ENG 1102

Library Research for Design Projects

Jacqueline Kreller-Vanderkooy
Steacie Science & Engineering
Library 102J
jkvan@yorku.ca
By the end of this class, you will be able to:

- Find information that will help you get to know your customers
- Search for patents
Brainstorm a list of ways to research your customers
Target age group: 25-40
People with diabetes who are insulin-dependent
Market Demographics

- CANSIM - Statistics Canada
- PMB (Print Measurement Bureau)
- Business Plans research guide
Researching medical conditions

- Encyclopedias
- Books
  - For patients
Popular Sources

- Written by experts OR journalists/professional writers
- Aimed at the general public

*Images of books and magazines*
Ask yourself:

- Who produced this information?
- When was the item produced?
- What kind of content is it?
- Has the author included their sources?

Always be watching for bias!
Researching medical conditions

- Medical websites
- Encyclopedias
- Books
  - For patients
  - For health care professionals
- Article databases
  - PubMed
  - CINAHL
Journal Articles/Scholarly Articles

- Written by experts for an expert audience
- Describes the results of original scientific research
- Peer-reviewed
Online research

- Blogs
- Forums
- Communities
- Association websites
Engineering Databases

- Inspec
- IEEE Xplore
- SPIE Digital Library
- Web of Science
- Scopus
- Google Scholar
<table>
<thead>
<tr>
<th>Popular</th>
<th>Scholarly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written by journalists or experts for the general public</td>
<td>Written by experts for other experts</td>
</tr>
<tr>
<td>Use common language</td>
<td>Use jargon/technical language</td>
</tr>
<tr>
<td>Usually no citations</td>
<td>Usually fully cited</td>
</tr>
<tr>
<td>Visually attractive</td>
<td>Visually boring</td>
</tr>
<tr>
<td>Not peer-reviewed</td>
<td>Usually peer-reviewed</td>
</tr>
<tr>
<td>Examples: magazines, newspapers, books</td>
<td>Examples: journal articles, books</td>
</tr>
</tbody>
</table>

JKV Winter 2015
Diseases and Conditions

Diabetes

Definition

By Mayo Clinic Staff

Diabetes mellitus refers to a group of diseases that affect how your body uses blood sugar (glucose). Glucose is vital to your health because it's an important source of energy for the cells that make up your muscles and tissues. It's also your brain's main source of fuel.

If you have diabetes, no matter what type, it means you have too much glucose in your blood, although the causes may differ. Too much glucose can lead to serious health problems.

Appointments & care

At Mayo Clinic, we take the time to listen, to find answers and to provide you the best care.

Learn more. Request an appointment.
Is Insulin Pump Therapy a Treatment Option for Some Type 2 Diabetes Patients Requiring Intensified Insulin Regimen?

Dooa Farid MA, b, Ahmad Haidar MSc, a,b, Remi Rabasa-Lhoret MD, PhD a,c

1. Department of Experimental Medicine, Faculty of Medicine, McGill University, Montreal, Quebec, Canada
2. Research Institute in Cardiovascular and Diabetes, Institute of Molecular Biology and Immunology, Montreal, Quebec, Canada
3. Nutrition Department, University of Montreal, Diabetes Research Center, Montreal, Quebec, Canada

Abstract: From 1998 to 2006, the prevalence of people diagnosed with diabetes increased by 70% and is projected to increase by 60% every year in Canada. Diabetes constitutes a heavy toll on the economy where it accounts for over $18.6 billion a year in healthcare expenditure in Canada. It is indeed an epidemic and a global burden.

In healthy subjects, the pancreas continuously secretes basal insulin to suppress hepatic glucose production and to promote glucose use. After meals, insulin secretion by pancreatic beta cells facilitates a tight control of blood glucose levels (4). However, type 2 diabetes mellitus patients possess a combination of insulin resistance and both qualitative and quantitative beta cells' insulin secretion defects (5). Because of these joint main abnormalities, type 2 diabetes patients present hyperglycaemia secondary to reduced glucose use in key insulin sensitive tissues, mainly muscle and adipose tissue, as well as increased hepatic glucose production. In fact, progressive insulin secretion failure is the driving factor for gradual glucose control deterioration (5).

To prevent diabetes-specific chronic complications such as retinopathy, nephropathy, and neuropathy, an important component of the multifactorial treatment goals is to obtain and maintain optimal glycaemic control. Current Canadian Diabetes Association guidelines recommend a target of glycated hemoglobin (A1C) below 7% while minimizing the risk of iatrogenic hypoglycaemia associated with some treatment options (6). Such A1C goal is established complications (8). In the long run, optimal glucose control might also contribute to the avoidance of cardiovascular diseases, which are major cause of death in patients with diabetes (9). However, despite current efforts, it has been reported that only 37% to 68% (~50% in Canada) of patients reach the goal of having an A1C below 7% (8,11). There is, therefore, an urgent need to implement ideal treatments to prevent and reduce the risk of type 2 diabetes complications. Type 2 diabetes treatment needs regular adaptation in a large part due to progressive beta-cell failure. However, progressive treatment intensification is often perceived as complex because of the numerous available treatment options, technical aspects (e.g., injections) and side effects including the most prominent, hypoglycaemia risk (10,12). The need of individualization coupled with perceived complexity can lead to clinical inertia.

When the combination of lifestyle changes and anti-diabetic oral agents don't reach or maintain ideal glucose control, the current preferred choice for insulin therapy is to start with basal insulin as an add-on therapy over daytime oral antihyperglycaemic agents. If the latter fails to attain glycaemic targets then adding mealtime insulin therapy regimen or multiple daily injections (MDI) is recommended (7). It is estimated that 10 years after the diagnosis of type 2 diabetes, 20% to 50% of type 2 diabetes patients should be on insulin therapy (10,15). In a recent 3-year open-label trial comparing various insulin regimens, 37.8% of patients randomized to initial basal insulin therapy required further intensification to reach A1C goals of 6.5% or less (16). Unfortunately, barriers for insulin treatment remain significant such as patients' resistance to injections and anxiety, health professionals delaying insulin initiation and more importantly the risk of hypoglycaemia.
In Diabetes, a Complex of Causes

An explosion of new research is vastly changing scientists’ understanding of diabetes and giving new clues about how to attack it.

Health Guide - Type 2 Diabetes

Health Tip

The fifth leading killer of Americans, with 76,000 deaths a year, diabetes is a disease in which the body’s failure to regulate glucose, or blood sugar, can lead to serious and even fatal complications. Until very recently, the regulation of glucose — how much sugar is present in a person’s blood, how much is taken up by cells for fuel, and how much is released from energy stores — was regarded as a conversation between a few key players: the pancreas, the liver, muscle and fat.
Insulin pump treatment compared with multiple daily injections for treatment of type 2 diabetes (Opt2mise): a randomised open-label controlled trial

Yosef Ronin, Shahar Cohen, Ronnie Assaf, Ignacio Cegol, Sarah Kurus, Javier Castaneda, Scott W. Laven, for the Opt2mise Study Group

Summary

Background: Many patients with advanced type 2 diabetes do not meet their glycated haemoglobin targets and randomised controlled studies comparing the efficacy of pump treatment and multiple daily injections for lowering glucose in insulin-treated patients have yielded inconclusive results. We aimed to resolve this uncertainty with a randomised controlled trial (Opt2mise).

Methods: Six months, mean glycated haemoglobin had decreased by 1.7% (SD 1.2; 12 mmol/mol, SD 13) in the pump treatment group and 0.8% (SD 1.4; 8 mmol/mol, SD 12) in the multiple daily injection group, resulting in a between-group treatment difference of 0.9% (95% CI: 0.9 to 0.6; 8 mmol/mol, 95% CI: 0.6 to 0.4; p-value: 0.001). At the end of the study, the mean total daily insulin dose was 79 units (SD 56) with pump treatment versus 122 units (SD 48) for multiple daily injections (p = 0.001), with no significant difference in body weight change between the two groups.

Results: Two diabetes-related severe adverse events (hypoglycaemia or hyperglycaemia without acidosis) resulting in hospital admission occurred in the pump treatment group compared with one in the multiple daily injection group. No ketosis were observed or ketones in either group and no episode of severe hypoglycaemia occurred in the multiple daily injection group.

Interpretation: In patients with poorly controlled type 2 diabetes despite using multiple daily injections of insulin, pump treatment can be considered as a safe and valuable treatment option.

Funding: Medtronic.

Introduction

Type 2 diabetes is characterised by insulin resistance and progressive β-cell failure, which results in increasing hyperglycaemia. Many patients with advanced disease require treatment with insulin, and in most cases the addition of basal insulin is sufficient to achieve glycated haemoglobin targets. If these targets are not met after active dose titration of basal insulin, a multiple daily injection regimen combining a long-acting and a rapid-acting insulin in a basal-bolus fashion can be offered to patients; however, such intensified regimens do not meet glycated haemoglobin targets in about 30% of patients, and are associated with increased risk of hypoglycaemia and weight gain. These limitations of multiple daily injection treatment show the need for new treatments for this group of patients.

Only four randomised controlled studies have compared pump treatment and multiple daily injection treatment for lowering glycated haemoglobin in patients with type 2 diabetes. Two parallel-group studies included 132 and 107 moderately obese, insulin using patients with a baseline glycated haemoglobin of 8.0–8.9%. The studies lasted 6 months and 12 months respectively and reported similar benefits from treatment intensification. By contrast, two randomised crossover studies showed that pump treatment was superior to multiple daily injections. Uncontrolled longitudinal studies have also shown that pump treatment can help to achieve and maintain good metabolic control.

To further assess the potential benefits of pump treatment for type 2 diabetes, we did a randomised, controlled trial (Opt2mise) to compare the efficacy and
Prior Art

- Any evidence that someone has thought of your invention before you did
- To establish the novelty of your invention, you must “prove” that it is a significant improvement on prior art
- Can be (but does not need to be) a patent
Patent Searching

- Patent
  - “A set of exclusive rights granted by a sovereign state to an inventor or assignee for a limited period of time in exchange for detailed public disclosure of an invention.” (Wikipedia)
Two ways to search

- Keyword searching
- Classification number searching
Choosing Keywords

- I have an idea for an insulin pump that does not require tubing between the pump and the infusion set.

What is the **structure**, **function**, and **use** of this item?
Economics of scholarly communication in transition
by Heather Morrison

Abstract
Academic library budgets are the primary source of revenue for scholarly journal publishing. There is more than enough money in the budgets of academic libraries to fund a fully open access scholarly journal publishing system. Seeking efficiencies, such as a reasonable average cost per article, will be key to a successful transition. This paper presents macro-level economic data and analysis illustrating the key factors and potential for cost savings.

Introduction: Academic library budgets sustain scholarly journal publishing

For scholarly library budgets to be sustained, scholarly journal publishing must be consistent with the economic model of scholarly library budgets. The economic model that underlies scholarly library budgets is based on a set of assumptions. These assumptions are: a) there is no cost to publish, b) the cost of publishing is zero, and c) the cost of publishing is zero. These assumptions are not realistic and cannot be met in practice. The economic model of scholarly library budgets is based on a set of assumptions that are not realistic and cannot be met in practice. The economic model of scholarly library budgets is based on a set of assumptions that are not realistic and cannot be met in practice. The economic model of scholarly library budgets is based on a set of assumptions that are not realistic and cannot be met in practice. The economic model of scholarly library budgets is based on a set of assumptions that are not realistic and cannot be met in practice. The economic model of scholarly library budgets is based on a set of assumptions that are not realistic and cannot be met in practice. The economic model of scholarly library budgets is based on a set of assumptions that are not realistic and cannot be met in practice.
PRESSURES ON THE CURRENT MODEL OF SCHOLARLY COMMUNICATION

This new information environment is putting serious pressure on the old system of scholarly communication. As a result, the marketplace is changing more deeply and more radically than we might think.

Weak Budgets

One of the pressures on libraries in particular is budgetary: many libraries saw their budgets cut dramatically a few years ago, and for many or most of us, they have been pretty much flat ever since. Some libraries are still seeing falling budgets, and even those for whom budgets have remained stable are experiencing an effective budget cut each year at the rate of inflation. These budget issues have led to an increasing impatience with waste in libraries, and one of the most egregious examples of waste is the fact that we have always bought content that nobody wants. We buy content, but we hold onto that content, and take the fact that nobody wants it. This was not the case during the print
This is a demonstration of Mendeley (Kelly & Autry, 2013).

References

# Mendeley

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free forever (up to 2 GB storage)</td>
<td>No Android app (some 3rd party apps available)</td>
</tr>
<tr>
<td>Automatically grab metadata from PDFs and other documents (including web pages)</td>
<td>Limited storage and sharing features unless you pay</td>
</tr>
<tr>
<td>Desktop, web, and iOS clients – seamless syncing between devices</td>
<td></td>
</tr>
<tr>
<td>Organize into folders</td>
<td></td>
</tr>
<tr>
<td>Annotate PDFs with integrated PDF viewer</td>
<td></td>
</tr>
<tr>
<td>Share your citations, documents, and annotations with others</td>
<td></td>
</tr>
<tr>
<td>Write and cite with plug-ins for Microsoft Word, Open Office, and Bibtex</td>
<td></td>
</tr>
</tbody>
</table>
zotero
Save to Zotero (ISI Web of Knowledge)

Saving to My Library...
Consumer eating quality acceptance of new...
<table>
<thead>
<tr>
<th>Title</th>
<th>Creator</th>
</tr>
</thead>
<tbody>
<tr>
<td>A longitudinal comparison of citation rates and growth among...</td>
<td>Solomon et al.</td>
</tr>
<tr>
<td>Access of primary and secondary literature by health ...</td>
<td>Meggio et al.</td>
</tr>
<tr>
<td>Access, accommodation, and science: Knowledge in an &quot;open&quot;...</td>
<td>Kelly and Autry</td>
</tr>
<tr>
<td>Bohannon 2013.pdf</td>
<td></td>
</tr>
<tr>
<td>Consumer eating quality acceptance of new apple varieties in different European countries</td>
<td>Bonny et al.</td>
</tr>
<tr>
<td>Consumer eating quality acceptance of new apple varieties in different European countries</td>
<td></td>
</tr>
<tr>
<td>Delayed open access: An overlooked high-impact category of...</td>
<td>Laskoski and Bjork</td>
</tr>
<tr>
<td>Economics of scholarly communication in transition</td>
<td>Morrison</td>
</tr>
<tr>
<td>Exploring the effects of a transition to open access: Insights from ...</td>
<td>Bernius et al.</td>
</tr>
<tr>
<td>Harley 2013.pdf</td>
<td></td>
</tr>
<tr>
<td>Is the Journal Dead? Possible Futures for Serial Scholarship</td>
<td>Anderson and Moore</td>
</tr>
<tr>
<td>Publishing in Discipline-Specific Open Access Journals: Opportunities</td>
<td>Tomaszewski et al.</td>
</tr>
<tr>
<td>Acceptability anthocyanin content</td>
<td></td>
</tr>
<tr>
<td>Apple Consumer acceptance cultivars European countries</td>
<td></td>
</tr>
<tr>
<td>firmness fruit color development gale open access PLOS preferences</td>
<td></td>
</tr>
</tbody>
</table>
# Zotero

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free forever (up to 300 MB)</td>
<td>Clunky &amp; unintuitive interface</td>
</tr>
<tr>
<td>Import citations from many sources using an icon integrated into your web browser</td>
<td>No PDF annotations</td>
</tr>
<tr>
<td>Automatically grab metadata from PDFs and other documents</td>
<td>No mobile apps – some 3rd party apps available</td>
</tr>
<tr>
<td>Organize into folders &amp; share with others</td>
<td></td>
</tr>
<tr>
<td>Desktop &amp; web clients – sync between devices</td>
<td></td>
</tr>
<tr>
<td>Write and cite with plug-ins for Microsoft Word, Open Office, and LibreOffice</td>
<td></td>
</tr>
</tbody>
</table>

Information about [Mendeley](#) and [Zotero](#)

JKV Winter 2015
Contact

Jacqueline Kreller-Vanderkooy
Steacie Science and Engineering Library 102J
jkvan@yorku.ca