An Evidence-based Guideline for Online Health Education Program for Men Who Have Sex with Men (MSM)

By

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Declaration

I declare that this dissertation represents my own work, except where due acknowledgement is made and that is has not been previously included in a thesis, dissertation or report submitted to this University or to any other institution for a degree, diploma or other qualifications.

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Chow Yung Wai
ABSTRACT

Sex among men has been existed in all society with variety of reasons. They are often stigmatized by other people. As a result, men who have sex with men (MSM) are less willing to expose themselves even if they have health problems.

To increase the awareness of the public and establish trust relationship within health organizations and MSM, Internet is a good platform to promote health concepts and health education.

In recent 10 years, Internet becomes popular. There was an increasing trend that MSM people are using Internet to seek partners. As a result, the sexually transmitted infections (STI) among MSM people had been increasing in recent years. The global population of HIV infection among MSM increased from 3.9 million in 2007 to 20.4 million in 2010. It is predicted that the number will further increase to 23.3 million in 2015 (Joint United Nations Programme on HIV and AIDS [UNAIDS], 2011).

In Hong Kong the HIV infection rate among MSM is still increasing around 42.4% of HIV infected cases were MSM (Department of Health, 2010). Therefore, a comprehensive health promotion program is needed to promote safer sex and prevent further spread of STI in Hong Kong.

Internet-based Sex Education Program is a health promotion program that was held in many countries. Those studies used webpage containing sex education materials such as STI

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knowledge, STI prevention methods, information about risky sexual behavior, knowledge of condom using skills, negotiation skills with partners and information of STI screening. Results showed that internet-based sex education program is successful in most countries.

Three electron bibliographical databases MEDLINE, CINAHL and Cochrane Library were used to search the relevant primary studies. After assessing the quality of the studies, six studies were found fulfilling the criteria of the program. By comparing the transferability and feasibility of the interventions of the six reviewed literatures, a new guideline was set. Stake holders were identified and through communication with the stake holders, a pilot study plan was designed and data collected from the pilot study would be used to modify the online health education program and provide a better nursing care for MSM clients.

Online health education program for MSM contributes a better platform to promote sexual health through internet. The program helps to prevent STI and HIV transmission and it is expected that the guideline of the program can be used by different health care settings such as hospitals or clinics when they are providing health education to MSM clients. A decrease of STI and HIV infection among MSM clients is expected since the program is carried out in public settings and hoping that MSM clients could gain benefit from it.
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<td>Antiretroviral Treatment</td>
</tr>
<tr>
<td>CI</td>
<td>Confidence Interval</td>
</tr>
<tr>
<td>COS</td>
<td>Chief of Service</td>
</tr>
<tr>
<td>EN</td>
<td>Enrolled Nurse</td>
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<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
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<tr>
<td>ITMU</td>
<td>Information Technology Management Unit</td>
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<td>MSM</td>
<td>Men who have sex on men</td>
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<td>NGO</td>
<td>Non-government Organization</td>
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<td>NO</td>
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<td>OHEP</td>
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<td>SD</td>
<td>Standard Deviation</td>
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<td>SIGN</td>
<td>Scottish Intercollegiate Guidelines Network</td>
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<tr>
<td>SNO</td>
<td>Senior Nursing Officer</td>
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<td>STI</td>
<td>Sexually Transmitted Infection</td>
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<tr>
<td>Term</td>
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<td>UAI</td>
<td>Unprotective Anal Intercourse</td>
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Chapter 1
Introduction

1.1 Background

Men who have sex with men (MSM), based on WHO definition, any man who has sex with another man, regardless of sexual orientation or gender identity, not considering the fact that he is also having sex with women, is defined as men-having-sex-with-men (MSM) (World Health Organization [WHO], 2008).

Sexual health promotion has long been a great challenge in public health throughout the world (WHO, 2004). Although the governments around the world are putting more efforts and resources in sexual health education, the sexually transmitted infection such as HIV is still increasing especially among the minority group “men who have sex with men (MSM)”.

What is the sexually transmitted infection condition in the world? In 2005, World Health Organizations (WHO) estimates that there will be 448 million new sexually transmitted infections annually among the people aged 15 – 49 in the world within the years 2001 to 2009. There will be 7.1 million people accounted for new STI cases in South East Asia (WHO, 2010 & WHO, 2011).

HIV infection is one of the sexually transmitted infections, how is the condition of HIV infection in the world? Globally, there are 33.3 million people with HIV infections and
around 2.6 million new cases in year 2009. Around 1.8 million die with HIV related diseases in the same year (WHO, 2010).

UNAIDS estimated that at the end of 2009, the number of people eligible to receive Antiretroviral treatment (ART) is 10 to 15 million around the world (WHO, 2010). The cost of treatment will rise to US$9 billion (WHO, 2010).

It is obvious that sexually transmitted infection and HIV infection population is large, what is the condition of such infections among men who have sex with men’s population? In 2009, World Health Organization (WHO) mentioned the alertness of the increasing trend of HIV infection among the MSM group. World Health Organization estimated that there are 4-5 million men who have sex with men people in South East Asia (WHO, 2010) and the population is about 2-4% of male population in the world (WHO, 2008). In 2009, World Health Organization also stated that the HIV infection acquisition rate among MSM group is 18.7 times higher than general population (WHO, 2011).

The global population of HIV infection among MSM is 3.9 million in year 2007 and the number increased to 20.4 million in year 2010. UNAIDS predicted that the number will further increase to 23.3 million in 2015 (Joint United Nations Program on HIV and AIDS [UNAIDS], 2011).

In Hong Kong, as a part of a well-developed international city, the HIV infection rate among men who have sex with men population is still increasing (Department of Health,
Increase in HIV infection may cause the increase of health care expenditure. Sexual health education is important especially for the minority group; the men who have sex with men group.

1.2 Affirming the needs

In 1999 an outbreak had occurred in San Francisco that a subsequent increase of syphilis infection among men who have sex with men people in a chat room on America On Line. Early Syphilis infection rise from 32 cases in 1999 to 446 cases in 2003. The epidemic is due to sex partner seeking from the internet and increased risk of exposure of sexually transmitted infections (STD Prevention and Control Services, 2004). The outbreak has raised an alarm that the risky exposure of MSM inside internet is vital so that they will have higher chance of contracting HIV as well (STD Prevention and Control Services, 2004).

As MSM groups are so specific and their population is small that makes them to be hard to reach and difficult to identify their characteristics especially their sexual behavior and preferences. It is difficult to conduct a tailor made sexual health education program to this group of people. These people are reluctant to access health service because of stigma against homosexuality and discriminations (WHO, 2011). They are socially isolated because of the misunderstanding from the mainstream society. Therefore they are more likely to delay or seeking health, sexually transmitted infections or HIV related information. Due to their hard
to reach, WHO has urged countries for the need to develop guidance for delivering evidence-based health education or prevention to MSM in the global consultation named “Prevention and treatment of HIV and other sexually transmitted infections (STI) for men who have sex with men and transgender populations” in Geneva, Switzerland (WHO, 2011).

It is proved that Unprotected Anal Intercourse (UAI) is still high risk sexual behavior of contracting HIV infections meanwhile, MSM has high preference of unprotected anal intercourse and their large number of sex partners further fosters a higher risk of contracting sexually transmitted infections and HIV infections. (Herbst et al., 2005)

Recent years, internet has become a common communication and information platform. People search information, seek friends, and communicate through internet and online discussion groups such as Facebook and Twisters. Different researches discovered that over 80% men who have sex with men will find their sex partner through internet or chat rooms (Lau et al., 2003). Such behavior will increase their high risk behavior and increase their risk of exposure to sexually transmitted infections and HIV.

In Hong Kong, Social Hygiene Service of Department of Health plays an important role in sexually transmitted infection prevention, treatment and education. Client will receive thorough assessment to find out the health problem. Investigations for scientific evidence in helping diagnosis and finally treatment will be provided. Each client will be provided different form of health education information. There will be a video playing in the waiting
hall and pamphlets provided at the entrance and verbal sexual health education will be given in every step of investigations and treatment. Individual tailored made instruction will be provided to any client face to face for whom he is diagnosed with STI. However, the service is limited to any client who is attending the social hygiene clinic. For the minority MSM group which is difficult to reach unless they have already had sexually transmitted infection related symptoms or problems and attend government STI Clinics. Online health education program is one of the methods that can reach their population and provide related information to this group of people. Although, Department of Health in Hong Kong provided sexually transmitted infection screening and treatment service to the general public, the service itself was not tailor-made to men who have sex with men group. Study found that only 6.2% of men who have sex with men population had been exposed to HIV related prevention program in Hong Kong (Lau, Kim, Lau, & Tsui, 2004). Therefore, men who have sex with men STI/HIV prevention and education service is needed in Hong Kong.

1.3 Objectives of Internet-based Sex Education Program

1. To increase the awareness of the risk of unprotected anal intercourse among men who have sex with men populations.

2. To reduce the HIV infection rate by reducing the number of unprotected anal intercourse
activities through increasing use of condoms and facilitating negotiation skills among men who have sex with men populations.

3. To compare the effectiveness of internet based sexual health education to traditional individual education among men who have sex with men populations.

1.4 Research Questions:

Would the internet-based sexual health education program be more effective than individual sexual health education on reducing unprotected anal sexual activities and increasing condom use among the men who have sex with men clients?
Chapter 2
Critical Appraisal

2.1 Search and appraisal strategies

2.1.1 Identification of studies

Three major electronic data bases were used to search the primary studies. They were Medline, CINAHL and Cochrane Library. Keywords used for searching included: ‘MSM’, ‘homosexual men’, ‘gay’; ‘internet’, ‘internet-based’, ‘web’, ‘online’, ‘computer’. During search, text and all text was searched. Titles and abstracts were then being screened based on inclusion and exclusion criteria. If the paper was relevant to the topic, its full text paper would be retrieved for detail reading. The details of searching strategies were further described in searching table Appendix A.

2.1.2 Inclusion criteria

Inclusion criteria were primary studies published in recent 10 years (2001 – 2010), written in English, academic paper, target population should be human and age 18 or above, abstract or full text should be provided, studies comparing the effect of interventions.
2.1.3 Exclusion criteria

Any animal trial was excluded. Other exclusion criteria are studies showing medication associated treatment, non-primary studies, and studies before year 2001, any non-academic and non-English language publications, interventions not in internet base and any study studying internet partner seeking behavior other that intervention on sexual health educations.

The screened literatures were then extracted out and their reference lists were further been screened for any relevant primary studies that could be used for review.

2.1.4 Data extraction

The following items of data were extracted for comparison: study type, level of evidence, number of participants, participants’ characteristics, interventions, comparisons, length of intervention, results, and outcome measures. Data extracted and compared and the comparison was shown in the table of evidence (Appendix B).

2.1.5 Appraisal strategy

Total six primary studies were selected for review. Quality of those six studies was criticized of its quality. A quality assessment tool developed by Scottish Intercollegiate Guidelines Network (SIGN, 2006) was used for assessing RCT studies and the result of the quality assessment was described in (Appendix C). The grading suggested by Scottish
Intercollegiate Guidelines Network (SIGN, 2006) was shown in (Appendix D).

2.2 Results

Six related studies were selected after searching the 3 data bases. Four of them Lau, Lau, Cheung, & Tsui, (2008); Wilkerson, Danilenko, Smolenski, Myer, & Simon, (2011); Carpenter, Stoner, Mikko, Dhanak, & Parsons, (2010) & Bowen, Horvath, & Williams, (2007) were RCT and two were quasi-experimental single group pretest-posttest design (Chiasson, Shaw, Humberstone, Hirshfield, & Hartel, 2009 & Bowen, Williams, Daniel, & Clayton, 2008). All of them fulfilled the selection criteria. Abstracts from each of the studies were further screened and research problems, objectives and study design were reviewed. Study types were identified and levels of evidence were graded by using Scottish Intercollegiate Guidelines Network (SIGN, 2006) as assessment tool. Both interventions from the studies were categorized and table of evidence was created with the guidance of Scottish Intercollegiate Guidelines Network (SIGN, 2006) as presented in Appendix B.

2.2.1 Research problem and purpose

After reviewing the content of the studies, most of the studies’ title could identify the study purpose and interventions were clearly mentioned. All of the five studies evaluated the effectiveness of internet interventions in reducing contraction of STI/HIV. However, the
objectives of each study were different. Two studies Wilkerson, Danilenko, Smolenski, Myer, & Simon, (2011) & Carpenter, Stoner, Mikko, Dhanak, & Parsons, (2010) aimed at reducing the risk behavior among men who have sex with men. But, one study Chiasson, Shaw, Humberstone, Hirshfield, & Hartel, (2009) aimed to change men who have sex with men’s behavior of disclosing HIV status to partners whereas one study Lau, Lau, Cheung, & Tsui, (2008) aimed to reduce risky behavior by changing their condom use behavior and concept in order to reduce the unprotected anal intercourse. Lastly, two studies, Bowen, Horvath, & Williams, (2007) & Bowen, Williams, Daniel, & Clayton, (2008) changed the condom use behavior as well as negotiation skills of safer sex.

2.2.2 Study type

Four Randomized Controlled Trial (RCT) Bowen, Horvath, & Williams, (2007); Carpenter, Stoner, Mikko, Dhanak, & Parsons, (2010); Lau, Lau, Cheung, & Tsui, (2008) & Wilkerson, Danilenko, Smolenski, Myer, & Simon, (2011) and two quasi experimental single group pretest-posttest design study Chiasson, Shaw, Humberstone, Hirshfield, & Hartel, (2009) & Bowen, Williams, Daniel, & Clayton, (2008) were selected for comparison. As mentioned by the reliability assessment tool from Scottish Intercollegiate Guidelines Network (SIGN, 2006), a well conducted RCT will be the most valid method for evaluation (Guyatt & Rennie, 2002) so RCT was the highest level of evidence.
2.2.3 Methodology

In most studies, recruitment of participants was through internet rolling advertisement banners. But one study Lau, Lau, Cheung, & Tsui, (2008), recruited participants through bars, saunas and beaches where most MSM would go in addition to internet recruiting.

All six studies used questionnaires to collect baseline and evaluation information of the participants. Questionnaires were put online and participants were asked to complete the baseline questionnaire before the intervention start. After the intervention, participants would be requested to complete an evaluation questionnaire otherwise if participants failed to complete the evaluation questionnaire, they will be considered as dropped-out.

Five in the six studies, Lau, Lau, Cheung, & Tsui, (2008); Wilkerson, Danilenko, Smolenski, Myer, & Simon, (2011); Carpenter, Stoner, Mikko, Dhanak, & Parsons, (2010); Bowen, Horvath, & Williams, (2007) & Bowen, Williams, Daniel, & Clayton, (2008) provided incentives to attract the participants to complete the whole study.

2.2.4 Sample size

participants and lastly a pilot study done by Bowen, Horvath, & Williams, (2007) had 90 participants. The study done by Bowen, Williams, Daniel, & Clayton, (2008) had 425 participants.

2.2.5 The interventions

In the six reviewed studies, interventions were delivered through Internet platform. However, the materials or designs of interventions were different. Three studies were using professional and well-designed education web page containing HIV risk reduction information and skills. One of the studies, Chiasson, Shaw, Humberstone, Hirshfield, & Hartel, (2009) used video to deliver HIV risk reduction messages. Another two studies, Lau, Lau, Cheung, & Tsui, (2008) & Bowen, Williams, Daniel, & Clayton, (2008) used e-mail delivery system to deliver messages containing HIV risk reduction information.

2.2.6 Length of follow-up

Three studies Wilkerson, Danilenko, Smolenski, Myer, & Simon, (2011); Chiasson, Shaw, Humberstone, Hirshfield, & Hartel, (2009) & Carpenter, Stoner, Mikko, Dhanak, & Parsons, (2010) used three-month follow-up. However one study Lau, Lau, Cheung, & Tsui, (2008) used 6-month follow-up and the other two studies used 14 to 28 days follow-up period and 10-42 days follow-up period respectively (Bowen, Horvath, & Williams, 2007 & Bowen,}

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2.3 Quality Assessment

2.3.1 Internal validity

To assess the reliability of a study, detail assessment of the study design, subject assignment, blinding method, samples characteristics, length of follow up, measurement, drop-out rate, research bias and sources of funding.

2.3.1.1 Research questions

Although the reviewed six studies did not state the research questions in the paper, four studies mentioned the objectives and goals very clearly. But Chiasson, Shaw, Humberstone, Hirshfield, & Hartel’s (2009) study, who did not clearly mention any research question or objective.

2.3.1.2 Subject assignment

All the intervention groups of the six studies were randomly selected by computer program. Participants did not know the process or criteria of the selection and interventions were conducted based on the group where the participants were assigned to.
2.3.1.3 Concealment method

Since all the six studies’ recruitment procedures and group selection procedures were conducted online, the selection procedures were conducted automatically at the moment when the participants clicked on the consent agreement button. Therefore nobody could interfere with the group selection procedure and the study was kept concealed.

2.3.1.4 Blinding

The six studies were considered double blinded because both subjects and investigators of all the studies were kept blinded due to the selection procedures were conducted automatically through online programs.

2.3.1.5 Comparison between intervention and control groups

At the point of recruitment, the participants in intervention groups and control groups would have the same characteristics because they were selected automatically and randomly without human interruptions. The only rule for selecting the participants was the inclusion and exclusion criteria.

2.3.1.6 Measurement tools

Questionnaires were used by all the six reviewed studies as the measurement tools for
pre and post assessment and evaluation. The criteria for setting the questions were not mentioned by the studies and the validation of the questionnaires were not described.

2.3.1.7 Drop-out rate

The drop-out rate for Lau, Lau, Cheung, & Tsui’s (2008) study was 41.3% and the drop-out rate for the other four studies Wilkerson, et al., (2011); Chiasson, Shaw, Humberstone, Hirshfield, & Hartel, (2009); Carpenter, et al., (2010); Bowen, et al., (2007) & Bowen, Williams, Daniel, & Clayton, (2008) were 13.8%, 46%, 21.7%, 21% and 31% respectively.

2.4 Summary

2.4.1 Outcome measures

The outcome measures of the five studies could be categorized in three major areas: behavioral change, perception and skills Lau, Lau, Cheung, & Tsui, (2008) measured all three areas. The studies of Wilkerson, et al., (2011) & Bowen, et al.,(2008) focused on behavioral change from the reported change of frequency of risky sex behavior by number of unprotected anal sex. Chiasson and team (2009) measured the perception of disclosing HIV status with partners and negotiation skills of insisting condom use for safer sex. Carpenter and team (2010) measured the behavioral change by reported incidence of unprotected anal
sex (insertive or receptive) and unprotected oral sex (insertive or receptive). Bowen and team (2007) measured the perception of knowledge and self-efficacy.

2.4.2 Results application

All the six reviewed studies focused on studying the effect of interventions affecting the prevention of STI/HIV among men who have sex with men in the three areas of change that were behavioral change, perception change and skill level change. Lau et and team (2008) was a study that was done in Hong Kong therefore the results and the recommendations can be important for designing further research of related topics. Although the other five studies were conducted in foreign countries, the internet world is unique and the characteristics of sexual behavior will be more or less the same in worldwide among men who have sex on men population. Therefore the results from other studies of other countries cannot be neglected. Modifications should be made due to cultural difference. Methodology should be modified with reference to the recommendations of the foreign studies in order to reduce bias and drop-out rate of the participants.

2.4.3 Preciseness of results

Two studies, Lau, Lau, Cheung, & Tsui, (2008); Carpenter, Stoner, Mikko, Dhanak, & Parsons, (2010) used chi square to test the validity of the results among the intervention
group and the control group. Whereas Wilkerson, Danilenko, Smolenski, Myer, & Simon, (2011) was using the differences (d value) to measure the changes and validated by confidence interval (CI) at the same time the study provided odd ratio (OR) as another validating value similar to the study of Chiasson, Shaw, Humberstone, Hirshfield, & Hartel, (2009) using odd ratio as well. However Chiasson, Shaw, Humberstone, Hirshfield, & Hartel, (2009) used p value as another validating criteria whereas Bowen, Williams, Daniel, & Clayton, (2008) was using the mean (M) and validate by Mann-Whitney U test, Z score.

2.4.4 Limitation and recommendations

Based on the limitation of study design, number of participants, drop-out rate, intervention design and presentation method, length of follow up and study results, the authors had provided different recommendations for future study. From the study of Lau, Lau, Cheung, & Tsui, (2008), there existed selection bias on recruitment of participants because >60% participants had received university education. Technical problem of program and machine should not be overlooked. Recommendations on ensuring participants read carefully on the intervention materials should be considered. Modification on study design should be made on rapport building. Measures to prevent loss of follow-up should be made. Rely on self reporting will consist reporting bias and should be careful.

Recommendations was made by the study done by Wilkerson, Danilenko, Smolenski,
Myer, & Simon, (2011) that consider other online recruitment methods because recruitment through banner advertisement of certain website may not represent the boarder populations. Another consideration is that the likelihood of risk behavior underreporting exist and survey answers are collect online and there was no change to clarify the questions.

Because Chiasson, Shaw, Humberstone, Hirshfield, & Hartel’s study, (2009) is a quasi-experimental study, selection bias might exist due to lack of control group comparison. The relationship between the behavioral change and intervention could not be ruled out in three months short follow-up time. Another important limitation was participants could not be tested about their intention on behavioral change before the study.

Carpenter, Stoner, Mikko, Dhanak, & Parsons, (2010) stated the limitation from the study that measurement of sexual activities were not specific enough to identify the relationship of unprotected act is due to increase in skills versus motivation. There were no reliable information about the dosage of information received by the participants and no assurance of the intervention was completed.

Bowen, Horvath, & Williams, (2007) found the limitation of the study that time was insufficient to examine the behavioral change and the internet connection speed may limit the sophistication of interventions. It was recommended that the interventions included sounds and animation could be more attractive and face to face recruitment may be outdated and their risk behavior may not be up to date.
Bowen, Williams, Daniel, & Clayton, (2008) stated that multiple submission and low retention rate were problems that affected the compromises of the validity of the study. The outcome data was weak because of lack of control group for comparison. The generalizability of the findings were limited by the nature of the internet itself. Furthermore, the rapid change of internet environment may result in technological obsolete in 6 months’ time.

2.5 Synthesis from the results

2.5.1 Components of interventions

2.5.1.1 Behavioral change

2.5.1.1.1 Condom use

After reviewing the studies, Lau, Lau, Cheung, & Tsui, (2008); Bowen, Horvath, & Williams, (2007) & Bowen, Williams, Daniel, & Clayton, (2008) were considering condom use as a criteria of outcome measurement. Bowen, Horvath, & Williams, (2007) and Bowen, Williams, Daniel, & Clayton, (2008) showed a positive change of condom use behavior that meant the intervention could enhance the condom use behavior among intervention groups. However, the change of condom use behavior among intervention group of the study done by Lau, Lau, Cheung, & Tsui, (2008) was negative that meant the intervention cannot facilitate the condom use behavior among the intervention group.
2.5.1.1.2 Change of the number of unprotected anal sex

Four studies used self-reported unprotected anal sex as a measure of intervention outcomes. Studies showed decrease of unprotected anal sex were 2.9% (Lau, Lau, Cheung, & Tsui, 2008), 20% (Chiasson, Shaw, Humberstone, Hirshfield, & Hartel, 2009) and 11% (Bowen, Williams, Daniel, & Clayton, 2008). Study of Carpenter, Stoner, Mikko, Dhanak, & Parsons, (2010) showed a decrease of reported unprotected anal sex after intervention from mean M=6.2 to M=4.1 with any partner regardless of serostatus. And mean M=2.3 to M=0.3 with partner of positive/unknown serostatus.

2.5.1.1.3 Change of number of sex partners

2.5.1.2 Knowledge change

2.5.1.2.1 STI/HIV perception

Only two studies from Lau, Lau, Cheung, & Tsui, (2008) and Bowen, Williams, Daniel, & Clayton, (2008) considered STI/HIV knowledge as an outcome measure. From the study of Bowen, Williams, Daniel, & Clayton, (2008), the STI/HIV knowledge showed a significant change of increase from $M=1.49$ (SD=2.12) to $M=2.84$ (SD=2.50). However, the STI/HIV knowledge change between intervention and control group from the study done by Lau, Lau, Cheung, & Tsui, (2008) was not significant. For intervention group, the STI/HIV knowledge of participants had 5% increase and 6.4% increase among control group.

2.5.1.2.2 Disclosure of HIV/STI status with partners

Chiasson, Shaw, Humberstone, Hirshfield, & Hartel, (2009) studied the effect of intervention changing participants’ ability to disclose or share their STI/HIV status with sex partners after intervention. There was an increase from 16% to 18% among intervention group that participants will ask and tell partner about STI/HIV status.

2.5.1.3 Skills change

2.5.1.3.1 Negotiation skills for safer sex

Chiasson, Shaw, Humberstone, Hirshfield, & Hartel, (2009) studied the negotiation skills to disclose STI/HIV serostatus with partner and Bowen, Horvath, & Williams, (2007)
studied the negotiation skills of insisting safer sex with partners after interventions. Bowen, Horvath, & Williams, (2007) showed positive effect on negotiation skills for insisting safer sex with partners. 18% of its participants increase their negotiation abilities to disclose HIV serostatus with partners after the intervention (Chiasson, Shaw, Humberstone, Hirshfield, & Hartel, 2009).

2.5.2 Presentation of intervention


After comparing the six reviewed literatures, the study of Bowen, Williams, Daniel, & Clayton, (2008) used modules to present the health education materials can be easier to be accept by MSM clients because it is less time consuming. Another study Chiasson, Shaw, Humberstone, Hirshfield, & Hartel, (2009) used video to present health education materials.
that can attract clients attention and can be more vivid for clients to absorb the informations.

2.6 Conclusion

When sexually transmitted or HIV infection increases in recent decade, the government had put much effort in education, prevention, screening and treatment. However, services could not be reached by men who have sex with men people. The increase of the usage of internet platform to seek sexual partners had been a new culture among MSM. It was also an opportunity to provide sexually transmitted infection or HIV education and prevention services through such platform to reach those MSM. However, the effectiveness of internet-based intervention was proved in other countries but not in HK. Further research was needed to explore the effectiveness of the online health education towards MSM in HK. Internet was new and became popular within recent decades and the usage by MSM was not popular so that the research about their internet searching of sex partners, their offline sexual behavior and sex preference on sexual activities was still lack of data because research about was limited. After reviewing the studies done in recent years, we could find that online health education intervention was effective to improve participants’ STI/HIV infection knowledge, acknowledge the risky behavior identification and the use of condom and also the negotiation skills of safer sex with partners.
Chapter 3
Translation and Application

3.1 Introduction

Men who have sex with men (MSM) are an important topic relevant to Sexually Transmitted Infections (STI) transmission. Online Health Education Program (OHEP) was proved to be effective and feasible from those studies mentioned before. However, an evidence based protocol / guideline for the internet-based sex education was needed for nurses to select appropriate education material for MSM clients.

In this chapter, the implementation potential of the Internet-based sex education program and its evidence based protocol will be discussed. The target audience, settings, transferability of findings, feasibility and difficulties of the Internet-based sex education program will be discussed. The cost effectiveness of the Internet-based sex education program will also be explored.
3.2 Implementation Potential

3.2.1 Transferability of Findings

3.2.1.1 Current practice

In clinic A, the attendance of MSM cases were walk-in or with referral from other medical institutions. MSM clients attending clinic A will register in the registration counter. Some demographic data will be recorded such as name, age, date of birth, address, contact email, telephone number, occupation and marital status. After registration, MSM clients will be arranged to a private room and have a brief assessment interview with health advisor. The health advisors will ask about the chief complain and sexual behavior pattern and most important the sex preference. Clients may feel embarrassment under this situation and they may not have opportunity to ask questions because they are not confirmed to be contracted with STI. Once when they were arranged to see the doctors, do assessments based on symptoms and lastly, diagnosis will be made, they may start to ask questions about their problems related to the transmission and treatment. These questions are time consuming for the doctor to answer. After all investigations and diagnostic procedures were done, the client may receive treatment and a fifteen minutes health advice will be given by health advisors. However, the health advice interview will be diagnosis-orientated including precaution measures about prevention of spreading of STI to sexual partners, precautions they should be
alert during treatment such as side effects, drug interactions and follow-up time. Due to time
limit, only key points to particular diagnosis will be mentioned. Client may not have enough
time to absorb such large amount of information and they may still have queries about the
way of transmission, the symptoms and the effectiveness of treatment.

The Internet-based sex education program is using internet to provide information in
order to provide additional information apart from face to face interview education methods.
The program is an additional service to the current practice so as to enhance the efficiency of
the interview. Therefore from the program, clients may gain the information from the website
about STI prevention method, concepts of risky sexual behavior and the concepts and
principles of screening. MSM clients will gain sufficient information, then they will be
interviewed and more focus on the treatment part. One third of interview time can be saved in
each interview, the saved time can be used to serve more clients or can be used to do contact
tracing and follow up reminder for the defaulted cases.

3.2.1.2 Proposed Settings

The Internet-based sex education program is proposed to be conducted in the internet a
very convenient platform for providing health education programs to any person who is able
to access to internet. The reviewed literatures, Wilkerson et al.,(2011); Chiasson et al., (2009);
Carpenter et al., (2010); Bowen et al.,(2007) & Bowen et al.,(2008) showed the success of
conducting sex education program in the internet. In clinic A, one of the highest STI attendance clinics in Hong Kong, about 3% of new cases were MSM clients. According to Lau’s study (2004), only 6.2% of MSM clients had been exposed to HIV or STI prevention programs in Hong Kong. All nurses including ENs and RNs in clinic A will be invited to participate in the program committee. MSM clients will be recruited through two channels. MSM may enter the OHEP website by clicking banner advertisement of popular MSM websites such as GayHK.cc, GayHK.com and xggay.com. Another channel is assessment interview in which health advisors will introduce the website to the MSM clients. Different modules of STI knowledge including signs and symptoms, prevention methods, concept of safe sex, identification of risky sexual behavior, condom usage skills, negotiation skills with partners and importance of screening will be presented in the website.

Online Health Education Program (OHEP) is not a new service in Hong Kong. Most of the government health care services had already built up their own website and provide relevant health education activities on internet. However, it is necessary to carry out a sex education program to build an official website in Hong Kong that could provide a platform that MSM group can get the correct information of prevention, investigation and treatment of STI.

The OHEP is to construct a website that is open to the men whose sex preference is MSM. In the website sex education materials will be well presented in forms of text, graphics
and videos. MSM can browse the website and gain their information related to their own status. The website design and construction use the resources and manpower from the department. Studies may recruit volunteers from Non-government organizations (NGOs), AIDS Concern and Community Health Organization for Intervention Care and Empowerment Limited (C.H.O.I.C.E.) and work as a partner. The volunteers from NGOs are mainly for face to face interviews or follow up and group discussion (Lau et al., 2008; Bowen et al., 2007 & Bowen et al., 2008). But in OHEP, the volunteers from the NGOs are providing opinions for the characteristics and culture of MSM groups. Based on the opinion from the NGOs, the program committee can prepare appropriate content for the website that can be more fit to MSM group culture so as to build up rapport. Finally, after completed the OHEP, we expect that the MSM participants will feel comfortable to express their need during interview and feel confident to attend clinic A for investigation and treatment.

After the content was prepared, the materials will be sent to Information Technology Management Unit (ITMU) for webpage design and ideas will be collected from the program committee about the arrangement of the materials. Weekly meetings will be held with ITMU for better presentation of the education materials.

Once the website was established, MSM clients may first do the registration process by clicking the banner advertisements posted on the popular MSM websites. The banner advertisement will direct the client to OHEP website. After reading declaration and rules and
regulations of the website, they are required to click on agree and disagree buttons to show their willingness to follow the rules and participate and consent to participate in the program. They also need to clarify themselves to be over 18 years old by clicking the button “I am over 18 years old” or “I am under 18 years old”. They need to provide their valid contact method such as e-mail address, contact telephone number, Facebook, Twisters, MSN or others. The MSM clients need to view the information page of the program containing the overview and duration of the program. The contact email of the program organizer will be provided for participants to send enquiries about the program to the program organizer. Afterward, they need to set up a user name and password for future login. After the validation of applicants’ information, if criteria are fulfilled, they would receive an e-mail message from the system to inform that the login name and password is activated and they can browse the content of the websites. The website will contain the information of STI knowledge and prevention methods, condoms using skills, safer sex concepts and negotiation skills with partners. (Chiasson et al., 2009; Carpenter et al., 2010; Bowen et al., 2007 & Bowen et al., 2008) and lastly introduction of the importance of screening and introduce the screening service in clinic A

3.2.1.3 Target Audience

The proposed target audiences were the same as all of those literature reviewed (Lau et al., 2008; Wilkerson et al., 2011; Chiasson et al., 2009; Carpenter et al., 2010; Bowen et al.,
They must be male with 18 years of age or older, able to access internet and able to use internet software to browse websites, having sex with man in the past one year and willing to view sexually explicit materials such as photos involving sex organs.

3.2.1.4 Philosophy of Care

The mission of clinic A is to safeguard the health of the community through promotive, preventive curative and rehabilitative services (Department of Health, 2006). The vision is committed to provide quality client-oriented service. The online health education program fulfills the mission of department that using internet platform which is client-convenient platform for accessing information and promote health through promoting investigation and early treatment. The Internet-based sex education program also promotes preventive methods so as to safeguard people free from STI.

The Internet-based sex education program itself also fits the mission of clinic A that the website is responsible for the management, prevention and control of sexually transmitted infections (STI).

3.2.1.5 Duration of Program

From the reviewed literature, the program was divided into modules with different topic and content. The duration of each module will range from 9 minutes to 6 hours (Lau et al.,
2008; Wilkerson et al., 2011; Chiasson et al., 2009; Carpenter et al., 2010; Bowen et al., 2007 & Bowen et al., 2008). The duration for completing the intervention varies from 7 days to 10 days (Lau et al., 2008; Wilkerson et al., 2011; Carpenter et al., 2010; Bowen et al., 2007 & Bowen et al., 2008). The follow up period were 3 months (Lau et al., 2008; Wilkerson et al., 2011; Chiasson et al., 2009; Carpenter et al., 2010). In Hong Kong, most people are time rushing therefore long modules time may not be preferred by the people. However, the content needs 15 minutes time to read through and another 15 minutes time for evaluation. Therefore half hour for each module is suitable. For the length of completing the intervention, because there are totally 7 topics and each module contain one topic. We expect participants to complete one module per day therefore 7 days is appropriate and 3 months follow up for program evaluation.

Appendix F will show the schedule of task of Internet-based Sex Education Program.

3.2.2 Feasibility

3.2.2.1 Degree of Freedom

The program committee has the autonomy to determine the time of initiation and termination of the website. The content of the website will be discussed in every meeting of the clinic in each quarter of the year and decide any need to change the content. New content will be selected and the selected materials will be passed to nursing officers, senior nursing
officers and chief of service for approval before posting. Protocol will be set to guide the committee members to choose the appropriate content and presenting method of the website. Each nurse in the working committee should follow the protocol when maintaining the website. The in-charge nurse in the program committee will be given a set of administrative user names and passwords to manage the website. This nurse has the right to lead the committee to determine initiation and termination of the program.

3.2.2.2 Potential Friction

The potential friction was mainly from the administrative level and also from Information Technology Management Unit of department (ITMU). For administrative level, minimal resource will be. However, support from Chief of Service (COS), Senior Nursing Officer (SNO) and Nursing Officer (NO) was needed. Therefore explanation of the cost effectiveness is important to gain their support. They would recognize that the innovation can save money, time and manpower; they would agree to provide support for the program.

For the ITMU department, the increased workload of system maintenance is minimal because they are only involved in designing and writing the program of the websites. But the increased workload will mainly at the beginning of the program. System maintenance is needed only when the content of the webpage need to change. However, there exists other websites from other services that need system maintenance also therefore formal
communication within department is needed through administrative level.

The OHEP will be carried out in cooperation with different NGOs and clinic A used to held different health talks to their members, therefore inviting the MSM NGOs to share their opinions and experience about OHEP would also provide opportunities for them to participate in the website. NGOs are welcome to provide relevant materials such as videos to post on the website in OHEP. The participating NGOs will have the right to post their banner advertisement in the related link area in the website as an incentive. During the meeting with NGOs, their volunteers would gain the knowledge about STI and its prevention method as well during experience sharing sessions.

Support from staffs was also important because they were responsible to give opinion for the website content. Currently there were different research studies held by different parties conducting in our clinic. The additional workload and limited manpower may induce certain resistance to the program. However, staffs participating in the program committee will gain the experience of holding a health education program and they will also gain a fruitful experience from cooperating with different NGOs. On the other hands, communication with staffs is important so as to hear their difficulties during program and explaining the importance of the program was necessary therefore monthly sharing sessions is important for ventilating stress. Besides, research activities was vital in government services because the data collected from research findings facilitate us to know about the effectiveness of our
health education provided and helped the service to reorganize the future plan on health education.

3.2.2.3 Availability of Equipment and Facilities

Since the webpage design is responsible by the ITMU department; the program committee is responsible in determining the health education materials, the idea of presenting the materials and collecting materials and opinions from the NGOs. Some of the videos were currently being broadcast in clinic A. The health education information can be using the pamphlets and booklet in clinic A. Some video can be provided from NGOs that are also currently shown in their center. Clinic A has regular recording of clinical photos of certain diagnosis without personal particulars and is used just for education purpose and had gained the consent from the client before photographing. These photos can be used in OHEP.

3.2.2.4 Staff Training

Staff training will be held in form of experience sharing sessions among staffs in the program committee. The sharing sessions will be held once per week in the month of preparation period of the OHEP. Then, program committee meetings will be held monthly for reviewing the OHEP guideline and materials presented in the website. Experience sharing sessions will be held after committee meeting to introduce the characteristics of MSM clients.
During the sharing sessions the culture of MSM group will be discussed and NGOs will be invited to share their experience about the skills of communicating with MSM people from their out-reach activities. MSM jargons and gesture will be discussed so that the staffs can know more about the characteristics of MSM minority group and can increase the effectiveness in selecting and presenting the appropriate education materials.

3.2.2.5 Availability of Measuring Tools

Reviewed from the literatures, each study had its own questionnaire to get the data from the participants. The questions of the questionnaires of each study are collecting different information according to their objectives of their study. Therefore no unique tools or questionnaires were used among the studies. Therefore, the questions of the questionnaire will be designed. Different items of data collected from previous studies will be used as references. Once the questionnaire was set, it will be approved by COS and SNOs of our service as a measuring tool of OHEP. Validation of the questionnaire items will be made.

3.2.3 Cost benefit ratio

3.2.3.1 Material Cost of Implementation

3.2.3.1.1 Cost of Manpower

As the program committee members are volunteers from clinic A, manpower cost is
minimal. However $50 supermarket coupon will be given to each participant as an incentive for encouragement of participation in program committee. Health education materials are currently in use in clinic A, NGOs will provide videos and their volunteers will participate in experience sharing sessions.

The program will last for 6 months and the expected total amount of manpower cost of nurses as incentives would be $50 x 10 RNs = $500/month.

The total manpower cost for the OHEP: $500/month x 6 months = $3000

3.2.3.1.2 Cost of Training

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Personnel</th>
<th>Number of sharing sessions per month</th>
<th>Budget cost of food and beverage</th>
<th>Total Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staffs training in preparation period</td>
<td>RN and volunteers</td>
<td>4</td>
<td>$500</td>
<td>$2000</td>
</tr>
<tr>
<td>Staffs training in monthly sharing session</td>
<td>RN and volunteers</td>
<td>1</td>
<td>$500</td>
<td>$500 x 6 months = $3000</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>$5000</td>
</tr>
</tbody>
</table>

Table 1. Cost of Staffs training

3.2.3.2 Non-material Cost of Implementation

Nurses involved in this program may encounter extra workload and stress of training because the webpage design course requires examination and assignments. The extra working hours also reduce the resting time with their families. Therefore staff morale may be affected. But, once the website was established, the workload will not be as heavy as the
webpage design period. The adaptation time may be long.

3.2.3.3 Material Benefits of Implementation

The program provides information about STI information, the mode of transmission and classification. MSM clients can gain their information so that it reduces unnecessary time of stay in clinic A. On the other hand the MSM clients gain the message about safer sex concept and try to maintain single partner principle and reduce unprotected sexual behavior as a result decrease their fear of contracting STI and decrease the opportunity of contracting STI and finally reduce the attendance in government STI clinics. Decrease of attendance may reduce the workload of the staffs in clinic. Website information may help clients’ early identification of their problems and reduce the complication caused by late treatment and reduce the drug cost from late treatment.

3.2.3.4 Non-material Benefits of Implementation

Not all the benefits can be measured by money. There are many benefits gained from the program. First, information can be obtained anywhere and anytime. The convenience enhances them to gain safer sex information and condoms use technique during partner seeking.

MSM cases are sensitive because they are afraid of being stigmatized and
discriminated once when they have exposed their sex preference as MSM. However, Internet platform may help them to identify signs and symptoms of STI and reduce the risk of exposing the status of MSM. Feeling less embarrassment they can build up rapport with clinic A and more willing to attend clinics for investigation and treatment (Kling et al., 1999 & Williams et al., 2005). By advertising effect of peer group, Clinic A may become popular among MSM group and more MSM cases become more willing to attend clinic A for investigation and treatment.

There are many discussion forums in certain popular MSM websites discussing the information about STI. The information may not be true that MSM may not gain the proper information and delay their treatment may cause so many complication and harm to their health. The website from OHEP provides evidence-based information and treatment totally free of charge and MSM clients can save money with proper information and treatment provided.

For staffs, MSM clients gain the information from the websites so that they can be more focus on the diagnosis and related information. Time is saved and workload is less therefore they can handle more on contact tracing and defaulter tracing work which is much more time consuming. The convenience of the website may improve the image of our clinics. Fewer questions from MSM clients may be expected so that it may increase the morale of staffs and they may feel more belongings in our clinic and reduce the turnover rate.
3.2.3.5 Risk of maintaining current practice

The increasing trend of partner seeking behavior among MSM increases STI and HIV spreading. Therefore clinic A no longer relies on clinical services but also need a breakthrough that need to stick into the habit of our MSM clients. Internet platform can be used as a health education tool for those MSM clients. Internet website is not a new method to promote health education and clinic A need to provide up-to-date service to fulfill public needs.

An official website is needed to provide correct and evidence based STI information and clarify myths from other non-official websites.

3.2.3.6 Risk of Implementation

Risk exposure to clients is minimal because MSM clients are requested to set their own user name and login password. Their privacy will be protected by password system and clients firewall.

The MSM clients may submit their queries about the information of the websites during participation of the program.

3.2.3.7 Cost-benefit Ratio

The program can save one third of face to face interview time. The cost of time
saved for health care advisor nurse to provide health interview

\[\text{\$150/hr x 44hrs x 1/3 x 52 wks = \$114400/year}\]

Cost of time for one health advisor to provide face to face interview

\[\text{\$150/hr x 44hrs/week x 52 weeks = \$343200/year}\]

Net cost-benefit ratio:

\[\frac{\text{\$114400-\$8000}}{343200}=0.31\]

The cost-benefit ratio is less than 1. Therefore the implementation is beneficial and worthy to conduct in service.
Chapter 4
Developing an Evidence-based Guideline

4.1 Introduction

We have discussed the transferability and feasibility of innovation in current service in Hong Kong. It is undeniable that a guideline is necessary for material selection and principles of information to be posted on the website.

In this chapter, we are going to discuss the purpose and objectives of the proposed internet-based sex education program for MSM people. The criteria of the target population and the workflow of the program will be discussed. Detail of the content of the website will also be discussed.

4.2 Purpose and Objectives

The purpose of the guideline is to assist nurses in selecting relevant materials for the webpage construction and maintenance and provide convenient platform for MSM clients to access the information they needed and promote safer sex concept.

4.2.1 Objectives

1) To assist nurses to get familiar with their role in this program and comply with
the workflow of the intervention.

2) To assist nurses to select the appropriate health education material and information for the MSM group people.

4.3 Guideline Development Process

The content of the guideline development is based on scientific evidence from the literature reviewed in previous chapters. The recommendations from the literature will be graded of the reliabilities and explain the rationale of the intervention will be provided. There are totally 12 recommendations were made which mainly focus on recruitment criteria of the program, information about STI, STI Prevention method, knowledge of risky behavior, condom use technique, knowledge of the importance of screening, partner negotiation skills.

1) Clients should be aged 18 or above and consented for willingness of joining the program and willing to view sexually explicit materials.

(Grade A)

(1+Lau et al., 2008, 1++Wilkerson et al., 2011, 1-Chiasson et al., 2009, 1++Carpenter et al., 2010, 1+Bowen et al., 2007 & 1+Bowen et al., 2008)

Rationale:

In order to avoid under-aged people to participate in the program because there will
be sexually explicit photos and the content is not suitable for under-aged people to discuss.

Our target population is MSM and the basic requirement of MSM is they have at least once sexual experience with another male partner so that they may have the interest to know about STI and HIV infections.

2) Clients should be able to access directly to the website or redirect access by clicking advertisement banner posted in MSM websites.

(Grade A)

(1+Lau et al., 2008, 1++Wilkerson et al., 2011, 1-Chiasson et al., 2009, 1++Carpenter et al., 2010, 1+Bowen et al., 2007& 1+Bowen et al., 2008)

Rationale:

In order to recruit the MSM group members who have the habit to seek sex partner on internet, internet banner advertisement posted in MSM web pages could remind them that their partner seeking behavior was at high risk and attract them to click on the banner advertisement to learn more about STI and HIV infection.

Identification of own problems and increase their motivation to change (Miller et al., 2002)
3) HIV and STI information knowledge should contain the mode of transmission, sign and symptoms with clinical photos displayed, method of prevention and treatment.

(Grade A)

(1+Lau et al., 2008, 1++Carpenter et al., 2010, 1+Bowen et al., 2007 & 1+Bowen et al., 2008)

Rationale:

HIV and STI knowledge information provided was going to increase self-awareness of the mode of transmission in order to motivate their move to safer sex behaviors. Providing signs and symptoms could promote early detection and early treatment of STI and HIV infections. Clinical photo could raise their interest on the symptoms of STI infections and facilitate clients to be aware of similar symptoms.

4) Condoms use technique should be described and demonstrated correctly

(Grade A)

(1+Lau et al., 2008, 1++Carpenter et al., 2010, 1+Bowen et al., 2007 & 1+Bowen et al., 2008)

Correct condom use could prevent more than 98% HIV infections, and most of the STI infections. However not many people know the correct procedure of using a condom and as a result causing breakage of condoms and ineffective use of condoms. The
instruction on the condom package is clearly stated in text but not in graphical demonstration. Video demonstration could be more effective, clear and easy to understand.

5) The importance of HIV and STI screening should be emphasized.

(Grade A)

(1+Lau et al., 2008, 1-Chiasson et al., 2009, 1++Carpenter et al., 2010, 1+Bowen et al., 2007 & 1+Bowen et al., 2008)

Rationale:

HIV and STI screening in every 3 months after unsafe sexual behavior, is important for early detection of infection. Regular HIV and STI testing could eliminate spreading of such disease because serostatus result will increase their awareness to do protection from or with partners.

6) The relationship between sex and love should be explained clearly.

(Grade A)

(1++Carpenter et al., 2010, 1+Bowen et al., 2007 & 1+Bowen et al., 2008)

Rationale:

Single partner concept is emphasized. Love doesn’t mean sex. Having sex with a
loved partner is important because having sex with single sex partner can reduce exposure to STI and HIV infections.

7) The relationship between abusing substances and sex should be explained.

(Grade A)

(1+Lau et al., 2008, 1-Chiasson et al., 2009, 1++Carpenter et al., 2010, 1+Bowen et al., 2007 & 1+Bowen et al., 2008)

Substance abuse including alcohol and drug before sex would decrease the ability of safer sex negotiation. Poor concentration and judgment after substance intake would fail to negotiate the use of condoms with partner.

8) The knowledge of risk behaviors including type of sex act, serostatus of partners and drug and alcohol use before sex should be identified.

(Grade A)

(1+Lau et al., 2008, 1++Wilkerson et al., 2011, 1-Chiasson et al., 2009, 1++Carpenter et al., 2010, 1+Bowen et al., 2007 & 1+Bowen et al., 2008)

Rationale:

Identification of the consequence of risk behavior such as unsafe sexual activities and alcohol use can enhance their motivation to change.
9) Skills training for safer sex must be enhanced which include communication about serostatus and skills on negotiating condom use.

(Grade A)

(1-Chiasson et al., 2009, 1++Carpenter et al., 2010, 1++Bowen et al., 2007 & 1++Bowen et al., 2008)

Rationale:

Knowing the serostatus of partner could increase the alertness of the importance of precaution measures. Therefore this can reduce the risk of exposure in HIV and STI infections.

10) Increase client’s motivation for behavior change by a series of questions pointing out his risky behaviors.

(Grade A)

(1++Carpenter et al., 2010, 1+Bowen et al., 2007 & 1+Bowen et al., 2008)

Rationale:

Once the client had the motivation to change, it was easy to enhance his enactment towards change by encouragement and support.
11) Help clients to identify the triggers of risky behavior and help clients to find alternatives to avoid unsafe sex.

(Grade A)

(1++Carpenter et al., 2010, 1+Bowen et al., 2007 & 1+Bowen et al., 2008)

Rationale:

Provide alternatives for client to choose and help them to avoid unsafe sex could enhance their negotiation skills with his partner.

12) Follow up each client to 3 months to complete the blood screening of clients and remind them to continue safer sex concept.

(Grade A)

(1++Wilkerson et al., 2011, 1-Chiasson et al., 2009 & 1++Carpenter et al., 2010)

Rationale:

Evaluation should be made to know how much information they had got and how much behavior they had changed. Reminder will be sent biweekly to remind the clients to keep on safer sex but stop any unsafe sex.

4.5 Measuring Tools

Questionnaire will be designed based on different criteria such as demographic data,
knowledge of STI and HIV infections, condom use technique, safer sex concept, safer sex negotiation skills, and unprotected sexual behavior.

Questionnaire will sent to at least 4 senior staffs including administrative personnel such as NOs, SNOs and COS for approval. During questionnaire designing process, experts from academic will be consulted for opinions.

The timeline of the Online Health Education Program will be shown in Appendix E.

4.6 Conclusion

This chapter outlined the guideline for the setup of the website, the selection of clients and the contents of the website. After forming the evidence based guideline, evaluation and implementation plan should be designed and would be discussed in the next chapter.
Chapter 5
Implementation Plan

5.1 Introduction

The implementation potential was proved to be high and a guideline was set for the OHEP. It is time to carry out into practice. In order to eliminate any ineffectiveness of implementation of the guideline, a clear and detail implementation plan should be set and also a clear communication plan has to be established so that the stakeholders can have a thorough understanding of the new guideline and enhance their support and feasibility of the program. Therefore, this chapter will discuss about the implementation plan in which communication plan will be discussed and talk about the pilot study.

5.2 Communication Plan

Communication plan is important because through effective communication program coordinator can transmit important messages to different parties so as to collect information, opinion and problems during process of the intervention and maintain an effective intervention procedure. It is important also to attract support from the stakeholders by explaining and comparing the advantages and disadvantages between the new intervention and current practice. The time frame of the communication process was presented in table 2.
<table>
<thead>
<tr>
<th>Time</th>
<th>Persons involved</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; week</td>
<td>RNs</td>
<td>Casual talk</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Discussion lead by the leader (RN)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Discuss about the need to change</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Advantages and disadvantages about change</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• New guideline from innovation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Share the stress from the new guideline</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; Week</td>
<td>NO and SNO</td>
<td>• Discuss the current situation and current practice</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Discuss the need to change</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Present the idea of the innovation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Discuss the new guideline and time for implementation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Gain opinion and do modification</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt; Week or a month</td>
<td>COS</td>
<td>• Half hour presentation (If required)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Detail of the innovation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Benefits from the innovation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Possible implementation time</td>
</tr>
<tr>
<td>Last Week</td>
<td>RNs and committee members formed</td>
<td>• Detail of the content of the new guideline of new innovation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Discuss with opinion and make modifications.</td>
</tr>
</tbody>
</table>

Table 2. Table of communication plan

5.2.1 Potential Stakeholders

In this program the major stakeholders are the administrators that include 1 chief of service (COS), 2 senior nursing officers (SNO) and 2 nursing officers (NOs) of clinic A, the committee members including 8 registered nurses (RNs) and 2 enrolled nurses (ENs) and finally the technical support staffs that are mainly the staffs from Information Technology.
Management Unit (ITMU).

The SNO and NOs are the key stakeholders to determine the feasibility of the program and determine the resources, manpower and budget for the program. COS will be the final approver of the program and he will be responsible to communicate with ITMU department for technical support.

The second stakeholders are the nurses involving RNs and ENs. They are the key people to carry out and manage the program. They will select the education material and decide the method of exhibition on the website. They will also be responsible to collect data and analysis of data. They will follow up cases that are suspected to be contracted with STI and provide referral for partner notification for the MSM people.

The final stakeholders are the ITMU staffs and MSM clients. ITMU staffs are responsible for webpage design. They will gather the education materials and follow the idea provided from the committee members and they will design and establish a webpage. A data collection program consists of questionnaire website will be established and put inside the webpage for evaluation. The MSM clients are the end users of the program and they will provide important information for further implementation.
5.2.2 Communication Process

5.2.2.1 Informal Discussion Group

Before introducing the program to the administrators, informal discussion will be carried out among staffs during break and meal time to gain their opinion and investigate their acceptability of the program. In discussion, the disadvantages of current practice will be discussed and their stress and difficulties from their experience faced in current practice will be ventilated. The urge of changing the current practice and the idea of the program will be introduced and encourage them to support and participate in the new practice through introducing the advantages of the program. On the other hand, the experience of difficulties and problems faced by other staffs will be recorded and summarized for presenting to the administrators.

5.2.2.2 Communication with the administrators

The main communication method is through e-mail. E-mails will be sent to SNO and NOs for a brief introduction and invite them to consider the feasibility of the program in service. In e-mails a detailed proposal will be attached for their consideration and literature review will also include as well as the summary of staffs opinion that collected in the informal discussion will also be attached. Invitation for a hearing section will be introduced in order to explain and answer their queries through presentation. The presentation will last
for about 15 minutes because both of them are busy with their daily job.

After presentation to the SNO and NOs, an introduction e-mail will be sent to COS under the approval of SNO and NOs. In the e-mail, advantage of the proposed program will be focused and briefly introduce the proposal of the program. It is necessary to prepare for face to face presentation once if COS was interested in intervening the program. A ten minutes presentation will be conducted under the request of COS and detail proposal will be presented and answer queries from COS.

5.2.2.3 Establish a program committee

Once if the proposal was approved, the proposal will formally presented to the staffs and invite them to join the committee. The responsibility of the committee is to maintain the effectiveness of the use of the webpage, to select appropriate education materials and keeps it up to date.

The committee will include 10 experienced RNs and ENs who are experienced in health education in clinic A. They will share their experience in committee’s monthly meeting. Difficulties and problems on conducting the program will be shared and opinions will be collected to modify the program guideline. The committee members will also responsible for collecting data from the website and analyze the data. Referral will be provided once if high risk cases were identified. Partner notification will be given for those cases that had
contracted with STI during follow up in clinic A. Finally the committee will finalize the guideline after the pilot study and promote to other clinics for larger scale of implementation.

After formation of the program committee, ITMU will be informed and also department headquarter through COS e-mails. The detailed idea of the education materials and the design of the webpage and questionnaire will be sent to ITMU at the last stage before implementation of the pilot study.

The duration of the communication period will last for one to two months after the design of the webpage was completed and approved by the administrators, the following phase will be the pilot study.

5.3 Implementation Plan

The implementation plan consists of four parts. It includes the training period, the pilot test, pilot review and implementation.

5.3.1 Training

Since the committee members are experienced RNs and ENs, the training of the committee members will be in one-hour experience sharing and discussion. The experienced RNs will hold a presentation to all committee members. Such experience sharing section will be held yearly and the content will be the principle of selecting materials for MSM education.
and that will be related to the materials selected for website. All committee members should follow the principle of the education material selection and should follow the guideline. For the newly recruited RNs, as they will be guided for at least 3 months. The recruitment criteria of the committee member are nurses with at least one-year health education and health interview experience. Therefore training for the program will only require attending the annual sharing section of committee meeting.

5.3.2 Pilot study

Another important aspect of implementing the new intervention is to carry out a pilot study. Pilot study is important because it can check the adequacy of methods and procedures of the new intervention. Moreover, it can test the appropriateness, quantity and quality of instrument. It can also help to calculate the number of participants and it can help to find out potential problems and the data collected in pilot study can justify the subsequent and vigorous research (Polit & Beck, 2008).

5.3.2.1 Objectives of the pilot study

The objectives of the pilot study is to examine the feasibility of the proposed guideline, to eliminate any errors during the process of the program and determine any extra training is required before actual implementation of the program. The pilot study can collect the data
that can enhance the evidence that the program is feasible and relief the staffs worry about the uncertainty of implementation of the program.

5.3.2.2 Recruitment Criteria for pilot study

The pilot study will last for two months. Within the two months, all male clients attending clinic A with age over 18 years, can understand English or Chinese, having experience about seeking male sex partner and experienced to have unprotected sex with male in the past one year will be recruited to participate in the program. Participants are required to sign a consent form that agrees to participate in the program and willing to watch sex related materials. All the participants are required to complete the whole module. Pre and post questionnaire will be completed before and after the module.

The interventions provided in pilot study are similar to the actual implementation of the program, but the recruitment method will be different and the time frame was limited to two months for the pilot study. All the committee members will provide questionnaires to evaluate their feelings, workload and stress level on implementing pilot study. The data collected will be used to modify the program guideline.

The pilot study data may not reflect the actual effect of the program because the number of participants is only ten, however the flow of the program will be tested and modification of the program may help in implementing the actual program.

Chow Yung Wai 1997430361
5.3.2.3 Pilot review

After two weeks pilot study, findings gathered from the participants of the pilot study will be reviewed. The accessibility of the webpage and the usefulness of the materials will be evaluated. Modification will be made to enhance the accessibility of information. On the other hand, the acceptability of staffs using the proposed guideline will be reviewed. Stress levels, workload, and difficulties of using the guideline will be evaluated and extra training will be provided for any uncertainty in using the guideline. Staffs are encouraged to share their opinion of any improvement suggestions for the guideline.

The results of the pilot review will reflect the actual feasibility of the implementation of the proposed innovation. Appropriate adjustment and modification is needed based on the results collected from the pilot study to enhance the feasibility and effectiveness of the proposed innovation.

The implementation of the program will be 1 month after the analysis of the data collected from pilot study. 1 month time is for modifying the guideline to prevent error and bias that was shown in the result of the pilot study.

The target population estimated to be 370 by calculation of Raosoft (2004) with CI = 95% compared with the six reviewed studies Lau et al., (2008); Wilkerson et al., (2011); Chiasson et al., (2009); Carpenter et al., (2010); Bowen et al., (2007) & Bowen et al., (2008),
the population ranged from 112 to 560 and the population calculated fell within the range.

The duration of the intervention will be 1 year and a larger scale of evaluation of the program will be conducted for assessing the need to continue the program.

Chapter 6
Evaluation Plan

6.1 Introduction

Evaluation is an important component to determine the effectiveness of a program. An evaluation plan will cover different aspect such as the outcomes to be achieved, the nature and number of participants, when and how to take measurement and finally how to analyze data collected.

6.2 Outcomes to be achieved

This is to evaluate two groups of people involving in the MSM online health education program. They are the participants’ outcome and health care provider outcomes.

6.2.1 Participants outcomes

The clinical benefit from the MSM sex education program will be focused. It is divided into primary outcomes and secondary outcomes. The primary outcome is participants’ knowledge sexuality and their risky behavior. The secondary outcome is participants’ ability to negotiate with partners, disposing HIV status to the partners and regular screening. (Lau et al., 2008, Wilkerson et al., 2011, Chiasson et al., 2009, Carpenter et al., 2010, Bowen et al., 2007 & Bowen et al., 2008)
Primary outcome

Participants will be evaluated with true and false questions about the knowledge of route of transmission of HIV and STI, prevention methods of STI and HIV and technique of using condoms. The format of the questionnaire will be shown in Appendix F.

Secondary outcome

Participants will provide true and false questions about statements of the best negotiation skills with partner. True and false questions will be used to test for their awareness of risky behavior. Finally self-report number of unprotected sexual behavior and screening is required.

Also questions about satisfaction of the intervention will be asked in Likert scales from 1 not satisfy to 10 most satisfy.

6.2.2 Health Care Provider Outcomes

Committee members will be providing a set of questionnaires before the program. The questionnaires will include Likert scale ranging from 1 (No stress) to 10 (Very high stress level) to test for their stress level before and after the program. True and false questions will be used to ask whether they feel their workload is increased or not and their confidence to continue the program.
6.3 Nature and number of participants to be involved

The inclusion criteria is mentioned in previous chapters that client aged over 18, male, understand Chinese, experienced of having sex with male, experienced to seek for male sex partners on internet, have tried unprotected sex in the past 12 months. Recruitment is based on clicking on the advertisement banner in some popular MSM websites and clicked on agree button for consent of participating in the program.

Convenience sampling was used. After calculation by Roasoft (2004), the sample size would be 370 with confidence Interval equals to 0.95. According to reviewed studies, the sample size ranged from 112 to 560 and the calculated value was within the range of the sample size of the reviewed studies.

However, the drop off rate of the reviewed studies was high of over 40% (Lau et al., 2008, Chiasson, 2008 & Carpenter, 2010). Therefore the minimum number of participants will be set as 370 x (1+40%) = 518

6.4 When and how often to take measurements

The measurement will base on the outcomes and divided into different time and frequency of data collection. For participant’s outcomes, according to the reviewed literatures the measurement methods are pre- and post- questionnaires completed before and after the program (Lau et al., 2008, Wilkerson et al., 2011, Chiasson et al., 2009, Carpenter et al., 2010
& Bowen et al., 2007). However, the measurements are only short term. Therefore continually daily assessment is required once the first group of participant came for follow up after three months from the start of the program and post-program evaluation will be started collection (Wilkerson et al., 2011, Chiasson et al., 2009 & Carpenter et al., 2010). At the end of the program, results will be obtained. E-mail will be sent to the participants who drop out from the program and ask them about the reasons for drop out of the program.

For health care provider outcome, continuous evaluation will be carried out in monthly base (at the end of each month) to detect the stress level, morale, acceptance and competence of the guideline during the process. Also in monthly meetings staffs are encouraged to share their experience, problems, difficulties and opinion faced inside the implementation of program.

6.5 Data analysis

For comparison in study design, part of the data is self-reported preferences and pre- and post- program comparison will be made and will be presented in form of rate of change (%). Data collected will be compared and calculated by using computer software Statistical Package for the Social Science (SPSS) in Windows version. A two-tailed t test will be used for comparing the rate of change with confidence interval CI=0.95. For health care provider outcomes the data will presented as mean (M) for the stress level Likert scale questions.
Therefore paired t test will be used for comparing the change of mean of the data collected.

For system outcome the data will be obtained from ITMU and presented in percentage of clicking rate (%) and number of hit of the websites.

6.6 Basis for an effective change of practice

6.6.1 Participant’s outcomes

6.6.1.1 Success criteria

The guideline will be considered effective if there are changes of certain criteria of the participants.

1. Increase of STI or HIV knowledge by 5% compared with the baseline assessment before the intervention (Lau et al., 2008, Bowen et al., 2007 & Bowen et al., 2008).

2. Increase condom use or reduce unprotected sexual behavior by at least 12% (Lau et al., 2008, Chiasson et al., 2009, Carpenter et al., 2010, Bowen et al., 2007 & Bowen et al., 2008).

3. Self-report reducing number of sex partners by at least 9% compared with the baseline assessment at the beginning of the intervention (Lau et al., 2008, Chiasson et al., 2009 & Bowen et al., 2008).

4. Increase in disclosure to or request from partner about HIV status compared with baseline assessment at the beginning of intervention. (Chiasson et al., 2009).
6.6.1.2 Criteria for Health care providers

1. Mean satisfactory level with reference to Likert scale 1 (not satisfied) to 10 (Satisfied) should be maintained or more than 5.

2. Mean acceptance of the guideline with reference to Likert scale 1 (not acceptable) to 10 (Acceptable) should be maintained or more than 5.

3. The percentage of compliance of the guideline should be more than 90%.

4. Time for face to face interview to MSM clients should be decreased by 30%.

5. Number of MSM client partner notification should be increased by 10% to 15%.

6. The overall mean grading of the guideline should be 1 (Bad) to 10 (Very good) should be more than 5.

6.6.1.3 The overall evaluation

1. Overall workload of face to face interview of each staffs should be decrease by 30%.

2. MSM attend clinic A for screening of STI should be increased by 10%.

6.7 Conclusion
Communication among different parties is important. From identifying the stakeholders, the responsibility and task were identified, it is easier to gain support not only approval of carry out the program but also gain support for participation and trust to the program. With support from administrators and staffs, the program can be conducted effectively and more MSM clients can gain the benefit from the new program. From carrying out the pilot study, the guideline can be refined and enhance the feasibility of the guideline and finally increase the confidence of staffs to comply with the guideline.

With the new program, the outdated practice can be replaced and the new guideline is easier to intervene and increase the satisfaction of staffs. The data collected can be used to modify and improve the design and effectiveness of the program.
Discussion

7.1 Conclusion

In Online Health Education Program (OHEM) a guideline was developed based on the existing evidence and interventions from reviewed studies. The purpose of this evidence-based practice guideline is to facilitate the use of internet as a platform to promote health from preventing STI transmission. By improving STI and AIDS knowledge, identifying risky behavior, Enhancing negotiation skills with partners, proper use of condoms, emphasizing the importance of screening and disclosing STI status to partners can finally promote safer sex to MSM clients.

According to the six reviewed studies, clients showed different level of improvement in different aspect of the content of the program. In fact, OHEP can improve the efficiency of health interview in clinic A and spend less time in relieving MSM clients’ worry and demonstrate effectiveness during the process of STI consultation in clinic A.

From chapter 5 an implementation plan was developed. From developing a communication plan with stakeholders to support the guideline as well as the pilot testing to test for any modification of the program is needed before the real implementation of the program.

In chapter 6, an evaluation plan was developed to evaluate the achievement of expected outcomes. Clients’ outcome, health care provider outcomes and system outcome were
important to consider any modification of the program design is required. The nature and number of client to be participated were proposed and the time and frequency of data collection were suggested. At the end of the chapter, the basics of the guideline effectiveness were set to assess the achievement of the expected outcomes.

7.2 Limitation

There are some limitations in this study. First of all, the target populations are those MSM people who are able to use internet. The proposed intervention may not suit to those MSM people who could not use internet.

Secondly, the reviewed literature showed success in conducting health education programs in Caucasian countries but not in Asian and Chinese society. One of the studies (Lau, Lau, Cheung, & Tsui, 2008) was conducted in Hong Kong, however, selection bias and technical problems were noted. Therefore, caution should be taken when interpreting the findings of the reviewed articles, as these may not suit the Chinese population.

7.3 Future Directions

The evidence-based guideline is designed to promote health and prevention of STI/AIDS among MSM clients. It is necessary to monitor and evaluate the implementation of the guideline in different clinics or in different settings.


sector for men who have sex with men and transgender populations 2011. Geneva, Switzerland


<table>
<thead>
<tr>
<th>Keywords</th>
<th>Database</th>
<th>CINAHL</th>
<th>Cochrane Library</th>
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<thead>
<tr>
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<th>Lev of Evidence</th>
<th>No. of participants</th>
<th>Participants’ character</th>
<th>Interventions</th>
<th>Comparison</th>
<th>Length of follow-up</th>
<th>Outcome measures</th>
<th>Results and conclusion</th>
</tr>
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<tr>
<td>RCT</td>
<td>+++</td>
<td>280</td>
<td>- Male</td>
<td>IG: n=140</td>
<td>CG: n=140</td>
<td>6 months</td>
<td>STI/HIV knowledge</td>
<td>HIV/STI knowledge ($X^2$ 0.85 and 0.80)</td>
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<td></td>
<td></td>
<td></td>
<td>- Age 18 or above</td>
<td>- Receiving appealing and professional designed educational, email, graphical message biweekly</td>
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<td></td>
<td>HIV-related perception</td>
<td>IG: +5%   CG: +6.4%</td>
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<td></td>
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<td>- engaged oral or anal sex with men in past 6 months</td>
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<td></td>
<td>Self-reported STI</td>
<td>Contracted STI in 6 m ($X^2$ 0.12; 0.52)</td>
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<td></td>
<td>- Self-reported regular internet users</td>
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<td>Service utilization</td>
<td>IG: -2.8% CG: +2.2%</td>
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<td></td>
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<td></td>
<td>- HK residents</td>
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<td>Sex partnership</td>
<td>Regular MSM partner ($X^2$ 0.62; 0.18)</td>
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<td></td>
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<td></td>
<td>- Read Chinese</td>
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<td></td>
<td>Anal sex behaviors</td>
<td>Non regular MSM partner ($X^2$ 0.56; 0.71)</td>
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<td></td>
<td></td>
<td>Oral sex behaviors</td>
<td>Anal sex with non-regular MSM ($X^2$ 0.71; 0.62)</td>
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<td></td>
<td>Condom use for anal sex with non-regular MSM ($X^2$ 0.14; 0.61)</td>
<td>IG: -3%   CG: +12%</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>Condom use for oral sex with non-regular MSM ($X^2$ 0.30; 0.73)</td>
<td>IG: -4.5% CG: +4.6%</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>The interventions did not bring about any improvement in terms of knowledge/perceptions and behaviors</td>
<td></td>
</tr>
</tbody>
</table>

Remarks: 1. Selection bias on participants’ recruitment (>60% received university education). 2. Technical problems of electronic delivery system. 3. Cannot ensure how carefully they read the materials. 4. Rapport is difficult to build. 5. Participants are easily lost to follow-up. 6. Reporting bias due to self-reporting.

<table>
<thead>
<tr>
<th>Study type</th>
<th>Lev of Evidence</th>
<th>No. of participants</th>
<th>Participants’ characteristics</th>
<th>Interventions</th>
<th>Comparison</th>
<th>Length of follow-up</th>
<th>Outcome measures</th>
<th>Results and conclusion</th>
</tr>
</thead>
</table>
| RCT        | +++             | n=560               | • 18 years or older Male    | IG: Sexpulse intervention (n=337) A 14 module sexual health and HIV prevention based in persuasive computing | CG: Null waitlist control (n=313) Complete a baseline survey, some additional scales (mirror activities of IG) | 3 months | • Self-reported no. of Unprotected Anal Intercourse with Male Partners (UAIMP) in last 90 days | Likelihood to change: difference (d) %
• More IR-RR in IG vs. CG indicate no action to change d=14.8%. IG more likely to change
• IR-IR in CG indicate no action d=12.9%
• More IR-RR in IG and IR-IR in IG enact to change d=12.2% and 10.1% respectively
• Movement from ordinary level to next level
IG: OR=1.14; 95% CI: 0.83,1.58
CG: OR=1.09; 95% CI: 0.79,1.49
• Thought more about attitude and behavior because of intervention
OR=1.46; 95% CI: 1.14,1.87
Intervention more with others
OR=1.20; 95% CI: 1.01,1.43
• Intervention fosters the labeling of risky behavior and enhance changes of their attitude and behavior. |

Remarks: 1. The sample of men are recruited through banner advertisements might not represent the boarder populations. 2. Likelihood of under-reporting risk behaviors. 3. Survey questions are collected online and no opportunity to clarify questions.
**Appendix B**


<table>
<thead>
<tr>
<th>Study type</th>
<th>Lev of Evidence</th>
<th>No. of participants</th>
<th>Participants’ character</th>
<th>Interventions</th>
<th>Comparison</th>
<th>Length of follow-up</th>
<th>Outcome measures</th>
<th>Results and conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quasi-experimental one-group pretest-posttest design</td>
<td>1</td>
<td>522</td>
<td>Self-reported MSM recruited through banner ads on gay website</td>
<td>A nine minutes video drama named “The Morning After” delivered online.</td>
<td>No control group mentioned</td>
<td>3 months</td>
<td>• Behavioral change of disclosure of HIV status from partner and to partners by ask, tell, or both ask and tell.</td>
<td>Behavioral change compared with baseline +18% ask partner HIV status OR=2.79 p&lt;0.001 +16% tell partner HIV status OR=2.10 p&lt;0.001 +18% ask and tell partner HIV status OR=3.37 p&lt;0.001 +30% reported HIV testing OR=1.45 p=0.03 16% not have casual sex partners OR=0.53 p=0.002 20% not have UAI OR=0.55 p=0.001 14% increases multiple partners OR=1.5 p=0.06</td>
</tr>
</tbody>
</table>

Remarks: 1. Selection bias in recruitment and retention because no control group comparison. 2. The relationship between the behavior change and the intervention cannot be ruled out in 3 months short follow-up time. 3. Participants are not tested about their intention on behavior change before the intervention.
### Appendix B


<table>
<thead>
<tr>
<th>Study type</th>
<th>Lev of Eviden ce</th>
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<th>Participants’ character</th>
<th>Interventions</th>
<th>Comparison</th>
<th>Length of follow-up</th>
<th>Outcome measures</th>
<th>Results and conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCT</td>
<td>+++</td>
<td>112</td>
<td>• MSM aged 18-39 years</td>
<td>IG: n=59</td>
<td>CG: n=53</td>
<td>3 months</td>
<td>1. Sexual practice</td>
<td>IG vs. CG</td>
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<tr>
<td></td>
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<td>• HIV status negative or unknown</td>
<td>1.5-2 h tutorial</td>
<td>A stress reduction training program provided</td>
<td></td>
<td>2. No of times with or without condoms</td>
<td>Report UAI: 44.1% vs. 24.5%, $X^2(1, N=112)=4.70$, $p=0.030$</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• unprotected sex (oral or anal) with men within 3 months</td>
<td>• IMB theory based HIV risk reduction consist of 7 motivational, informational and skills training modules</td>
<td></td>
<td>3. Intervention satisfaction</td>
<td>Report UIAI: 28.8% vs. 7.5%, $X^2(1, N=112)=8.29$, $p=0.004$</td>
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<td></td>
<td></td>
<td>• provide e-mail</td>
<td>IG: n=59</td>
<td>CG: n=53</td>
<td>3 months</td>
<td>4. Unprotected anal intercourse (UAI) receptive (URAI) insertive (UIAI)</td>
<td>Report UOI: 66.1% vs. 41.5%, $X^2(1, N=112)=6.81$, $p=0.009$</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Computer with Windows, internet</td>
<td>IG: n=59</td>
<td>CG: n=53</td>
<td>3 months</td>
<td>5. Unprotected oral intercourse (UROI) and (UIOI)</td>
<td>Decrease no. of unprotected acts by IG vs. CG with risky partners for AI, RAI, IOI and ROI but not IAI</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Resided in US and understand English</td>
<td>IG: n=59</td>
<td>CG: n=53</td>
<td>3 months</td>
<td></td>
<td>No. of unprotected acts with risky partner decreases more for AI, IAI, IOI and ROI but not RAI</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IG: n=59</td>
<td>CG: n=53</td>
<td>3 months</td>
<td></td>
<td>Both IG and CG reduced levels of risky sex</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IG: n=59</td>
<td>CG: n=53</td>
<td>3 months</td>
<td></td>
<td>IG reported less unprotected act with positive or unknown serostatus partner</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IG: n=59</td>
<td>CG: n=53</td>
<td>3 months</td>
<td></td>
<td>Risky behaviors decreases more among IG than CG</td>
</tr>
</tbody>
</table>

Remarks: 1. Measures of sexual activities were not specific enough to identify the relationship of unprotected act is due to increase in skills versus motivation. 2. No reliable information about the dosage of information they have received and no assurance the interventions was completed.
Appendix B


<table>
<thead>
<tr>
<th>Study type</th>
<th>Lev of Evidence</th>
<th>No. of participants</th>
<th>Participants’ characteristics</th>
<th>Interventions</th>
<th>Comparison</th>
<th>Length of follow-up</th>
<th>Outcome measures</th>
<th>Results and conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCT</td>
<td>+++</td>
<td>90</td>
<td>Internet using MSM</td>
<td>2 modules of HIV prevention information not known to MSM, presented in the format of dialog on internet.</td>
<td>CG will obtain the intervention 1 week later than IG after T2 assessment</td>
<td>14 to 28 days</td>
<td>Outcome expectancies on Condom use (OUC) Insisting safer sex (OISS) Self-efficacy on Condom use (SSC) Insisting safer sex (SSA)</td>
<td>Both IG and CG’s knowledge, self-efficacy and outcome expectancies increased. IG maintain their positive changes in cognitive variables and knowledge for 1 week. Internet intervention can be well completed and responses are positive. Internet-delivered intervention targeting psychosocial precursors to AIDS-related behavior change are feasible and potentially effective.</td>
</tr>
</tbody>
</table>

Remarks: 1. Not sufficient time to examine behavior change. 2. The internet connection speed may limit the sophistication of interventions. 3. The intervention include sound and animations will be attractive. 4. Participants recruited by face to face may be ‘out’ and their risk behavior may be different.

<table>
<thead>
<tr>
<th>Study type</th>
<th>Lev of Evidence</th>
<th>No. of participants</th>
<th>Participants’ character</th>
<th>Interventions</th>
<th>Comparison</th>
<th>Length of follow-up</th>
<th>Outcome measures</th>
<th>Results and conclusion</th>
</tr>
</thead>
</table>
| Quasi-experimental | 1-1             | 425                 | • MSM frequented a gay website
• 18 years older
• Sex with men last 12 months
• Living in population <75000 driving time >60 mins from urban | • 3 modules of 2 20 min interactive sessions containing HIV prevention information.
• Knowledge module
• Partner module
• Contexts of risk module | No control group mentioned | 10 to 42 days | • HIV/AIDS knowledge
• Cognitive precursors to risk reduction behaviors (i.e. self-efficacy, outcome expectancy, and willingness to change risk behavior)
• HIV sexual risk behavior | • HIV/AIDS knowledge M=1.49 (SD=2.12) to M=2.84 (SD=2.50)
• Self-efficacy (Mechanical)M=0.6 (SD=0.98) to M=1.24 (SD=1.12)
• Self-efficacy (Emotional)M=0.49(SD=0.98) to M=1.03(SD=1.19)
• Willingness to reduce risk: Limit sex partners to 1 per month M=0.04(SD=1.14) to M=0.29(SD=1.49)
• Use condom with every new partner all the time M=0.17(SD=1.08) to M=0.41(SD=1.09)
• Overall report of no. of sex partners M=1.92(SD=5.87) to M=2.09(SD=6.45)
• Frequent anal sex/no. sex partners M=0.7(SD=0.40) to M=0.63(SD=0.41)
• Condom use M=0.44(SD=0.46) M=0.66(0.44) |

Remarks: 1. Multiple submission and low retention rates in this study. Retention can be improved by reimbursement. 2. Security was ensured by valid e-mail address, telephone numbers and most important the log-in procedure. 3. The outcome data was weakened by the lack of an intervention control group and longer term of follow-up. 4. Generalizability is limited by the nature of internet itself. 5. The rapid change of internet environment may result in technological obsolete in 6 months.
### Quality Assessment Summary

**SIGN methodology Checklist for Randomized Controlled Trials**


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</thead>
<tbody>
<tr>
<td>1.1 The study addresses an appropriate and clearly focused question.</td>
<td>Well Covered</td>
<td>Well Covered</td>
<td>Well Covered</td>
<td>Well Covered</td>
<td>Well Covered</td>
<td>Well Covered</td>
</tr>
<tr>
<td>1.2 The assignment of subjects to treatment groups is randomised</td>
<td>Well Covered</td>
<td>Well Covered</td>
<td>Well Covered</td>
<td>Well Covered</td>
<td>Well Covered</td>
<td>Well Covered</td>
</tr>
<tr>
<td>1.3 An adequate concealment method is used</td>
<td>Well Covered</td>
<td>Well Covered</td>
<td>Well Covered</td>
<td>Well Covered</td>
<td>Well Covered</td>
<td>Well Covered</td>
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</table>

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Chow Yung Wai 1997430361
## Appendix C

### Quality Assessment Summary Part 2

<table>
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<tr>
<th>SIGN methodology Checklist for Randomized Controlled Trials</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1.4 Subjects and investigators are kept ‘blind’ about treatment allocation</td>
<td>Well Covered</td>
<td>Well Covered</td>
<td>Well Covered</td>
<td>Well Covered</td>
<td>Well Covered</td>
<td>Well Covered</td>
</tr>
<tr>
<td>1.5 The treatment and control groups are similar at the start of the trial</td>
<td>Well Covered</td>
<td>Well Covered</td>
<td>No Control Group</td>
<td>Well Covered</td>
<td>Well Covered</td>
<td>No Control Group</td>
</tr>
<tr>
<td>1.6 The only difference between groups is the treatment under investigation</td>
<td>Well Covered</td>
<td>Well Covered</td>
<td>NA</td>
<td>Well Covered</td>
<td>Well Covered</td>
<td>NA</td>
</tr>
</tbody>
</table>

Chow Yung Wai 1997430361
## Appendix C

### Quality Assessment Summary Part 3

**SIGN methodology Checklist for Randomized Controlled Trials**


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<tbody>
<tr>
<td>1.7 All relevant outcomes are measured in a standard, valid and reliable way</td>
<td>Well Covered</td>
<td>Well Covered</td>
<td>Well Covered</td>
<td>Well Covered</td>
<td>Well Covered</td>
<td>Well Covered</td>
</tr>
<tr>
<td>1.8 What percentage of the individuals or clusters recruited into each treatment arm of the study dropped out before the study was completed?</td>
<td>41.3%</td>
<td>13.8%</td>
<td>46%</td>
<td>21.7%</td>
<td>21%</td>
<td>31%</td>
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</table>
### SIGN methodology Checklist for Randomized Controlled Trials


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<tbody>
<tr>
<td>1.9 All the subjects are analysed in the groups to which they were randomly allocated (often referred to as intention to treat analysis)</td>
<td></td>
<td></td>
<td>Well Covered</td>
<td>Well Covered</td>
<td>Well Covered</td>
<td>Well Covered</td>
</tr>
<tr>
<td>1.10 Where the study is carried out at more than one site, results are comparable for all sites</td>
<td>Not Reported</td>
<td>Not Reported</td>
<td>Not Reported</td>
<td>Not Reported</td>
<td>Not Reported</td>
<td>Not Reported</td>
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### SIGN methodology Checklist for Randomized Controlled Trials


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<tbody>
<tr>
<td>2.1 How well was the study done to minimise bias? Code ++, +, or -</td>
<td>-</td>
<td>++</td>
<td>+</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>2.2 Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the study intervention?</td>
<td>Not due to study intervention</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
### Quality Assessment Summary Part 6

**SIGN methodology Checklist for Randomized Controlled Trials**


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<tbody>
<tr>
<td>2.3 Are the results of this study directly applicable to the patient group targeted by this guideline?</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>2.4 Notes. Summarise the authors conclusions. Add any comments on your own assessment of the study, and the extent to which it answers your question.</td>
<td>Selection bias during recruiting participants (&gt;60% university education) Unable to build rapport with participants</td>
<td>No comment</td>
<td>Lack of control group for comparison so that the result is weak in validity</td>
<td>No comment</td>
<td>No comment</td>
<td>Lack of control group for comparison so that the result is weak in validity</td>
</tr>
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</table>
### Quality Assessment Summary Part 7

**SIGN methodology Checklist for Randomized Controlled Trials**


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<tbody>
<tr>
<td>3.1 Do we know who the study was funded by?</td>
<td>Academic Institution</td>
<td>Academic Institution</td>
<td>Academic Institution</td>
<td>Academic Institution</td>
<td>Academic Institution</td>
<td>Academic Institution</td>
</tr>
<tr>
<td>3.2 How many centres are patients recruited from?</td>
<td>Recruited online and from bars, saunas and beaches</td>
<td>Recruited online</td>
<td>Recruited online</td>
<td>Recruited online</td>
<td>Recruited online</td>
<td>Recruited online</td>
</tr>
<tr>
<td>3.3 From which countries are patients selected? (Select all those involved. Note additional countries after “Other”):</td>
<td>Hong Kong</td>
<td>US</td>
<td>Not specified</td>
<td>US</td>
<td>Rural area in US</td>
<td>Rural area in US</td>
</tr>
</tbody>
</table>
### SIGN methodology Checklist for Randomized Controlled Trials


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<tbody>
<tr>
<td><strong>3.4</strong></td>
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<tr>
<td>What is the social setting (ie type of environment in which they live) of patients in the study?</td>
<td>Urbanl</td>
<td></td>
<td></td>
<td>Mixed</td>
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<tr>
<td><strong>3.5</strong></td>
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<tr>
<td>What criteria are used to decide who should be INCLUDED in the study?</td>
<td>Male, Age 18 or above, engaged oral or anal sex with men in past 6 months, Self-reported regular internet users, HK residents, Read Chinese</td>
<td>18 years or older Male, Resident in US, Access to board-band internet, Had UAIMP in past 3 months, Available to spend 4-6 hours for study, activities in 7 days, Willing to view sexually explicit materials</td>
<td>Self-reported MSM recruited through banner ads on gay website</td>
<td>MSM aged 18-39 years, HIV status negative or unknown, unprotected sex (oral or anal) with men within 3 months, provide e-mail, Computer with Windows, internet, Resided in US and understand English</td>
<td>Internet user MSM, During Apr to May, 2004, 18 years older, Sex with men last 12 months, Living in population &lt;75000 driving time &gt;60 mins from urban</td>
<td>MSM frequented a gay website, 18 years older, Sex with men last 12 months, Living in population &lt;75000 driving time &gt;60 mins from urban</td>
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</table>
## Appendix C

### Quality Assessment Summary Part 9

**SIGN methodology Checklist for Randomized Controlled Trials**


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<tbody>
<tr>
<td>3.6 What criteria are used to decide who should be EXCLUDED from the study?</td>
<td>Not consent and not finished the pre-evaluation questionnaire</td>
<td>Not consent and not finished the pre-evaluation questionnaire</td>
<td>Not consent and not finished the pre-evaluation questionnaire</td>
<td>Not consent and not finished the pre-evaluation questionnaire</td>
<td>People in urban Not consented and not finished the pre-evaluation questionnaire</td>
<td>People in urban Not consented and not finished the pre-evaluation questionnaire</td>
</tr>
<tr>
<td>3.7 What intervention or risk factor is investigated in the study? (Include dosage where appropriate)</td>
<td>STI/HIV knowledge, HIV-related perception, Self-reported STI Service utilization, Sex partnership, Anal sex behaviors, Oral sex behaviors, Condom use for anal sex, Condom use for oral sex</td>
<td>Self-reported no. of Unprotected Anal Intercourse with Male Partners (UAIMP) in last 90 days, Likelihood to change beliefs and behaviors of UAIMP</td>
<td>Behavior change of disclosure of HIV status from partner and to partners by ask, tell, or both ask and tell.</td>
<td>Sexual practice, No of times with or without condoms, Intervention satisfaction, Unprotected anal intercourse (UAI) receptive (URAI) insertive (UIAI), Unprotected oral intercourse (UROI) and (UIOI)</td>
<td>Condom use (OUC), Insisting safer sex (OISS), Self-efficacy on condom use, (SSC), Insisting safer sex (SSA)</td>
<td>HIV/AIDS knowledge, Cognitive precursors to risk reduction behaviors (i.e. self-efficacy, outcome expectancy, and willingness to change risk behavior), HIV sexual risk behavior</td>
</tr>
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</table>
## Quality Assessment Summary Part 10

### SIGN methodology Checklist for Randomized Controlled Trials


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</thead>
<tbody>
<tr>
<td>3.8 What comparisons are made in the study (ie what alternative treatments are used to compare the intervention with). Include dosage where appropriate.</td>
<td>CG: Only pamphlets were given</td>
<td>Null waitlist control Complete a baseline survey, some additional scales</td>
<td>No comparisons mentioned</td>
<td>A stress reduction training program provided</td>
<td>obtain the intervention 1 week later</td>
<td>No comparisons mentioned</td>
</tr>
<tr>
<td>3.9 What methods were used to randomize patients, blind patients or investigators, and to conceal the randomization process from investigators?</td>
<td>Computer randomization</td>
<td>Computer randomization</td>
<td>NA</td>
<td>Computer randomization</td>
<td>Computer randomization and intervention start 1 week later than the intervention group</td>
<td>NA</td>
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</tbody>
</table>
### SIGN methodology Checklist for Randomized Controlled Trials


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<tbody>
<tr>
<td>3.10 How long did the active phase of the study last?</td>
<td>6 months</td>
<td>3 months</td>
<td>3 months</td>
<td>3 months</td>
<td>1 year</td>
<td>Not mentioned</td>
</tr>
<tr>
<td>3.11 How long were patients followed-up for, during and after the study?</td>
<td>6 months</td>
<td>3 months</td>
<td>3 months</td>
<td>3 months</td>
<td>14 to 28 days</td>
<td>10 to 42 days</td>
</tr>
</tbody>
</table>
SIGN Grading System

LEVELS OF EVIDENCE

1++ High quality meta-analyses, systematic reviews of RCTs, or RCTs with a very low risk of bias
1+ Well-conducted meta-analyses, systematic reviews, or RCTs with a low risk of bias
1- Meta-analyses, systematic reviews, or RCTs with a high risk of bias
2++ High quality systematic reviews of case control or cohort or studies
High quality case control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal
2+ Well-conducted case control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal
2- Case control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal
3 Non-analytic studies, e.g. case reports, case series
4 Expert opinion

GRADES OF RECOMMENDATIONS

At least one meta-analysis, systematic review, or RCT rated as 1++, and directly applicable to the target population; or
A body of evidence consisting principally of studies rated as 1+, directly applicable to the target population, and demonstrating overall consistency of results
A body of evidence including studies rated as 2++, directly applicable to the target population, and demonstrating overall consistency of results; or
Extrapolated evidence from studies rated as 1++ or 1+
A body of evidence including studies rated as 2+, directly applicable to the target population and demonstrating overall consistency of results; or
Extrapolated evidence from studies rated as 2++
Evidence level 3 or 4; or
Extrapolated evidence from studies rated as 2+

Reference:
http://www.sign.ac.uk/GUIDELINES/FULLTEXT/50/ANNEXB.HTML
## Timeline Chart of Internet-based Sex Education Program

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Weeks</th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<tbody>
<tr>
<td>Informal Discussion with colleagues</td>
<td>✔</td>
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<tr>
<td>Gather information and prepare proposal</td>
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<td>Discussion with NO and SNO</td>
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<td>Presentation to COS</td>
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<td>Formation of program committee</td>
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<tr>
<td>Sending invitation letters and e-mail to relevant parties</td>
<td>✔ ✔</td>
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<td>Setup protocol and guideline</td>
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<td>Training sessions and sharing</td>
<td>✔ ✔ ✔</td>
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<tr>
<td>Preparation of materials</td>
<td>✔ ✔ ✔ ✔</td>
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Appendix F

Questionnaire

Demographic Data

1. Age group
   - ≤20
   - 21-30
   - 31-40
   - ≥41

2. Education Level
   - Form 1-5
   - Form 6-7
   - University or above

3. Marital Status
   - Single
   - Married
   - Divorced/Widow

4. Ethnicity
   - Chinese
   - Non-chinese

Sexual Behavior Preference

1. What is your sexual preference?
   - Homosexual
   - Bisexual

2. What type of sexual activities do you have recently?
   - Anal sex
   - Oral sex
   - Both oral and anal sex

3. When is your last sexual activities?
   - 0-3 months
   - 3-6 months
   - 6-12 months
   - >1 year

4. Do you use condoms in your last sexual activities?
   - Yes
   - No

5. Do you have a regular MSM partner?
   - Yes
   - No

6. Do you use condoms when having sexual activities with your regular sex partner?
   - Yes
   - No

7. Do you have sexual activities with commercial/unknown MSM sex partner?
   - Yes
   - No

8. Do you use condoms when having sexual activities with commercial/unknown MSM sex partners?
   - Yes
   - No

9. How do you find the commercial/unknown MSM sex partners?
   - Sauner
   - Bars
   - Gym Room
   - Media(Magazine/Newspaper)
   - Internet(Discussion groups/Blogs)
   - Friends

10. When do you have STI screening last time?
    - <1 month
    - 1-3 months
    - >3 months
    - Never
Module 1: STI Knowledge

1. HIV infections is not equal to AIDS patient
   - True
   - False
2. An HIV infected person may look health for a long period of time
   - True
   - False
3. Common social activities such as using the same toilet would not transmit HIV
   - True
   - False
4. Mouth to mouth kisses with a HIV infected person would not transmit HIV
   - True
   - False
5. Mosquito bite could transmit HIV
   - True
   - False

Module 2: Condom usage

1. Water base lubricants is more effective than oil base lubricant
   - True
   - False
2. Condom is effective in preventing HIV
   - True
   - False
3. Condom is not guaranteed to prevent all STI
   - True
   - False
4. Condoms should check the expiry date before use
   - True
   - False
5. Condoms can be used even the package is broken
   - True
   - False
6. Use two condoms at the same time is much safer to prevent STI
   - True
   - False

Module 3: STI Knowledge

1. One contracted with STI would be immunized from contracting other STI in future
   - True
   - False
2. Most of STI may not present signs and symptoms
   - True
   - False
3. Seek medical advice immediately when doubted to be contracted with STI
   - True
   - False
4. Not all STI can be completely cured but can be controlled
   - True
   - False
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5. Partners are strongly advised to have medical checkup and treatment to prevent cross infection
   ☐ True ☐ False

Module 4: Risk Behavior Identification

1. Unprotected anal sex is at higher risk of contracting STI and HIV
   ☐ True ☐ False
2. Oral sex is also a pathway of contracting STI and HIV
   ☐ True ☐ False
3. The best way of preventing STI contraction is single partner in whole life
   ☐ True ☐ False
4. Use condoms during anal and oral sex is an effective way to prevent STI and HIV
   ☐ True ☐ False
5. To prevent cross infection, the best way is mutual communication about the past sexual history and STI status with partner before starting sexual relationship
   ☐ True ☐ False

Module 5: Importance of screening and treatment

1. Screening is not important for early treatment of STI
   ☐ True ☐ False
2. Complications can be prevented from early treatment of STI diseases
   ☐ True ☐ False
3. Blood screening for HIV and Syphilis may not be repeated 3 months after the date of unsafe sex
   ☐ True ☐ False
4. Specimen could be collected directly on affected area presenting with signs and symptoms is the most effective way of STI investigation.
   ☐ True ☐ False
5. Treatment should be completed following the physician order
   ☐ True ☐ False

Module 6 and 7: Partner negotiation skills

1. Partner should not be notified once if contracted with STI
   ☐ True ☐ False
2. Continue sexual activities if the partner refused to use condoms.
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3. Relationship is not only based on sex but also love and mutual concern
   - True
   - False

4. Develop common interest and try to persuade partner to do other activities together when feeling unsafe to have sexual activities
   - True
   - False

5. Emphasize the importance of using condoms is not protecting self but also protecting partner
   - True
   - False

The end and Thank You!