

# ABOUT OSCAR

## Brief Overview: Everything You Wanted to Know About OSCAR, But Were Afraid to Ask...

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## WHAT IS OSCAR?

OSCAR is a fully featured Electronic Medical Records (**EMR**) software program, designed by doctors for doctors, for use in medical offices. Besides by physicians, OSCAR is also used by a variety of other front line health care professionals, including registered midwives, social workers, psychologists, nurse practitioners and physiotherapists. OSCAR is an OPEN SOURCE project. This means that the software can be downloaded freely by anyone and the source code is distributed with the software so that peer review and collaboration can take place. For a 2 minute mini demo of the EMR see: <http://tinyurl.com/d93e6c> To our knowledge OSCAR is the only widely deployed open source EMR system in Canada. The name "OSCAR" is an acronym for "Open Source Clinical Application Resource".

## OSCAR's HISTORY:

In 2001, the OSCAR project was started by the Department of Family Medicine at McMaster University (in Hamilton, ON, Canada) with the objective of producing a state of the art web-based EMR to support diverse academic and clinical functions. Since 2001 OSCAR has been implemented in large and small clinics across the country with most users found in Ontario and BC. An increasing number of support companies provide services which include server installation, maintenance, and user training and support.

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## USER BASE:

OSCAR experienced a fantastic year of growth in 2008, which saw a 75% increase in new installations year/year from 2007. As of May 2009, OSCAR had a user base of 700-800 clinician users across BC, Alberta, Ontario, Quebec and PEI. By 2011 that number had grown to well over 1000 physicians. By early 2012 we counted clinician user numbers approaching 700 in BC alone. According to OntarioMD's EMR Advisor web site, *OSCAR McMaster* held a healthy 10.5% market share among a sample of 6876 Ontario physicians eligible for govt EMR adoption funding programs from 2005 to January 31st, 2012 (in total there are about 30 000 physicians registered to practice in ON). However the great majority of the OSCAR users in the sample were new adopters, having installed their EMR after 2009, so the OSCAR market share in terms of new installations is significantly higher. In addition the sample only accounts for those doctors who have applied to OntarioMD for funding. There are many physicians running OSCAR without going through the steps to apply for govt funding.

It should also be noted that OSCAR is now the EMR used by Departments of Family Practice at a number of medical schools, including at McGill, at Queens, at UBC and of course at McMaster.

Internationally there are active OSCAR EMR systems running in Argentina (it has been translated into Spanish) and we have heard from isolated installations in Africa, Australia and elsewhere.

Overall, the largest numbers of users are in Canada, in Ontario and BC. The true number of Canadian users is probably higher than estimated, because physicians can self-install OSCAR, and, since it is a free open source project, there is no formal central register of users. We therefore rely on voluntary self-report by OSCAR support providers and users to establish usage statistics. For a self-reported Google Map of OSCAR installations across Canada [click here](#).

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## WHERE CAN I SEE A DEMO?

Some screen-shots are posted on this site here. Some OSCAR support providers or developer groups provide demo sites, these are full OSCAR installations open for the public to explore. The best possible demo experience is to visit an actual working OSCAR user near you and see a living, breathing OSCAR system in action. Generally OSCAR users embrace the opportunity to show their EMR off to interested colleagues and help them make good choices.

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## OPEN SOURCE:

OSCAR is FLOSS (Free libre open source software). The licence is the General Public Licence (GPLv2) which ensures that OSCAR is available for no charge, in perpetuity. The licence also specifically gives rights to people to develop and distribute the software. Since the creation of the Linux operating system in the 90's, open source software has grown dramatically and has clearly established its viability in the commercial sector. Because contributions to enhancing the code come from many sources in an environment of collaboration, innovation is more rapid. Open source is much more consistent with a true free market approach than proprietary products that entail the infamous 'vendor lock-in'. For further info about open source click here.

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## OSCAR COMMUNITY:

OSCAR support companies and users form a close knit community with regional and national group meetings. Key role players in the OSCAR community are as follows:

- **McMaster university** is the non-commercial sponsor and development coordinator of the OSCAR project. McMaster also holds the strong open source license and they are trusted to maintain the code repository and to ensure the project remains unified, free and certified with ISO and OntarioMD. The official repository version of the source code is identified as "*OSCAR McMaster*". This serves to differentiate the main trunk from unofficial forked versions of the OSCAR project that might occasionally appear.
- **The Oscar Canada Users Society "OCUS"** is a not-for-profit society with a democratically elected board representing the interests of the user community in steering the project. All OSCAR end users are encouraged to become active members of OCUS. You are currently looking at our OCUS website maintained by board volunteers. OCUS board members are actual working physician users of OSCAR. No OCUS board member may have a direct financial profit interest in OSCAR, or in an OSCAR support business, in order to avoid conflict of interest situations arising. If you are already an OSCAR user and you wish to become a member of OCUS, click here.
- **OSCAR support providers "OSPs"** install and maintain the EMR solution for the end user. They are entitled to levy support fees for this service and they compete in the open market for the support business. Under the terms of the open source license, OSPs do *not* have rights to sell *licenses* for the use of OSCAR, or to sell their own software products derived from OSCAR.

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## WHAT IS VENDOR LOCK IN?

Vendor lock in means that once you have invested data in a proprietary system you are stuck. It makes business sense

for vendors of proprietary EMR systems to lock you into their format and themselves into your cash. The vendor can name their price for additional features because no-one else can write for the product. New features are often slow to arrive because the vendor has to wait until there is a significant demand for that feature before investing money into developing it. The vendor has little interest in creating customized features for one user because it is more difficult to maintain support. Before purchasing a proprietary EMR solution, ask your vendor if you will require a special password in order to extract, into a generic format, your full and complete demographic and medical record data. Ask that vendor if that special password changes on a regular basis, thus requiring you to maintain a monthly support contract with them in perpetuity. While many modern proprietary EMR systems are very well designed, robust and usable, this satirical website does a great job of illustrating, in a tongue-in-cheek fashion, some of the frustrations doctors have run into while locked into certain proprietary EMR systems.

In contrast to the above, OSCAR is a fully open platform. Your data is, and always will be, your data.

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## COMMERCIAL SUPPORT FOR YOUR OSCAR EMR:

The vast majority of doctors using OSCAR choose to pay to have OSCAR installed, and to pay for ongoing support. At OCUS we strongly encourage our members to engage one of the professional OSCAR tech support providers (**OSPs**), rather than trying to do the installation and maintenance of the EMR system themselves. There are several OSCAR support provider companies, and as the demand for OSCAR continues to increase, there has been a predictable market response, with an increase in the supply of support providers. For an (incomplete) list of OSCAR support providers see: <http://www.oscarcanada.org/support>

While it is natural in the business world to want to achieve a competitive advantage, the open source mechanism provides important protection to the OSCAR end user from vendor-lock-in situations. Such protection is not available to users of proprietary EMR products. OSCAR users are free to change OSCAR support providers at any time, without the risk of their data being held to ransom. OSCAR support providers compete honestly in the open market, on the basis of true merit and customer service, rather than on the basis of leverage.

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## WHO IS OSCAR's "VENDOR"?

Many govt EMR funding programs across Canada are structured to engage an EMR "vendor". Yet, in the case of OSCAR, *there is no "vendor"* in the traditional sense. The term "vendor" implies that a sale is taking place, yet OSCAR software cannot be sold. It has to be free. OSCAR's strong open source license ensures that it will always remain so. OSCAR simply is the finest EMR software no money can buy.

- McMaster university holds the strong open source license for *OSCAR McMaster*. This means that McMaster has solid copyright, and no one else may assume or claim ownership of the project. In Ontario, McMaster university has taken it upon themselves to shoulder the considerable development effort required to meet provincial EMR certification conformance criteria.
- A growing number of independent commercial OSCAR support providers compete for the support business. These "OSPs" may levy fees for tech support, but none of them have rights to sell licenses to use OSCAR.
- The various provincial government EMR funding agencies are used to dealing with private corporations, so with the arrival of OSCAR many of these authorities were, and still are, somewhat unsure about how exactly to engage with a decentralized open source project. In most provinces OSCAR is therefore not eligible for the same govt funding available for use of certain proprietary EMR systems. Nonetheless, in BC OSCAR is healthy and thriving in the absence of direct government funding and is now the third most installed EMR solution in that province. In Ontario the funding problem has been solved by having McMaster University assume a central accrediting role for the OSCAR support providers and user community, and applications for govt funding have to be audited by McMaster prior to approval (this of course applies to Ontario only).

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## ACCOUNTABILITY:

OSCAR is provided for free with absolutely no warranty or guarantees. Medical physicians are a self regulated profession in Canada, and they are held to certain professional standards. These standards, enforced by the various provincial physician college licensing authorities, apply not only to medical competency and proficiency, but also to medical record keeping. Physicians are the trusted stewards of their patients' medical data, and they have strong obligations to ensure that this data remains private, protected, intact, well organized and available when needed. It is the *physician end user* who is responsible for the integrity and security of their EMR system, not the developer, not the tech support provider nor the vendor. This principle applies to users of open source OSCAR EMR, just as it does to users of proprietary EMR systems.

In this context OSCAR users are encouraged to practice due diligence when choosing an OSCAR support provider. Partnering with an inexperienced or incompetent support provider can lead to serious professional consequences. As with many things, experience counts. Ask for references! Ask about security protocols. Speak to colleagues who use OSCAR in their practices. You will find that most OSP companies have an excellent reputation and track record.

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## DEVELOPMENT:

OSCAR is based on a community driven development model. Current contributors to the OSCAR project include:

- Large institutions (e.g. McMaster, McGill & City of Toronto),
- independent companies (e.g. OSCAR support provider companies)
- User Groups (e.g. OSCAR Canada Users Society)
- Independent clinics or doctors and individual developers.

The main OSCAR development team at McMaster University coordinates community development and maintains the trunk of the source code, referred to as *OSCARMcMaster*.

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## UPDATES:

Currently, the *OSCARMcMaster* trunk repository for the source code is updated by the developers twice a year, in April and October, with clear outlines for users in advance, of what each new release will contain. Updates are overseen by a technical committee and a product management committee, with representation from McMaster, the development community, the support provider community and us, OCUS, representing the user community, to ensure that quality standards for the source code are maintained and that the project remains unified, free and open.

Once the updates are officially released, the various OSCAR support providers in the market are free to update their customer's systems with the newer versions, at their, and their clients' discretion.

The various OSCAR support providers are also free to do some custom programming and development work for specific clients, however, under the open source license rules, they are obligated to voluntarily share these improvements back to the main code repository. To read more please refer to OSCARs "open source code of ethical conduct" here.

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## STANDARDS, CONFORMANCE AND FEATURES:

In Ontario, where a standards-based approach was taken to EMR selection, *OSCAR McMaster* has easily passed all rounds of conformance testing, including the rigorous CMS Specification v3.0 from OntarioMD in February 2009. *OSCAR McMaster* has registered for **OntarioMD Specification 4.0 Validation Testing**, and has achieved **ISO 13485:2003 Certification**.

OSCAR is able to communicate via HL7, can export data as mandated by the OntarioMD standards and can import labs. Oscar has an Excelleris interface for lab download and is in the process of completing its interface with BC's Interior Health Authority's Physician Office Integration program so that regional patient reports can be directly downloaded.

OSCAR can be run as a local server installation or as a remotely hosted system.

The BC OSCAR user group has independently driven and managed the introduction and deployment of OSCAR in BC under their own steam with some development help from McMaster. While OSCAR fully meets conformance with the most recent and rigorous Ontario standards, there are 2 elements of *British Columbia* PITO conformance that OSCAR users in BC have *chosen* NOT to develop: This concerns the mandated upload of the "Core Data Set" (CDS) to a centralized government database, as this initiative has been met with skepticism and concern about privacy by a number of patient advocacy groups and physicians, and the upload of office EMR CDM flow-sheets to the BC Ministry's centralized chronic disease management (CDM) toolkit database, for the same reasons. However, OSCAR can export CDM data to the *Ontario* Diabetic Registry.

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## CHRONIC DISEASE MANAGEMENT (CDM) TOOLS:

OSCAR has excellent Chronic Disease Management Flow Sheets for Diabetes, Hypertension, CHF, COPD, asthma, HIV and INR, as well as Chronic Disease Management audit tools. The CDM flow-sheets are also customizable for each patient to assist in improved tracking of appropriately customized care for each patient. There are also Maternity Care forms, reports and audit tools, as well as Preventive Care and Immunization Modules, Enhanced Prescribing, and many other features.

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## PATIENT PORTAL:

OSCAR also interfaces with an interoperable **PHR**, a Patient Controlled Health Record called *MyOSCAR*. This was jointly developed with Harvard and MIT. For details see: <http://myoscar.org/> . For a mini demo (with Seinfeld opening) see <http://tinyurl.com/ckuooob>

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## STABILITY:

OSCAR is highly stable. Running on Linux servers means that the server operating system is also stable. Linux servers can run for years without the need to be rebooted and OSCAR crashing is virtually unheard of. New updates of OSCAR are tested for stability prior to release in the McMaster teaching clinics.

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## SECURITY:

Doctors are trusted with the safekeeping of their patients' confidential medical information and thus take the security of their EMR system very seriously. Therefore this point warrants some more detailed discussion. The concept of EMR security can be divided into three categories:

- **Server security:** Most OSCAR support providers do a fine job of electronically securing a local server installation of OSCAR from Internet attack. It should be noted that the self-install version of OSCAR posted on this website will need some basic security hardening (changing passwords from the default settings and such) before it would be safe for production use. It should also be noted that it is good practice to physically secure your servers behind a sturdy locked door in your office and have an alarm system in place. If you are very concerned about the physical security of local servers, these can be set up with their database encrypted, making it impossible to hack into them even with physical access from the console. Furthermore the automatic daily on-site and off-site backup files are usually set up to be encrypted, thus also making those useless to hackers. In some provinces govt EMR funding authorities feel uncomfortable leaving server security in the hands of individual physicians, and thus mandate that all EMR solutions have to be remotely and centrally hosted (ASP/cloud hosted) by the support provider/vendor in a secured server farm to be eligible for funding. Some physicians on the other hand feel uncomfortable leaving server security in the hands of govt regulators or EMR vendors, and prefer to hold their EMR data themselves on a local server. OSCAR can be deployed equally effectively as either a local server or a remotely hosted installation. Both types of OSCAR installation can be adequately secured. With the price of server hardware decreasing and the reliability of Internet connections increasing, this has become less of a technical matter and more of a control issue.
- **Connection security:** OSCAR uses something called "Transport Layer Security" to encrypt the information flowing between the server and the browser/clients/workstations connected to it. By encrypting the communication between server and workstations, OSCAR users are protected against "eavesdropping" breaches. This is the same open source technology that banks around the world use to secure their online banking portals for their clients. This widely used approach of securely encrypting point-to-point information sent over an insecure network (the Internet) is a flexible, light-weight, proven, cost effective and practical solution. In contrast to OSCAR's approach, the EMR funding authorities in some provinces, have gone about this in a different way and have made an attempt to build a secured "mini Internet" for exclusive use by physician offices. This essentially amounts to a giant official Virtual Private Network (VPN) where each user of all funded EMR solutions is individually granted secured access by a central system administrator (usually a private company). The usual hurdles with such a large "circling of wagons" effort are cost, insufficient bandwidth, vendor lock-in and the decreasing ability to effectively secure the system as the scale of the network increases. The more users you have, the more likely that someone will leave a door open. This is currently being tried in BC. It has failed in the past in ON.
- **Workstation security:** OSCAR uses a double password approach for user log-in, much like many banks use for online banking access. One password is set by the user, the other is set by the OSCAR system administrator. Most security breaches in any IT system occur due to user carelessness, not due to hacker attack or failure of security technology. It is therefore imperative to implement basic user workstation security, such as screen locks, updated security software (on Windows workstations) and to generally follow good security habits such as using nominal user IDs, not sharing user IDs, using strong passwords and to rotate passwords regularly. This would be important for any type of EMR (and no, those little security fobs don't necessarily make it foolproof, since those could be shared among uncooperative users too). For more practical tips on securing your office workstations [click here](#).

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## CAN OSCAR RUN "IN THE CLOUD"?

Yes, OSCAR can be installed either as a local server solution, or it can be remotely hosted on someone else's server. With a local server solution the server becomes the "single point of failure". Most OSPs will therefore put a twinned backup server right next to the main server, to take over in the unlikely event of server failure. With a remotely hosted EMR solution, the Internet connection becomes the single point of failure. Internet outages do occur and can be very frustrating. Some clinics have therefore set up a fancy dual ISP fault-over solution to improve redundancy, but this

increases cost. Most OSPs will tell you that the costs of local server OSCAR versus cloud/ASP/remote hosted OSCAR are on par, with local server being marginally cheaper these days. Some OSPs will say that it is easier for them to secure, update and maintain their own server farms than a local server in your office. With server hardware prices dropping and Internet reliability improving, this issue increasingly becomes one of control rather than technical consideration. You will want to think carefully about where your data is held physically, how and where it is backed up and secured, and whom you trust to look after data security and integrity for you. Increasingly patients are starting to have opinions about these issues too.

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## WHAT ABOUT SPEECH RECOGNITION SOFTWARE? DOES THAT WORK WITH OSCAR?

But of course! Many OSCAR users do just that to generate their case notes and letters in the EMR. Since OSCAR is designed as a free-text type EMR (as opposed to a structured-input type EMR) it is a good fit with proprietary software such as "Dragon" or "MacSpeech" running on the workstation PC, and most browsers, including Firefox, will work just fine with Dragon. Many users just pick up the basic version of Dragon in their neighbourhood electronics store and start dictating, but there are also a number of "Dragon support providers" in the market, who will install a proper networked, medical edition of Dragon for you and provide support, training and dictation equipment. If you do it yourself, remember that you want a newish computer with lots of RAM and a good quality USB microphone headset to get the best results. Also be prepared to spend a bit of time familiarizing yourself with the software and the processes involved. The learning curve is fairly steep, and the frustration to fun ratio is low.

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## DOES OSCAR RUN ON A MAC?

Yes it does. This is actually one of the advantages of the modern web-server/web-browser platform OSCAR sits on:

- **On the workstation/desktop side** OSCAR is entirely cross-platform. If you have a login ID and passwords to an OSCAR server, you can connect with pretty much any device that can run a web browser, including PCs, Mac, Linux desktop, iPad, Android Tablet, Amazon Kindle, iPhone, Android phones and even game consoles like X-Box (Nintendo Wii and Sony PS3 unfortunately use the Opera browser that doesn't like OSCAR). The browser recommended for OSCAR as the best workstation application platform is Firefox, because it is also an open source program, and because OSCAR is developed and tested against it. Other browsers like Internet Explorer, Safari and Chrome also work. Many OSCAR users like using Apple products and check their lab results and update case notes from home on their iPads after work. Many offices contain a cheerful mix of Macs and PC machines. There is even a subset of OSCAR users, called the "Ubunuts", who take the whole open source thing very seriously and thus have taken the extra step of converting all their office workstation computers to Ubuntu Linux or similar open source Linux desktops.
- **On the server side** OSCAR is usually installed on top of a Linux operating system platform, usually the latest Ubuntu LTS (long term support) operating system. The Ubuntu server operating system is free, open source, proven, widely used to run Internet servers everywhere and it is very, very stable. We also know of a few installations using Red Hat Enterprise Linux. We have some very enthusiastic Mac aficionados in the community who have asked their OSPs to install OSCAR on a Mac server platform instead of on the default Ubuntu server. We hear that it runs fine on Mac server, but there are no real advantages to doing it this way. OSCAR can also be installed on a Windows server platform, but the hefty annual CAL (client access license) fees payable to Microsoft for the privilege of using their server operating system make this option unattractive.

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## COST ESTIMATES:

Because OSCAR is OPEN SOURCE, the software is free and there are no licensing fees. The licence is the General Public Licence (GPLv2), which ensures that OSCAR is available for no charge, in perpetuity. The licence also specifically gives rights to people to develop and distribute the software. Because OSCAR is a browser based EMR, it can run on very low cost workstations. Below is a cost estimate for a local server deployment of OSCAR:

#### *Hardware costs for OSCAR:*

- Per Computer and screen: \$600 - \$1500, can be Macs and PCs
- Server: \$1000 - \$2500 depending on size of clinic, with OSCAR and Ubuntu pre-installed with surge protection and battery backup.
- Back up server: \$600 - \$2000 depending on size of clinic

#### *Software costs for OSCAR:*

- **FREE**

#### *Network IT support:*

- \$0 - \$400 per month. If you can keep all your computers at home connected to the Internet, you can keep your clinic running without the need of professional help. It's that simple.

#### *Server support:*

- Typically \$300 per month for 4 docs and \$50 per additional doc (or about \$900/doc/year).

#### *Additional:*

- Printers - \$100 - \$150 each for laser printers. Most users have one in every room, but this is not a requirement.
- Switch/hub - \$65 for small office to \$250 for a large office.
- Router - \$65-\$100.
- Scanner - \$500 - \$1000 depending on speed and quality of scanned images
- Network cabling. Local electricians usually charge \$50-\$100 per 'drop' i.e. per run of cable. Wireless LANs are an option, provided they are properly secured.
- Time for IT installation and training: 7 hours @ \$85/hr = \$595

Of note: The "industry" life-cycle for computer hardware is 3-5 years, not because the hardware is broken but because the operating system (e.g. Microsoft Windows) is constantly being upgraded and has larger hardware requirements. OSCAR uses only the browser function of the computer so does NOT require frequent updates to the operating system or to the hardware. It is possible to get 10 years out of hardware. This might not sound important, but is actually a BIG cost to EMR.

#### *Cost Amortization for a 4 doc office:*

\$4800 in terminals .....amortize over 10 years so \$480/year

\$750 in servers (\$3000/4 docs).....amortize over 5 years so \$150/year

\$3600/year in server support for 4 docs.....\$900/year

So per doctor per year in a 4 doctor practice using decent hardware the cost is around \$1600/year.

With additions such as printers/switches/cables/fax machines etc this can go up to \$2200/year per doctor.

The cheapest possible with say 8 doctors using cheaper hardware could be as low as \$800/year per doctor. If you search the internet, the “accepted” cost for an EMR seems to be \$10 000 - \$12 000 per doctor per year.

Of course cost is only a small part of the consideration. The functionality of the EMR is worth far more (one or two less patients per day works out to a lot of money lost). Users agree that OSCAR has all the functionality of any of the proprietary EMRs, and in some areas does more.

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## **TESTIMONIALS:**

To read more about what users say about OSCAR, [click here.](#)

### **Sue Harris: Past Head of Family Practice, BC Children's & Women's Hospital & BC Family Physician of the Year 2008**

“Over the last 9 years I have had personal experience with three different electronic medical records. There is no question in my mind about which provides the best options for a family practice office. OSCAR is firstly a patient-centered record which provides evidenced-based care in a cost-effective manner which is not intimidating. Given that software is free and service charges are much less, OSCAR provides ongoing savings for those who are committed to an EMR. There are also OSCAR options for the patient to access parts of his or her own chart. In addition, OSCAR is flexible and can be altered readily for new guidelines, practice recommendations and fee schedules. Finally OSCAR is built on a community of practice: physicians across the country sharing a common goal: to provide high quality care to patients through communication and working together. This is a model for the electronic age and OSCAR should be considered by any family physician looking to an electronic health record and new way of practice.”

To find out more about becoming part of the OSCAR community [click here.](#)

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### **Contact Us:**

For general inquiries to the directors of OCUS (Oscar Canada Users Society) please send your email to:

[OscarCanadaUserSociety@gmail.com](mailto:OscarCanadaUserSociety@gmail.com)