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# Using SNOMED CT® to enhance the benefits of EHR Investment

Russ Buchanan

Informatics for a healthier world

# Session Objectives

- Explore some ways that SNOMED CT can help increase return from investments in EHR related systems.

- Highlight some available frameworks in the IHTSDO document *Building the Business Case for SNOMED CT*.

# About me

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## Russ Buchanan

Management Consultant / Terminology Practice Lead

Project work focuses on the operational use and management of vocabularies and ontologies to support clinical data capture, processing and secondary use.

**Highlights:**

- Past Director, Convergent Medical Terminology (CMT) at Kaiser Permanente;
- Consulting projects at Canada Health Infoway and the IHTSDO to help promote SNOMED CT adoption; and
- Design and implementation of terminology services to support eHealth Ontario's infrastructure programs.

# Significant investment in EHR systems

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FEBRUARY 24, 2014

Global Market for Electronic Health Records (EHR) Expected to Reach $22.3 Billion by the end of 2015, According to Accenture

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U.S. market projected to reach $9.3 billi

Source:
https://newsroom.accenture.com/subjects/research-surveys/global-market-for-electronic-health-records-expected-to-reach-22-3-billion-by-the-end-of-2015-according-to-accenture.htm

# Rising Health Expenditures

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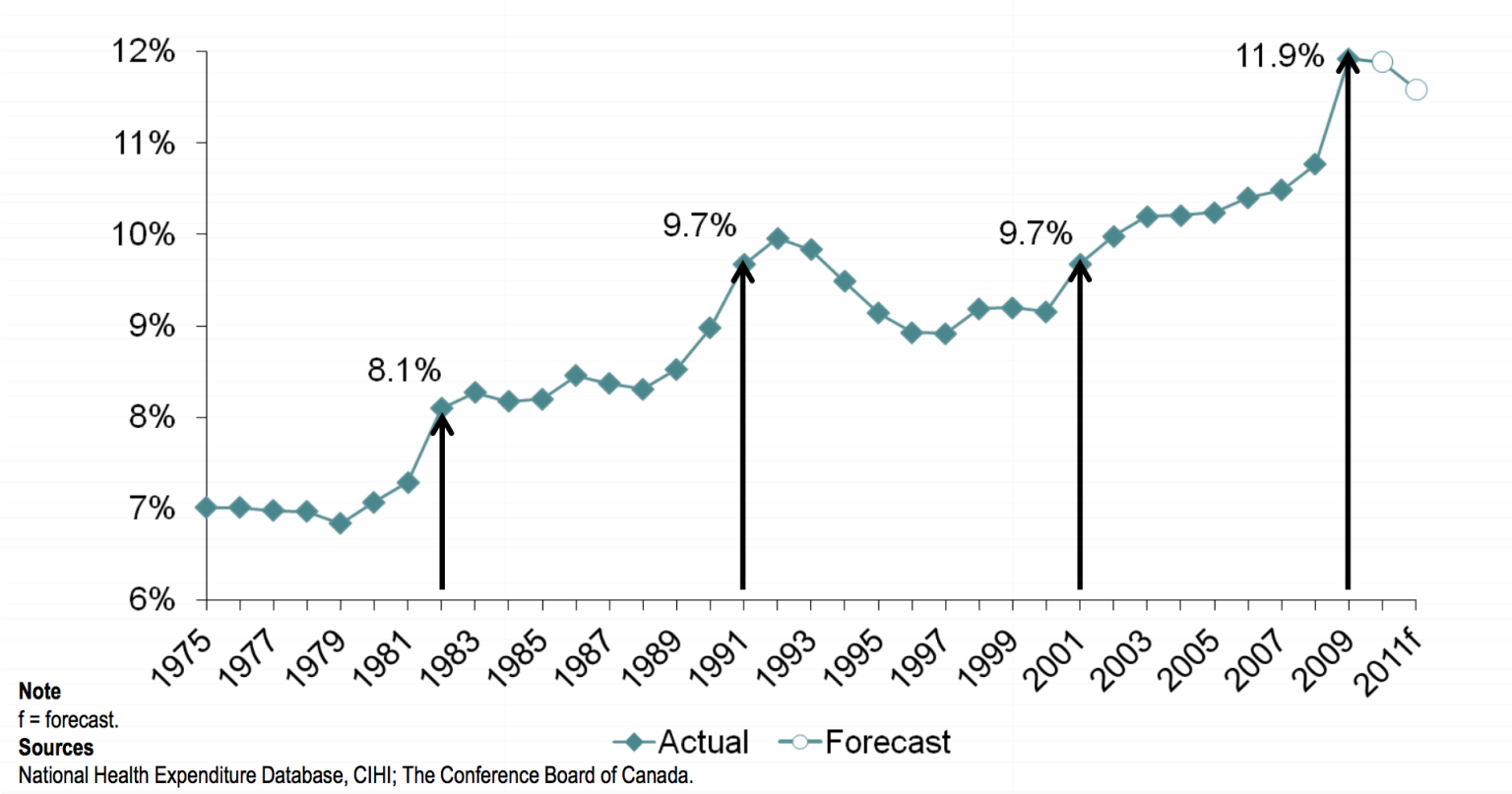


**Note**
f = forecast.
**Sources**
National Health Expenditure Database, CIHI; The Conference Board of Canada.

Source: Elmslie, K. Against the Growing Burden of Disease: Centre for Chronic disease Prevention. Public Health Agency of Canada: Ottawa, Canada, 2012.

# Excess Costs

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Estimated Sources of Excess Costs in Health Care (2009)

| Category | Sources | |
|---|---|---|
| Unnecessary Services | • Overuse—beyond evidence–established levels<br>• Discretionary use beyond benchmarks<br>• Unnecessary choice of higher-cost services | $210 billion |
| Inefficiently Delivered Services | • Mistakes—errors, preventable complications<br>• Care fragmentation<br>• Unnecessary use of higher-cost providers<br>• Operational inefficiencies at care delivery sites | $130 billion |
| Excess Administrative Costs | • Insurance paperwork costs beyond benchmarks<br>• Insurers' administrative inefficiencies<br>• Inefficiencies due to care documentation requirements | $190 billion |
| Prices That Are Too High | • Service prices beyond competitive benchmarks<br>• Product prices beyond competitive benchmarks | $105 billion |
| Missed Prevention Opportunities | • Primary prevention<br>• Secondary prevention<br>• Tertiary prevention | $55 billion |
| Fraud | • All sources—payers, clinicians, patients | $75 billion |

Source: Best care at lower cost : the path to continuously learning health care in America / Committee on the Learning Health Care System in America, The Institute of Medicine ; Mark Smith ... [et al.], editors.

# Chronic Conditions

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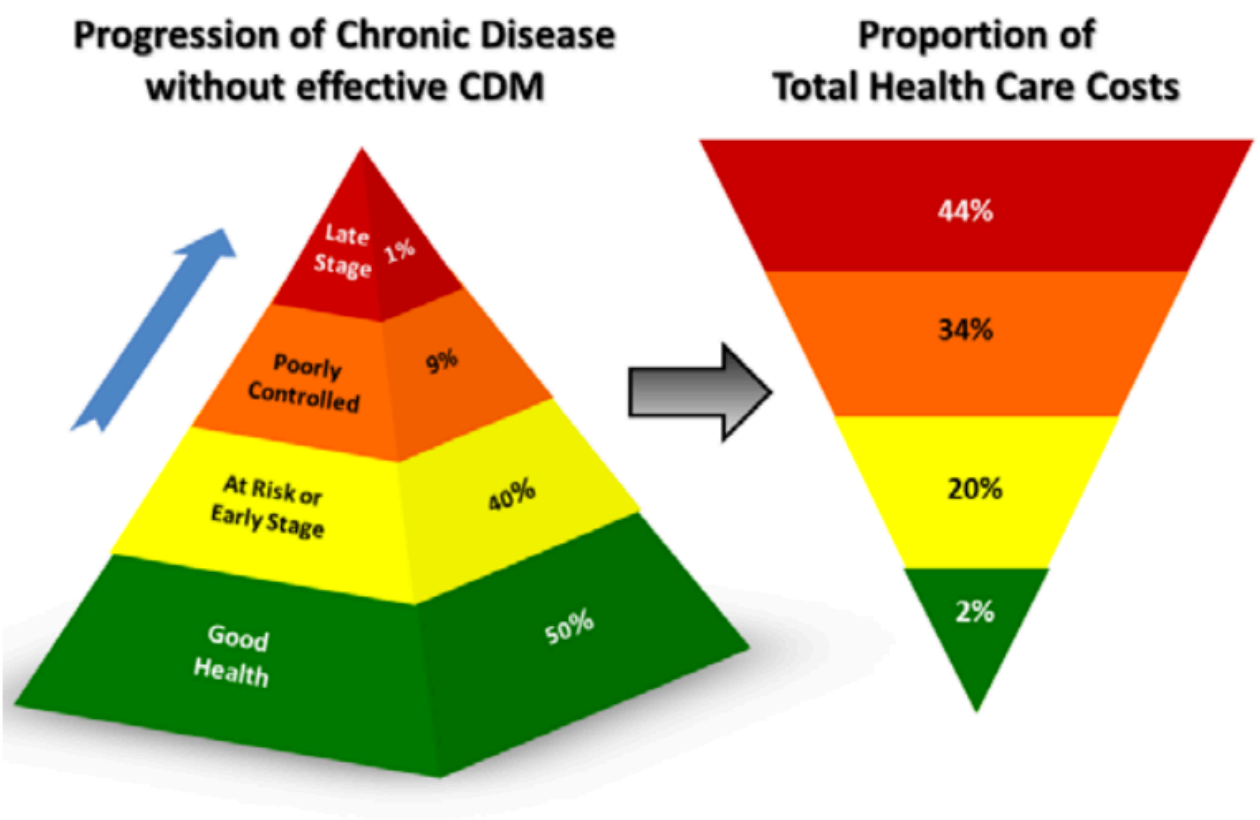


Source: Report of the Auditor General of Alberta - September 2014

# Knowledge Translation

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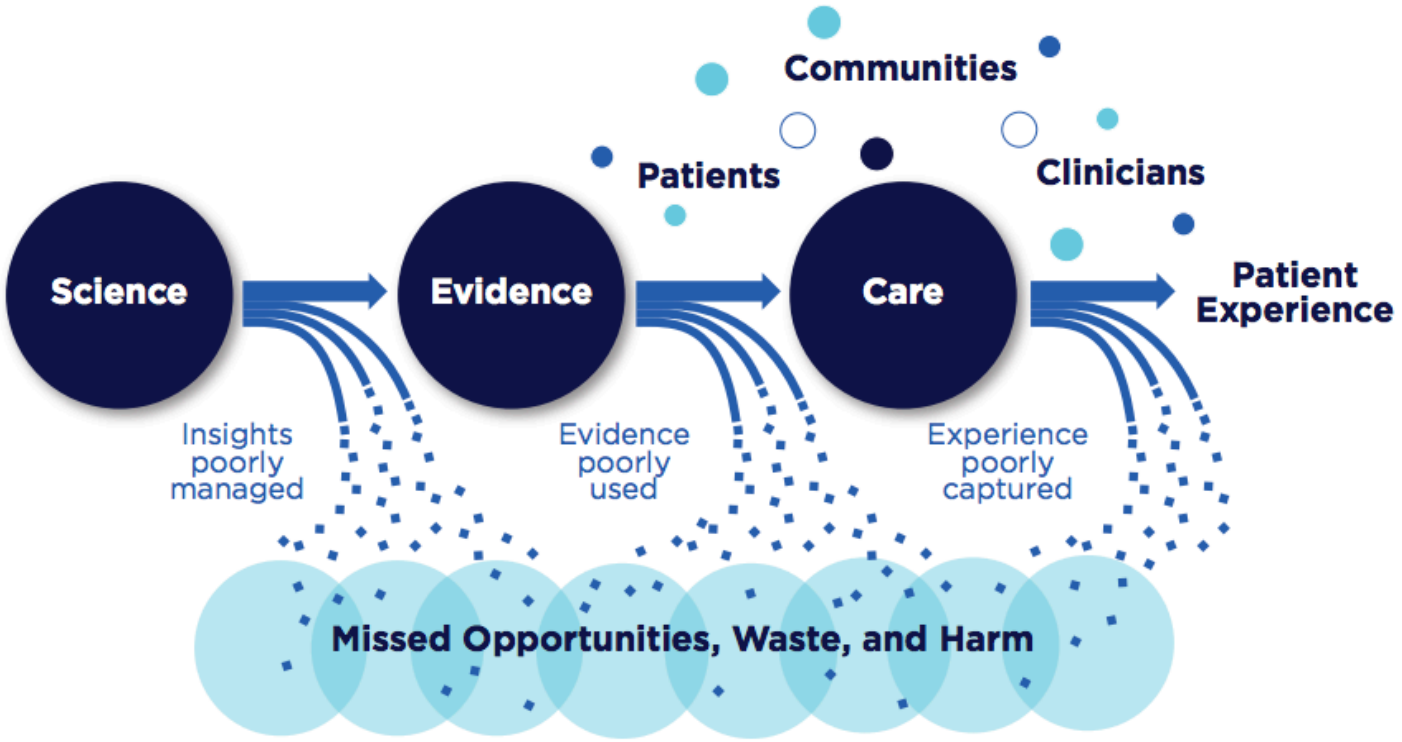


**FIGURE S-2** Schematic of the health care system today.

Source: Best care at lower cost : the path to continuously learning health care in America / Committee on the Learning Health Care System in America, The Institute of Medicine ; Mark Smith ... [et al.], editors.

# Value of Health Information

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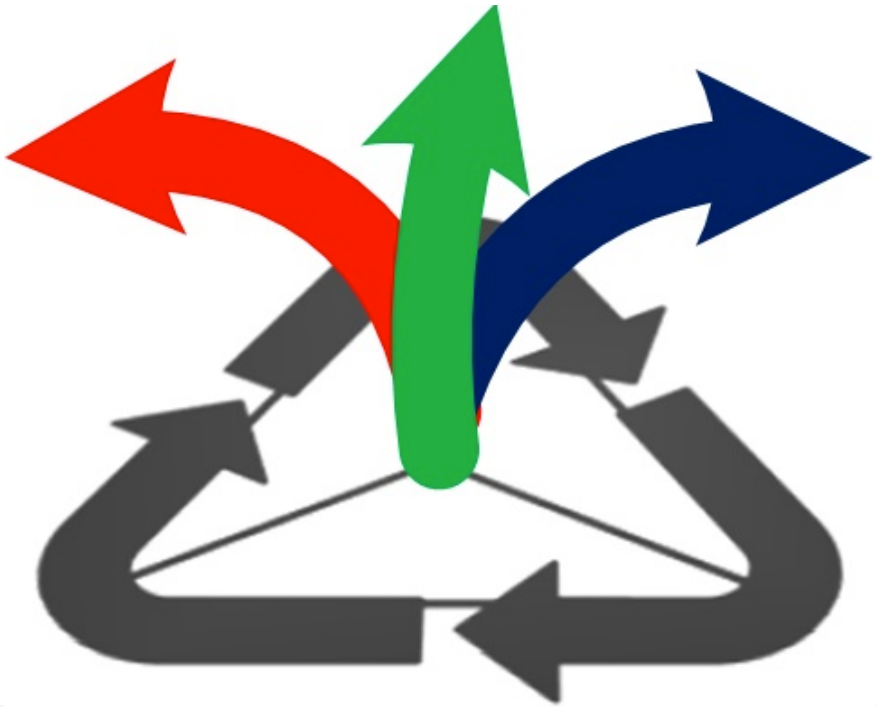
## Healthy People

### Quality Health Care

Responds to changes in evidence
Better outcomes.
Better return on investment.



### Effective Government

Healthy and productive population.
Successful, transparent programs.
Effective use of tax dollars.

### (Re) Use

- Patient Information across encounters and care settings
- Medical knowledge resources throughout the health system

### Reduce

- Effort for providers to stay abreast of medical best practice
- Medical errors
- Unnecessary and redundant care
- Rate of advancement of chronic conditions

### Recycle

- Capture and disseminate best practice throughout the system
- Monitor and fine tune interventions

Source: Building the Business Case for SNOMED CT®

# Clinical Knowledge Management

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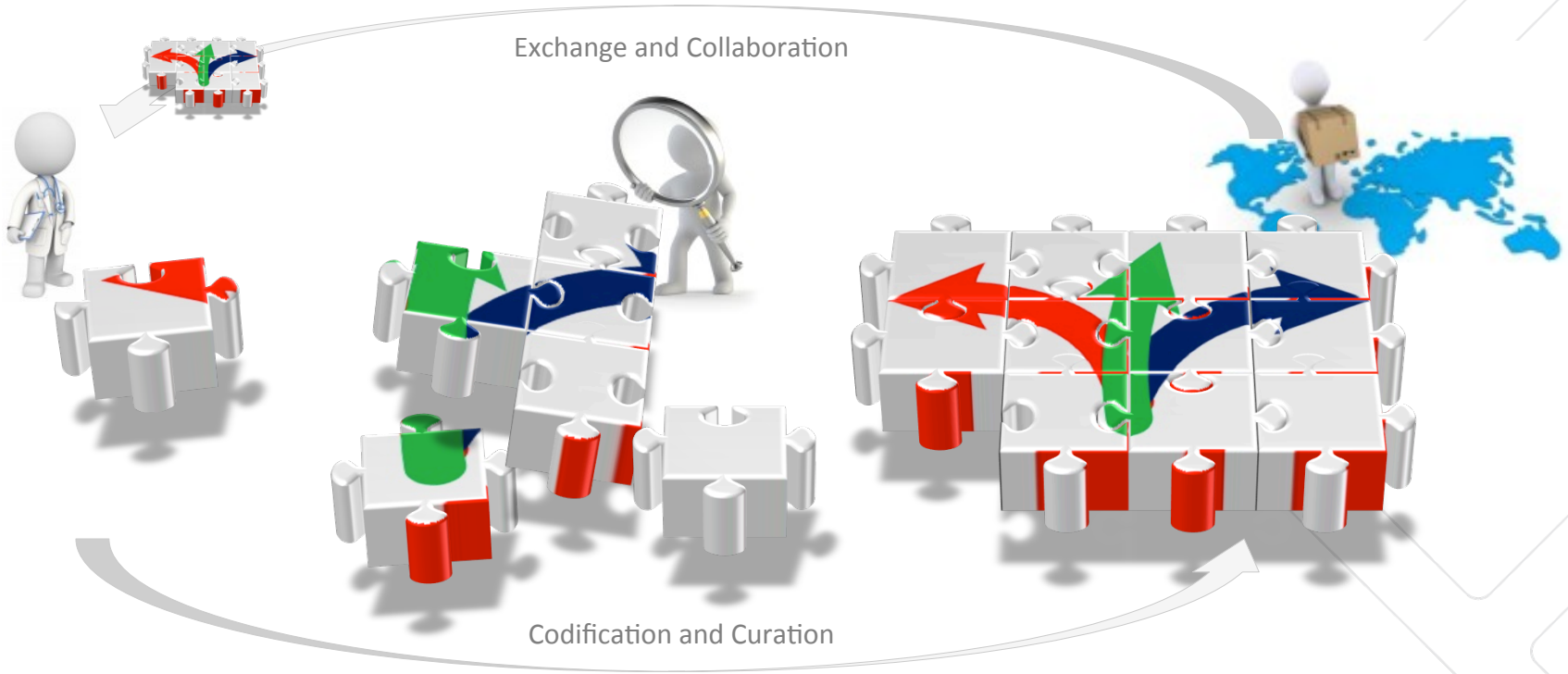


### Collection and Reuse (Clinical Records)

A *SNOMED CT* enabled application uses *SNOMED CT expressions* to capture clinical information and to present available clinical knowledge to providers at the point of care.

### Interpretation (Aggregation and Analysis)

SNOMED CT enables effective retrieval, aggregation and analysis of clinical information.

### Exchange (Knowledge Representation)

SNOMED CT expressions are used to tag and index clinical knowledge for distribution to clinical records systems, users and curators.

# Features of SNOMED CT

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## Concepts

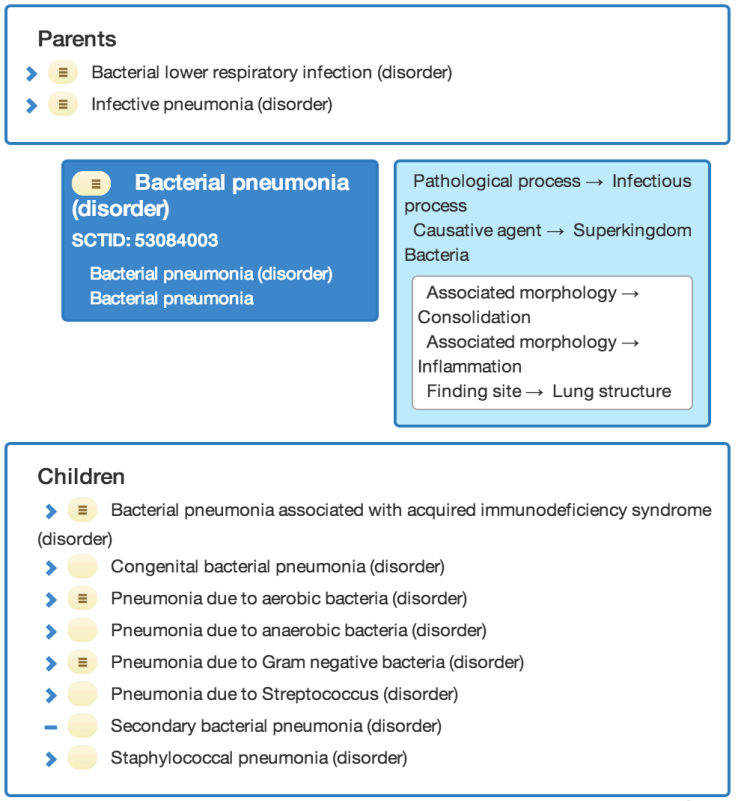
- A collection of almost 300,000 unique concepts are represented by codes.

## Reference Features

- Concepts are organized in a directed acyclic graph,
- Relationships within the graph explicitly express the meaning of concepts, and
- Reference sets to group concepts.

## Interface Features

- Concepts are represented by clinician friendly preferred names and synonyms, and
- Reference sets to constrain use to context.



# SNOMED enabled C-KM

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| Clinical Knowledge Management | Key SNOMED CT® Components |
|---|---|
|  <br>**Collection and Reuse** (Clinical Records)<br>KM Role : User (U)<br>- Decisions support systems use relationships within clinical information systems to provide Users with available information as it is relevant to their work.<br><br>KM Role : Producer (P)<br>- Healthcare Providers capture information about patient conditions, medical interventions and outcomes in Clinical Records Systems as they care for their patients. | **SNOMED CT® Concepts**<br>- *codes (& expressions)* capture information within patient records. Underlying definitional relationships may be used to develop triggers to provide reminders or information.<br>**SNOMED CT® Interface Features**<br>- *preferred terms* and *synonyms* allow health care providers to use familiar language to capture coded, structured statements in a patient health record.<br>- *reference sets* may: constrain data entry to terms and/ or concepts appropriate within context of use; and/or operationalize decision support rules. |
|  <br>**Interpretation** (Aggregation and Analysis)<br>KM Role: Curator (C)<br>- Healthcare Providers, Researchers and other Clinical Knowledge Curators collect information from within Clinical Records and other Knowledge Resources to understand health issues and possible interventions. | **SNOMED CT® Reference Features**<br>- Definitional *relationships* within SNOMED CT enable logic based computer assisted retrieval, aggregation and analysis of clinical information within patient charts, or tagged knowledge resources.<br>- Relationships can be inferred as concepts are added or changed. |
|  <br>**Share** (Knowledge Representation)<br>KM Role: Distributor (D)<br>- Medical Journals, Clinical Content vendors and other Knowledge Distributors collect medical knowledge resources for distribution to users. | **SNOMED CT® Concepts**<br>- *codes (& expressions)* may used to tag knowledge resources for distribution to Users or Curators.<br>- Definitional relationships enable computer assisted maintenance of existing knowledge archives or decision support systems. |





Source: Building the Business Case for SNOMED CT®

# SNOMED enabled C-KM

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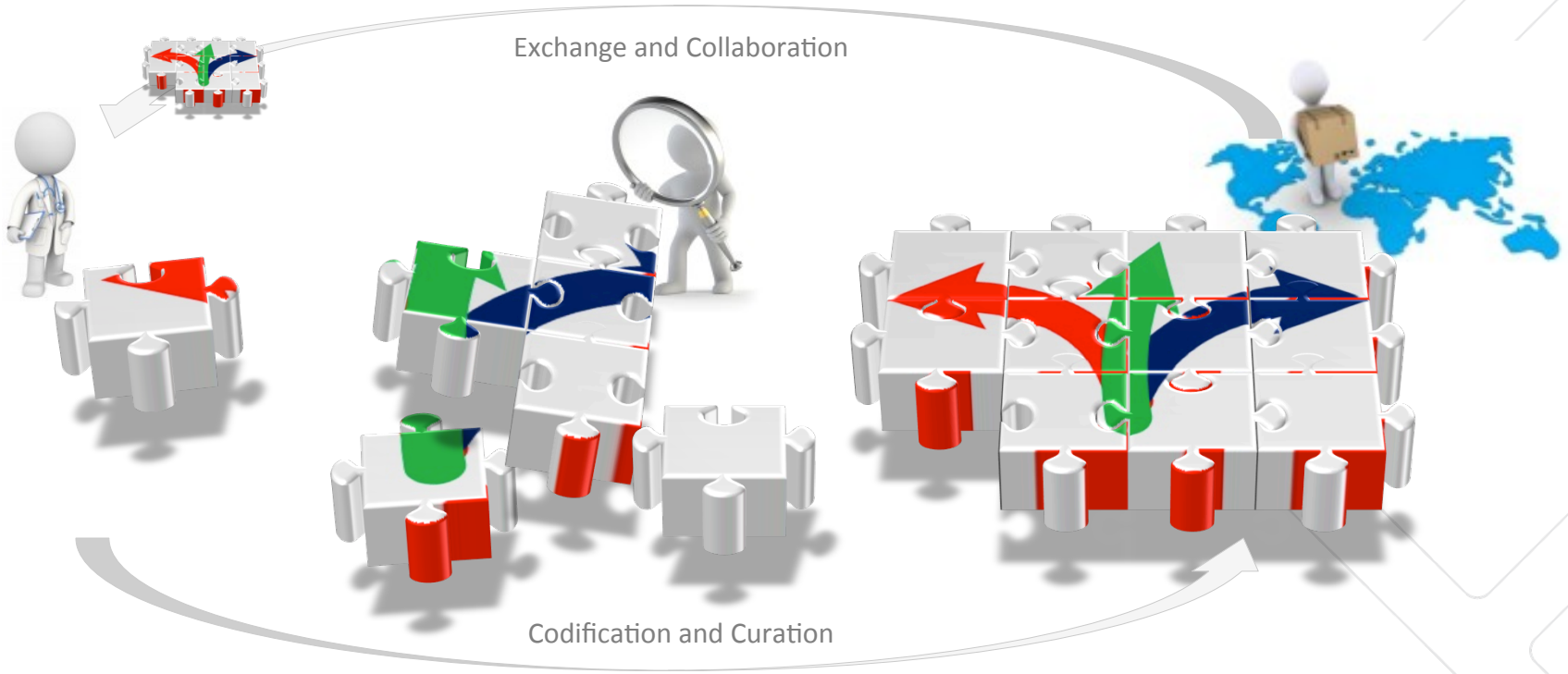


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Source: Building the Business Case for SNOMED CT®

# Quantifiable Benefit Streams

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| Administrative & Management Cost Savings | |
|---|---|
| Admin. Cost Reduction | • Reduction in medical records administration / health information management (HIM) costs as standardized SNOMED CT to ICD maps and software help automate coding processes. |
| System Management Cost Avoidance and/or Reduction | • Reduction in costs to acquire or to develop and maintain local terminology products (e.g. value sets used in messaging, selection lists, etc.) |
| | • Reduction in costs to acquire or to develop and maintain clinical criteria used to identify patient cohorts within clinical decision support and performance monitoring (clinical and business intelligence) systems. |
| | • Reduction in costs to acquire or to develop and maintain clinical decision support tools and other knowledge products. |
| **Care and Outcome Improvements** | |
| Efficient Care Delivery | • Reduction in costs associated with duplicate or unnecessary investigations (e.g. laboratory tests and imaging studies) |
| | • Reduction in costs associated with errors (e.g. reduced liability and reduced lengths of stay) |
| | • Reduction in costs due to more optimized use of medications (e.g. appropriate, cost effective use of drug therapies) and other technologies (e.g. appropriate, cost effective use of laboratory tests and imaging studies). |
| Improved Patient Outcomes | • Reduction in costs due to better disease management, better patient outcomes and lower health system utilization. |
| Improved Societal Outcomes | • Improved economic productivity from better population-wide health ("Heathy Happy Productive Communities"). |

Source: Building the Business Case for SNOMED CT®

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# Thank you!



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