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Parathyroid Hormone: An Expert Consultation

Health Quality Ontario

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About Health Quality Ontario

Health Quality Ontario is an arms-length agency of the Ontario government. It is a partner and leader in transforming Ontario's health care system so that it can deliver a better experience of care, better outcomes for Ontarians, and better value for money.

Health Quality Ontario strives to promote health care that is supported by the best available scientific evidence. Health Quality Ontario works with clinical experts, scientific collaborators, and field evaluation partners to develop and publish research that evaluates the effectiveness and cost-effectiveness of health technologies and services in Ontario.

Based on the research conducted by Health Quality Ontario and its partners, the Ontario Health Technology Advisory Committee (OHTAC)—a standing advisory subcommittee of the Health Quality Ontario Board—makes recommendations about the uptake, diffusion, distribution, or removal of health interventions to Ontario's Ministry of Health and Long-Term Care, clinicians, health system leaders, and policy makers.

Expert consultations, rapid reviews, evidence-based analyses, OHTAC recommendations, and other associated reports are published on the Health Quality Ontario website. Visit http://www.hqontario.ca for more information.

About Health Quality Ontario Publications

To conduct its expert consultations, Health Quality Ontario and/or its research partners reviews the available scientific literature, making every effort to consider all relevant national and international research; collaborates with partners across relevant government branches; consults with clinical and other external experts and developers of new health technologies; and solicits any necessary supplemental information.

In addition, Health Quality Ontario collects and analyzes information about how a health intervention fits within current practice and existing treatment alternatives. Details about the diffusion of the intervention into current health care practices in Ontario can add an important dimension to the review. Information concerning the health benefits, economic and human resources, and ethical, regulatory, social, and legal issues relating to the intervention may be included to assist in making timely and relevant decisions to optimize patient outcomes.

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Table of Contents

Background

Overuse, underuse, and misuse of interventions are important concerns in health care and lead to individuals receiving unnecessary or inappropriate care. In April 2012, under the guidance of the Ontario Health Technology Advisory Committee's Appropriateness Working Group, Health Quality Ontario (HQO) launched its Appropriateness Initiative. The objective of this initiative is to develop a systematic framework for the ongoing identification, prioritization, and assessment of health interventions in Ontario for which there is possible misuse, overuse, or underuse.

For more information on HQO's Appropriateness Initiative, visit our website at www.hqontario.ca.

Objective of Analysis

The objective of this expert consultation was to review current parathyroid hormone testing practices in Ontario and identify areas of inappropriate testing, if possible.

Clinical Need and Target Population

Description of Condition

The parathyroid glands are 4 pea-sized glands located on the thyroid gland in the neck. They secrete parathyroid hormone, which maintains the body's calcium and phosphorus levels. If the parathyroid glands secrete too much parathyroid hormone (hyperparathyroidism), then blood calcium levels rise. Adverse outcomes of hyperparathyroidism include bone loss and kidney stones. (1)

There are 2 major types of hyperparathyroidism. Primary hyperparathyroidism originates in the parathyroid and involves 1 or more enlarged overactive parathyroid glands. Most patients have this benign form (85% of cases are sporadic). (1) Secondary hyperparathyroidism occurs when a distal problem (such as kidney failure) causes the parathyroid to become overactive. (1)

Technology/Technique

In 2011/2012, the 5 specialities that ordered the most parathyroid hormone testing were nephrology (32.8%), family practice/general practice (28.9%), internal medicine (24.3%), endocrinology (4.9%), and rheumatology (2.6%). (2) In 2011/2012, patients receiving dialysis underwent 6,907 parathyroid hormone tests in the community. (3)

Expert Consultation

Research Question

What are current parathyroid hormone testing practices in Ontario? Are there any areas of inappropriate parathyroid hormone testing?

Research Methods

Expert Opinion

In August 2012, expert consultation on the Appropriate Use of Parathyroid Hormone Testing was solicited. Members of the consultation included physicians in the specialty areas of endocrinology and hemodialysis.

The role of the expert consultations on the Appropriate Use of Parathyroid Hormone Testing was to contextualize the evidence produced by Health Quality Ontario and provide advice on the appropriate use of parathyroid hormone testing in the Ontario health care setting. Expert consultation took the form of emails and teleconference calls with experts. However, the statements, conclusions, and views expressed in this report do not necessarily represent the views of the expert consultations.

Findings

Ontario Context

Parathyroid hormone testing in the community has increased steadily in Ontario since 2005 (Figure 1). In 2011/2012, 149,690 tests were conducted, at a cost of $9,286,768 (Cdn). (4)

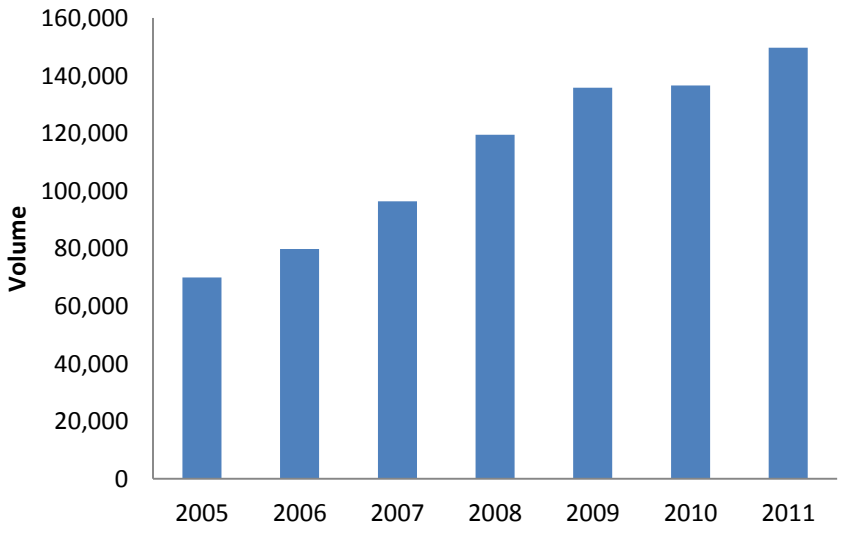

Figure 1: Parathyroid Testing in Community Laboratories in Ontario, 2005–2011a

[a]Years are fiscal years as prespecified by the Ministry of Health and Long-Term Care.
Source: Claims History Database, aggregate data. (4)

Guidelines

There were no guidelines on primary hyperparathyroidism.

Expert Consultation

Using the U.S. prevalence of 1 per 1,000 population (1;5) extrapolated to the 2012 Ontario population and an average of 3 tests per year (clinical expert, written communication, August 2012), approximately 40,518 tests are needed each year in the community to monitor prevalent cases of primary hyperparathyroidism.

Using the U.S. incidence of 20.8 per 100,000 per year (6) extrapolated to the 2012 Ontario population and an average of 3 tests per year (clinical expert, written communication, August 2012), approximately 8,428 tests are needed each year in the community to monitor new cases of primary hyperparathyroidism.

Using the above data for dialysis patients and assuming a conservative estimate of approximately 4 tests per year (clinical expert, written communication, January 2013), approximately 27,628 tests are needed each year to monitor secondary hyperparathyroidism.

The estimated total volume of community parathyroid hormone tests needed each year, therefore, is 76,574. Based on Ontario testing volumes for the fiscal year 2011/2012 (149,690), an excess of 73,116 community parathyroid hormone tests were conducted.

Conclusions

Given the lack of systematic reviews on the subject of primary hyperparathyroidism, clinical experts were contacted to contextualize the use or volumes of community laboratory testing of parathyroid hormone in Ontario. A calculation based on published data helped to determine what may be considered inappropriate community laboratory testing of parathyroid hormone in Ontario. As a result, the following OTHAC recommendations were made:

- OHTAC recommended that:
  - Parathyroid hormone should be measured only when high calcium levels are detected, as in suspected or established primary hyperparathyroidism.
  - Parathyroid hormone should be measured in patients with chronic renal disease as needed on an ongoing basis.

Acknowledgements

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