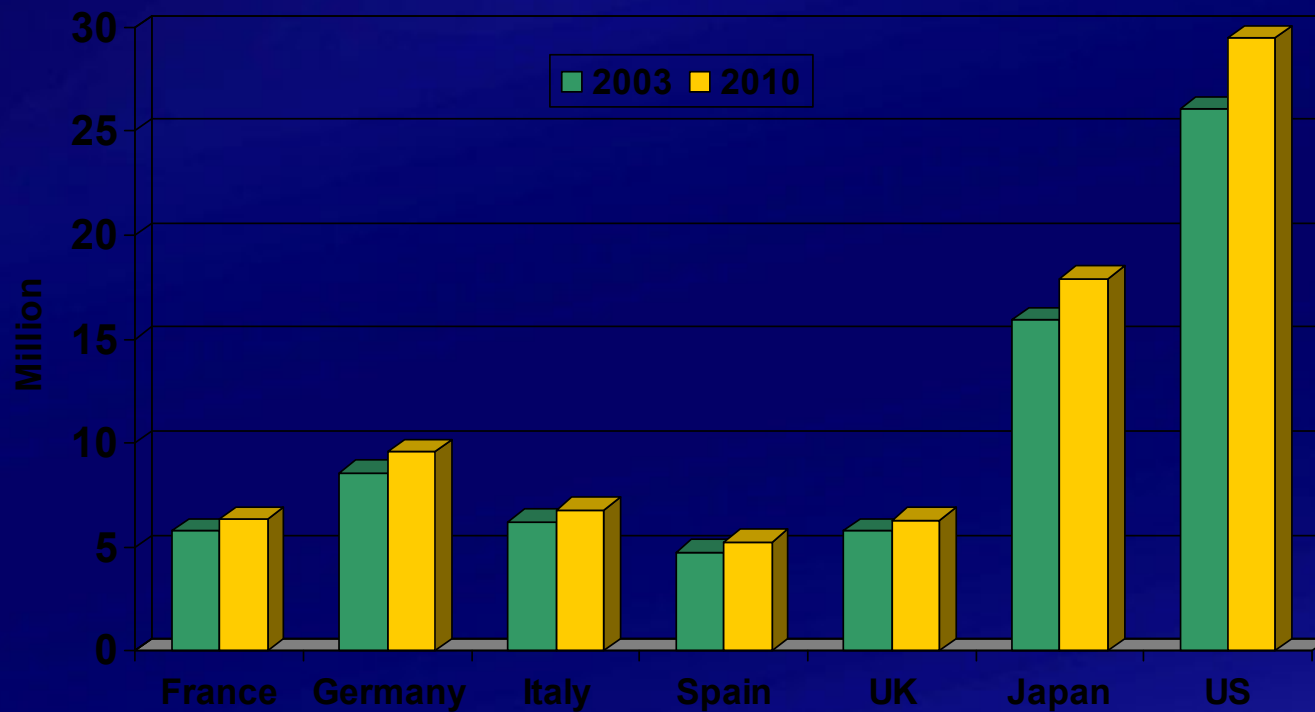
Medical Technology Benefits to Patients



The Burden of Disease

- *Cataracts* affect about half of people over the age of 55
- Each year, more than 300,000 Americans suffer *cardiac death* when their hearts fail to beat properly
- *Heart attacks, Type 2 diabetes, stroke* and *breast cancer* alone affect 17 million Americans annually
- *Osteoarthritis* is the number one cause of disability in the United States – CDC estimates that it costs the U.S. economy \$86 billion annually in medical costs (\$51 billion) and indirect costs (\$35 billion)

Osteoarthritis (OA) Prevalence



- The OA population in these markets is expected to reach 80 million by 2010.

- Growth will be largely driven by the aging population and obesity.

- Obesity will increase 7-11% in the US and Europe between 1999-2010.

Source: *Epidemiology: Osteo- and Rheumatoid Arthritis, Datamonitor, October 2003.*

Medical Technology as Part of the Solution: Delivering Value

- Medical technology spending represents approximately 5% of health care expenditures
- Advances in care through earlier disease detection, faster recoveries, reduced hospitalizations, fewer medical errors, etc. has yielded the following from 1980-2000:
 - Annual mortality declined 16%
 - Disability rates declined 25%
 - Life expectancy increased 3.2 years (4%)
 - Hospital days fell 56%
- Per capital spending up \$2,250 but health gains far exceeded the additional dollars spent by approximately \$2.70 per dollar...

Testimonials Related to Medical Technology

“The benefits from lower infant mortality and better treatment of heart attacks have been sufficiently great that they alone are about equal to the entire cost increase for medical care over time.”

--David M. Cutler, Ph.D., Harvard, and Mark McClellan, M.D., Stanford (former FDA Commissioner and Administrator of Center for Medicare and Medicaid Services)

“In the 1980s, society received up to \$2 in benefit for every \$1 it spent on health care.”

--Economist William Nordhaus, Yale University

Medical Technology Evolution: Incremental Change Leads to Big Results

Advances in Total Joint Replacement

FEATURES	1973	1993	TODAY
Incision Size	8"-10"	6"-10"	4"-6"
Length of Hospital Stay	12.5 days	5.5 days	4 days
OR Time	140 minutes	65 minutes	45 minutes
Recovery time	Several weeks in the hospital	10 days	3-4 days
Feature Improvements	Cement used for implants, not as durable and led to cracks. 10 year implant life.	Increased use of non-cemented implants that encouraged bone growth into the implant.	Ceramic, metal on metal and improved polyethylene implants improve durability and implant life to 15 years or more. Minimally invasive outpatient procedure.
Cost*	NA	\$11,196.74	\$11,494.87

*Cost data based on Medicare charges (include outliers). Total charges calculated assuming a 50% cost to charge ratio and adjusted for inflation. "Today" values are 2002 data.

Medical Technology Evolution: Incremental Change Leads to Big Results

The ICD Example

	1980s	2000
Weight	280 g	< 100 g
Surgery	Thoracic	Pect.(1 incision)
Stay	14-24 days	2 days
Anesthesia	General	Local
Battery Life	2-3 years	7 years
Oper. Mortality	9 percent	< 1 percent
Complications	Significant	Virtually none
Total Cost	\$99,000	\$44,000

The Promise of Tomorrow's Innovation...

- Less invasive implants
- More accurate diagnostics
- Biological implants
- Genetic therapies
- Imaging that will minimize exploratory surgery
- Better fitting and more natural implants
- Drug-device combination products
- Tissue-engineered products
- Remote monitoring devices
- And more...

...Must Be Accessible to Patients

- Transparent, efficient, and globally-consistent regulatory requirements
- Reimbursement and pricing policies that recognize and reward innovation
- Efficient post-market regulation
- Economic environment that helps support R&D