

### ***A Brief History of the Internet***

The Internet began in 1969 as an experimental project by the department of defence in the United States to link up four universities in California and Utah.<sup>1</sup> It has since grown at an exponential rate into what is now a global network of computers. The Internet has elevated the information revolution to an unprecedented level. It has impacted on the way we communicate, do business and spend our recreational time. The two most important functions of the Internet are electronic mail (email) and the world wide web (WWW).

Email was developed by *IBM* and *Digital* corporations in the 1970's for large businesses to improve memorandum distribution and for sending simple messages to co-workers. It has grown significantly and is an integral part of present day communication. Synchronous communication, such as a telephone conversation, where both groups must be present and available at the same time, is difficult and often not feasible in a busy schedule. The appeal and success of email is that it is fast, cheap and it allows for asynchronous communication.

The world wide web is that part of the Internet that most of us browse with either *Netscape* or *Microsoft Explorer*. With help of search engines such as *Yahoo* and *Alta Vista* one finds webs of interest which they can then explore or surf . Access to information is quick and generally presented in a graphical interface. Navigation through sites by using menu bars or hyper links, which are bolded areas of text or pictures that you click with a mouse, becomes intuitive.

The success of the Internet has been largely due to its universality. Many of the applications on the net can be accessed with any computer and operating system. Whether one is using *Microsoft*, *Macintosh* or *Unix*, with the appropriate software, information can be accessed on the net. This has allowed for mass communication. The Internet is rapidly evolving with increasing power for more complex tasks. Internet radio, real motion video and dynamic relational databases can now be found on the web. With the next generation of Internet applications, desktop computing and the web will be completely integrated. The possibilities are thus limitless.

### ***Medicine and the Internet***

For medical researchers, the Internet has an essential role in the sharing and collecting of

information. Access to *Medline* and other medical databases, has greatly facilitated literature searching. Many journals are now online and the articles can be readily accessed. Mass collaborative projects such as *Online Mendelian Inheritance in Man* (OMIM) have provided a wealth of resources for genetic-related research. Information has never been more readily accessible. The Internet provides a source not only for information gathering, *Medline* access, and rapid/frequent/cheap contact (email) but also a means to foster research collaboration and interaction. In this age of evidence-based medicine (EBM), too many small studies are being carried out that frequently do not have the statistical power to make definitive conclusions or promote real change in clinical practice. Trials that have more of an impact on clinical practice (e.g. Canadian Preterm Labor Investigators Group,<sup>2</sup> Canadian Multicentre Post-term Pregnancy Trial Group,<sup>3</sup> Vermont Oxford Network,<sup>4</sup> NICHD Network of Maternal-Fetal Medicine Units,<sup>5</sup> CLASP Collaborative Group,<sup>6</sup> etc.) demonstrates the importance of larger multicentre studies both at the national and international level.

### ***The Canadian Perinatal Network***

With finite funding sources available to us, we need to facilitate research collaboration and interaction in Canada. To this end, demonstration of successful collaboration, implementation and publication has the potential to improve funding opportunities from which we would all benefit. However, large trials require efficient coordination for their successful and accurate recruitment, randomization, and completion. The development of a collaborative perinatal research network in Canada (***The Canadian Perinatal Network (CPN)***)(Table 1) and Internet Website (*PeriNet*)(Table 2) would augment perinatal research in Canada and would be a more cost effective way of carrying out multicentre studies. This would also facilitate international collaboration in what has been termed *Global Partnerships*.<sup>7</sup> Currently we are piloting a randomized, placebo controlled trial (Nitroglycerin Preterm Labour Trial (PSI funded. G.N.Smith, R.Windrim, K.O'Brien, M.Walker, J.Barrett)) in Ontario with plans to expand to other interested centres in Canada if further funding (e.g. MRC) is obtained. Data will be prospectively entered in the password-protected *Database* to allow for Safety Monitoring and ongoing assessment.

Another research initiative is to collect larger case series nationally. Currently, we all are publishing small numbers of interesting cases that do not have a great impact on clinical care. Large case series can be collected prospectively on a *Database* set up on *PeriNet*. One such initiative, a twin-to-twin transfusion (TTT) registry, is currently being developed. This project,

funded by Health and Welfare Canada (K. Fung Ke Fung) will be a one hundred field database which will collect relevant information about disease state, interventions and outcomes in TTT. Only with a large cohort of subjects will it be possible to evaluate important prognostic factors and beneficial interventions. This database, as well as others with sensitive information, will be password protected and data transmission will be encrypted for security.

The *PeriNet* web site will also have other important features to promote research and collaboration. There will be a contacts *directory* which will list the names, addresses, phone numbers, email addresses and research interests of perinatal investigator across Canada,. *discussion pages* where investigators will be able to post research questions or ideas where others can respond, a *search engine* for rapid information retrieval, and links to useful sites.

The idea for the *CPN* and the initial development of *PeriNet* is being put forth by the authors. However, to be successful, a Canada wide Steering Committee will need to be organized. Ultimately, any decision made regarding either the *CPN* or the *PeriNet* would require input from the participating individuals and centres. As an example, a prospective *Database* on fetal anomalies would be set up to allow a given individual/centre to only view their own data. However, if a resident/fellow/staff person were interested in examining and analysing a specific topic (e.g. fetal cardiac anomalies, etc.), the data from the whole *Database* could be released to the individual(s) after submission and approval by the Steering Committee.

Authorship (Table 3) always becomes a difficult issue. For academic promotion and personal satisfaction, we all require evidence of our academic pursuits. Manuscripts that result from studies (trials or case series) through the *CPN* would be published under the heading of *The Canadian Perinatal Network*. All individuals/centres which have either recruited patients to a clinical trial or submitted cases to the *Database* would be listed in alphabetical order at the end of any manuscript; Principle Investigators, Steering and Safety Committee Members, and other members of note (e.g. Statistician/Epidemiologist) would also be listed separately. The author of note to whom correspondence should be addressed would be with the Principle Investigator(s). This is the format that was done with the Canadian Preterm Labor Investigators Group.<sup>2</sup>

Finally, the question of funding such a venture must be addressed. The initial basic Internet site (*PeriNet*) set-up is being funded through the Nitroglycerin Preterm Labour Trial. However, funding for computer programming to maintain and expand *PeriNet* will be required. A *New Opportunities* grant to the Canadian Foundation of Innovation (CFI) is being submitted through Queen's University. As well, any grant being submitted to run a study through the *CPN/PeriNet* (e.g. The Twin-to-Twin Transfusion Registry) would be required to include the

costs for programming a specific site within *PeriNet* which would include the development of a *Database* specific to the needs of that study. Industry and other funding sources will also be sought.

We encourage any ideas, comments, suggestions, and most importantly, interest. Any help would be greatly appreciated and would ultimately lead to the success of this venture. Please contact us at [gns@post.queensu.ca](mailto:gns@post.queensu.ca). For those who do not yet have access to the Internet/email (if there are any such persons!!), please fax (613-548-1313) or phone (613-533-2853) for more information.

#### Reference

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7. Gulmezoglu M, Villar J, Hofmeyr J, Duley L, Belizan JM. Randomised trials in maternal and perinatal medicine: global partnerships are the way forward. *Br J Obstet Gynaecol* 1998; 105:1244-1247.



**Table 1.**

**CANADIAN PERINATAL NETWORK (CPN)**

**LONGTERM GOALS**

1. Foster multicentre studies:

- clinical trials
- clinical case series
- basic science collaboration

2. Obs/Gyn Residents involvement/interest (i.e. Royal College research requirement)  
(e.g. involvement in multicentre Resident generated research ideas)

3. Canadian Perinatal Database (Internet based)

4. Funding (granting agencies...for individual studies; industry, Ministry of Health, other)

5. Bilingual



**Table 2.**

**CANADIAN PERINATAL NETWORK**

**INTERNET WEBSITE** (*www.PeriNet.ca*)

1. Communication and Interaction

2. Clinical Trials    -randomization  
                          -prospective data entry  
                          -monitoring and ongoing follow-up

3. Clinical Case Reporting

4. Basic Science Collaboration/Interaction

5. Interesting Case depository (i.e. for resident education purposes)

6. Ideas network

7. Forums (e.g. government U/S billing restrictions in Ontario)

8. E-mail directory

9. Links (i.e. to other websites)

10. Announcements (e.g. conferences, abstract due dates, etc.)

11. Patient Education Sites



**Table 3.**

**CANADIAN PERINATAL NETWORK (CPN)**

**PUBLISHING**

1. Authorship would be "*The Canadian Perinatal Network*"
2. All *participants who recruit subjects* in a particular study (clinical trial or case series) would be listed at the end of the manuscript by Centre (University and/or Hospital) in *alphabetical order*.
3. Author for *correspondence* would be the *Principle Investigator* for the study/trial.
4. Organizing/Steering/Writing Committees listed at end of manuscript.
5. All manuscripts would have input from participating centres.