
PHARMACY PRACTICE



The Development and Implementation of a Hospital Pharmacy Electronic Bulletin Board System

Ross T. Tsuyuki, Tessa Valg and Robert Lam

INTRODUCTION

An electronic bulletin board system (BBS) is an electronic message centre which allows the sharing of information and ideas between individuals. In a sense, a BBS is the 1990's equivalent of a cork bulletin board placed in a busy corridor of a business office. Individuals can post messages for others, reply to messages, or share documents and information. Historically, the use of BBSs has been the realm of computer hobbyists. "Normal" individuals were often precluded from using these systems because of the arcane command language and expensive equipment. Over the past several years, however, the cost of hardware has decreased dramatically and software has now progressed to the point where little user skill is required.

The equipment required to access an electronic bulletin board is fairly minimal: a personal computer, modem, communications software, and a telephone line. A modem (an acronym for MODulate-DEModulate) is a device which converts digital computer signals into analog signals (and vice versa) for transmission over conventional telephone lines. It is controlled

by the communications software which provides the commands for dialing and other functions. A dedicated telephone line is usually not required as the modem is transparent to regular telephone use when not in operation (similar to a telephone answering machine). Excellent reviews on the use and terminology of electronic bulletin board systems have been published by Walkley and Walker.^{1,2}

The ability of a BBS to act as an electronic meeting place is an appealing prospect. In fact, many computer hardware and software companies now operate BBSs to disseminate product information, to provide customer support, distribute software upgrades, and to perform on-line software demonstrations. There are now also many public BBSs which are used to exchange games and other software, news bulletins, graphics, dialogue between individuals, and many other services.

Contemporary hospital pharmacy is finding new and expanded roles in health care. However, these expanded roles are not always compensated with a commensurate increase in resources. This, coupled with an explosion of new drug information and increasing

requirement for specialization amongst hospital pharmacists, underscores the need to share information and experiences and avoid "reinventing the wheel". This is perhaps even more important in the many smaller community hospitals which are often forced to deal with the same issues as their larger teaching hospital counterparts with comparatively fewer resources.

The use of a BBS for hospital pharmacy is also attractive because its use requires few computer skills, and most individuals have ready access to the major components required to use a BBS. The purpose of this project was to implement and determine the feasibility of operating an electronic bulletin board for hospital pharmacy.

MATERIALS AND METHODS

Equipment

A refurbished IBM personal computer operating at 12 MHz was provided by the Information Services Department at Royal Columbian Hospital (RCH). The system contained a 2400 baud Hayes-compatible modem and a dedicated office and telephone line was provided to us by the hospital.

Ross T. Tsuyuki, B.Sc.(Pharm.), Pharm.D., FCSHP, is a clinical specialist in the Department of Pharmacy and Co-Director, Clinical Research, Department of Cardiology at Royal Columbian Hospital, New Westminster, B.C. and an Assistant Professor at the University of British Columbia, Vancouver, B.C.

Tessa Valg, B.Sc. (Pharm.) at the time of this project was a resident in the Department of Pharmacy, Royal Columbian Hospital,

Robert Lam, B.Sc., B.Sc.(Pharm.), is a pharmacist in the Department of Pharmacy, Eagle Ridge Hospital, Coquitlam, B.C.

Address Correspondence to: Dr. Tsuyuki, Faculty of Pharmaceutical Sciences, University of British Columbia, 2146 East Mall, Vancouver, B.C., V6T 1Z3

Software

The BBS software program chosen was Telegard®, a shareware product which was obtained from a public BBS. The menu selections were simplified for ease of use and contained four major areas:

Message area — for posting of public messages and private electronic mail;

Text files — for posting of newsletters, bulletins and formulary information which could be read on-line;

File area — collection of text and other files which could be downloaded by the user;

Voting Booth — an on-line survey of BBS users.

The fundamental philosophy of the system was that its use would be simple and intuitive. Access to a more detailed menu was also made available for more advanced users. The menu structure of the original system is illustrated in Figure 1.

Implementation

Planning for the system began in January, 1991. A letter was sent out to the Clinical Assistant Directors in the Vancouver area in order to announce the implementation of the BBS and to gather some initial opinions concerning the implementation and content of the system. An announcement of the creation of the BBS was placed in the CSHP British Columbia Branch’s quarterly newsletter and the system was placed on-line on April 29, 1991.

In order to further promote the use of the BBS, a series of newsletters were sent out to all CSHP members in British Columbia. These newsletters reviewed the rationale for the use of the BBS for information sharing and networking, basic BBS terminology, log-on procedures and key BBS commands such as use of electronic mail, uploading and downloading.

Data Collection (Utilization Monitoring)

A survey of all hospital pharmacists in British Columbia was undertaken to determine interest in the use of the BBS and to determine the barriers to BBS use (if any). During the two month data collection period, daily statistics were collected regarding the number of callers (new and repeat), the amount of time spent on-line and the numbers of uploads and downloads.

RESULTS

Survey Results

Pharmacists in a total of 45 hospitals, representing 86% of the total public hospital beds in the province of British Columbia were surveyed. The response rate to the survey was 25%. Respondents from 36 hospitals (80%) reported having access to a personal computer and pharmacists in 13 hospitals (29%) had access to a modem. Over 70% of the respondents had not previously used an electronic bulletin board.

BBS Usage Review

During the data collection period of April 29 - June 25, 1991, the system received over 300 calls from 42 different users. The average number of calls per day during the study period was 6.3. The average total daily time which the BBS was used was 93 minutes. There were 53 uploads and 67 downloads recorded during the study period. The BBS was not operational for five days due to power failures, system “crashes” and host computer breakdown.

DISCUSSION

The fast pace of new drug development, clinical trials and economic pressures has made it imperative that hospital pharmacists work smarter. As stated by Walker in his review of the use

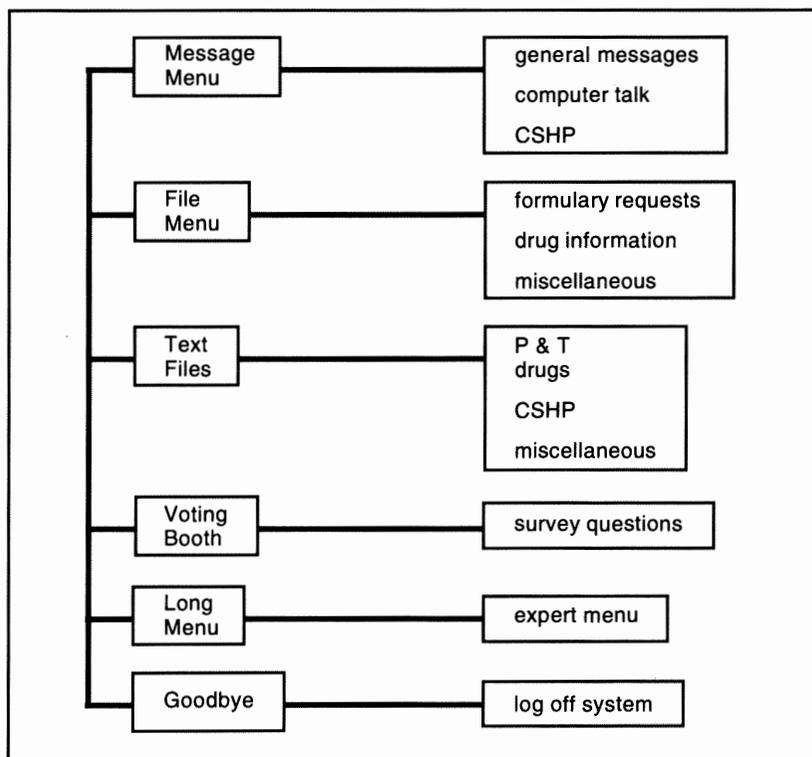


Figure 1: Original BBS menu structure

of BBS's in hospital pharmacy, "...many professionals never reach beyond the four walls of their practices to share ideas with others."² An efficient means to accomplish this is to share information and experiences through a medium such as an electronic bulletin board. The concept of a BBS for pharmacists is not entirely new. There are several hospital pharmacy BBS's, most notably PharmNet[®], operated by the American Society of Hospital Pharmacists, ClinNet[®], of the American College of Clinical Pharmacy, and the privately-owned FIX[®] (Formulary Information eXchange). There are also numerous health professional BBSs, such as Meddix, operated by the Greater Victoria Hospital Society, which was conceived by a hospital pharmacist. While all of these systems have some things to offer hospital pharmacists, we felt that a dedicated Canadian hospital pharmacy network was needed.

We felt that the results of this study demonstrated that an electronic network of hospital pharmacists was not only feasible, but would become a necessary tool for the future. While the relatively small amount of data collected cannot be regarded as conclusive, we were able to characterize our user audience through the survey and daily usage statistics.

Our survey showed that, while most pharmacists had access to a personal computer, relatively few (29% of hospitals) had access to a modem. It is likely that this figure was an overestimate, given the probable bias towards modem owners in the return of surveys. If the lack of modem access is the major barrier towards the use of an electronic network, this is a surmountable problem, as the cost of modems has dropped in the past several years to \$100 or less.

Clearly, efforts to maximize the user base of the system should be directed at demonstrating to administrators and pharmacists the value of networking with other pharmacists and how this can be achieved with only minimal capital expenditure.

The survey also indicated that over 70% of respondents had not used a BBS before. Again, the survey could have been biased in that persons interested in BBS technology would be more likely to return the survey. Nevertheless, it was apparent that most hospital pharmacists were unfamiliar with BBS technology. We had anticipated this prior to the development of the BBS and instituted a simplified beginner's menu, which contained only the most commonly used functions. After viewing BBS menus from several public BBS's, we were aware that a complicated, non-intuitive main menu would only serve to exacerbate acute "technophobia" in most novice BBS users.

The number of users (42) and the number of calls to the BBS (>300) were as expected for the limited number of individuals with access to modems in British Columbia and the infantile state of the system. Another possible barrier to use of the BBS were the long distance telephone charges incurred. Since browsing through the BBS material and leaving/answering electronic mail could take 10 - 15 minutes, substantial costs could accumulate particularly if the BBS was used on a regular basis. Indeed, several survey respondents mentioned that toll-free access would be highly desirable and that this would encourage use of the system.

Our goal of providing services to smaller and remote hospitals was tempered by the lack of availability of modems in these settings. In speaking with

pharmacists practicing in small hospitals, it was apparent that they could be helped considerably through sharing of information from their colleagues in larger hospitals. Indeed, a survey conducted by the Hospital Pharmacy Resource Committee (the "small hospital" committee) of the B.C. Branch of CSHP indicated that virtually all of the needs identified by survey respondents could be met by use of the BBS (McGregor KE, personal communication). Clearly, efforts needed to be directed at linking small hospitals to the BBS.

The uploading and downloading figures from the usage review reflected information-sharing activities on the BBS. There was an average of approximately one upload and download per day during the data collection period. This figure would be expected to increase substantially as the quantity of information available on the BBS increased. Uploading and downloading of information requires the individual to learn several command steps and the provision of a user's manual and/or workshops on BBS use would facilitate this process.

We felt that continued education, promotion and updating of the system was necessary in order to keep the interest of the users. We periodically asked specific individuals to contribute material from their institution for posting on the BBS. In this way, the informational content of the system was kept "fresh". This could easily be extended to other hospital groups such as drug utilization evaluation, administrative, drug information, or other special interest (e.g., oncology) groups. Further interest could be generated by encouraging these groups to use the system as a meeting place. Expansion of the user base needs to be a priority, as

this would increase the utility of the system. With these goals in mind, we plan to continue to support and expand the BBS as a service to the profession. ☒

ADDENDUM

The success of the original project described here led to several significant events. In October, 1991, the council of the British Columbia Branch of the Canadian Society of Hospital Pharmacists (CSHP) voted in favour of adopting the BBS project and named it the B.C. Branch BBS. Sponsorship for hardware and software upgrading was obtained from Du Pont Pharma Inc. and a Branch BBS Committee was formed. After a successful launch in November 1991, the list of users and quantity of information on the BBS began to grow steadily. During meetings of the B.C. Branch BBS Committee, it became apparent that it would be desirable to have more pharmacist users. In July 1992, the B.C. Branch BBS Committee

submitted a proposal to CSHP National to make the B.C. Branch BBS the National BBS of CSHP. During the ensuing months, CSHP National Council endorsed the creation of a national electronic bulletin board system and Pharmascope BBS was born. Initial funding for toll-free access was obtained from Merck Frosst Canada Inc. and Du Pont Pharma Inc. The changeover to a truly national system occurred on February 8th, 1993. In early 1994, it became apparent that the extreme costs of the toll-free line (\$4,000 per month) necessitated a change in operation strategy. In May 1994, the Pharmascope BBS Committee decided to discontinue the toll-free line and utilize a "user pay" approach. Along with this change came several new initiatives, including the addition of another telephone line, a change in software, a new educational campaign to teach members how to get the most from the system, and active solicitation

of new material for the system from hospitals and specialty groups.

The system remains housed in a small, dimly lit room in the Sherbrooke Building at Royal Columbian Hospital (not really, but it sounds good); however, through the magic of telecommunications technology, it is now establishing itself as the communications centre for Canadian hospital pharmacists.

The telephone number for Pharmascope BBS is (604) 520-4433. Communications parameters are: No parity, 8 data bits, 1 stop bit, and the system supports up to 9600 bps. For further information, please call Mr. Robert Lam at (604) 461-2022, local 3164, or the CSHP National office at (613) 736-9733.

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