Infrastructure Opportunities
Asking the Right Questions

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What’s the Problem?
What’s the Problem?

Grande Prairie
Objectives

- Where are we going as a society?
- What questions do we have to ask?
- How have others solved their problems?
- What are the challenges and impact from decisions concerning capital and operating costs?
Drivers

Population

2/3 of people who have reached the age of 65 are alive today.
Drivers

Population
Drivers

Growing Expectations

- Care for everyone
- High availability, reliability, continuity
- Compliance with standards
- High accuracy, low tolerance for deviations from spec, particularly for P3
Affordability

Per Capita Spending by Provincial Governments on Health

Per Capita Provincial Government Expenditure ($)

2005 2006 2007 2008 2009 2010

Non-Ontario
Ontario
Ontario: from 2000 to 2009 there has been a 6.9% increase in healthcare spending
Canada (CCPA) from 1975 to 2006: 6.3% increase in health care spending

- Inflation: 2.5%
- Enrichment: 2.0%
- Population Growth: 1.0%
- Aging: 0.8%
Drivers

Affordability

- Disparity in Spending (HBAN):
  - 1.0% of the population use 50% of the funding
  - 5.0% of the population use 84% of the funding

- General recognition that the system is not very efficient, for every 1000 admission:
  - 75 adverse drug events
  - 150 unnecessary lab tests
  - 320 ‘information gap’ costing 1.2 hr each
Drivers

Clinical

- Changing nature of delivery
- LEAN or process re-engineering
- Shifts from inpatient to ambulatory
- Higher acuity, more home based care
- Less tolerance of errors
Drivers

Medical Equipment Challenges

- Frequent changes in technology
- Decision making process for the equipment itself
- Big budgets for the equipment
- Small amount for installation
- Service in space often not adequate
- Last minute arrival
Drivers

Information Technology

- Past changes as a backdrop
- Integrated systems; PACs; bedside clinical information; tracking systems
- Constant connectivity expected
Drivers

Information Technology

- Requirements will continue to increase
  - Images vs text
  - RFID

- Current spending averages 2.5% of HIT, UHN is 5%

- Electronic Health Records still a struggle but is a necessity for efficiency
Sustainability
What is it really?

Green Building

Sustainability
Sustainability

What is it really?

- Energy, recycling, reuse, environmental impact
- A hospital that is still doing its job years in the future
- The goal: a **sustainable healthcare infrastructure**
Solutions

What questions can we ask to address some of these drivers?
What is important in the design?

Establish Design Principles:

- Sustainable development
- Flexibility, adaptability, reliability
- Safety of patients and staff
- Infection prevention and control
- Separation of clinical and technical functions
- Quality of indoor environment
- Energy efficiency
- Ability to maintain and replace
What is the importance of master planning?

- Hospital that is doing its job years in the future
- Keeping the big picture in mind
- Step back and look at things in context
- Always have one
- Have a plan B
- Do a really good M&E plan
- $19M to $100M case study
- Carrying on operation of facility during renovation
What does sustainability really mean?

Flexibility & Adaptability

- Locations of shafts/communication rooms, planning for the future
What does sustainability really mean?

Planning for the Future

- Leaving service routes, equipment removal aisles
- Future equipment locations in plant spaces
- Upsizing services/capped connections
- Modularity
What does sustainability really mean?

Reliability & Redundancy

- What are the expectations?
- Built for the long term
Pay now or pay later?

**Capital Costs**
- Often the focus
- Fixed amount
- Construction
- Clinical equipment
- Fees

**Operating Costs**
- Staffing
- Utilities
- Cost of care
- Maintenance
Pay now or pay later?
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Implications of Decisions

- Infection prevention & control
- Lifecycle
- Energy
- Staffing costs
Pay now or pay later?

Here’s the real picture...

British PFI Program and NHS Healthcare Design

NHS pays for operations (health services) for 30 years 40-75 (approx)

1 Building Design & Construction

4.2 Maintenance

Healthcare (Business) Operations

Ulrich, 2005, 2006
How do we predict the future?

We can’t, but...

- We can make some reasonable hypotheses
- There are things we do know
- “The only certainty is that nothing is certain” – Pliny the Elder
- A flexible and adaptable facility is one that is sustainable