Chapter 5: Technology and its Effects and Chapter 11: Populations with Special Health Needs

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Learning Objectives

At the end of this lecture, student should be able to:

- Explain at least two ways in which technology can be used to improve access to care for a special population
- Describe at least three considerations that should be taken into account when trying to minimize the cost and maximize the benefit of medical technology
- Describe at least one special population, what special needs it has, and what the health care system must consider in meeting those needs

Chapter 5

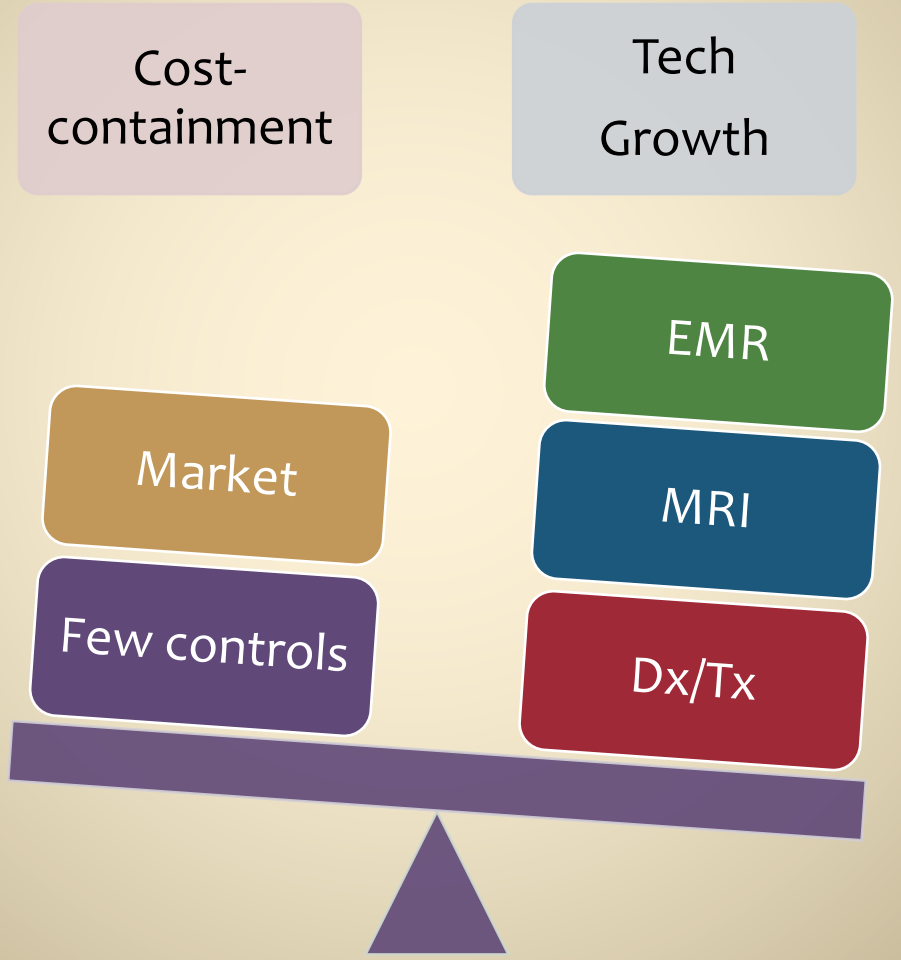
Impact of Medical Technology

Introduction

Benefits of Modern Technology

- Improved diagnosis and treatments
- Improved sanitation, nutrition, living conditions
- Life expectancy almost doubled from 1900 to 1965
- Research and development (R&D) has led to these advances

Modern Technology in the U.S.



There is such thing as too much technology….

Canada Supply-side rationing

- Limit number of MRI machines in a particular area

U.S. Market

- Consumer expectations must be met
- Offer specialized procedures in outpatient
- Medical training more complicated
- These pressures = excessive equipment/treatment, increasing cost

Examples of Medical Technology

Medical Procedures

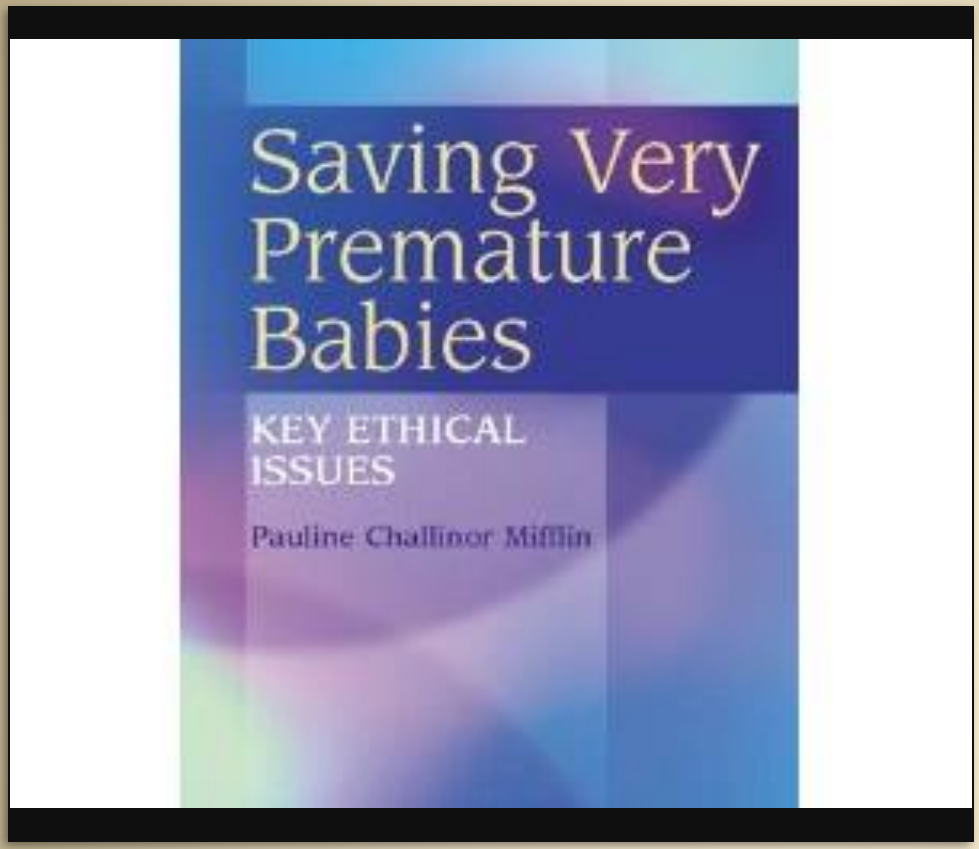
- Open-heart surgery
- Tissue transplants
- Hip and knee replacements

Diagnostic Equipment

- CT and MRI

Equipment Devices to Render Treatment

- Lithotripter
- Heart and lung machine
- Kidney dialysis machine
- Pacemaker



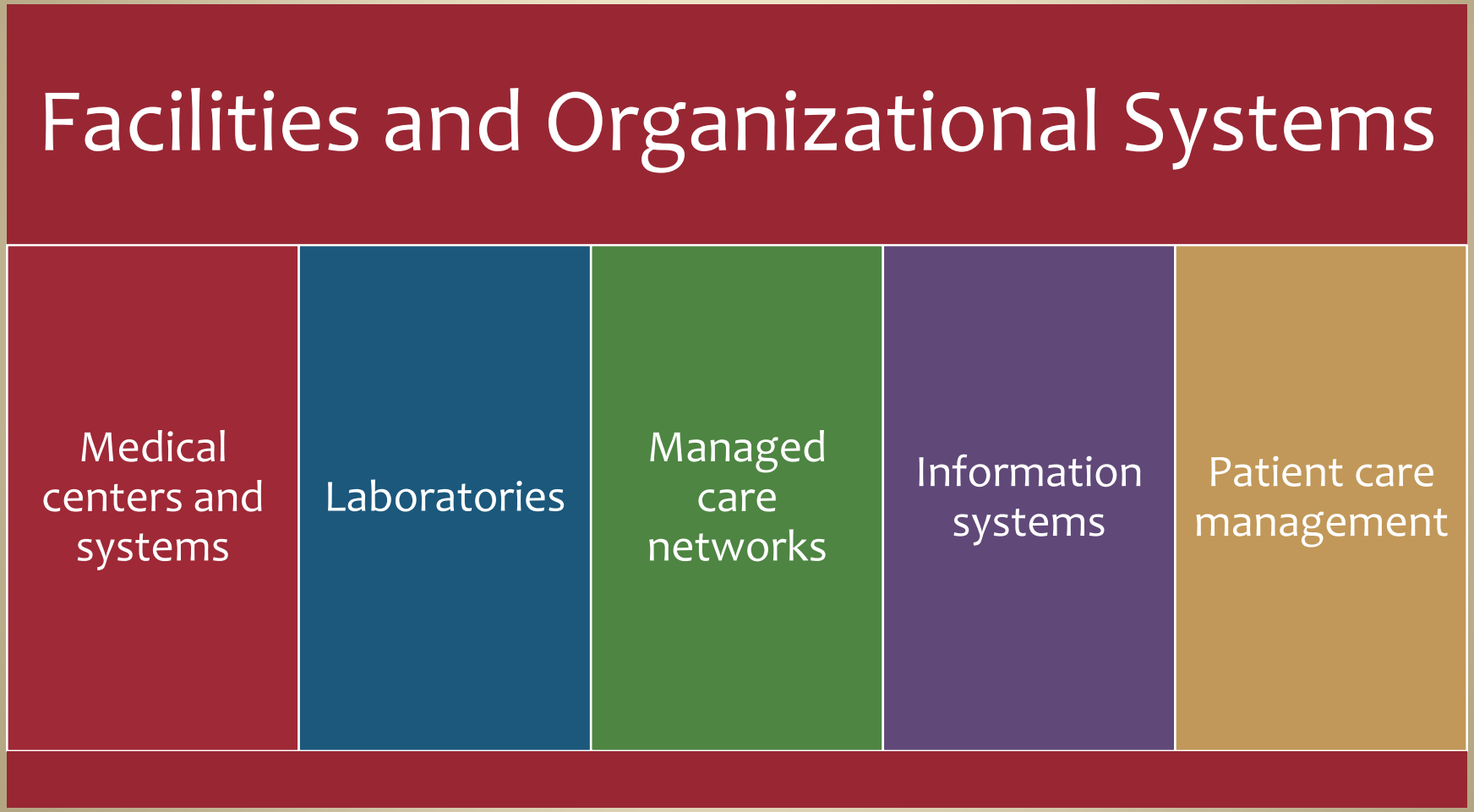
- End-of life issues
- Informed consent issues
- Questions of rationing

New Ethical Dilemmas

Medical Technology

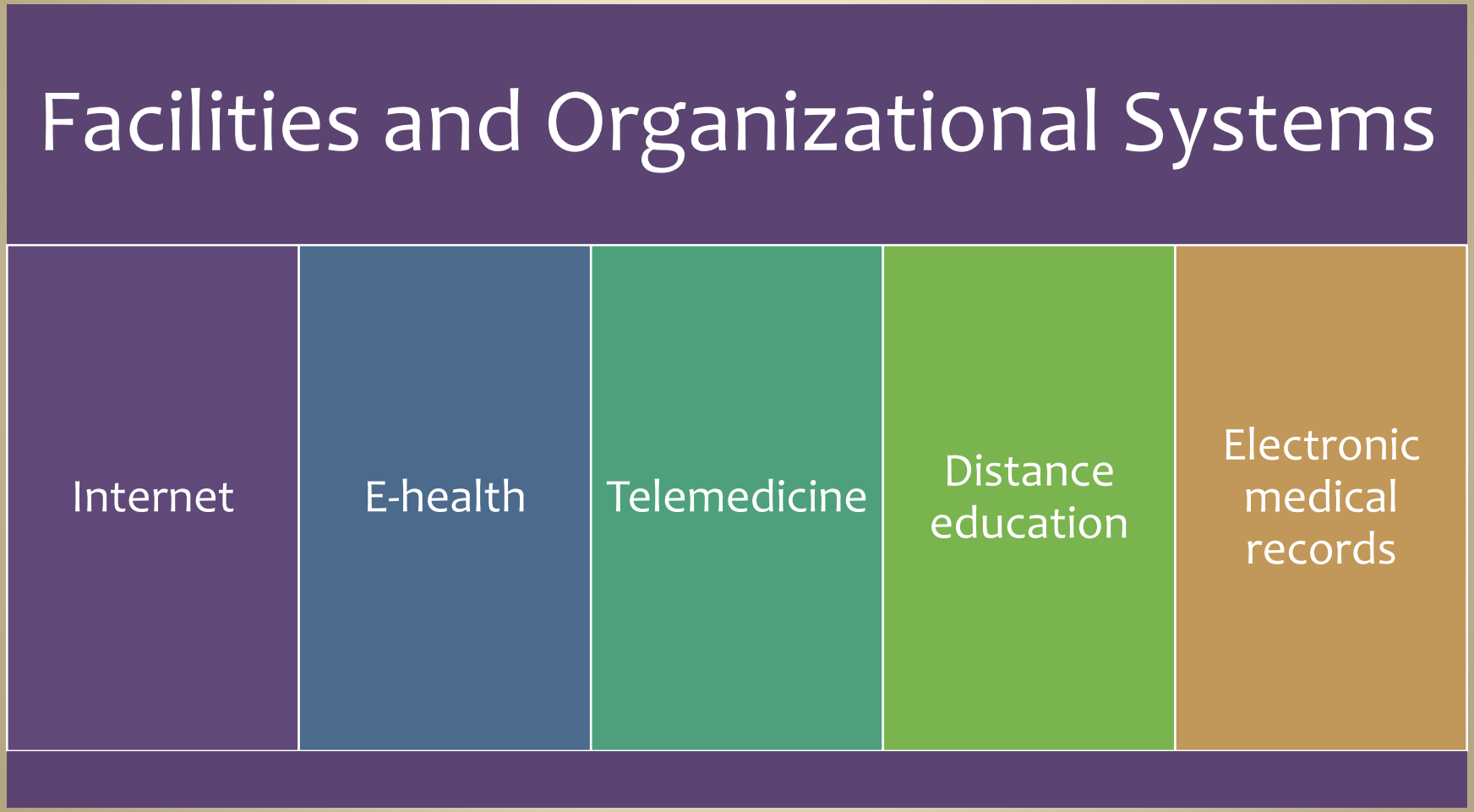
And Information Technology

Examples of Medical Technology



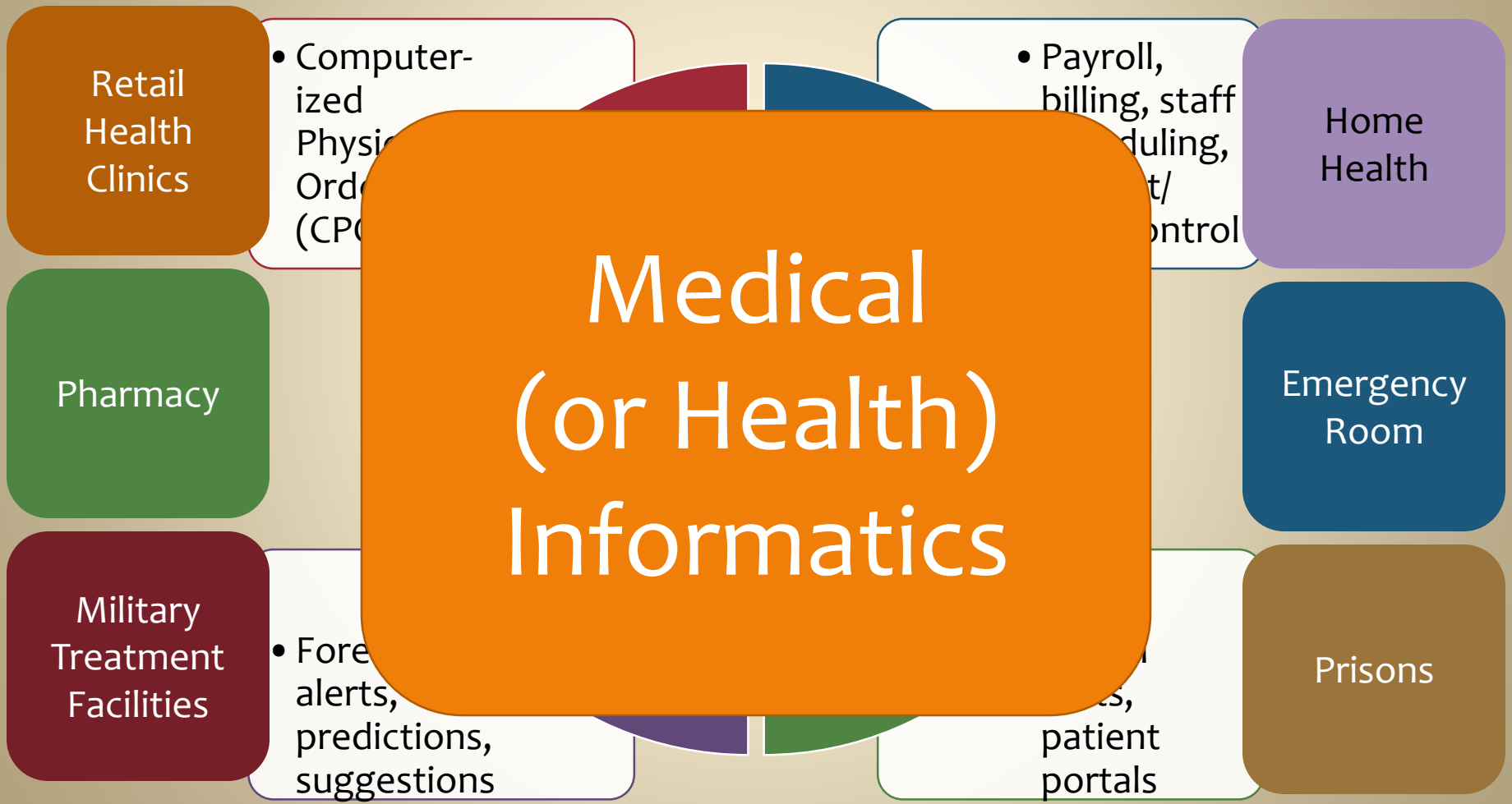
From Exhibit 5.1 on page 108.

Examples of Medical Technology

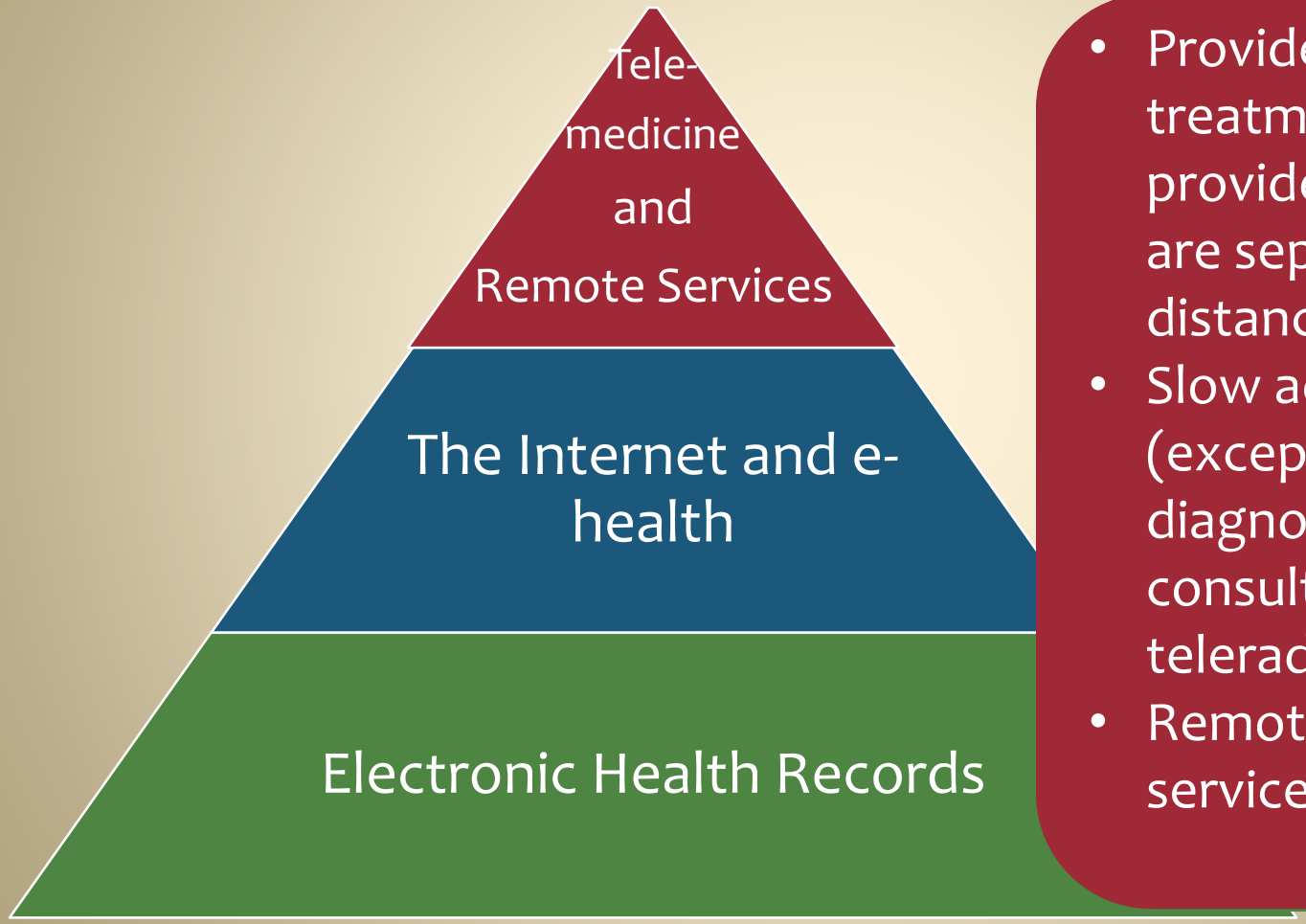


From Exhibit 5.1 on page 108.

Major Categories of Medical Technology

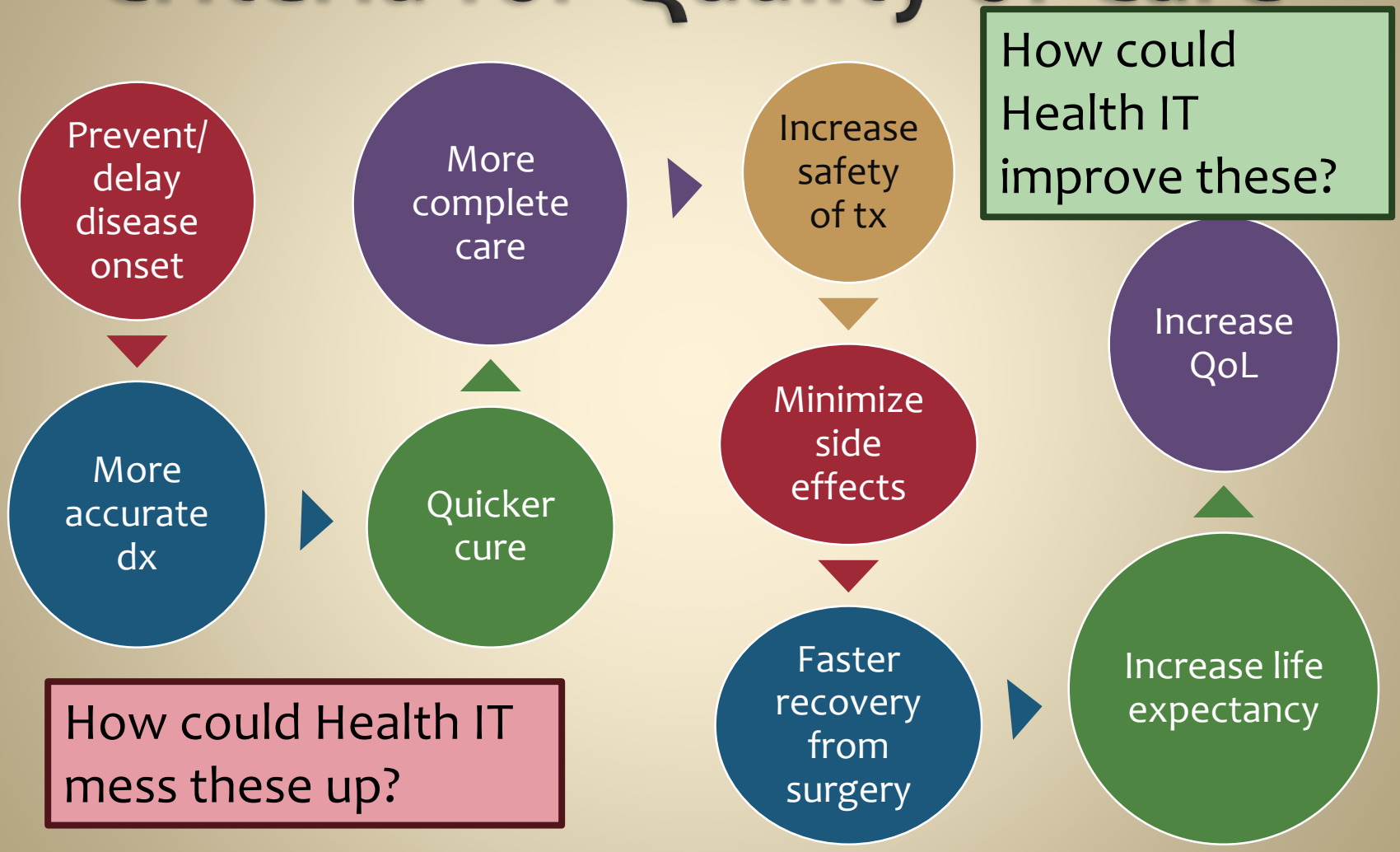


Strategies in Medical Informatics



- Provides diagnosis/ treatment when provider and patient are separated at a distance
- Slow adoption (except for diagnostic/ consultative teleradiology)
- Remote health services

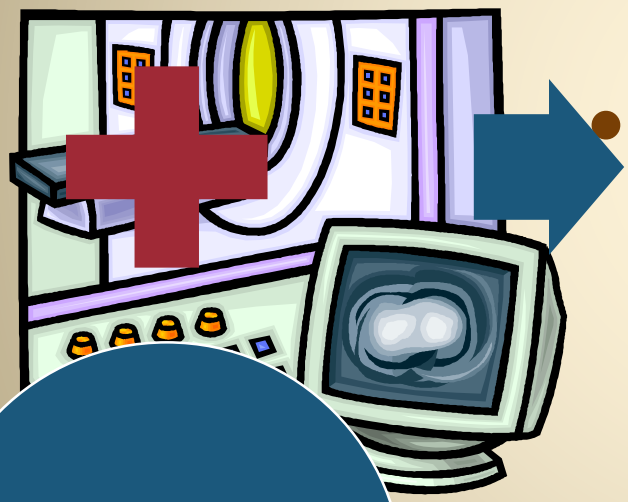
Criteria for Quality of Care



From Exhibit 5.4 (page 119)

lenges for Health IT

Expertise in Manage-ment



Expertise in Informatics

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    IT/medical

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Nursing!

Cost and Cost-saving in Medical Technology

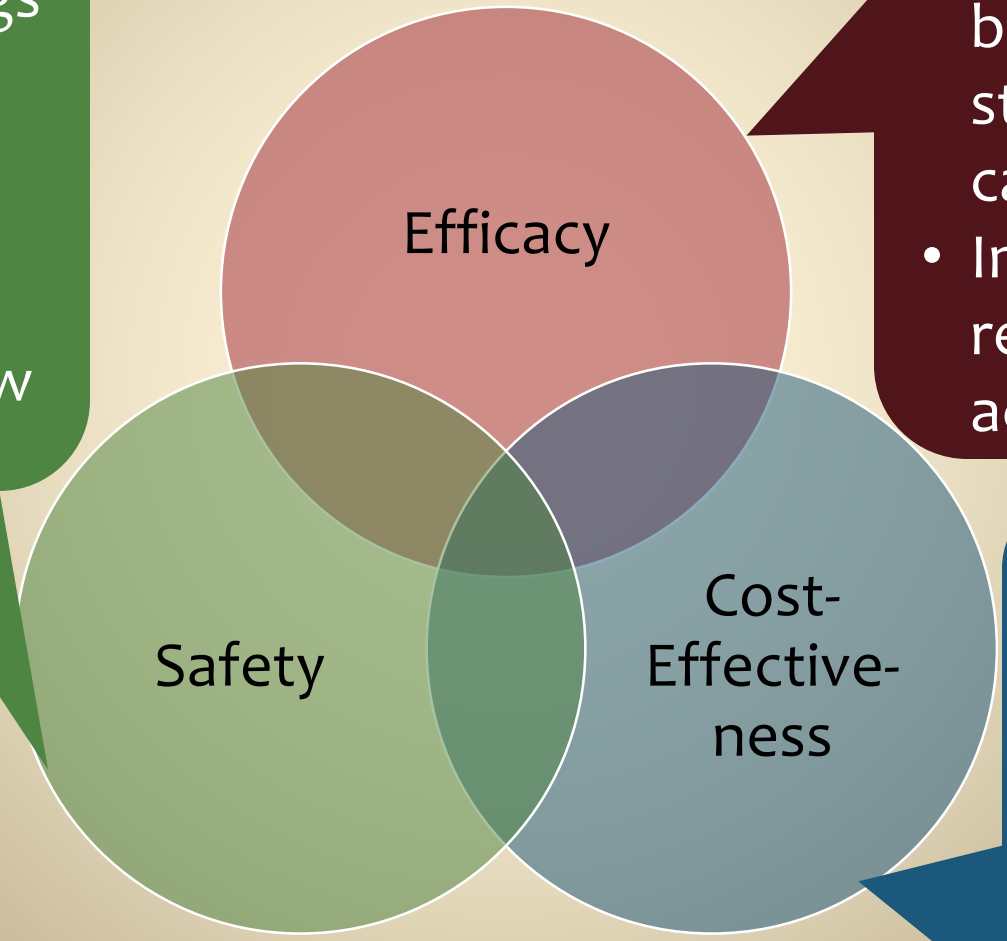
- High capital costs (R&D, precision manufacturing)
- Training/special skills
- Facilities may require refurbishing
- Higher utilization when covered by insurance (moral hazard/provider-induced demand)

- Replacement of earlier, more expensive procedures
- Minimally invasive procedures that eliminate the need for overnight hospital stays
- Technologies that shorten hospital stays

From Exhibits 5.5 and 5.6 (pages 120-121)

ROI in Health Care: Health Technology Assessment is Necessary

- Does it "break" things that were working before?
- Does it introduce new errors?



- Equal to or better than standard of care?
- Intended results achieved?

- Does it save money anywhere in the system? How much?
- When do we get our ROI?

Thoughts to Ponder

- ewhere (esp. health
  where where they
- Do you know why manag
  "health technology asses

Good management is the key to seeing an ROI from health IT/medical informatics

Nursing has been known to excel in management and health IT/informatics

Ways Health IT *Can* Improve the U.S. Health Care System

Improve operations

Improve safety

Contain cost

Optimize care/value

Standardize care

Improve access to care

Why has Health IT not lived up to its promise so far?

- Cost in making/implementing laws/regulations (FDA)
- Competition from providers drives up costs
- Medical training and research create demand
- American customers demand, and insurance supplies
- ROI not demonstrated for a variety of reasons

Conclusion

- Technology can have good or bad effects on the U.S. health care system, depending upon how it is implemented
- Not only is it important to plan for an ROI when implementing new health technology, but to also do a health technology assessment after implementing it
- **Good management is the key to seeing an ROI from health IT/medical informatics**
  - **Conversely, bad management is the key to wasting money and putting patients in danger**

Chapter 11

Populations with Special Health Needs

Predisposing, Enabling, and Need Characteristics of Vulnerability

ibit 11.1 (page 263)

Predisposing Characteristics

The Predisposing Characteristic of Race/Ethnicity

- "Disparities" (a disproportionate amount compared to whites) in
  - Health outcomes (e.g., life expectancy)
  - Enabling characteristics (e.g., literacy, access to health care)
- How does Race/Ethnicity lead to disparities?
  - Mainly environmental stressors: racism, poverty, poor food quality, lack of time to exercise, stressful life circumstances
  - Rarely biological relationships (e.g., African American race linked to sickle cell trait)

Pre-disposing Characteristics

WOMEN AND CHILDREN

- Women have a higher mental illness rate than men
  - Attributed to stress from sexism (lower pay), other environmental sources
- "New morbidities" for children
  - Drug/alcohol abuse
  - Obesity and type II diabetes
  - Other mental health, learning disabilities

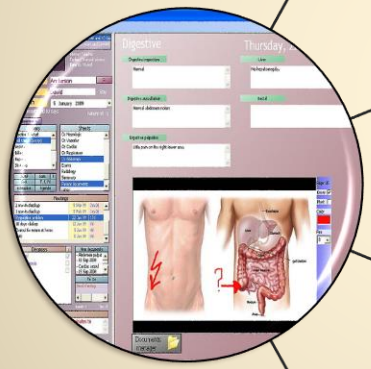
GLBT POPULATIONS

- Not mentioned in text, but very important group
  - High adolescent suicide rate
- Only recently achieved measure of civil rights
  - Still much medical discrimination against transgendered individuals
- Unique health needs
  - Lesbians and birth control?
  - Gay men and HIV?

Rural Health

- Rural residents earn on average $7,417 less than urban residents
- 24% rural children live in poverty
- 20% of US population lives in rural areas, but 10% of physicians are based there
- Increased burden of heart disease, stroke, diabetes, mental health disorders, tobacco usage and substance abuse

How could medical technology reduce disparities in these groups?



- Racial/ Ethnic
  - Literacy?
  - Poverty?
- Women/ Children
  - Mental health?
  - Obesity?
- GLBT
  - Adolescent suicide?
  - Unique health care needs?
- Rural Health
  - Reduce burden of disease?
  - Cost/access issues?

Enabling Characteristics

Enabling Characteristics from Text

- Uninsured
  - Tend to be younger (Medicare)
  - More likely to be racial/ethnic minority
  - Estimated ER uncompensated care cost of $31 billion in 2009
  - Low access to care
- Homeless
  - 1% of U.S. is homeless each year
  - 40% of homeless men are veterans
  - 26% of homeless have severe mental illness, but only 5-7% require institutionalization
  - High rates of mental health, acute/chronic medical, substance abuse, assault/victimization, effects of weather

More enabling characteristics

MIGRANT STATUS

- Continuity of care difficult
- Exposure to harsh environments (immigration health issues, occupational issues)
- Possible language barrier
- Often uninsured
- Undocumented leads to fear of accessing health care

CORRECTIONAL STATUS

- While in correctional system, care received can be compromised
- After leaving system, occupational discrimination
- Mental health/substance abuse issues prevalent
- Intersects with homeless and uninsured enabling characteristics

How could medical technology cost-effectively improve access to quality care in these groups?

- Un-insured
  - ER visits?
  - Access and cost?
- Home-less
  - Mental health?
  - Ascend from homelessness?
- Mi-grant
  - Continuity of care?
  - Protection if undocumented?
- Correct-ional
  - Continuity of care?
  - Mental health/ substance/ privacy?

Need Characteristics

Need Characteristics

- Mental illness (MI)
  - Ranks 2nd as a nationwide burden on health and productivity
  - 26.2% of U.S. adults have at least one MI/year, about a 1/5 of those have severe MI, and only 41% of those with an MI get any treatment
  - In 2006, 36.2 million people received $57.5 billion of mental health services, at average $1,591/person
- Chronic illness/disability
  - Almost half of all Americans have at least one chronic condition.
  - Chronic disease deaths are largely attributed to preventable illnesses
  - U.S. health care system oriented toward treating acute illness

HIV/AIDS

- 1 million adolescents/adults living with HIV in US
- More Americans know their status
- Advances in dx/tx have slowed incidence and increased prevalence
- Antiretroviral therapy $15,000/year – barrier
- Overlap with predisposing and enabling characteristics

How could medical technology cost-effectively improve access to quality care in these groups?

- MI pts.
  - Privacy/ stigma?
  - Cost/ telehealth?
- Chronic illness pts.
  - Secondary/ tertiary prevention?
  - Remote monitoring?
- HIV pts.
  - Home health?
  - Privacy/ stigma?

Conclusion

- The U.S., like every country, has its own unique vulnerable populations
  - Predisposing, enabling, and need characteristics
  - Racial minorities, children and women
  - Rural residents
  - Homeless, mentally ill, individuals with HIV/AID
- Important concern for the future
  - Health care disparities
  - Affordable Care Act provisions
- How can technology be applied to make things better, and not worse?

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