

#### INTRODUCTION

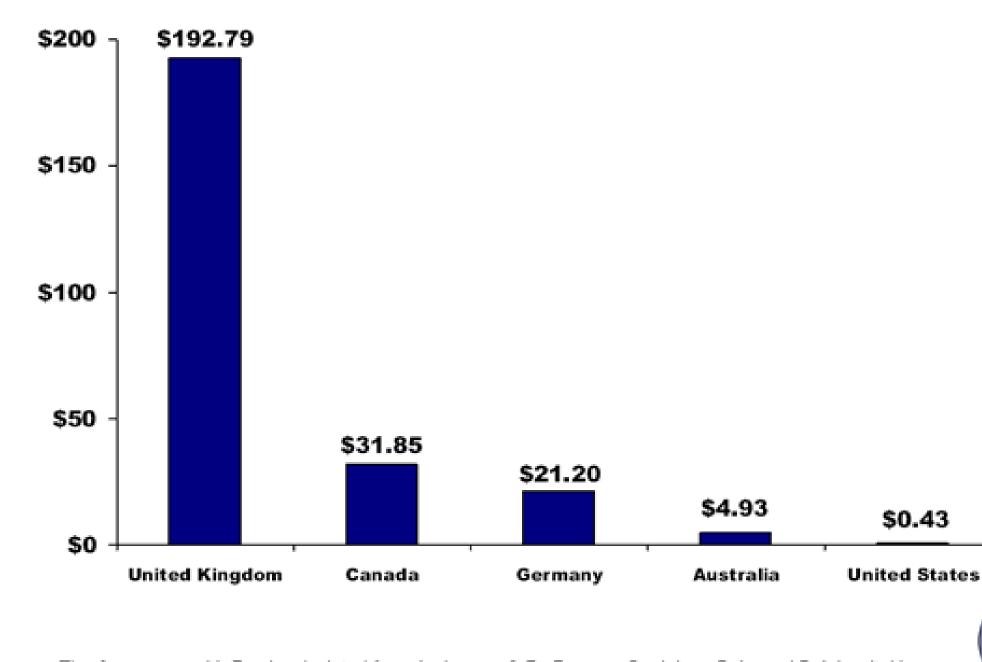
Health information technology and infrastructures for increasingly web-based services will drive the future development of national health care systems. However, implementation of HIT without attention to institutional infrastructure will only amplify the uncontrollable surge in health care expenditures. [1,2] The objective of this review is to summarize published evidence and develop a conceptual framework for design of a national health information network (NHIN) integrating public and private enterprise in the health sector. Recent comparative studies of national health care systems in the industrialized world demonstrate that health care service delivery in the U.S. performs poorly in light of the level of per capita expenditure in the sector. [3-5] Even though there is consensus among physicians that the U.S. health care system is broken, review of the positions of the American Medical Association (AMA), the American Medical Informatics Association (AMIA) and Physicians for a National Health Program (PNHP) reveals no coordination of political action among these associations for system reform integrating health information technologies (HIT) in support of evidence-based medical practice, research and education. The U.S. lags significantly behind other developed countries in public investments for HIT; [6] as of 2005 the U.K. had spent \$192.79 per capita compared to a U.S. investment of \$.43. [7,8] (See Figure 1: Public Investment per Capita in Health Information Technology as of 2005.) One reason for this is policy emphasis on development of sustainable business models based on private investment for health information exchange (HIE).

#### RESEARCH PROBLEM

In the U.S. multiple payer system, competing health care providers and insurance companies focus on automation of financial transactions and implementation of redundant proprietary HIS. Their incentives for new technology adoption do not take into account system level efficiencies often external to private HIT purchasers in the health care sector. While policy on electronic health records (EHR) focuses on internal efficiencies and improved individual health care quality, these investments require public infrastructures for effective health information exchange at the system level. [9]

The National Health Information Network (NHIN) refers to a proposed system linking data intermediaries for health information exchange. Related policies rely primarily on the principle of locally sustainable health information exchanges that can collaborate and exchange data. An assumption fundamental to this model is incremental development by linkage of regional health information organizations (RHIOs). However, early research on the performance of RHIOs shows a high failure rate among these organizations and offers no significant evidence to substantiate interoperability among their systems. No sustainable RHIO business model has been identified to integrate public and private stakeholders. [10-13]

Many barriers to design of the NHIN remain. [14] Experience in other developed nations, particularly the U.K., suggests the critical role of national policy in funding and design of a national infrastructure. This experience also demonstrates the necessity of public investment to support scalable local systems and their integration at the national and regional levels. [15] Some analyses suggest that HIT in general may only contribute to cost control in the context of a single payer national health care system. [1,2, 16-18]The most promising legislative initiative in this regard is HR 676 for extension of the Medicare system to serve all citizens of the U.S. and to require not-for-profit status of private enterprises integrated in the system. The advantage of this proposal is reliance on existing national Medicare infrastructures. This system could be extended to serve integrated public and private sector health care services.



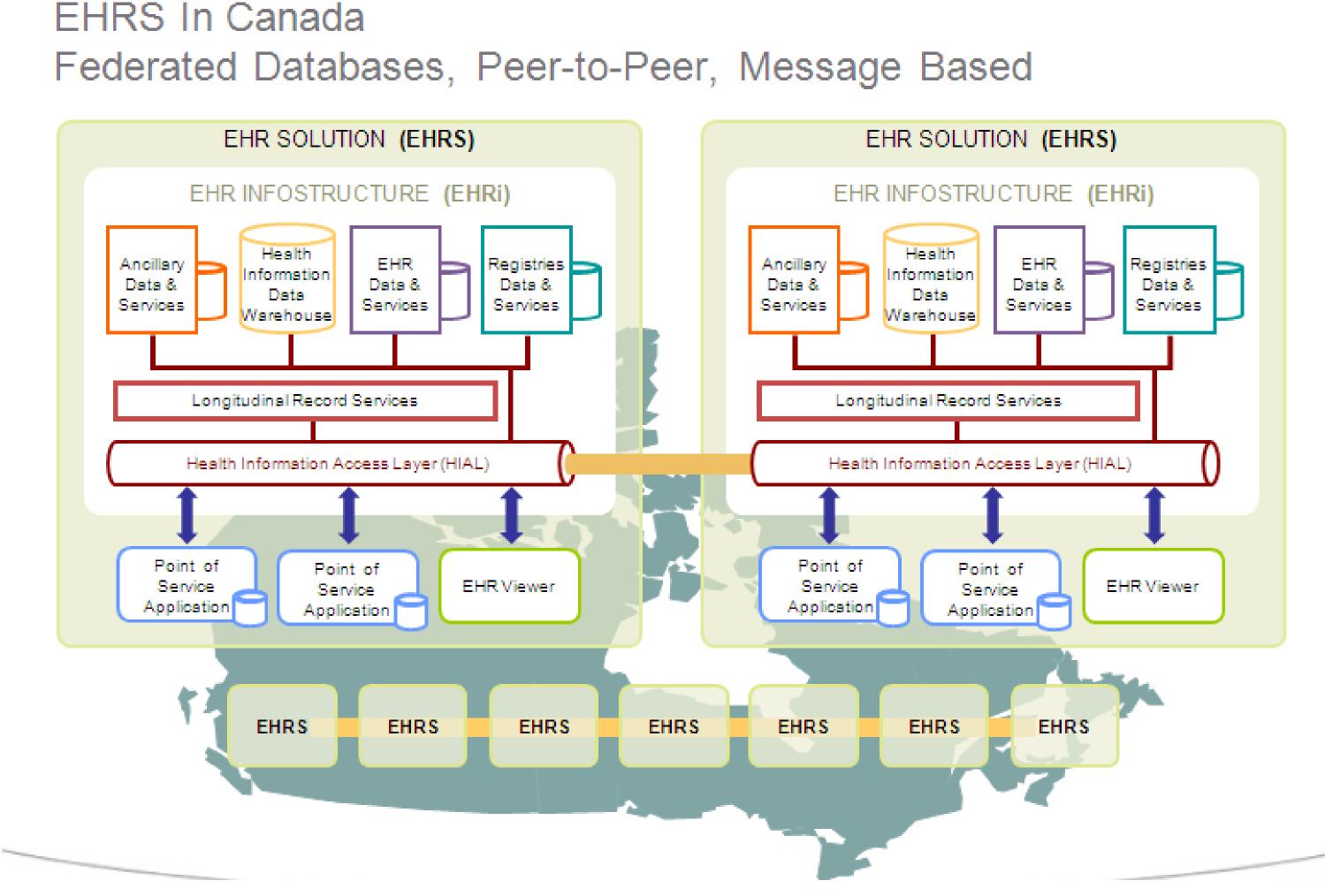
Source: The Commonwealth Fund, calculated from Anderson, G.F., Frogner, B., Johns, R.A., and Reinhardt, U. "Health Care Spending and Use of Information Technology in OECD Countries," Health Affairs, 2006. Figure 1: Public Investment per Capita in Health Information Technology as of 2005

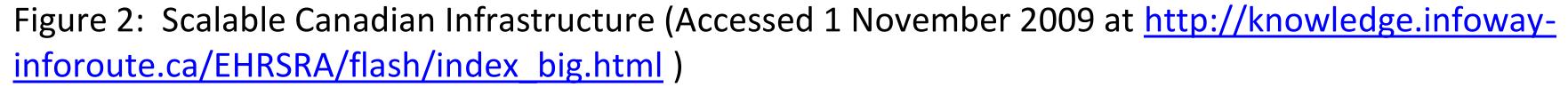
# **PUBLIC HEALTH INFORMATICS FOR A NATIONAL INFRASTRUCTURE:** THE CASE OF THE U.S. HEALTH CARE SYSTEM

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# RECOMMENDATIONS

- Public investment in a national health information infrastructure to promote interoperability for both public and private services - a single infrastructure does not necessarily imply a single payer design.
- 4 Identification of states as the critical system unit for local leadership as well as development of scalable and interoperable systems and tools at the national level.
- Federal government provision of goal oriented services and tools rather than financial incentives.
- Restriction of public reimbursement for basic health care products and services to not-for-profit enterprises.
- 4 Extension of open access policies governing availability of public health information and published research in medicine and the health sciences.
- Collaboration across the Americas as a foundation for large scale grid and cloud infrastructures to support regional research and innovation.
- Canadian INFOWAY (See Figure 2)
- Brazilian Regional Health Information System BIREME (See Figure 3)











# Figure 3: BIREME: Latin American and Caribbean Center on Health Sciences Information (Accessed 1 November 2009 at <a href="http://www.bireme.br/php/index.php?lang=en">http://www.bireme.br/php/index.php?lang=en</a> )

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