

A Review of the Evidence

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Why optimization?

- *Historical context*
- *HHR planning framework*
 - *Evidence from research*
- *Action plan*
 - *Applying the HHR planning framework*

HHR Framework

Framework for HHR planning and management:

- **Population Health Needs / Person centered care**
- **System Design**
- **Supply**
- **Production (education & training)**
- **Financial resources**
- **Management (organization & delivery of services)**
 - **In order to:**
 - **Deploy and utilize resources effectively**
 - **Improve outcomes**
 - **Optimize the mix of resources required to achieve outcomes**

Context (Reports 2001-2003)

Structure of the Health System

- **Address morale issues**
- **Respect contributions of all staff**
 - **Fyke (2001)**
- **Change scopes and patterns of practice**
 - **Romanow Commission (2002)**
- **Address the shortage of health professionals**
- **Ensure adequate supply and mix of providers**
 - **Kirby Senate Report (2002)**
- **Maximize Nursing Scopes of Practice**
 - **“as nursing goes, so goes the rest of the system”**
 - **Canadian Nursing Advisory Committee (2002)**

Context (Reports 2001-2003) 2

Process of Care Delivery

- **Define the roles of providers**
 - Mazankowski (2002)
- **Optimize the skills and competencies of all providers**
 - Kirby (2002)
- **Avoid overlap, duplication, inefficiency in service delivery**
 - Fyke (2001)
- **Move from silo to collaborative practice**
- **Deliver seamless, integrated care across continuum**
 - Romanow (2002)
- **Improve continuity and coordination of care**
 - 2003 First Ministers Accord on Health Care Renewal

Context (Reports 2001-2003) 3

Outcomes

- **Focus on quality, accountability, sustainability**
- **Improve timely access to quality care**
 - Romanow (2002)
- **Improve job satisfaction**
- **Reduce unnecessary and ineffective work**
 - Fyke (2001); Mazankowski (2002)
- **Create professional practice environments**
 - Canadian Nursing Advisory Committee (2002)
- **Increase individual and collective productivity of health care providers**
 - Kirby (2002)

Action Needed

Health System and Workforce Optimization

- **Improved utilization of health care providers (i.e. working to full scope of practice)**
 - *Application of knowledge & skills people educated, regulated & competent to perform*
 - *Improve worklife satisfaction, recruitment, retention*
- **Collaborative Practice (new ways of working together)**
 - *Requires changes in pre service education and continuing education of current providers*
 - *Improve professional relationships, valuing, respect*
- **New service delivery models across continuum of care delivery**
 - *Improve health outcomes, access, quality, safety, cost-effectiveness, sustainability, productivity*

Where do we start?

- **Evidence informed approach**
 - *Apply findings from research, evaluation, experience*
 - *Establish and test new collaborative service delivery models*
- **Guided by a set of principles**
 - *Population needs driven, across continuum of care*
 - *Optimal utilization of knowledge and skills of all providers*
 - *Staffing and staff mix models linked to intended outcomes*
 - *Patient/population, provider and system levels*
 - *Evidence informed decisions, context specific*
- **Supported with appropriate resources**
- **Assessed through ongoing, rigorous evaluation**
- **Iterative process of continuous refinement**
 - *Phased approach, series of inter-dependent initiatives*
 - *Consistent approach to change management*
 - *“action research” as basis for learning*

Optimal Utilization of Personnel

***What have we learned about providers:
Utilization, satisfaction, perceptions?***

Nursing and Allied Health

Professional roles:

- **Role ambiguity and confusion within nursing and across professions**
 - Gaps between optimal and actual practice endemic
 - In part related to pre-regionalization differences in practices/policies and to lack of evidence base for practice
(Sources: Clinical Nutrition Review; Scope of Practice and Interprofessional research)
- **Roles = Sum of tasks/activities performed**
 - Overlap in tasks across professions contributes to frustration, confusion, tension
- **Optimal Utilization (“working to full scope”)**
 - Only 50% of RNs, 73% RPNs, 20% LPNs report working to full scope
 - Majority of PCMs and specialized nurses feel RNs, LPNs NOT working to full scope
 - Stereotyping contributes to sub-optimal utilization

(Source: Scope of Practice research – 2005)

Role Effectiveness

RN role as one exemplar:

- ***Key clinical role functions of RNs***
 - ***Comprehensive assessment, planning, intervention & evaluation***
 - ***Monitoring/surveillance***
 - ***Patient and family teaching and support***
 - ***Coordination of care***

Role Effectiveness (continued)

Focus of client assessments:

- **primarily bio-medical/physical – RNs/LPNs**
 - RNs say psychosocial assessments not valued by colleagues or employers
 - Lack of time noted as contributing to focus on physical aspects of care
- **Psycho-social – RPNs**
 - Little focus on bio-medical aspects of care

“Source: (Nursing Scope of Practice research. 2005)

Job Redesign Research

RNs spend

- ~ 35.5% of time in direct care activities
 - E.g. ADL/personal care (12.4%), biomedical assessment (6.5%); medication administration / treatments (10.2%), engagement (1.4%), mobilization (0.6%)
 - Patient and family assessment /teaching /support (4.4%)
 - Much of this within scope of practice of LPNs and others
- ~ 19.4% of time in charting, reviewing information
- ~ 15.7% in care coordination
- ~ 12% in indirect care
 - E.g. administration (3.3%), hand washing (1%), reorganizing unit (4.6%)
- 12.4% “in flight” (i.e. travel)
 - Interruptions often occur while ‘in flight’ and are primarily by nursing colleagues
 - May be associated with higher risk of medical errors

Job Redesign Research

continued)

Identified areas for optimizing roles

- **Staff involvement in change**
- **Population focused, needs based staffing**
- **Priorities identified:**
 - **Role Accountability**
 - role clarification & role enactment
 - **Unit and System processes**
 - Service delivery model absolutely critical
 - **Space & Technology**
 - Equipment, geography, etc.

The Process of Care Delivery

What are some of the issues?

Efficient Utilization of Staff

Themes emerging from Research

- **Duplication**
 - **data collection** (e.g. assessment data); **data entry** (e.g. multiple forms & data entry)
 - **Fragmentation across continuum of care**
- **Information flow**
 - **Lag time in data entry, data retrieval**
 - **Content of messages, information overload** (too much unimportant, irrelevant data)
 - **Lack of integration b/w institutional and community services**
- **Time Pressures**
- **Team cohesion** (some integrated, cohesive; others not)
 - **Need for clear mandates and priorities**
- **Gatekeepers, information hubs** (contribute to fragmentation, delays in care)
- **Resource limitations** (e.g. SLPs, pharmacists, SW)
- **Lack of comprehensive client assessments** (focus on bio-medical)
 - **Need to focus on patient versus provider needs**

(Sources: Scope of Practice, Process Mapping, Interprofessional research, Clinical Nutrition Review)

The Importance of Context

Barriers to Optimal Workforce Utilization

- Poor interprofessional relationships
- Lack of data about allied health professional roles
 - Research to date primarily within nursing
- Perceived lack of professional autonomy
- De-valuing of own & other professional roles, power struggles
- Lack of trust among team members
- Lack of involvement of all team members in decisions about work redesign
- Work environment
 - Time, workloads, patient acuity, lack of organizational supports, lack of access to continuing education, space/physical layout, administrative structures
- Leadership commitment at all levels

(Source: Scope of Practice 2005; Interprofessional research 2006)

Are we achieving intended outcomes?

Evidence related to Patient, Provider and System Outcomes

Re-hospitalization (within 90 days)

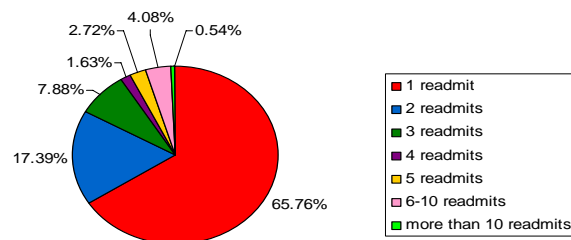
Predictors of readmission

- **Lack of adequate support (social, financial, familial)**
- **Premature discharge from hospital**
- **Non-adherence with medication (lack of knowledge about)**
- **Non-adherence with follow up procedures or instruction**
- **Substance abuse**
- **Homelessness**
- **Events external to patient's control**
- **Limited control over dietary restrictions or activity level**
- **Delay in seeking treatment at first sign of recurring symptoms**
 - (Anthony, Chetty, Kartha et al. *Advances in Patient Safety*, Vol. 2., 2005)
- **Most of these predictors associated with comprehensive assessment by RNs and others**
 - Suggests we could prevent some readmissions by focusing on improving assessment at the time of admission

Readmission / ED Visits (one medical unit)

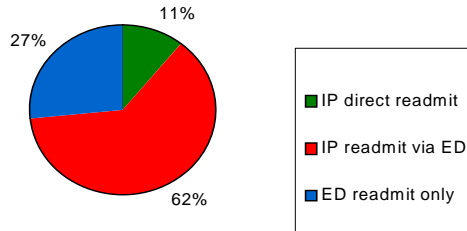
31% of patients are returning within 90 days

- **368 patients represented 659 "readmissions"**
- ***** 44% of those within the top 10 cluster of diagnoses are returning within 90 days (median 28 days)**



Type of Readmission

A majority of in-patients are re-admitted through ED



Potential Patient Concerns

Assessing Co-morbidities

- **Type 2 (Post admission co-morbidities)**
 - *Complications of procedures, disorders of circulatory system, disorders of urinary system, respiratory disorders, fluid/electrolyte imbalance, MI, pneumonitis, Acute renal failure, pneumonia*
 - *Many fall within “failure to rescue” basket of complications*
- **Potentially associated with monitoring and surveillance?**
 - *Relationship between nursing surveillance and patient safety*
 - *Need to consider in view of staffing models, staff fatigue, etc.*

What do Patients Say?

Key Themes:

1. **Social Support** (from family, friends, providers)
 - Contributes to ability to cope, less utilization of services
2. **System Navigation**
 - Depends on previous experience with system, relationships with & genuineness of providers. Communication & caring are key enablers
 - Lack of continuity between acute care and primary care
3. **Access to Services**
 - Facilitated by inclusion of client/family in discharge planning, communication among providers
 - Patients generally do not know what they don't know; providers need to anticipate needs & issues
 - Social isolation common among elderly, complex chronic patients
 - providers must increase assessment of risk factors

(Source: Patient Journey Study - 2007)

Provider Outcomes

Summary of data from 7 Units (3 Adult Hospitals)

On average, over 2005/06 fiscal year

- 81% of time worked as regular hours
- 13.4% worked as Overtime (? Proportion > 1.0 FTE)
- 5.6% hours paid as sick time
 - OT + Sick Time = 3.05 FTE for every 24 hours worked
 - May contribute to burnout, fatigue of current staff (if > 1.0 FTE)
 - Affects productivity
 - May lead to patient safety errors

System Outcomes

Capacity Issues

- **Impact of 65+ population**
 - 9% of Calgary population, 42% of bed days
 - (Source: Seniors Health Strategic Plan)
 - 2,500 people age 65+ have 3 or more hospital stays over a 365 day period
 - 11.9% of all seniors with IP admission over 365 days
 - 27.9% of IP stays
 - 27.2% of bed days
 - People 65+ with 3 or more stays = 125,246 bed days
 - 2,137 admitted as urgent, emergent patients

System Outcomes (continued)

- **Impact of 65+ population**
 - **Recurrent readmissions**
 - 596 people had 4 IP stays over 365 days; 32,983 bed days
 - 203 people had 5; 12,946 bed days
 - 87 people had 6; 6,714 bed days
 - 40 people had 7; 2,955 bed days
 - 14 people had 8; 1,189 bed days
 - 5 people had 9; 462 bed days
 - 2 people had 10; 191 bed days
 - 1 person had 12; 94 bed days

Why change ... again?

- ***“The definition of insanity is doing the same thing over and over again, but expecting a different result.”***

Albert Einstein

- ***Is our current way of doing things working for us?***
 - *Overtime, turnover, absenteeism, shortages*
 - *Wait times, capacity pressures, quality of care, sustainability*

Action Plan

Applying the HHR framework

What are the issues related to:

- ***Population Health Needs?***
- ***System Design?***
- ***HHR Supply?***
- ***HHR Production?***
- ***Financial Resources (i.e. sustainability)?***
- ***Management (organization & delivery)?***

Population Health Needs

Unit A

- 58.5% 70 years+
- 59% LOS = or > 6 days
- Average pt flow (new pts) per month = 79
- Average per month per bed = 2
- Common diagnoses
 - Heart, COPD, Digestive, Alcohol/Drug related behaviour disorders
- Post-admit morbidities
 - Fluid/electrolyte imbalance
 - Septicemia
 - Heart failure
 - Pneumonitis due to solids/liquids
- Potential "Failure to Rescue" diagnoses
 - over 65 yrs
 - 10.5%

Unit B

- 41.7% 20 to 49 years
- 29.2% 70 years+
- 70% LOS = or < 5 days
- Average pt flow (new pts) per month = 98
- Average per month per bed = 5
- Common diagnoses
 - Fractures (neck, spine)
 - Cervical disk disorders
 - Spondylopathies
- Post-admit morbidities
 - Complication of procedures
 - Disorders urinary system
 - Respiratory disorders (post procedure)
 - Fluid/electrolyte imbalance
 - Cognitive awareness
- Potential "Failure to Rescue" diagnoses
 - over 65 yrs
 - 11.1%

Patient-centered Care

Needs-based factors in Planning (staffing and care)

- ***Actual and perceived health status***
 - *Risk factors associated with these different populations? Which apply to individual patients?*
- ***Health Determinants (individual/societal)***
 - *Socio-economic status, demographics, social / cultural beliefs, health behaviours*
 - *Biological, social / physical environment*
 - *Accessibility and quality of care*
- ***Current and predicted health status needed for HHR planning over long-term***

Why does that matter?

Seniors as an Example

- **1 in 8 has adequate “health literacy skills”**
 - **Inability to properly make daily decisions about own health**
 - **Hinders ability to access, understand and use health information**
 - **Low health literacy linked to poorer health**
 - **More likely to have chronic health problems**
 - **More difficulty coping with health care system**
 - **Need more medications than average adults**
- **Health system needs to be sensitive to**
 - **Languages, culture, literacy levels to meet health needs**
 - **Source: Canadian Council on Learning, 2003**

Patient-centered Care)

How does assessment influence care?

- **What information do I communicate, how (ad hoc or planned) and with whom as a result of my assessment?**
- **How, when or why do I consult with a colleague to seek direction about how I should manage care?**
- **Are the patient, family or colleagues consulted without being actively involved in decisions about care? i.e. Do we merely cooperate in discussing what care we think is appropriate?**
- **When and why would I establish formal relationships (e.g. referrals) and with whom in order to coordinate care for this individual/family?**
- **Under what circumstances would I involve other members of the health care team (along with the patient and family) in collaborating to mutually determine the most appropriate care plan for this individual/ family?**

Population/Patients

Overview of the Population on One Medical Unit

- **~ 70% of patients d/c during the year clustered into 10 or fewer ICD-10 codes**
 - *Anemia, Atrial Fibrillation, COPD, Dementia, Diabetes, Heart Failure, Hypertension, Neoplasms, Pneumonia & Urinary Dx.*
- **Many patients have multiple co-morbidities**
- **63% over 70 years of age**
 - *Consistent with data from Seniors Health strategic plan*
- **Majority discharged with no formal support**
 - *26.3% with referral to Home Care, etc.*
- **Median LOS 6.1 days, Average LOS 10.7 days**

System Design

Model of Care (service delivery model)

- ***Is the service delivery model designed to address the type and level of need of the “typical” population served?***
- ***Is the staff mix reflective of the needs of population served?***
 - *Is it cost-effective? Does it promote optimum utilization of the knowledge and skills of all staff?*
- ***Are we focused on patient safety, wait times for necessary procedures or consultations, prevention of complications, injuries, infections?***
- ***Are we considering people’s need for care or services across the continuum?***

HHR Supply (general)

- **Supply of HHR varies by geographic area**
 - **Family physicians**
 - 118:1000 in Newfoundland Labrador
 - 85:100,000 in Ontario
 - **RNs**
 - 994:100,000 in Prince Edward Island
 - 665:100,000 in BC
 - **Medical Laboratory Technologists**
 - 94:100,000 in Saskatchewan
 - 39:100,000 in Quebec
 - **Chiropractors**
 - 8:100,000 in New Brunswick
 - 29:100,000 in Yukon
- **Associated with differences in needs or outcomes?**
 - *We don't know ... but suggests potential opportunities for improvement in utilization of professionals*

HHR Supply (2)

- **# Professionals varies (e.g.) Per 100,000 population (1994 to 2002)**
 - **No change in number of physicians at 188:100,000**
 - *But changes in proportion of family physicians*
 - **RNs decreased 804 to 734:100,000**
 - **LPNs decreased 282 to 191:100,000**
 - **MLT & Radiation technologists from 282 to 191:100,000**

 - **Increase in pharmacists from 73 to 84:100,000**
 - **Increase in Psychologists from 14 to 20:100,000**
 - **Increase in Social Workers from 44 to 77:100,000**
 - **Increase in other professions as well (RTs, OTs, chiropractors)**
- **Linked to changing health needs or patient outcomes?**
 - *We don't know*

HHR Supply (3)

- **Aging workforce**
 - Average age of health professionals in Canada - 41.6 years
 - Calgary: 40.3 years
 - 12.3 % of employees aged 55+; eligible to retire within 5 years
 - Average age of nurses – 44.6 years
 - Calgary: 41.1 years (RNs)
 - Average age of Canadian physicians – 46+ years
- **Assuming retirement at 65 years**
 - Potential loss of 29,746 Canadian RNs aged 60+ by 2006
 - Represents 13% of the 2001 nursing workforce
 - Nurses represent ~ 40% of the health care workforce
 - Calgary: Average age of retirement for nurses= 60 years
 - : 13.5% RNs eligible to retire now or within 5 years
 - > 24% RPNS eligible to retire now or within 5 years
 - > 12.3% LPNs eligible to retire now or within 5 years

Source: CIHI, 2005 Chartbook
Calgary Health Region People & Finance Quarterly report (February, 2008)

Other Factors

- **Values and practice patterns are changing**
 - (e.g.) 25% of family physicians provided obstetrical services 1993; 16% in 2001 (CIHI, 2005)
 - Lifestyle expectations limiting hours worked (NS HHR study, 2003)
- **Rapid diffusion of new technologies and treatments**
 - Estimate 50% of technologies in use 10 years from now not yet “invented”
 - Need for constant training and retraining of workers, flexibility
- **Emergence of new diseases, increase in chronic diseases and complex disorders**
 - Require different approaches to service delivery
- **Changing public expectations**
 - Patients and families want to be involved in care decisions

Supply of Providers

Unit A* (38 beds)

RN= 36.0; 24.3 (♣ 29.7) FTE
LPN= 8.0; 4.7 (7.3) FTE
HCA= 40; 17.1 (18.1) FTE
Clerk= 4.0; 2.6 (3.0) FTE
Aid= 1.0; 1.0 (1.0) FTE
APCM= 1.0 FTE

Turnover**

- RN= 33.6***
- LPN= 4.2***
- NA= 20.2***

****Point in time***

***** Actual number over 42 months***

♣ Budgeted FTE

Unit B* (18 beds)

RN= 22; 11.8 (♣ 16.1) FTE
LPN= 12.0; 8.4 (10.4) FTE
HCA= 12.0; 5.5 (5.5) FTE
Clerk= 7.0; 2.5 (2.5) FTE
Aid= 0
APCM= 0 FTE

Turnover**

- RN= 16.8***
- LPN= 8.4***
- NA= 8.4***

****Point in time***

***** Actual number over 42 months***

♣ Budgeted FTE

Role Optimization

- ***Redesign of work (functional)***
 - ***Align education and practice with patient / population needs***
 - ***E.g. Gerontology, chronic diseases***
 - ***Optimal utilization of every member of the team***
 - ***Address role ambiguity, duplication & unnecessary overlap***
- ***Establish new models of service delivery based on population/patient health needs (structural)***
 - ***Focus on collaborative practice***
 - ***Consider the continuum of care***

Nursing Service Delivery Model

Unit A (38 beds)

•Nurse Staffing model

•Days:

- 4-5 pts RN/LPN/grad/UNE
 - 9.5 to 7.6 FTE
- 4-5 HCAs
- * 3.8 to 4.75 patients per "nurse"

•Evenings:

- 5-6 pts per RN/LPN/grad/UNE
 - 7.6 to 6.3 FTE
- 3 HCAs
- * 4.2 to 4.75 patients per "nurse"

•Nights:

- 7-8 pts per RN/LPN/grad/UNE
 - 5.4 to 4.75 FTE
- 2 HCAs
- * 3.8 to 4.9 patients per "nurse"

•Supports

- 2 PT CNEs

Unit B (18 beds)

•Nurse Staffing model

•Days:

- 4 pts per RN or LPN
 - 4.5 FTE
- 2 HCAs
- * 3 patients per "nurse"

•Evenings:

- 4 pts per RN or LPN
 - 4.5 FTE
- 2 HCAs
- * 3 patients per "nurse"

•Nights:

- 5 pts per RN or LPN
 - 3.6 FTE
- 1 HCA
- * 3 patients per "nurse"

•Supports

- 1.0 NP; 0.6 CNE

Structural elements: Issues to consider

Effectiveness & Efficiency: Existing Models

- **Total patient care / Primary Nursing** (often all RN staff)
 - Not cost effective, particularly during nursing shortages
 - Waste of skills and time performing work that others could do
 - When RNs/LPNs assigned work "in parallel" – leads to role confusion and tension
 - May result in inappropriate care assignments
- **Functional care** (tasks assigned to specific worker)
 - Task focused, ritualistic, dependent on rules, policies, protocols, procedures
 - Decreases professional autonomy, narrows role of all providers
 - May lead to boredom and decrease in job satisfaction
 - Leads to fragmentation of care, increase in errors/omissions
 - Decreases attention to psychosocial, spiritual needs
 - Many examples in service delivery currently
 - E.g. Discharge Nurse, Resource Nurse, Nurse-in-charge, etc.

Structural elements: Issues to consider

Effectiveness & Efficiency: Existing Models

- **Team Nursing (usually led by a team leader)**
 - **Group of workers with diverse levels of education, skills/abilities deliver care to a group of patients**
 - **Team leader rarely provides “hands-on” care**
 - **Assumes accountability and responsibility for outcomes of care**
 - **Supervises/observes and evaluates team members**
 - **Emerged in 1950s (nursing shortage; LPNs unregulated)**
 - **Ineffective when short-staffed because requires more personnel**
 - **RN leads the team, but provides no direct care**

Structural elements: Issues to consider

- **Case Management (coordination of care delivery)**
 - **Case manager may not have a role in direct care delivery**
 - **Can lead to duplication of service across care continuum**
 - **Case managers in various settings, but not integrated**
 - **Patient/family may have more than one Case Manager**
 - **May also narrow the “assessment, planning, evaluation” functions associated with other professional roles**

Collaborative Practice

- **Hybrid of other care delivery models**
 - **Shared responsibility & accountability for delivery of care to a group of patients**
 - **Assignment of tasks/activities negotiated by team members, based on needs of patients and capabilities/experience of team members on shift by shift basis**
 - **All team members involved in care delivery**
 - RN does not “supervise” other providers
 - Optimized role for all interprofessional team members
 - May allow greater flexibility, continuity of care
 - **May lead to re-definition of existing positions**
 - E.g. Clinical nurse educators, CNS, NPs, discharge planners, etc.

Redesign of Work

Collaborative Practice

Collaborative practice is a patient and family centered process for communication and decision-making that enables the separate and shared knowledge and skills of care providers to synergistically influence the client / patient care provided. It is designed to promote the active participation of several care providers. It enhances patient, family and community-centered goals and values, provides mechanisms for continuous communication among health care providers, optimizes client / family and staff (within and across disciplines) participation in clinical decision-making and fosters respect for the contributions of all members of the team.

Adapted from: (Way, Jones & Busing, Ontario College of Family Physicians, 2000).

Collaborative Practice ⁽²⁾

- **Will require**
 - **(Re) education of workforce, culture/attitude shift**
 - *Time for reflection, learning together*
 - **Leadership support**
 - **Effective communication structures and clear role delineation**
 - **Experimentation with new staff to patient ratios**
 - *Rigorous evaluation to assess impact on outcomes and on HHR planning and management*

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