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An evaluation of videoconferencing Bug Breakfast

NSW DEPARTMENT OF HEALTH

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Bug Breakfast is videoconferenced each month through the financial support of the Health Protection Branch.

EXECUTIVE SUMMARY

Bug Breakfast is a series of hour-long breakfast seminars on communicable diseases that has been delivered by the NSW Department of Health since 1990. Bug Breakfast was first broadcast by videoconference in 1999. Since then, the number of remote sites that regularly seek to be connected by videoconference has continued to increase and currently up to 10 remote sites are linked to each session. The size of the live site audience at North Sydney has also increased to 40–50 participants.

An evaluation was undertaken to assess:

- the impact of videoconferencing on the learning environments at both North Sydney and at the remote sites;
- the perceived value of Bug Breakfast to the professional development of all participants.

A four-part evaluation was undertaken of the July 2002 session:

1. participants were surveyed using a self-administered questionnaire;
2. facilitators at each remote site participated in a semi-structured interview;
3. presenters were interviewed;
4. organisers completed a self-administered questionnaire.

Ten remote sites requested a connection to the session and eight were successfully connected. The audience comprised: 50 people at the live site and another 47 between the remote sites. The response rate was 93 per cent.

The audience at the live site differed to that at the remote sites. While both groups were multidisciplinary, the North Sydney audience were mainly public health professionals and included a large number of trainees from various public health training programs. The remote audience included a large number of clinical professionals. The audience was united by a common interest in communicable diseases, immunisation, and also the provision of training–continuing education.

Participants and facilitators clearly articulated recurrent problems with the learning environments. The major concerns were: the size of the room at the live site and, for the remote sites, the quality of the sound.

Strong support was expressed by participants and facilitators for Bug Breakfast's role in professional development. Participants cited the quality of the organisation, the expert speakers, and the opportunity to access these speakers through the question time, as features that they valued.

A series of recommendations were developed to improve the delivery of Bug Breakfast, some of which have already been actioned. For example:

- the NSW Telehealth Initiative, who coordinate the videoconferencing facilities at North Sydney, has hastened the installation of facilities in a larger suite of rooms. The new venue can accommodate up to 80 people. A new microphone system has also been installed, which will improve the quality of the sound for the remote audience;
- dates for Bug Breakfast have been scheduled for 2003 to allow remote facilitators to book their facilities in advance.

The current method of connecting sites will be reviewed to determine whether the demand from new sites to be linked can be accommodated.

GLOSSARY

bandwidth	the amount of information that can be transmitted by an information channel. Higher bandwidths allow more information to be carried, which, in videoconferencing, means that the picture will be of better quality. The bandwidth is measured in kbps
bridge	in videoconferencing terminology, a bridge connects three or more sites so that they can simultaneously communicate
dial-in	each site initiates their connection by making a call or 'dialling-in' to the bridge
dial-out	connection is initiated from the bridge which makes a call or 'dials-out' to each site
kbps	kilobytes per second is the measurement of speed at which images can be transmitted during a videoconference
live site	the site from which a session is transmitted and at which the presenters are located. For Bug Breakfast, this is usually a conference room within the NSW Department of Health at North Sydney
multipoint	a videoconference between more than two sites—that is, compared to point-to-point where communication is between two sites only
mute	activating the mute function stops sounds from being transmitted to other sites
real time	virtually simultaneously
remote site	site other than the live site—that is, a site receiving the transmission
Telehealth	the transmission of images, voice and data between two or more sites via telecommunications channels to provide clinical advice, consultation, education and training services
videoconferencing	the transmission of images, voice and data between two or more sites via telecommunications channels
voice activated	mode of videoconferencing in which the cameras are activated by sound. The site at which the sound is originating automatically appears on screen and is seen by all sites

I. BACKGROUND TO THE EVALUATION

Bug Breakfast

Bug Breakfast is the name given to a series of hour-long breakfast seminars on communicable diseases presented by the Public Health Division of the NSW Department of Health about eight times a year. The Public Health Training and Development Branch, in the Centre for Epidemiology and Research, and the Communicable Diseases Branch, in the Centre for Health Protection, coordinate the content and delivery of the sessions.

First delivered in 1990, the purpose of Bug Breakfast is to keep participants abreast of issues in communicable diseases, with each session focusing on a disease of current relevance. It also forms part of the training for trainees on the NSW Public Health Officer Training Program. This group were the original audience for the sessions, along with staff from both the Public Health Division and metropolitan public health units in NSW.

Trainee Public Health Officers continue to be involved in the organisation and delivery of the sessions.

Videoconferencing Bug Breakfast

Videoconferencing facilities were first installed at the NSW Department of Health in July 1997 as part of a statewide Telehealth initiative to improve access to health services. The number of sites has continued to expand and there are now 200 facilities throughout NSW. While the priority of these facilities is the provision of direct clinical care, they are available for other purposes.

In 1999 it was suggested that videoconferencing could be used to link the staff of rural public health units in NSW with the Bug Breakfast sessions. This first occurred in June 1999 with a trial broadcast to the Mid North Coast Population Health Unit in Port Macquarie. Up to 10 sites are now regularly connected to the sessions. To date, the Centre for Health Protection has met the cost of these connections.

Videoconferencing enables the delivery of information in real time, across geographically distant sites. There are several advantages in utilising this form of technology for the delivery of Bug Breakfast to rural sites. First, rural health professionals can receive the training while remaining close to their work site. Previously a small number of rural participants were able to access Bug Breakfast when they were in Sydney for other training or for meetings. Videoconferencing offers these individuals consistent access and also expands the number of people who can participate. Second, it provides rural health professionals with the opportunity to participate in this program of continuing education with colleagues from across the state. Health professionals, regardless of their location, have the opportunity to network and share their experiences with experts in communicable diseases and with other public health professionals.

Since 1999 different ways of delivering the session have been trialled to optimise delivery for the remote audience. These have included using different transmission bandwidths, which influences the quality of the picture. Different methods of displaying the presentation have also been investigated. Currently, the camera at the live site is positioned to show both the presenter and the projection screen. All sites are provided with copies of the PowerPoint slides prior to the session so that participants do not need to rely on reading the screen for the content of the slides. Prior to this evaluation, there had been feedback of occasional technical difficulties. The evaluation, however, was not driven by dissatisfaction with the remote site delivery.

In recent years the audience at the live site in North Sydney has expanded from 20–30 people to 40–50 people. The venue that is regularly used, a medium-sized conference room, can no longer comfortably accommodate the audience. In addition, there has been an expanding demand both from rural sites and from sites within Sydney to participate by videoconference. To date, connections have been limited to one site per area health service and no sites in metropolitan Sydney are connected. This is largely due to the difficulties associated with organising and managing large numbers of connections on a dial-out basis.

Evaluation

While the content of Bug Breakfast is evaluated, there has been no evaluation of how videoconferencing has influenced the learning environment at either the live site in North Sydney or at the remote sites.

The general impression of the organisers of Bug Breakfast was that the continued expansion of videoconferencing was having a detrimental effect on the delivery at the live site. For example the question and answer session at the end of each session is shared between all the sites, resulting in restrictions in the number of questions per site. In addition, as the organisers of Bug Breakfast always participate at the live site, there was a need to explicitly document the experience of the remote sites.

A review of the literature identified several studies that had evaluated the effectiveness of videoconferencing through surveying participants.^{1–7} The author of a recently published Queensland based survey was contacted, and the types of questions used were reviewed.⁸ The benefits of including a qualitative component in telehealth evaluations has also been confirmed.⁹

Consequently an evaluation was undertaken to assess:

1. the impact of videoconferencing on the learning environments at both the live site at North Sydney and at the remote sites;
2. the perceived value of Bug Breakfast to the professional development of the participants.

The purpose of the evaluation was to document the quality of the delivery of Bug Breakfast and to identify ways to enhance the learning environment for all participants. It did not seek to evaluate the learning outcomes of the session.

2. METHODOLOGY

The July 2002 session of Bug Breakfast was evaluated. The topic for the session was meningococcal disease. The following standard procedures for delivering a Bug Breakfast were followed:

- the live site was the Wallumatta Conference Room at the NSW Department of Health, North Sydney;
- the session was advertised by email to staff within the Department's Public Health Division and to metropolitan and rural public health units within NSW;
- trainees from the NSW Public Health Officer Training Program assisted with the organisation and supported the delivery of the session;
- the videoconference was coordinated by the NSW Telehealth Initiative;
- Genesys Conferencing was the external provider who placed the call and provided the bridge between the sites;
- the transmission bandwidth was 256 kbps;
- the videoconference was 'voice activated';
- the session was an hour long with three presenters;
- electronic copies of the presentations (in Microsoft PowerPoint) were supplied by the presenters and distributed by email to the remote sites in advance.

Eleven sites initially requested a connection; however, one site subsequently withdrew. Consequently, 10 remote sites were to be connected on the day (Table 1). For the first time two sites within a single area health service, the Far West, were connected.

A person was identified at each site to facilitate the evaluation. In most cases, this was the person who usually acts as the contact for Bug Breakfast. In addition to their usual responsibilities of advertising the session locally, and receiving and distributing copies of the presentations, the facilitators were provided with written instructions by email describing their responsibilities for the evaluation.

TABLE I	
Remote sites requesting connection to the July Bug Breakfast	
Area Health Service	Location of Site
Far West	Broken Hill
Far West	Dareton
Hunter	Wallsend
Illawarra	Warrawong
Macquarie	Dubbo
Mid North Coast	Port Macquarie
Mid Western	Orange
New England	Tamworth
Northern Rivers	Lismore
Southern	Queanbeyan

A four part evaluation was implemented at the conclusion of the session:

1. participants at North Sydney and at each of the remote sites were surveyed using an anonymous self-administered questionnaire;
2. facilitators were surveyed by semi-structured interview either via videoconferencing, telephone or email;
3. presenters were interviewed either face to face or via telephone;
4. Trainee Public Health Officers who assisted with the organisation of the session completed a self-administered questionnaire.

2.1 Participants' survey

A structured questionnaire was developed which used three types of questions:

1. close-ended questions;
2. close-ended questions with the opportunity for comment;
3. open-ended questions.

Close-ended questions used tick box responses and Likert scales. Respondents were asked to report: their age and gender; their professional role and responsibilities; whether they travelled to participate in Bug Breakfast; whether Bug Breakfast helped them to do their job; their appraisal of the learning environment; the adequacy of the time allowed for questions; and their overall impression of the value of the session.

The questionnaires used at the live and remote sites differed in the questions used to examine the nature of the learning environments. At the live site, participants were asked about the layout of the room; while at the remote sites, participants were asked about the quality of the technical delivery of the session, such as the picture and sound. The live site participants were asked about the time allowed for questions. All other questions were common to both groups. A copy of each questionnaire is included in Appendices 8.2 and 8.3.

At the beginning of the July Bug Breakfast, the chair of the session, who was part of the evaluation team, introduced the evaluation and sought the cooperation of the participants. Participation was voluntary. The questionnaires were distributed and completed at the end of the session at all the sites.

The facilitators at the remote sites:

- counted the number of participants at their site;
- distributed the questionnaires;
- collected the completed questionnaires;
- returned the questionnaires to the investigators at North Sydney.

The responses to the participant questionnaires were entered into a database using Microsoft Access software and imported into SAS (version 8.02) for analysis.¹⁰ For the close-ended questions a quantitative analysis was undertaken for simple frequencies. The comments offered in response to the open questions underwent a qualitative analysis for the major themes expressed.

2.2 Facilitators' survey

The 10 facilitators were invited to participate in a focus group via videoconference at the end of the Bug Breakfast. For those facilitators unable to reconnect via videoconference, telephone interviews were conducted or the questions were supplied and responded to by email. Participation was voluntary.

The themes explored were: the time spent arranging the connection; difficulties experienced; perceived benefits for staff; and how the organisation of the session might be improved. A qualitative analysis was undertaken of the responses.

The questions used are presented in Box 1.

Box 1: Questions asked of facilitators

1. What are the major barriers or difficulties that you experience in connecting to Bug Breakfast?
2. How much time does it take to organise your participation in Bug Breakfast, including setting up the location?
3. Do you get any training to manage the videoconferencing?
4. What do you think are the benefits for staff in attending Bug Breakfast?
5. What aspects of the organisation from the North Sydney end work well for you?
6. Is there anything that you feel that we could do from the North Sydney end that would improve Bug Breakfast for you?
7. Are there any further comments that you would like to make?

2.3 Presenters' survey

All three speakers presented from the live site in North Sydney. As is customary, one of the presenters was a Trainee Public Health Officer who liaised with the two guest presenters. The Trainee Public Health Officer was briefed about the evaluation, and prior to the day had notified the guest speakers that an evaluation would take place at the end of the session and informed them of its purpose. He also clarified whether they had any concerns. The presenters were asked whether they would complete a separate survey by interview after the session, to which they agreed.

All three presenters were interviewed. Two of the interviews were conducted by telephone and one was a face-to-face interview.

The questions explored the presenters' perspective of videoconferencing the session. It sought their prior experience of the medium, their concerns, whether they had adapted their presentation style and lessons learnt.

The questions used are presented in Box 2. A qualitative analysis was undertaken of their responses.

Box 2: Questions asked of presenters

1. Prior to today, have you ever used videoconferencing facilities? If yes, in what situations have you used them (meetings, patient consultations, teaching etc)?
2. Did you have any concerns about using videoconferencing before you started?
3. Did you have to adapt your presentation style to accommodate videoconferencing? If yes, how and to what extent?
4. Would you do anything different, if you had to present by videoconferencing in the future?
5. Is there anything else you would like to make further comment on?

2.4 Organisers' survey

The five Trainee Public Health Officers who organised the Bug Breakfast completed an anonymous self-administered structured questionnaire at the end of the session. The purpose of the questionnaire was to explore whether assisting with the organisation and delivery of the session interfered with their learning experience. A qualitative analysis was undertaken of the responses. The organisers' survey is presented in Appendix 8.4.

3. RESULTS

3.1 Participants' survey

There were 55 people present at the live site in North Sydney, of whom three were presenters and two were investigators. These five individuals did not complete a participant questionnaire.

Of the 10 sites that requested a connection by videoconference, two, the Illawarra and Northern Rivers, were unable to be connected due to transmission difficulties. Consequently, eight rural sites took part in the participant survey. There were a total of 46 participants at these sites. There were 14 people present at the Illawarra, and four at Northern Rivers, who were unable to participate in the session. Although not connected to the session, the facilitator from the Northern Rivers site, Lismore, completed a participant questionnaire based on her previous experience of Bug Breakfast transmissions, and this was included with the responses (Table 2).# Therefore, for the purposes of this evaluation, the facilitator at Lismore has been identified as a participant, making a total of 47 at the remote sites.

Response rates

A total of 90 participants completed a questionnaire. The number of people attending the session and the number of participant responses from each location are presented in Table 2. The response rates from the remote sites and the live site were 96 per cent and 90 per cent, respectively.

TABLE 2

Numbers of participants and responses from each site for July Bug Breakfast

Location of site	Participants (N)	Responses (N)
North Sydney	50	45
Remote		
Orange	14	12
Broken Hill	10	10
Dareton	7	7
Wallsend	7	7
Dubbo	3	3
Port Macquarie	2	2
Queanbeyan	2	2
Tamworth	1	1
Lismore#	1	1
Total remote	47	45

TABLE 3**Age and gender of participants by site**

	North Sydney		Remote sites	
Gender	N	%	N	%
Male	16	36	6	13
Female	29	64	38	85
Not stated	0	0	1	2
Age groups				
20–29	12	27	3	7
30–39	15	33	10	22
40–49	11	24	18	40
50–59	4	9	13	29
60–69	3	7	0	0
Not stated	0	0	1	2

Profile of participants

The age and gender of the respondents is presented in Table 3. The majority of the participants (74 per cent) were female. The North Sydney audience contained more men and was younger than the rural audience.

Most of the participants at North Sydney (87 per cent) had previously attended a Bug Breakfast, while for 44 per cent of the remote participants this was their first experience. Participants were asked their job title and their principal responsibilities in that role. Job titles were grouped into one of three categories: public health, clinical or other. Responsibilities were grouped into four categories: immunisation, communicable diseases, training and other. Table 4 compares the responses between the locations.

TABLE 4**Type of job and principal role within job of participants by site**

	North Sydney		Remote sites	
Position	N	%	N	%
Public Health	39	87	16	36
Clinical	2	4	27	60
Other–Not stated	4	9	2	4
Responsibility				
Immunisation	8	18	5	11
Communicable Diseases	7	16	20	44
Training	19	42	7	16
Other	11	24	13	29

TABLE 5				
Access to videoconferencing venue by site				
	North Sydney		Remote sites	
Venue at worksite	N	%	N	%
Yes	19	42	25	56
No	25	56	18	40
Not stated	1	2	2	4
Time taken to travel to venue (minutes)				
< 30	5		11	
30–60	16		5	
> 60	4		2	

Accessing the session

Half the participants (49 per cent) were able to join the broadcast of Bug Breakfast at their worksite, the remainder had to travel to participate. The length of time spent travelling to the venue is presented by site in Table 5. Overall, more participants at North Sydney travelled and for longer periods than their rural counterparts.

Of the 18 rural participants who travelled to participate seven were identified as working in public health.

Reasons for participating

When asked why they participate in Bug Breakfast, 86 participants responded, many citing several reasons. The most common reason was to obtain current information about and overviews of communicable diseases (n=55), followed by meeting professional development and continuing education needs (n=28), and networking (n=6). Participants were asked whether attending Bug Breakfast helped them to do their job and 82 per cent agreed that it did. Sixty-three people also offered a comment to this question. Of these, one-third (n=21) saw Bug Breakfast as a source of up-to-date information, a response particularly cited by the remote audience.

Questions for live site participants

Participants at the live site were asked to comment on: the impact of videoconferencing on their learning; the venue; and the time allowed for questions.

Twenty-nine per cent of participants reported that videoconferencing hindered their learning experience. Thirteen provided comment to this question, and of these 10 cited distracting background noise from the remote sites caused by the failure to mute the microphones. When asked whether the layout of the room hindered their learning, 49 per cent felt that it did. Twenty-nine people offered comment to this question and the majority of these (n=23) cited that the venue was not big enough to comfortably accommodate the audience.

The screen onto which the presentations are projected is located near the door to the room. Participants were asked whether this position was distracting when there were late arrivals to the session, and 29 per cent reported that it was. However, few exercised the opportunity to comment and those who commented inferred that the disruption did not disturb them significantly.

If time permits following the presentations, each site is given the opportunity to ask the speakers a question. Sixty-seven per cent of participants reported that insufficient time is allowed for questions. Respondents commented that at least 10 minutes should be allocated, as the discussion is an important reason for attending. They also felt that it was important that the participants at the remote sites were able to ask questions.

Questions for remote site participants

Of the 23 remote site participants who had previously connected to a Bug Breakfast: 13 reported that the Bug Breakfast that was evaluated was typical of the videoconferencing quality; and 18 indicated that ‘sometimes’ or ‘frequently’ the transmission of Bug Breakfast could be interrupted due to technical problems.

Participants were asked to rank the quality of the images received and the quality of the sound and Table 6 presents their responses. Most people felt that the picture quality was average and the quality of the sound was poor.

TABLE 6		
Picture and sound quality of Bug Breakfast broadcast		
Remote sites		
Picture quality	N	%
Good	11	25
Average	31	69
Poor	2	4
Not stated	1	2
Sound quality		
Good	1	2
Average	10	22
Poor	33	74
Not stated	1	2

Remote participants were also asked whether videoconferencing hindered their learning, and 47 per cent felt that it did. Twenty-two provided comment: 13 cited distracting background noise originating from both the live site and other remote sites; 11 commented on the poor quality of the sound of the transmission, of these, six comments specifically raised the issue of the speakers not speaking directly into the microphone; and three people mentioned the picture quality.

Seventy-six per cent of remote site participants confirmed that they received a hard copy of the PowerPoint presentation prior to the session.

Most liked aspect of Bug Breakfast

All participants were asked what they liked the most about participating in Bug Breakfast, and this elicited 81 responses. Access to current relevant information was the most frequently cited reason (n=61) and was provided by similar numbers at the live site (n=35) and at the remote sites (n=26). Opportunities for networking was cited by 22 people, more participants

at North Sydney (n=16) providing this explanation. Quality of the speakers was given equal weight to networking by the rural participants (n=6) and was also valued by the live audience (n=11).

Least liked aspect of Bug Breakfast

The quality of the learning environment was the aspect of the training that the participants liked the least. The most common response from the North Sydney audience was the crowded room (n=7) and of the 37 comments provided to this question by rural participants 26 reiterated issues with the quality of the sound.

Future attendance

Overall, 90 per cent of participants reported that they would attend future videoconferenced Bug Breakfast sessions. Table 7 compares responses to this question from the remote sites and North Sydney. More remote participants (11 per cent) were unsure whether they would attend in the future.

TABLE 7				
Attendance at future Bug Breakfast sessions				
	North Sydney		Remote sites	
	N	%	N	%
Yes	43	96	38	85
No	0	0	0	0
Not sure	1	2	5	11
Not stated	1	2	2	4

3.2 Facilitators' survey

All of the facilitators (n=10) provided feedback, including the facilitators for the two sites that could not be connected, the Illawarra and Northern Rivers. Two facilitators were new to Bug Breakfast, Dareton in the Far West Area Health Service was connected for the first time and the single participant-facilitator in Tamworth was a new participant. At one site the facilitator did not participate in the session and so additional comment was obtained from the public health manager who did. Consequently the total number of respondents who contributed to this part of the evaluation was 11.

Connecting to Bug Breakfast

While a number of sites experienced technical difficulties in making the connection on the morning of the evaluation, most facilitators said that usually it took about 10 minutes for the link to be made.

A number of potential barriers to participation were identified, including:

- the videoconferencing facilities are often booked by other users and consequently advance warning is helpful to secure the facilities;
- the time constraints of an early link in particular for Broken Hill which is in a time zone 30 minutes behind Sydney. However there is an advantage to this time as the night clinical staff are coming off duty which makes it easier for them to participate;
- one site experienced difficulties in receiving the electronic copy of the PowerPoint presentations due to an error in the contact email address.

Time taken to organise participation

When asked how long it took to make the arrangements for the participation of their site most said that it took about an hour. This time is spent on tasks such as arranging for the set-up, sending email advice advertising the session and photocopying the presentations for distribution to participants.

Training in using the videoconferencing technology

Only one facilitator had received training in the use of the videoconferencing technology; five said that trained staff were available to provide assistance if required; and in Broken Hill there is a poster in the room providing instructions. One facilitator was shown how to activate the mute function prior to the session beginning.

Perceived benefits for staff

The most common response to the question regarding the benefits for staff from attending (n=8) was that Bug Breakfast provided up-to-date information on relevant topics. In particular the contribution of experts in their field to the sessions was valued as was access to these experts during question time. Question time is considered an important part of the session. It was noted that speakers needed to be made aware of the time constraints for the broadcast so that the presentations do not impinge on the question time.

The multidisciplinary background of participants at the remote sites was noted (n=6) and is seen as a very positive aspect of the session. Indeed, multidisciplinary participation is encouraged by the facilitators. Many of these participants are from outside of public health, such as clinical hospital staff including emergency department staff. One facilitator commented that they considered that a broad participation is enabled by the style of the presentations, which allow those not specialised in communicable diseases to join. Another commented that it enabled clinical people to gain a better understanding of the role of their Public Health Unit in the management of disease. Another found the epidemiology interesting.

The sessions provide an opportunity for networking with others across the State, both within public health and beyond this. They are seen as an important source of continuing education for rural staff and stimulate discussion within rural public health units.

Many facilitators noted the convenience of the having the videoconference site at their workplace however they also indicated that some participants travelled for an hour or more to attend.

Quality of the organisation provided by the Department

The facilitators expressed appreciation for the organisation and delivery of the sessions and stated that the current arrangements worked well. In particular, they liked that on the day all they needed to do was to wait to be dialled in. They considered the sessions to be well organised with good speakers and relevant topics. The provision of copies of the presentations beforehand is valued and they feel that this encourages people to attend. One facilitator commented that the screen should be given over to the presentation of the slides

and that little was gained by seeing the North Sydney audience. Facilitators felt that there needed to be a good lead-time to a session to allow sufficient notice to participants.

Suggestions to improve delivery

While noting that Bug Breakfast is a great concept almost all facilitators (n=9) commented that the sound quality is a problem, particularly where speakers are softly spoken. Suggestions for improving this included:

- providing a different sort of microphone for the use of the speakers such as clip on microphones;
- improving the muting at the rural sites;
- muting the background noise at the live site.

There also appeared to be difficulty in hearing the questions from the live site. This was not cited as a problem for questions from the remote sites.

While advance copies of the presentations were appreciated, one facilitator cited difficulties in printing and then reading the slides when complex backgrounds are used. They suggested providing the speakers with specifications for using PowerPoint.

Other points raised included having:

- time for questions;
- the session videotaped for distribution;
- a set day and time to assist with booking the equipment.

One facilitator noted that the videoconferencing had improved since it first commenced.

3.3 Presenters' survey

All three presenters cited experience of videoconferencing prior to the session; however, only one had used the medium to present before. This presenter claimed considerable experience. No presenter expressed any concerns prior to the session regarding the use of videoconferencing.

When asked whether they had adapted their style of presentation to the medium, the experienced presenter said that they had not. Of the other two presenters, one commented that he used a more descriptive style and avoided pointing to the slides as he would normally have done. This presenter felt that if he had had a better understanding of how the videoconferencing equipment worked that this might have relieved his anxiety during the presentation. This presenter commented that prior to presenting through this medium again he would become more familiar with the technology. The other presenter directed his presentation to the live audience and reported finding it strange that the set-up did not provide the presenter with any feedback from the remote sites. He reported that he had no idea what the remote audience were seeing during his presentation. When asked whether he would do anything different if presenting by videoconference again, this presenter cited clarifying who was on the link, whether they were successfully connected and how they were experiencing the presentation.

Other comments offered included noting the difficulty in keeping the session running to time, and questioning whether the technology was being used to its full potential. One speaker wondered whether they might have been linked by telephone to give their presentation.

3.4 Organisers' survey

All five Trainee Public Health Officers who assisted with the organisation of the session completed a questionnaire.

Time required to organise Bug Breakfast

Four Officers spent less than half a day each in organising the session while one person spent about a day. The liaison with the remote sites and with the Telehealth Coordinator took the greatest amount of time.

Adequacy of training provided

Overall the trainees felt that the training they received to support Bug Breakfast prepared them for their roles. They also acknowledged the value of the of detailed instructions with which they are provided, particularly as the trainees take turns in performing the different roles. One trainee has expanded the instructions that supported her role to reflect the experience of overcoming particular difficulties.

The support of the Telehealth Coordinator was considered to be particularly important.

Effect on learning

The trainees considered that the experience of helping to organise Bug Breakfast had a largely positive affect on their learning. They cited specific skills gained such as mastering the technical tasks associated with setting up and running the videoconference and a knowledge of the network of public health units attained through liasing with the different sites. A trainee commented that it provided an insight into the behind-the-scenes work required for the delivery of high quality training.

One trainee cited a negative affect on their learning. The person managing the camera during the session found that this role distracted from listening to the speakers.

4. DISCUSSION

As a result of both the size of the audience and the very high response rates from all the sites, the overall rate being approximately 93 per cent, this evaluation provides a good basis for reflecting upon Bug Breakfast and suggesting ways that it might be improved. The session evaluated coincided with school holidays in New South Wales and when it was not possible to move the evaluation to another date there were concerns that the audience would be small. However, the combination of a topic that was of current concern, meningococcal disease, and the commitment of the remote facilitators to advertise the session ensured a large audience.

The evaluation allowed the size and composition of the audience to be described for the first time. In particular it revealed the size of the remote audience, which, had all sites been connected, would have been larger than the audience at the live site. While the audience at the live site was comprised primarily of people working in public health, more than half of the remote audience were clinical hospital staff. What linked participants was a common interest in communicable diseases. Remote participants cited as reasons for attending, that the sessions contained 'clinically relevant material', that they are 'unable to obtain such information from other sources' and that they appreciated 'the different aspects of covering the subject (epidemiological, clinical etc.)'.

The audience at the live site contained many trainees, reflecting the origins and purpose of the session. These days, however, there are trainees other than those on the NSW Public Health Officer Training Program participating, including trainees from the NSW Biostatistical Officer Training Program, which is also offered by the Department; the Master of Applied Epidemiology Program offered by the National Centre for Epidemiology and Population Health; and the Advanced Training in Public Health Medicine offered by the Australasian Faculty of Public Health Medicine. The remote audience also contained trainees, the majority of these being nursing trainees.

4.1 Videoconferencing and the learning environments

Live Site: North Sydney

The evaluation confirmed that both the size of the venue in North Sydney and the use of videoconferencing interfered with the quality of the learning experience for the participants at this site.

The venue, the Wallumatta conference room, is designed to seat 20 people around a fixed table. Bug Breakfast, however, is a didactic presentation, usually delivered by a number of speakers followed by a question and answer session that prompts general discussion. The set-up in the Wallumatta room has been made to 'fit' Bug Breakfast, and for as long as the live audience was relatively small this was manageable. However, with a large and growing audience, the evaluation has confirmed that this room is no longer able to provide comfortable accommodation. The layout of the room also restricts the way in which videoconferencing can be used as the equipment is fixed at one end of the room to facilitate round table videoconferencing.

Bug Breakfast presenters are asked to prepare visual presentation materials in Microsoft PowerPoint, and these are projected onto a large freestanding screen at the live site. As previously referred to in the Background, different methods of displaying the presentations for the remote sites have been trialled. For a number of sessions, the presentations were

relayed to the remote sites directly through the videoconferencing system. While this enabled the presentation to be viewed more clearly, the presenter could not be seen. This method also required an additional operator at the live site. Currently, the camera at the live site is positioned to capture both the presenter and the screen onto which the presentations are projected. The disadvantage for the live site of this arrangement is that due to the position of the camera, the screen is close to the entrance to the room. The organisers had been concerned that latecomers were disturbing both the presenter and the audience, and nearly a third of the live audience confirmed that this was distracting. However, those who provided comment were sympathetic to latecomers.

Remote sites

The quality of the picture was reported by the majority of the remote audience to be average, however this observation varied from site to site and a quarter considered the quality to be good. The bandwidth used for the transmission affects the quality of the picture but does not affect the quality of the audio reception—the higher the bandwidth the sharper the picture. Different bandwidths have been trialled; the initial broadcasts were made at the highest bandwidth (384 kbps) and a couple were tried at 128 kbps, the lowest bandwidth. All sessions are currently delivered at the mid bandwidth, 256 kbps. The bandwidth also determines the cost, higher bandwidths incur higher costs. The costs of transmitting Bug Breakfast seminars using different bandwidths and to different numbers of sites is summarised in Table 8. Other factors influence picture quality, such as the different types of videoconferencing systems used by sites, but the transmission bandwidth is the only factor that the organisers can control.

The evaluation revealed unexpected results regarding the quality of the sound for the remote audiences. Three-quarters of the remote audience judged the sound quality as ‘poor’ and the remainder assessed it as ‘average’. Indeed, poor sound quality emerged as the main issue for remote sites. The facilitators confirmed this finding. The problem appeared to have two parts:

1. type and position of the microphone for the speakers;
2. interference from various sources of background noise.

At the live site, the microphones are positioned on the table in the centre of the room (to accommodate round table conferencing). Consequently, during the presentations, when the speakers are standing to the side of the table, the microphones are at a distance to them. What emerged from the evaluation was that speakers with soft voices and speakers who turned away from the microphone could not be heard.

Regarding the background noise, there appeared to be at least two sources. First, the sensitivity of the microphones at the live site picked up background noise from the participants in the room as well as transmitting the speakers’ voices. (This arrangement of the microphone meant that the background noise could not be muted without also losing the speaker’s voice.) Second, the remote sites heard noise from other remote sites that failed to mute. This form of background noise also intrudes into the environment at the live site. A third form of noise that was not directly investigated was distortions caused by the link. One participant referred to ‘loud beeps and whistles in the sound’ which may not have been related to the microphone.

These findings highlight the difficulties created when facilities designed for one purpose are adapted for another. The expansion of participation in Bug Breakfast has stretched a system that was not designed to accommodate events of this type. Consequently some of the difficulties experienced can be attributed to:

TABLE 8**Transmission costs of Bug Breakfast sessions**

Transmission Date	No. Sites (including live site)	Trans. speed (kbps)	Trans. duration (minutes)	Trans. cost (\$)	Admin. cost (\$)	Total cost (\$)	Average cost per site (\$)
June 1999	2	384	70	150*	70	220	110
Sept 1999	3	384	60	533	150	683	228
Feb 2000	4	384	60	640	70	710	178
March 2000	3	384	90	525	70	595	198
July 2000	2	384	70	150*	70	220	110
March 2001	4	384	66	769	70	839	210
May 2001	8	128	76	851	70	921	115
June 2001	5	128	78	583	70	653	131
July 2001	7	256	72	904	70	974	139
Sept 2001	7	256	69	976	70	1046	149
Dec 2001	9	256	80	1376	70	1446	161
Feb 2002	6	256	67	981	70	1051	175
April 2002	7	256	93	1542	70	1612	230
June 2002	10	128	82	1383	70	1453	145
July 2002	9	256	90	1976	70	2046	227

Notes

- Not all rural public health units have access to videoconferencing facilities and some transmissions therefore include audio only sites. Audio connections are significantly less expensive, but for the purposes of calculating average cost per site, all sites have been considered equally.
 - Some sessions were videotaped and the additional cost of this has been included in the 'transmission cost'.
- * approximate cost only.

1. facilities that were never intended to accommodate large audiences for didactic sessions;
2. connecting large numbers of sites that use different videoconferencing systems. At least two of the remote sites use non-standard equipment, which can lead to transmission failure.

However the NSW Telehealth Initiative is seeking to develop the education and training capacity of the network and many of the recommendations and outcomes described in Parts 5 and 6 are in response to the difficulties described.

Question time

Question time emerged as an important part of the session. Before videoconferencing began, the audience at the live site had 15 minutes for questions. Since videoconferencing commenced the time allowed for questions has remained the same and as a courtesy to the remote sites they are given the first opportunity to pose a question. Consequently, as the number of sites has expanded, all sites are restricted to a single question. Thus, over time the opportunity for the live site audience to pose questions has declined and the evaluation sought to understand their response to this. On the day of the evaluation, because the

speakers ran over their time, there was no time available for questions, and this situation may have thrown this issue into relief.

North Sydney participants confirmed that question time was a valuable component of Bug Breakfast for the whole audience. This was confirmed by the remote participants some of whom unprompted commented on the value of questions and several in response to the question exploring what they liked least about Bug Breakfast stated ‘no opportunity to ask questions’. Indeed some participants suggested that the session be longer to ensure enough time for questions.

4.2 Professional development of participants

Perceived value to the professional development of participants

The value that participants place on Bug Breakfast emerged strongly from the evaluation. Both the high response rate and the constructive criticism expressed in the participants’ comments are a measure, we believe, of this support. In addition, the majority of respondents stated that they would attend a session in the future.

The quality of the presentations and of the presenters appears central to its popularity. Participants enjoyed the ‘high quality presentations that distil the information on a topic’ and ‘the ability to interact with experts’.

Facilitators, Public Health Officer organisers and the participants confirmed the value of the session to their continuing professional development. The session promotes discussion at a local level and within the state and also provides an opportunity for networking. The facilitators confirmed the multidisciplinary nature of the remote audience and that they have encouraged this to develop. The participants reported that they found the presentations relevant to a wide variety of professions working in communicable diseases. For example, within the remote audience there were a number of nurses responsible for infection control.

This raises the question of whether the role and function of Bug Breakfast should be reviewed. The expanded audience includes many groups whose learning needs have not been considered in the way the sessions are currently planned.

Access

Videoconferencing allows rural health professionals access to Bug Breakfast from their local area health service and thus minimizes the time and associated costs incurred in travelling to Sydney to participate. The organisers were aware however that many remote participants still had to travel long distances to reach a videoconferencing site. Consequently the evaluation sought to clarify the burden of travel by participants at all sites.

To date, connections to the rural areas have been limited to one site per area health service. Within Greater Metropolitan Sydney there have been two sites, the live site in North Sydney and a remote site at Warrawong in the Illawarra. The evaluation revealed that while many remote participants travelled to participate, some travelling for over an hour, that more of

the North Sydney audience travelled and that some of these participants travelled for longer than their remote colleagues.

The travel time of some participants indicates that it would be an advantage if additional remote sites were made available both in the rural areas and within Sydney. There is also a demand from other new sites seeking to connect entirely new audiences. The evaluation has therefore highlighted both the demand and need for additional videoconferencing sites.

Before increasing the number of sites however, several issues must be considered. First, an increase in sites would increase the time required to organise each session. Second, additional sites will further reduce the question and answer time available to each site. Finally, there are financial implications. Additional sites would mean a greater cost. Currently, connections are made on a dial-out basis, the cost of which is met by the Department of Health. While calls can be made on a dial-in basis, there are several disadvantages of using this method, primarily: the increased complexity of organising sessions and the difficulty associated with not knowing which sites are connected. (Where calls are organised on a dial-in basis, the bridge provider does not provide a rollcall or follow-up sites that fail to connect).

4.3 Other findings

Facilitators

The evaluation highlighted the important role that the facilitator assumes at the remote sites; particularly in advertising the session and ensuring videoconferencing facilities are booked. The facilitators described the demand upon the local videoconferencing facilities and expressed a wish for a regular time slot for the session so that they could book the facilities well in advance. It also showed that few had been offered training in the use of the technology.

The facilitators are a good resource for Bug Breakfast to both gauge the needs of the audience and to provide feedback on the quality of the transmission. This evaluation has highlighted this capacity and ways of seeking regular feedback will be sought.

Presenters

The evaluation revealed that presenters would appreciate some guidance. The challenge of presenting simultaneously to a live audience and to remote sites is new to many. It became apparent from the presenters feedback, that they would like to be briefed on both the format of Bug Breakfast and the use of videoconferencing facilities.

Other issues identified by the participants that could also be met through a detailed briefing were the need for presenters to adhere to their allocated time so that the presentations do not encroach on question time and the use of PowerPoint formats that are more easy to read on screen at the remote sites.

Resources

The delivery of Bug Breakfast has always been resource intensive and each session requires several days of preparation. Videoconferencing has considerably increased the resources required for its delivery.

Without videoconferencing, the sessions take approximately two and a half days to organise and involve the following tasks: identifying and liaising with speakers; booking and setting up the venue at North Sydney; advertising the session and handling registrations; organising and providing breakfast for North Sydney participants; clearing up the venue following the session; maintaining appropriate records and other administrative tasks.

Videoconferencing takes at least one additional day of preparation from the Public Health Training and Development Branch (including the trainee Public Health Officers) as well as resources from the Telehealth Initiative. The additional tasks include: arranging the videoconferencing bookings with the provider; liaising with the remote sites regarding their contact details; liaising with the Telehealth Coordinator; emailing the presentations to the remote sites; and managing the videoconferencing technology during the session. As previously stated further expansion will require more resources unless a 'dial-in' mode is used.

The facilitators at the remote sites appreciate the organisation that is provided. Several stated that it was of a very high standard and that it minimised the amount of time that they had to spend to establish the connection.

4.4 Conclusion

This evaluation of Bug Breakfast has described the learning environment and in particular the problems experienced by the participants at both the live and remote sites resulting from the use of videoconferencing. As the participants judged the quality of the session to be typical, the findings indicate that intervention is required. A series of recommendations are presented in Part 5 to systematically address the issues raised. Some of these recommendations have been actioned whilst this report was being prepared and these actions are described in Part 6.

The evaluation has also allowed the perceived value of the session to the professional development of the participants to be documented. Bug Breakfast now regularly serves a large multidisciplinary audience who are linked by a common interest in communicable diseases. The majority of the audience, however, remain public health professionals. The session is meeting a range of professional development needs: allowing networking; providing access to experts; building confidence and competence; meeting clinical needs including requirements for Continuing Medical Education; and reducing feelings of isolation. Undertaking the evaluation has forced the organisers to acknowledge the size of this audience and to question the capacity of the facilities to support further expansion.

The preparation of this report has also enabled the history of the development of Bug Breakfast to be described as well as the different methods of delivery that have been tried. It also creates a baseline from which further developments can be evaluated.

The evaluation confirmed the important role that Bug Breakfast performs in supporting the NSW Health workforce to continue to deal effectively with communicable diseases issues.

5. RECOMMENDATIONS

Future directions

1. That the original role and purpose of Bug Breakfast are reviewed in light of the expanding audience.
2. That consideration is given to requests for additional remote sites to be connected and alternative ways of connecting sites including 'dial-in' mode.
3. That this evaluation be repeated after a suitable interval to measure the effect of changes implemented since this study was completed.

Presenters

4. That a guideline is developed for presenters to explain the purpose of Bug Breakfast, the role and duration of the different parts and what the remote sites can see and hear during the transmission.
5. That a template is developed for presentations in Microsoft PowerPoint to improve onscreen readability at the remote sites.

Facilitators at remote sites

6. That a guideline is developed for facilitators outlining the responsibilities of the Public Health Training and Development Branch and the role of the facilitators in coordinating the Bug Breakfast sessions.
7. That remote sites are regularly reminded of the protocol for muting their microphones for the presentation and during question time.
8. That regular feedback is sought from the facilitators at the remote sites regarding the quality of broadcasts.

Delivery

9. That a regular timeslot is found for Bug Breakfast and a program of topics to enable remote sites to participate through advance booking the facilities.
10. That ways of improving quality of delivery are explored, including the use of different microphones, reducing background noise at the live site.
11. That the question and answer session is reviewed in particular how questions are canvassed from the remote sites.

Training

12. That additional training is provided for trainee Public Health Officers in using the videoconferencing equipment.
13. That training for the NSW Telehealth coordinators take into consideration the results of this evaluation.

Communication

14. That the results of this evaluation are communicated to:
 - Director, Centre for Health Protection;
 - Manager, Communicable Diseases Branch;
 - Public Health Unit Directors;
 - Assistant Director, Community Healthcare and Telehealth.

6. OUTCOMES

A number of actions have been taken to improve the 2003 delivery of Bug Breakfast.

1. The NSW Telehealth Initiative, who coordinate the videoconferencing facilities at North Sydney, requested a briefing when the evaluation was completed. As a result the following changes have been implemented:
 - videoconferencing facilities have been installed in a suite of rooms at North Sydney. These rooms can be opened to create a large single space that can be used in theatre style to comfortably hold up to 80 people.
 - a lectern stand with a directional microphone for presenters is available which should improve the quality of the audio reception of the presentations for the remote sites and diminish the background noise from the live site.
 - a hand held microphone is being sourced for questions at the live site.
 - a training session for the Telehealth coordinators around the state is being planned.
2. The Public Health Training and Development Branch has:
 - developed a program for Bug Breakfast with dates scheduled for 2003 and this has been circulated to remote sites. This should enable remote sites to book their facilities in advance.
 - briefed presenters on the time constraints of the session and the need to allow time for questions.
 - formed a working group with representatives from the public health unit directors to examine the recommendations.

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8. APPENDICES

Appendix 8.1: Bug Breakfast advertisement



8.30am to 9.30am

Thursday 11th July 2002

**Walkumatta Room, Level 4 Conference Suite,
NSW Department of Health, 73 Miller Street, North Sydney**

BREAKFAST PROVIDED, ALL WELCOME

Appendix 8.2: Questionnaire for live site participants

Bug Breakfast Videoconferencing Evaluation—North Sydney

Thank you for attending Bug Breakfast!

You are invited to fill in this evaluation on the videoconferencing of Bug Breakfast. Your responses will provide us with a better understanding of the usefulness of videoconferencing Bug Breakfast, and will assist us in improving the delivery. The survey will take approximately 5 minutes to complete.

1. Are you: Female
 Male
2. Your age group:
 20–29
 30–39
 40–49
 50–59
 60–69
3. What is your job title? _____
4. What is your major role in this position?

5. How did you hear about today's Bug Breakfast?

6. Is the venue for Bug Breakfast at your worksite?
 Yes
 No
If No, please indicate the time that it takes you to travel from your work site to the venue
 less than 30 minutes
 30 minutes to 1 hour
 greater than 1 hour
7. Why do you participate in Bug Breakfast?

8. Does Bug Breakfast help you do your job?
 Yes
 No
Please explain _____
9. Have you previously attended a Bug Breakfast?
 Yes
 No

10. Does any aspect of the use of videoconferencing technology hinder your learning experience?

Yes

No

Please explain _____

11. Does the layout of the room hinder your learning experience in any way?

Yes

No

Please explain _____

12. As the screen for videoconferencing must be situated near the door, is the late arrival of participants distracting from the presentation?

Yes

No

Please explain _____

13. Do you feel sufficient time was allowed for questions, including the questions from the remote sites?

Yes

No

Please explain _____

14. What do you like most about participating in Bug Breakfast?

15. What do you like least about participating in Bug Breakfast?

16. Would you attend another Bug Breakfast videoconference session?

Yes

No

Unsure

17. Are there any other comments you would like to make?

Thank you for taking the time to complete this evaluation.

The facilitator will collect from you the completed evaluation form.

Appendix 8.3: Questionnaire for remote site participants

Bug Breakfast Videoconferencing Evaluation—Remote Sites

Thank you for attending Bug Breakfast!

You are invited to fill in this evaluation on the videoconferencing of Bug Breakfast. Your responses will provide us with a better understanding of the usefulness of videoconferencing Bug Breakfast, and will assist us in improving the delivery. The survey will take approximately 5 minutes to complete.

1. Transmission site _____
2. Are you: Female
 Male
3. Your age group:
 20–29
 30–39
 40–49
 50–59
 60–69
4. What is your job title? _____
5. What is your major role in this position?

6. How did you hear about today's Bug Breakfast?

7. Is the venue for videoconferencing at your worksite?
 Yes
 No
If No, please indicate the time that it takes you to travel from your work site to the venue
 less than 30 minutes
 30 minutes to 1 hour
 greater than 1 hour
8. Did you receive a copy of the PowerPoint presentation prior to the session?
 Yes
 No
9. Why do you participate in Bug Breakfast?

10. Does Bug Breakfast help you do your job?
 Yes
 No

Please explain _____

11. Have you previously attended a Bug Breakfast?

- Yes
- No

If Yes, was today typical of your experience of the videoconferencing quality?

- Yes
- No

If Yes, do technical problems interrupt the transmission?

- Never
- Sometimes
- Frequently

12. How would you rate the quality of the TV picture?

- Good
- Average
- Poor

13. How would you rate the quality of the sound?

- Good
- Average
- Poor

14. Does any other aspect of the videoconferencing technology hinder your learning experience?

- Yes
- No

Please explain _____

15. What did you like most about participating in Bug Breakfast?

16. What did you like least about participating in Bug Breakfast?

17. Would you attend another Bug Breakfast videoconference session?

- Yes
- No
- Unsure

18. Are there any other comments you would like to make?

Thank you for taking the time to complete this evaluation.

The facilitator will collect from you the completed evaluation form.

Appendix 8.4: Questionnaire for Public Health Officer organisers

Bug Breakfast Videoconferencing Evaluation Organisers

You are invited to fill in this evaluation on the videoconferencing of Bug Breakfast. Your responses will provide us with a better understanding of the impact of videoconferencing Bug Breakfast has on your learning experience. The survey will take approximately 5 minutes to complete.

1. Describe your role and responsibilities as an organiser of this Bug Breakfast?

2. How much time have you spent organising this Bug Breakfast?

- 0–1/2 day
 1/2–1 day
 1 day–1 week
 greater than once a week

3. Did organising Bug Breakfast affect your learning experience?

- Yes
 No
 Unsure

If Yes, please explain

4. If you were involved with setting up and supporting the videoconferencing technology today, do you think that the training you received adequately prepared you?

Please explain

5. Are there any other comments you would like to make?

Thank you for taking the time to complete this evaluation.