Planning, Designing and Building for Health: Healthcare Facilities as a Source of Health Promotion

February 9, 2007
U.S. Population, 1990-2100

Year

Number in millions

Source: U.S. Census Bureau
An Aging Population
Percentage of U.S. Population over Age 65

Source: From Baby Boom to Elder Boom: Providing Health Care for an Aging Population
Estimated Per Capita Health Expenditures by Age and Sex, 1995

Source: From Baby Boom to Elder Boom: Providing Health Care for an Aging Population
US Health Care Expenditures as Percent of GDP Projections

Obesity Trends* Among U.S. Adults
(*BMI ≥ 30, or about 30 lbs overweight for 5’4” person)

1991

1996

2004

CDC

No Data  10%  10% - 14%  15% - 19%  20% - 24%  ≥25%
National Diabetes Surveillance System

State-specific Estimates of Diagnosed Diabetes Among Adults

Age-Adjusted Prevalence of Diagnosed Diabetes per 100 Adult Population, by State, United States, 1994 and 2004
Persons employed in health service sites: United States -- 2005

- All employed civilians: 141,730,000
- All health service sites: ?
Persons employed in health service sites: United States -- 2005

- All employed civilians: 141,730,000
- All health service sites: 14,052,000
- Hospitals:
- Nursing care facilities:
- Residential care facilities, without nursing:
Persons employed in health service sites: United States -- 2005

- All employed civilians: 141,730,000
- All health service sites: 14,052,000
  - Hospitals: 5,719,000
  - Nursing care facilities: 1,848,000

http://www.cdc.gov/nchs/data/hus/hus06.pdf#summary
Of the 4,800,000 new jobs in the US 2000-2005

- 1.8 million were in Health Care -- 40%
The Coming Shortage in Healthcare Personnel
Projected Shortage of RNs California

Forecasted RNs California per 100,000 population

Figure 4: Forecasted RN FTE per 100,000 population

From 540 to 460 RNs per 100,000 patients by 2030

“The amount of VOCs emitted from a single waxing of a floor is comparable to the amount of VOCs emitted from the flooring itself over its entire life!”

--Dr. Greg Norris et.al.
Harvard School of Public Health
How are Hospitals for Patients? What Patients Want:

• Personal space
• A homey, welcoming atmosphere
• A supportive environment
• Good physical design
• Access to external areas
• Provision of facilities for recreation & leisure

Key Environmental Factors

- Aesthetic pleasantness
- Sunlight
- Noise reduction and positive sound stimulation
- Connection to nature
- Socially supportive spaces
- Increased behavioral control
“If there is one universal truth about hospitals, it is that they are drab, dismal places, not at all designed to soothe and heal.”

What Many Experience Now

- Pain, discomfort and anxiety
- Loss of emotional and social support
- Loss of behavioral control
- Boredom
- Loss of natural stimulation
- Presence of technological stimulation
- Lack of creative activity – mental or manual
- Sense of isolation
- An uninteresting, uninspiring visual environment
- Disconnection from the natural environment
The Current Look & Feel

Hospital experience can be a state of psychosocial deprivation
Noise

• Medical technologies
• People talking
• Hard surfaces
• Lack of acoustical treatment – ceiling tiles, carpet
Peak noise in patient room during shift change: 113DB

Cmiel et al, 2004
Issues for Hospitals and Research Centers

• Operate 24/7

• Large Energy consumption
  – Often at Premium times
  – Need for standby Power
Electricity Consumption by the Health Care Sector

- Acute Care facilities consume nearly twice the energy annually of an average commercial building –
- 6% of total US annual energy

Issues for Hospitals and Research Centers

• Operate 24/7
• Large Energy consumption
  – Often at Premium times
  – Need for standby Power
• Large waste production
  – Solid, Medical
  – Contaminated
  – Hazardous
  – Stored, transported
In 1998, the American Hospital Association signs a voluntary Memorandum of Understanding with the EPA pledging reductions in solid waste, PBT avoidance and virtual elimination of mercury by 2005.

In 1996, there were 5,600 operational medical waste incinerators in North America.
In 2005, there are fewer than 100…
• We are at or beyond “Peak Oil”
TOP 5 WARMEST YEARS WORLDWIDE SINCE THE 1890s

1) 2005
2) 1998
3) 2002
4) 2003
5) 2004
Decreasing California Snowpack Late 20\textsuperscript{th} vs Late 21\textsuperscript{st} Centuries
Changes in CO2 and Temperature – Last 400,000 years

And on Top of All This…
The Health Care Culture is…
These are fearsome challenges--
Panelists

• John Kouletsis--
  – National Director of Strategy, Planning and Design – Kaiser Permanente
• John Pangrazio FAIA -- NBBJ Architects
• Michael Hrast –
  – Project Director, NFS Capital Projects Modesto
Planning, Designing and Building for Health: Healthcare Facilities as a Source of Health Promotion

February 9, 2007
Richard J Jackson MD MPH
dickjackson@berkeley.edu