

Interim Evaluation of BC ConsultDerm A Pilot Teledermatology Initiative in British Columbia

Prepared by

Cordova Bay Research

Victoria, B.C.

john@cordovabayresearch.com

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TABLE OF CONTENTS

Executive Summary		page 3
Foreword		page 6
Chapter 1	Overview of BC ConsultDerm	page 7
Chapter 2	Utilization of BC ConsultDerm	page 10
Chapter 3	Survey of BC ConsultDerm Dermatologists	page 16
Chapter 4	Survey of BC ConsultDerm Referring Clinician's	page 23
Chapter 5	Comparing the views of BC ConsultDerm Clinicians	page 44
Chapter 6	Conclusions and Recommendations	page 48
References		page 50

FORWARD

The purpose of this evaluation of BC ConsultDerm is to produce useful service planning information for the Shared Care Tele dermatology Committee about this initiative with a view to its being included as an insured service under the Medical Service Plan for British Columbians.

This tele dermatology pilot program is offered under the auspices of British Columbia's Shared Care Committee (2015). Shared Care promotes collaboration between family and specialist physicians and seeks to improve the patient and family journey through the integration of care and addressing system barriers.

This work will review recent literature demonstrating the overall effectiveness and efficiency of tele dermatology. It will describe a reduction in the availability of dermatology care in BC. It will examine BC ConsultDerm utilization data and describe its impact on patient wait times, patterns of service growth among the health authorities and its uptake and use by referring clinicians. It will seek tele dermatologists' opinion on operational matters, on their satisfaction with clinical images and information received and the extent to which participation in this initiative may have reduced their office or clinic time for patients. Similarly, it will seek the opinion of referring physicians and nurse practitioners on operational matters, on their satisfaction with consult quality and response time and on the benefits tele dermatology has delivered for their patients. Finally, it will discuss these findings in light of the Institute for Healthcare Improvement's (2015), triple aim frame work and the goals of BC Shared Care Committee and make recommendations for next steps.

CHAPTER 1 OVERVIEW OF BC ConsultDerm

❖ **Introduction**

Dermatology is a branch of the practice of medicine; it is a specialization that deals with skin, nails, hair and its diseases. Teledermatology, a type of telemedicine, describes the provision of dermatology expertise, by way of telecommunication or information technology, when patient and dermatologist are separated by distance (Vancouver Division of Family Practice, 2014).

Dermatology is a discipline which responds to visual clues. Teledermatology effectively conveys visual clues in the form of digital photographs, along with text describing the patient's problem, to a dermatologist for consultation. Upon reviewing this information, the dermatologist submits a report to the referring clinician with a diagnosis, an educational note and a patient management plan. This exchange of information can occur quite quickly: typically within hours or a few days. The patient returns to the referring clinician's office where treatment recommendations are reviewed and implemented.

The importance of teledermatology in the 21st Century is that the demand for dermatologic care is increasing and in many jurisdictions the number of dermatologists and/or the level of dermatology service is decreasing (Coates, 2015). Access to a dermatologist has become increasingly difficult resulting in long patient wait times. In the USA, the prevalence of skin diseases is greater than that of obesity, cancer and hypertension. It accounts for 12% primary care visits, many of which require dermatologic knowledge.

The principal beneficiary in this process is the patient who does not have to wait to be seen by a dermatologist and who does not have to experience the costs of traveling to a dermatologist in an office or clinic.

With respect to its effectiveness, a recent systematic review by the American Telemedicine Association (Whited, 2011) concludes that teledermatology generates highly reliable diagnoses, comparable to clinic-based care. It yields equivalent or superior patient management decisions for pigmented and non-pigmented lesions but was inferior for malignant neoplasms. Whited (2011) cites evidence from economic analyses that store-and-forward teledermatology has the potential to deliver cost savings, particularly from societal perspective. Referring clinicians value the educational benefit of their use of teledermatology and can apply newly-acquired knowledge in their practice.

While acknowledging its benefits, limitations or barriers to widespread uptake and use of teledermatology were noted (Whited, 2011; Coates, 2015). Among these are:

- Clinical - the absence of physical touch and the inability to replicate full-body skin exams.
- Financial - limited reimbursements from public and private insurers
- Information technology - problems in synchronizing teledermatology systems with patient electronic medical record systems

- Legal - the need for clear privacy and confidentiality guidelines and to operate in the context of a comprehensive telemedicine policy.

A Canadian review (Ndegwa, 2010) concluded that teledermatology appears to be a feasible alternative to clinic dermatology and may reduce unnecessary referrals and patient wait time. A substantial and growing body of evidence supports the use of teledermatology for differing patient populations, in addition to rural and remote areas with limited or no local access to a dermatologist. For example, Lenardis (2014) demonstrated the value of teledermatology in a Canadian urban homeless population. Ogbechie (2014) makes a case for teledermatology in urban underserved populations.

Teledermatology has the ability to reduce the number of consults to a dermatology practice or clinic. In a study of referrals in the Netherlands, Knol and colleagues (2006) found that the use of store-and-forward teledermatology resulted in a reduction in referrals by more than 50%. Distance to a dermatologist was not a factor in this study as most patients lived within a 30 minutes of the hospital.

❖ **Teledermatology in BC**

Teledermatology offers referring clinicians access to dermatology without their patients having to attend a traditional office or clinic. This service is particularly valuable when timely access to a dermatologist is not feasible by virtue of the distance a patient would need to travel or when a patient is unable to travel or there is a shortage of dermatologists.

Dismayed by the length of time his patients had to wait to see a dermatologist for assessment and by the costly travel (requiring a ferry) they experienced, Salt Spring Island family physician Dr. Shane Barclay started a process to develop a teledermatology service that could serve his patients' needs and, ultimately, be offered across the province.

BC ConsultDerm currently operates as a pilot project with an office in Vancouver and offers teledermatology to referring physicians and nurse practitioners across British Columbia. At the present time, it is not an insured service under the BC Medical Service Plan; the teledermatologist's fee for service is paid from a dedicate Shared Care fund during the trial period.

Part of the reason for patients' long waits for a dermatologist appointment is the relative reduction in the number of these medical specialists over time. Reporting on their national survey, Chow and Searles (2010) describe Canadian dermatology as a discipline that is failing to replenish itself. Training programs are producing fewer dermatologists than needed to replace retiring doctors. This attrition occurs in the context of an aging population and increasing incidence of skin diseases. Also, they describe a shift of dermatologists from rural to urban settings and changes in patterns of practice that tend to reduce access.

These observations are borne out by BC Ministry of Health (2015) data describing the number of physicians and their practice patterns as shown in Table 1.1.

Report on the Interim Evaluation of BC ConsultDerm

	Number of	Median	Total	Average	Patients per	Population
Year	Dermatologists	Age	Services	Days	Dermatologist	Estimate
2004-2005	63	52	559,964	181	2,805	4,155,017
2013-2014	63	59	512,967	173	2,592	4,631,302
Observed Difference	No change	7 years older	8% fewer	4% fewer	8% fewer	11% larger

In 2004/05 there were 63 dermatologists (median age of 52 years) providing insured services in BC; they practiced an average of 181 days per year. In 2013/14 BC had the same number of dermatologists; however, their median age had risen to 59 years and they were practicing an average of 173 days per year. These service reductions were exacerbated by an 11% increase in population during the same period according to BC Statistics (2015).

A Vancouver Sun (2013) report citing the Canadian Skin Patient Alliance suggests that BC patients wait an average of 10 weeks to see a dermatologist, with 25% waiting at least 16 weeks. A Times Colonist (2015) report citing the BC Dermatologists Association says that in the face of an increasing incidence of skin cancer, the shortage of dermatologists is critical.

BC sees about 800 new cases of melanoma each year (Times Colonist, 2015). The shortage of dermatologists in Vancouver Island Health Authority has resulted in many patients with skin cancer (melanomas) being seen later than they should. The American Cancer Society (2015) cites research showing melanoma five year survival rates ranging from 97% if diagnosed and treated in the earliest stage (1A) but decreasing to 15% if not found before it advances to stage V.

On balance, access to a dermatologist for medically necessary care is difficult not only for rural and remote residents but for urban and suburban populations as well. Teledermatology has the potential to provide an effective service for these populations, in a timely and efficient manner.

CHAPTER 2 UTILIZATION OF BC CONSULTDERM

Utilization Review

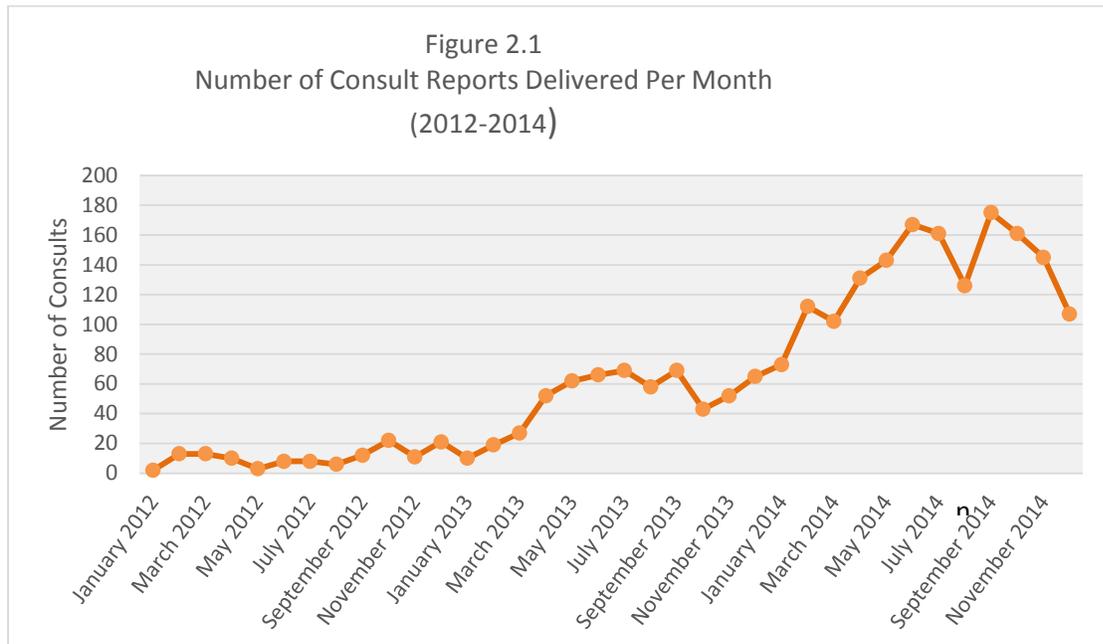
BC’s pilot teledermatology initiative makes use of the ConsultDerm system developed by Dr. Jaggi Rao and colleagues in Alberta (Ludwick et al., 2010). It is used in that province as well as BC, PEI and the NWT. BC ConsultDerm makes use of store-and-forward technology which permits a referring clinician to send diagnostic information to a particular or to the next available teledermatologist and expect to receive a consultation report consisting of a diagnosis, patient management plan and clinical pearl, within 48 hours.

Licensed Physicians and registered nurse practitioners can apply to register with BC ConsultDerm as referring clinicians. Dermatologists licensed to practice medicine in BC may register as teledermatologists. User manuals have been developed as have procedures for recruitment, registration and credentialing. BC ConsultDerm transactions between referring clinicians and dermatologists are stored in a secure database.

To examine the utilization of this service, three consecutive years of referral data was obtained from the initiative. From January 2012 through December 2014, 2,324 referral reports were delivered by BC ConsultDerm. While the initiative began in 2011, the first several months of use were viewed as a trial and testing period and not included in this review.

❖ Uptake and growth

Figure 2.1 shows a steady increase in the number of reports made over the three years, with some month-to-month variability.



❖ **Response time**

The relatively short interval between the date of a request for a consultation and its delivery (response time) is one of teledermatology’s defining features. BC ConsultDerm records these dates and the actual response time for each completed request was calculated and illustrated and grouped as follows: same day response (within 24 hours); response in 1 to 3 days; response in 4 to 7 days; response in 8 or more days.

As shown in Table 2.1, the time required to complete a consultation steadily declined over the three years reviewed. In 2012, 34% of cases were completed within one day and by 2014 that increased to 75%. Conversely, the percent of referrals requiring one or more weeks dropped from 25% in 2012 to 1% in 2014.

By the end of 2014, in 94% of cases, a referring clinician will receive a report from a BC ConsultDerm dermatologist within three days. The goal is to return a response within two days. Table 2.1 also shows a significant improvement for response time in 2013 and relatively small changes in 2014.

Table 2.1						
Change in BC ConsultDerm Response Time – 2012 to 2014						
	2012		2013		2014	
Response Time	number	percent	number	percent	number	percent
Same day	44	34%	431	73%	1,209	75%
1 to 3 days	28	22%	120	20%	298	19%
4 to 7 days	25	19%	37	6%	81	5%
8 or more days	32	25%	4	1%	15	1%
Total	129	100%	592	100	1,603	100

❖ **Location of patients**

Table 2.2 shows the geographic location of the patient for whom a teledermatology consultation is provided.

Table 2.2		
Geographic Distribution of Referrals		
Location	Number	Percent
Vancouver Island	822	29%
Interior	579	20%
Northern	575	20%
Fraser	393	14%
Vancouver Coastal	382	13%
Alberta	50	2%

Report on the Interim Evaluation of BC ConsultDerm

Saskatchewan	2	0%
Manitoba	1	0%
Ontario	9	0%
Other Canada	31	1%
USA	1	0%
Total	2,845	100%

96% of cases are British Columbia residents; 2% have an Alberta address and the remainder are from other Canadian jurisdictions and the USA. This 4% may be made up of patients who sought care while visiting BC or who are in transit between BC and another jurisdiction.

Table 2.3 sheds some light on the utilization of BC ConsultDerm as a function of the size of the population in BC's health authorities.

Health Authority	# Consults	% of Consults	Population	% Population
Vancouver Island	822	30%	755,284	16%
Interior	579	21%	722,589	16%
Northern	575	21%	285,992	6%
Fraser	393	14%	1,686,326	37%
Vancouver Coastal	382	14%	1,132,434	25%
Total	2,751	100%	4,582,625	100%

Vancouver Island's 822 consultations represent 30% of the total while its population accounts for 16% of the provincial total. VIHA and Interior Health account for relatively more teledermatology consultations than one might expect based on their population. Fraser Health and Vancouver Coastal Health are the opposite. Fraser is the most populous of the regional authorities but accounts for only 14% of the BC ConsultDerm cases. The variance demonstrated by the Northern Health Authority is the most extreme; it has 21% of the provincial population but only 6% of the referrals.

Viewed from a different perspective, Table 2.4 shows that the number BC ConsultDerm referrals is relatively small compared to all consultations by BC dermatologists. Looking at the year 2014, 1,603 BC ConsultDerm referrals were made at the rate of 0.350 per 1,000 population. At the provincial level and in the same time period, 130,485 conventional dermatology referrals were made at the rate of 28.252 per 1,000 population (Times Colonist, 2015).

Table 2.4			
Rate of referrals per 1,000 population, 2014			
	2014	2014 BC	Referrals
Type of Referral	Referrals	Population	per 1,000
BC ConsultDerm referrals	1,603	4,582,625	0.346
Total BC dermatology referrals	130,845	4,582,625	28.252

❖ **The referring clinicians**

Clinicians who make referrals to BC ConsultDerm fall into three main categories: family physicians or general practitioners; registered nurse practitioners; and others, typically medical specialists. Table 2.5 shows how the number of referring clinicians has increased across BC in the period 2012 through 2014. Table 2.6 shows this at the health authority level.

Table 2.5				
Recruitment of Referring Clinicians, 2012 to 2014				
Category	2012	2013	2014	Total
General Practitioners	37	322	279	638
Nurse Practitioners	0	17	61	78
Others	1	14	32	47
Total	38	353	372	763

At the provincial level in 2012, and early in the development of BC ConsultDerm, 38 referring clinicians had registered with the initiative. In 2013 that number increased almost 10-fold to 353 and the first nurse practitioners signed on. In 2014, the number of registrations by GPs decreased but there were increases in the other categories. Similarly, the number of nurse practitioners grew steadily as did the third group, the medical specialists.

At the health authority level (Table 2.6), Vancouver Island has the greatest number of referring clinicians. This finding is expected in the early days of BC ConsultDerm as it originated on Salt Spring Island which is within the boundaries of VIHA.

Table 2.6				
Change in the number of referring clinicians				
	2012	2013	2014	Total
Vancouver Island				
General Practitioners	10	72	63	145
Nurse Practitioners	0	6	13	19
Others	1	6	6	13
<i>Vancouver Island Health Total</i>	<i>11</i>	<i>84</i>	<i>82</i>	<i>177</i>
Fraser				
General Practitioners	8	106	24	138
Nurse Practitioners	0	3	20	23
Others	0	1	11	12
<i>Fraser Health Total</i>	<i>8</i>	<i>110</i>	<i>55</i>	<i>173</i>
Vancouver Coastal				
General Practitioners	11	45	68	124
Nurse Practitioners	0	1	19	20
Others	0	5	6	11
<i>Vancouver Coastal Health Total</i>	<i>11</i>	<i>51</i>	<i>93</i>	<i>155</i>
Interior				
General Practitioners	6	78	48	132
Nurse Practitioners	0	2	3	5
Others	0	2	8	10
<i>Interior Health Total</i>	<i>6</i>	<i>82</i>	<i>59</i>	<i>147</i>
Northern				
General Practitioners	2	21	76	99
Nurse Practitioners	0	5	6	11
Others	0	0	1	1
<i>Northern Health Total</i>	<i>2</i>	<i>26</i>	<i>83</i>	<i>111</i>

❖ **Clinicians' use of BC ConsultDerm**

During the three year interval of this review, many clinicians registered with BC ConsultDerm but not all of them used it with the same frequency and some did not use it at all. Table 2.7 summarizes the number of consultation requests in each of the health authorities. Overall, 50% of registered clinicians did not use BC Consult Derm; this ranges from 70% in Fraser to 32% in the North. Reasons for this are discussed in Chapter 4, of this report. As for intensity of use, very few (3%)

made 21 or more requests for consultation over the three years. Forty per cent of referring clinicians made between one and ten requests from 2012 through 2014.

Table 2.7												
Frequency of use of BC ConsultDerm, 2012 through 2014												
Consult Requests	Fraser Health		Interior Health		Northern Health		Vancouver Coastal		Vancouver Island		TOTAL	
21 +	5	3%	3	2%	3	3%	5	3%	9	5%	25	3%
11 to 20	7	4%	11	7%	12	10%	10	6%	15	8%	55	7%
1 to 10	45	24%	81	50%	65	55%	68	39%	83	42%	342	40%
None	132	70%	67	41%	38	32%	93	53%	93	47%	423	50%
Total	189	100%	162	100%	118	100%	176	100%	200	100%	845	100%

❖ Discussion

Teledermatology is in its early stages in British Columbia. Its growth has been steady over the three years in this review but even in 2014 it accounts for a very small proportion of all dermatology consultations. It would appear that there is an opportunity for more family physicians, general practitioners, nurse practitioners and medical specialists to register with the system.

The ability of the service to provide a timely dermatology consult is well demonstrated with 94% of consultations being delivered within 72 hours. 1% of cases wait 8 days or longer; this is in stark contrast to the estimated wait of 12 weeks or longer for the average patient as reported by Kunimoto (2013).

Looking at the source of the referrals, as BC ConsultDerm began in VIHA it is not surprising that the greatest number of referrals (822 or 30%) is from that regional health authority. Variability in use among the health authorities is more likely due to promotion and recruitment activities than the prevalence of dermatologic disease in those regional populations.

Additional evidence of the relatively small role that teledermatology now plays is found by looking at the referral rates. In 2014, BC ConsultDerm referred at the rate of 0.346 cases per 1,000 population compared to traditional in-person dermatology referrals of 28.252 per 1,000.

Given the proven benefits of teledermatology (wait time, convenience and cost), the evidence supports the view that BC ConsultDerm should develop a strategy to identify and recruit potential referring clinicians and, as required, teledermatologists.

We know that about half of those who registered for BC ConsultDerm did not use it so there is potential for uptake and use in this group. We know from our survey that referring clinicians are highly supportive of the initiative and recognize its benefits. They also raise issues about the challenges the technology presents, particularly the inability of BC ConsultDerm to work seamlessly with their office-based electronic medical record systems.

CHAPTER 3 SURVEY OF BC ConsultDerm DERMATOLOGISTS

❖ **Purpose of the survey**

This survey of dermatologists participating in BC ConsultDerm was undertaken as part of an interim evaluation of the Shared Care teledermatology initiative. Its purpose was to assess their satisfaction with various elements of the initiative and to seek their input regarding its improvement for clinicians and patients. A similar survey was designed and distributed to the physicians and nurse practitioners who registered as referring clinicians.

❖ **Methodology**

This questionnaire was designed and tested in consultation with medical and lay members of the Shared Care Teledermatology Committee. A list of participating dermatologists, and their email address, was obtained from the teledermatology office. An invitation to complete the survey was sent on June 25, 2015 and a reminder was sent on July 7.

❖ **Results**

Overall, eight (73%) of the 11 dermatologists completed the questionnaire. The tables in this report include the actual wording of the question asked. Table titles refer to the number of the item in the dermatologist questionnaire: DQ 1, DQ 2, etc. Several questions provide the opportunity for respondents to add a comment; these are included verbatim, in italics, as they appear in the questionnaire.

✓ **Describing the respondents**

Of the eight who replied, six indicated their practice was located in the Vancouver Island Health Authority, one in Fraser Health and one in the Provincial Health Services Authority (Vancouver).

<i>Health Authority</i>	<i>Number</i>	<i>% of Total</i>
Vancouver Island	6	75%
Vancouver Coastal	0	0%
Fraser	1	12%
Interior	0	0%
Northern	0	0%
Other (PHSA)	1	12%
Total	8	100% ¹

¹ Percentages in the tables in this report will be rounded and may not always sum to 100%

Regarding the length of time dermatologists have been licenced to practice in Canada, 13% reported 9 years or less, 25% reported 10 to 19 years, 13% reported 20 to 24 years and 50% reported 30 or more years.

Table DQ 2		
How long have you been licenced to practice in Canada?		
<i>Years in practice</i>	<i>Number</i>	<i>% of Total</i>
4 years or less	0	0%
5 to 9	1	13%
10 to 14	2	25%
15 to 19	0	0%
20 to 24	0	0%
25 to 29	1	13%
30 or more	4	50%
Total	8	100%

✓ **Learning the teledermatology system and technical support**

Asked how they first learned to use BC ConsultDerm, 50% identified online or phone training. 38% said they had no formal training and were essentially self-taught; one dermatologist reported using both online and in-person methods for learning.

Table DQ 3		
Which way best describes how you learned to use BC ConsultDerm?		
<i>Learning method</i>	<i>Number</i>	<i>% of Total</i>
In-person training	0	0%
Online or telephone training	4	50%
...I figured it out myself	3	37%
Other (in-person and online)	1	13%
Total	8	100%

One dermatologist added a comment on learning how to use BC ConsultDerm (DQ 4), describing it as:

- *a clumsy system, not intuitive or convenient*

Dermatologists were asked if they had sought technical assistance on how to use the system. Four sought assistance and four did not.

Table DQ 5		
Have you sought technical assistance on how to use BC ConsultDerm?		
<i>Response</i>	<i>Number</i>	<i>% of Total</i>
Yes	4	50%
No	4	50%
Total	8	100%

Of the four who reported seeking assistance, 75% were satisfied or very satisfied with the support and no one expressed dissatisfaction. Respondents were given the opportunity (DQ 7) to add a comment on technical assistance but none did so.

Table Q 6		
How satisfied are you with the assistance you received		
<i>Level of satisfaction</i>	<i>Number</i>	<i>% of Total</i>
Very Satisfied	1	25%
Satisfied	2	50%
Neutral	1	25%
Dissatisfied	0	0%
Very Dissatisfied	0	0%
Total	4	100%

❖ Privacy and confidentiality provisions

Asked about their level of satisfaction with BC ConsultDerm’s provisions for the protection of privacy and confidentiality, four replied and all were satisfied or very satisfied. No additional comments (DQ 9) were recorded.

Table DQ 8		
How satisfied are you with provisions for protection of privacy and confidentiality		
<i>Level of satisfaction</i>	<i>Number</i>	<i>% of Total</i>
Very Satisfied	3	75%
Satisfied	1	25%
Neutral	0	0%
Dissatisfied	0	0%
Very Dissatisfied	0	0%
Total	4	100%

❖ **Quality of service**

Dermatologists were asked to describe their satisfaction with the quality of images and clinical information they receive from referring clinicians. Images and information were ranked similarly; 56% were satisfied or very satisfied; two dermatologists were neutral on the matter and one was dissatisfied.

Table DQ 10		
How satisfied are you with the quality of the images you receive from referring clinicians?		
<i>Level of satisfaction</i>	<i>Number</i>	<i>% of Total</i>
Very Satisfied	2	28%
Satisfied	2	28%
Neutral	2	28%
Dissatisfied	1	14%
Very Dissatisfied	0	0%
Total	7	100%

Table DQ 11		
How satisfied are you with the quality of the clinical information you receive from referring clinicians?		
<i>Level of satisfaction</i>	<i>Number</i>	<i>% of Total</i>
Very Satisfied	1	14%
Satisfied	3	43%
Neutral	2	28%
Dissatisfied	1	14%
Very Dissatisfied	0	0%
Total	7	100%

Two dermatologists commented (DQ 12) on the quality of images and clinical information they receive:

- *Images are often out of focus or do not display the range of photos required to understand distribution and morphology*
- *It would be better to have images done by a trained technician or give referring doctors a tutorial on proper photographic technique*

Another indicator of the quality of the information received lies in the frequency with which dermatologists ask referring clinicians to send additional images or clinical information in order to complete their referral (DQ 13). In this survey, five (71%) indicated that they make such a request in about 1% of cases, or less. One dermatologist said that such requests are made in about 5% of cases and another said 25% of cases.

Response to a question (DQ 14) about the how frequently the dermatologists recommended an office or clinic visit for a teledermatology referral was identical to DQ 13 (above). Five (71%) replied that they make such a request in 1% of cases, or less; one responded 5% and one responded 25% of cases.

❖ **Impact of teledermatology on clinic or office practice**

Time spent participating in a teledermatology initiative has the potential to reduce the time spent seeing patients in a clinic with the possible consequence of increasing patient wait times. In this survey all seven (100%) reported that neither their office hours nor the volume of patients seen in clinic have changed as a result of their work with BC ConsultDerm.

Table DQ 15		
Has participation in BC ConsultDerm had an impact on the number of clinic hours or patient volume?		
<i>Response</i>	<i>Number</i>	<i>% of Total</i>
My clinic hours have been reduced	0	0%
My clinic hours have not changed	7	100%
Total	7	100%

❖ **Teledermatology caseload**

Asked about the current volume of teledermatology referrals they receive and the desire for change, 57% dermatologists replied their current caseload is just about right while 43% said they would like more. None suggested that they would prefer fewer referrals.

Table Q 17		
Which of the following statements best reflects your view on the number of BC ConsultDerm requests?		
<i>Response</i>	<i>Number</i>	<i>% of Total</i>
I would like more consult requests	3	43%
I would like fewer consult requests	0	0%
Present number of requests is about right	4	57%
Total	7	100%

Three respondents provided comments (DQ 18):

- *The number overall is about right. Sometimes they come in clusters and of course that's often when I am very busy otherwise, so it takes a bit longer to reply than I would like.*
- *Presently, I take only assigned consultation requests. MDs who refer to my clinic have been slow to register with the programme.*

- *You're such a valuable service; I am surprised to receive only very rare consultations. About 1 to 2 per month.*

❖ **Suggestions for improvement of BC ConsultDerm**

The final item on the questionnaire (DQ 19) asked dermatologists to suggest improvements to BC ConsultDerm; three replied:

- *expand use to medical students*
- *I am not receiving e-mail alerts consistently re: consultation requests. This has been reported twice to Technical Support but is an ongoing problem.*
- *In the early months of my promoting this service, there were technical problems which made it difficult for some local family doctors to use this service efficiently. Many have abandoned the technology and instead are sending me photos via email or text. I think it would be very helpful to promote this service again. Also, I have received feedback that some clinicians wish my specific consultation advice but are surprised to receive consultation instead from a dermatologist they did not expect. I have always responded within 48 hours of a consultation and therefore, it is unclear as to why I am not being chosen specifically for consultation.*

❖ **Discussion**

Eight of the 13 dermatologists providing services to BC ConsultDerm completed a questionnaire. One half of those responding have been licenced to practice medicine in Canada for 30 years or more.

Asked about how they learned how to use the system, 37% responded that they figured it out for themselves using resource at their disposal. These responses suggest that formalized training for new users and rapid access to clinical decision support should be considered. BC ConsultDerm's "Policy on Privileging of Dermatologists" requires the completion of an orientation session prior use and that may provide an opportunity to ensure dermatologists are adequately trained.

Technical support is offered to BC ConsultDerm users. One half reported using it and, of that number, 75% were satisfied or very satisfied with the service received. A store-and-forward teledermatology initiative must ensure that patient information is protected and that privacy is respected. A commissioned Privacy Impact Assessment (Ferguson, 2013) looked at the initiative from the perspective of legislation protecting privacy, confidentiality and security and did not highlight areas of non-compliance. Further, all dermatologists who responded to a question about this were satisfied or very satisfied with BC ConsultDerm's privacy-related provisions. Privacy and confidentiality provisions are posted on the BC ConsultDerm website (Consult Derm, 2015).

High quality images and appropriate clinical information are required for a teledermatologist to complete a referral. Just over half of dermatologists reported satisfaction with both elements but some suggested that there is room for improvement. Respondents commented that medical images

can be out of focus or otherwise not useful and that this deficit could be addressed by training. That said, dermatologists suggest it is rare to ask referring clinicians to resend images or clinical information. Asked how often a dermatologist would recommend a clinic visit based on the teledermatology referral, the majority do so in less than 1% of cases.

The addition of teledermatology was not reported to have had a negative impact on practice volume. All respondents said their time providing in-person care has not decreased, suggesting that the teledermatology work is done outside traditional office hours. When asked if they would like more or fewer referrals, three responding dermatologists said they could take on more and four said the present number is adequate.

Given the opportunity to make suggestions for improvement of BC ConsultDerm, one dermatologist proposed expanding use to include medical students. Two others comment that they are not receiving consult requests as they had expected, suggesting that the mechanism for linking referring clinicians with dermatologists merits review.

❖ CONCLUSIONS

Eight of 11 dermatologists providing teledermatology service responded to the brief questionnaire. From their responses it can be concluded that standardization of BC ConsultDerm training may be warranted as might training of referring clinicians in taking and transmitting clinical images. Introducing BC ConsultDerm to medical students and reviewing the referral protocol are areas for potential improvement. The number of dermatologists participating in BC ConsultDerm today is small (11) and it should be relatively easy to engage them in specific quality improvement initiatives.

CHAPTER 4 VIEWS OF BC ConsultDerm’s REFERRING CLINICIANS

❖ **Purpose of the survey**

This survey of referring clinicians was undertaken as part of an interim evaluation of the Shared Care BC ConsultDerm initiative. Its purpose was to understand referring clinicians’ satisfaction with this teledermatology initiative and to seek their input regarding opportunities for improvement for clinicians and patients. A similar survey was designed and distributed to the dermatologists registered with BC ConsultDerm.

❖ **Methodology**

A questionnaire was designed and tested in consultation with medical and lay members of the Shared Care Teledermatology Committee. A list of clinicians, and their email address, was obtained from the teledermatology office. An invitation to participate was emailed on June 22 to 845 referring clinicians: 719 general practitioners and family physicians; 84 nurse practitioners; and 42 specialist physicians. A reminder was sent on July 2 to those who had not replied.

❖ **Results**

Overall, 319 (38%) replied. Response to the survey was highest among the medical specialists (52%) followed by the nurse practitioners (45%) and general practitioners, family physicians (35%).

In addition to responses to fixed-choice questions, respondents were given the opportunity to record their comments on several issues. These are included, verbatim, in this report, except references to individuals were modified to protect privacy. The tables in this report are titled with the question number (RQ 1, RQ 2, etc.) and the wording as it appeared in the questionnaire. Totals in the tables reflect the number responding to that particular question.

✓ **Describing the respondents**

To get a picture of the range of experience of the clinicians who use BC ConsultDerm, they were asked to clarify their clinical role. Of the respondents to this questionnaire, 81% are family physicians or GPs; 12% are nurse practitioners and 7% are ‘other.’ The most frequent designations within this latter are pediatricians (7) and emergency/critical care physicians (5).

<i>Clinical role</i>	<i>Number</i>	<i>% of Total</i>
Family Physician/GP	257	81%
Nurse Practitioner	38	12%
Others	22	7%

Report on the Interim Evaluation of BC ConsultDerm

Total	317 ²	100% ³
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Regarding the length of time respondents have been licenced to practice in Canada, about one half (48%) reported 9 years or less, 20% reported 10 to 19 years, 17% reported 20 to 24 years and 15% reported 30 or more years.

Table RQ 2		
How long have you been licenced to practice in Canada?		
<i>Years in practice</i>	<i>Number</i>	<i>% of Total</i>
4 years or less	95	30%
5 to 9	56	18%
10 to 14	34	11%
15 to 19	27	9%
20 to 24	26	8%
25 to 29	29	9%
30 or more	46	15%
Total	313	100%

Asked about the BC regional health authority in which they practice, 28% report Vancouver Island Health Authority, 22% report Vancouver Coastal; 21% report Interior Health; 14% report Northern Health; 12% report Fraser Health and the remaining 4% say they work in more than one health authority.

Table RQ 3		
In which health authority is your practice located?		
<i>Health Authority</i>	<i>Number</i>	<i>% of Total</i>
Vancouver Island	87	28%
Vancouver Coastal	68	22%
Fraser	38	12%
Interior	66	21%
Northern	43	14%
Other	13	4%
Total	315	100%

² The total in the tables reflects the number who responded to the particular question

³ Percentages in the tables will be rounded and may not always sum to 100%

Report on the Interim Evaluation of BC ConsultDerm

Referring doctors and nurse practitioners describe the population their practice serves in the following ways: 52% serve an urban or suburban population; 22% are rural; 15% are small town; 8% are geographically isolated or remote.

Table RQ 4		
What is the population primarily served by your practice?		
<i>Population type</i>	<i>Number</i>	<i>% of Total</i>
Urban or suburban	166	53%
Small town	47	15%
Rural	70	22%
Geographically isolated	25	8%
Other	7	2%
Total	315	100%

✓ Using BC ConsultDerm

While all referring clinicians had registered with BC ConsultDerm, 83% reported using it. The remainder had not used it and cited the following reasons:

- 6% cite technical issues, too busy to figure it out, cumbersome to load patient demographics and similar circumstances
- 5% have ready access to a dermatologist and have not needed it
- 4% had forgotten about BC ConsultDerm

Table RQ 5 & Table RQ 6		
Have you used BC ConsultDerm?		
Why have you not used BC ConsultDerm?		
<i>Response</i>	<i>Number</i>	<i>% of Total</i>
Yes	263	83%
No: technical issues; too busy; cumbersome	18	6%
No: don't need it for dermatology consults	16	5%
No: registered but forgot about it	12	4%
No: other	7	2%
Total	316	100%

Report on the Interim Evaluation of BC ConsultDerm

After registering on BC ConsultDerm, referring clinicians must learn how to use the system. While some learned in an online or in-person training session (16%), most (76%) report no formal training; they figured it out themselves. Twenty one clinicians (8%) learned how to use BC ConsultDerm in 'other' ways including from their colleagues and at a conference or meeting.

Table RQ 7		
Which of the following best describes how you learned to use BC ConsultDerm?		
<i>Learning method</i>	<i>Number</i>	<i>% of Total</i>
In-person training	37	14%
Online or telephone training	5	2%
...I figured it out myself	198	76%
Other	21	8%
Total	261	100%

Sixty nine respondents commented on learning how to use BC ConsultDerm (RQ 8). Of these, 50 said it was relatively easy, straightforward and user friendly. Comments by the remaining 19 are listed here:

- *had to figure out a workflow with EMR*
- *easy to use but sometimes a bit time consuming with uploading pictures etc*
- *always a problem with the sign on/ password*
- *thank you for providing secure access to such a valuable and prompt service that is very much appreciated by physician and patient- fantastic consults but platform can be a challenge*
- *I find that the image uploading time is quite long, and due to this, I initially was not sure if the upload was working or not. Furthermore, there have been a few occasions where the upload was unsuccessful but, the final page still loads up, where one can then submit the consult. The first time I did this, I thought it was a bit strange that I could not see my attached imaged but assumed they were somehow embedded. However, the Dermatologist confirmed that he did not see any images. So, maybe there could be a "warning" or "notice" that the image loading takes a while and that one must see the images on the final page as confirmation that they actually attached to the consult properly*
- *would have preferred some training as it was a barrier to start figuring it out and still have less comfort than I would like to use it*
- *cannot attach demographics to consult.... have to re-enter every time*
- *the iPhone app is awful...just awful...crashes often....uploading images is unreliable*
- *I found it more difficult to upload pictures than use the site; easy to use*
- *I wasn't able to load the picture and so the consult was never completed*
- *faster answer to consults is needed*
- *I have had two occasions where I entered all the patient data and the app crashed/ locked-up. It would be convenient if a case could be started using the desk-top web application and then later use the iPhone app to edit the submission by attaching photos*
- *system wasn't completely intuitive*

Report on the Interim Evaluation of BC ConsultDerm

- *better intuitive user interface*
- *some glitches - needs to be smoother and easier to use with less time to be universally accepted*
- *it was straightforward...took while to get the 'upload' picture format to work smoothly*
- *most difficult aspect was learning how to obtain good photos and get them into a file where they could be transmitted*
- *we had no help - had to figure out on our own*
- *pictures often difficult to download...I am better at it now...could be easier to have a check box form for history, then I won't forget things*

Referring clinicians were asked if they had sought technical assistance on how to use the system. 88% reported not seeking assistance and 12% did seek it.

Table RQ 9		
Have you sought technical assistance on how to use BC ConsultDerm?		
<i>Response</i>	<i>Number</i>	<i>% of Total</i>
Yes	32	12%
No	229	88%
Total	261	100%

Thirty two responded to a question about satisfaction with technical assistance. 69% were satisfied or very satisfied; 22% were neutral on the subject and 9% were dissatisfied or very dissatisfied.

Table RQ 10		
How satisfied were you with the technical assistance provided?		
<i>Level of satisfaction</i>	<i>Number</i>	<i>% of Total</i>
Very Satisfied	8	25%
Satisfied	14	44%
Neutral	7	22%
Dissatisfied	2	6%
Very Dissatisfied	1	3%
Total	32	100%

Ten respondents provided comments (RQ 11) on technical assistance and are presented here:

- *slow response time*
- *there were some problems with the patient personal information if I remember correctly...I asked for help and I recall there was an email sent out to help me but the whole process became too labour intensive so I just abandoned the whole thing*
- *for one patient there was no explanation about why the referral was not received, perhaps because the patient had an Alberta medical number*

- *the guy who tried to help was great...it was just a very frustrating technical difficulty which made it nearly impossible to load photos*
- *it was my error but they were helpful and it was resolved quickly*
- *no administrative support in spite of 3 attempts*
- *always have problem logging onto the app on my iphone*
- *very hard to find out where to get assistance and the phone number given on the shared care documents led to people who hadn't even heard of the app*
- *took a few days but worked it out...images wouldn't upload*

✓ **Privacy and confidentiality provisions**

When asked about their satisfaction with BC ConsultDerm’s provisions for the protection of privacy and confidentiality, 91% were satisfied or very satisfied; 7% were neutral on the matter and 1% dissatisfied or very dissatisfied. A 2011 Privacy Impact Assessment (Ferguson, 2011) prepared for the Shared Care Committee reviewed this matter and did not identify any areas of concern.

Table RQ 12		
How satisfied are you with provisions for protection of privacy and confidentiality?		
<i>Level of satisfaction</i>	<i>Number</i>	<i>% of Total</i>
Very Satisfied	163	62%
Satisfied	76	29%
Neutral	19	7%
Dissatisfied	1	>1%
Very Dissatisfied	2	1%
Total	261	100%

Comments (RQ 13) on privacy by referring physicians and nurse practitioners are presented here:

- *I have to trust those who know more about these things than I*
- *I presume the College has vetted this service*
- *I assumed they were adequate but know nothing about them*
- *single factor authentication*
- *don't know if there is a problem 'til there is a problem...no problems to date*
- *not sure why patient's phone number is needed on demographic section*
- *would be nice to have a very clear, highlighted section covering privacy*
- *I don't really have any way of knowing how secure the system is. An obvious risk, which is not under you control, is the device used to capture the pictures.*
- *inevitably, these pictures are sent through some type of portal and the data stored, so more concerned than previously as to patient data...specially in lieu of US law*
- *we're very concerned about the contract you want us to sign...it is totally one sided and unconditionally weighted protective of the dermatologist...we all have CMPA, including the*

Dermatologist...you will get much wider uptake and respect and goodwill if you make it mutually protective and shared legal accountability...this is a very big issue for many of our regional Divisional members

- *I assume it is up to standard of care, but do not really know anything about what you are using to achieve it*

✓ **Timeliness of response from BC ConsultDerm**

The ability to obtain a prompt response to a request for dermatology consultation is a key feature of BC ConsultDerm. When asked about their satisfaction with the time it takes to get a teledermatology report, 95% of referring clinicians reported being satisfied or very satisfied; 4% were neutral and 1% were dissatisfied or very dissatisfied.

Table RQ 14		
How satisfied are you with the time it takes to get a report from BC ConsultDerm?		
<i>Level of satisfaction</i>	<i>Number</i>	<i>% of Total</i>
Very Satisfied	209	81%
Satisfied	36	14%
Neutral	11	4%
Dissatisfied	1	>1%
Very Dissatisfied	2	1%
Total	259	100%

Respondents' comments and suggestions on timeliness (RQ 15) covered a broad range of issues. They are grouped into those which are deemed to be relatively complimentary of BC ConsultDerm and those which are critical:

Complimentary comments

- *usually same or next day*
- *exceptional*
- *helps me efficiently manage patients*
- *outstanding service*
- *very prompt with progressive follow on plans and option for follow up*
- *response time is so fast, which makes this an especially attractive feature, in addition to avoiding long travel times and costs for rural patients*
- *much quicker than if the patient saw the derm in "real time" and I needed to wait for a consult letter to be typed*
- *incredibly fast responses, particularly compared to the months it takes to get a derm consult in our rural location*
- *super-efficient...quick turnaround*

- *quick turn-around time of Consult Derm is very helpful*
- *super impressed*
- *much more convenient*
- *remarkable response time....very much appreciated*
- *exceptional*
- *very fast response*
- *always very prompt*
- *usually get a consult back within a few days*
- *the service response times are terrific*
- *an incredible fast turn-around*
- *fantastic service*
- *turnaround is remarkable*
- *it is awesome, love it*
- *incredible*
- *excellent*

Critical comments

- *took longer than I expected*
- *they never responded to my referral other than it was received, so no reports received*
- *got a note from the dermatologist eventually saying that my photos didn't transfer*
- *sometimes I feel the consultants have responses to my queries much too fast, as though they didn't spend much time thinking about the case*
- *while the consultant replied within 2 days (it took me by surprise), the photos I had attached had not been transmitted and he said so...so I tried to resend them and didn't get the same physician who didn't understand...after that, I gave up*
- *it takes time for answers...like a few days while I expect a sooner response like same day*
- *occasionally the treatment option such as cream or product is no longer available in BC...would be handy to give 2 treatment options*

✓ **Use of an electronic patient medical record (EMR)**

Asked (RQ 16) if their practice uses an EMR, 92% answered 'yes' and 8% answered 'no.' Many respondents provided the name of the EMR system(s) they use. Note that some cited more than one brand.

Table RQ 17		
What is the name of your EMR system?		
<i>Name</i>	<i>Number</i>	<i>% of Total</i>
Med Access	53	24%
OSCAR	41	19%
Intrahealth/Profile	36	16%
Wolf	34	15%

Report on the Interim Evaluation of BC ConsultDerm

MOIS	33	15%
Others	23	11%
Total	220	100%

✓ BC ConsultDerm and dermatology knowledge base

A BC ConsultDerm report includes a “note” field which can be used by the dermatologist to convey clinical pearls appropriate to the case. Teledermatology has the capability to enhance referring clinicians’ case-specific dermatology knowledge. When asked (RQ 18) if this is the case, 82% said ‘yes’ and 18% said ‘no.’ Referring clinicians’ comments (RQ 19) on this aspect of BC ConsultDerm are presented here:

- *only used on couple occasions...it certainly has potential to enhance my knowledge if improvements made*
- *would really like an educational component to this and think it should be added so I can better care for my patients instead of consulting ConsultDerm...I could also learn from the cases submitted by others*
- *I learn a lot from each case...timely feedback is very helpful...as a locum I often don't get the specialist opinion back in time when refer pts and consult derm is great learning...it is also helpful that the previous cases remain stored on consult derm for future use*
- *learned about lime juice and sun induced hyper pigmentation of skin*
- *a little bit as I had one or 2 cases to consult*
- *consults provide reassurance that I am diagnosing and managing patients correctly and treatment options that I can apply to future patient*
- *the program and consult note have reinforced what I know and enhanced my learning in dermatology differential dx and management*
- *great to have the dermatologist attach educational information or clinical pearls*
- *answers very helpful and reinforces what I already know*
- *combination of consult derm and Up to Date has improved my ability to provide confident and appropriated care in situations where I was previously uncertain of the best management plan*
- *I am able to have a text discussion after the initial consult for clarification...or I can text back comments that treatment didn't work or is unavailable...then I get a discussion on differential dx and variations in derm cases*
- *it is fun to have the previous consults recorded, it will create a great data base that I can go back to*
- *helpful for learning pattern recognition of derm diagnosis, especially since it was impossible to get any med school clinical experience (outside BC) or residency clinical experience (in BC)*
- *in a way I am less inclined to try and work out a diagnosis and treatment plan myself as it is just so accessible but on the other hand it can increase my confidence for example if I consult provides a good plan for a common condition I refer back to it...it saves costs*

because we don't have to do the trial and error process that so many providers try when unsure of a derm dx

✓ **Satisfaction with BC ConsultDerm reports**

Doctors and nurse practitioners were asked about their satisfaction with the reports they receive from BC ConsultDerm. As shown in the following table, 93% are satisfied or very satisfied with the clinical information and advice they receive from BC's teledermatologists.

Table RQ 20		
How satisfied are you with clinical information/advice received from BC ConsultDerm?		
<i>Category</i>	<i>Number</i>	<i>% of Total</i>
Very Satisfied	140	53%
Satisfied	104	40%
Neutral	12	5%
Dissatisfied	4	2%
Very Dissatisfied	2	1%
Total	262	100%

Referring clinicians' comments on satisfaction with clinical information/advice from BC ConsultDerm (RQ 21) are listed here, grouped according to whether they tend to be critical of the process or complimentary:

Critical comments

- *I am left with questions about the consult and would value a chance to ask the dermatologist one f/u question*
- *would be nice to receive a bit more of a customized message vs a very short note on diagnosis - perhaps a template could be completed re Diagnosis, Treatment options and suggested follow up (i.e. need to be seen by derm or just f/u with GP & timeline)*
- *of the 3 cases I sent in, 2 were aimed at specific doctors, neither time did the right doctor answer(someone with cosmetic experience) so all I got back was very little info or help*
- *none received...wish I did*
- *consults are very generic and non-specific...difficult to have a conversation about it - consultant often asks questions and then I'm not sure how my answers would change management suggestions*
- *unable to use BC ConsultDerm as noted due to technical issues (could not upload photos)*
- *on 2 occasion, I have specifically requested the paediatric derm to be consultant and had adult derm feedback which was not that helpful/relevant...it would be good if paediatricians could always have their referrals "defaulted" to paed derms*
- *photographs did not accurately depict the lesions*

- *it can vary from consultant to consultant--some are comprehensive and very helpful, others not so much*
- *only used it once and it was for a rash that happened to be in the diaper area that had been ongoing for months...tried all the usual diaper dermatitis measures thoroughly and explained all that in my request but the answer came back that it was diaper dermatitis and to use a standard diaper cream...I was way past that and wondering what else it might be or that I could try so the answer wasn't helpful*
- *I've also reviewed some consults that my colleagues received from consult Derm...some of the information is a bit generic I find with a remaining broad differential...I appreciate that this is largely a limitation of using remote online access, rather than hands on examination, and a limited number of photographs (sometimes of dubious quality)...derm is such a visual profession that online consults must be very frustrating for a dermatologist*
- *occasionally I feel the diagnosis is not correct, but there are limitations to what can be done without actually seeing the patient*
- *appreciate difficulty in giving advice based on often inadequate pictures but advice given is often very similar*
- *seem to get more useful info from some providers than others...small sample size overall... so tend to ask for a particular derm*
- *I sometimes seem to get generic answers to cases that I'm not sure are very helpful*
- *I work only as a part time locum...as such, I don't always have the opportunity to follow-up with interventions such as biopsy*
- *would appreciate more informative consults to be honest...they are succinct however*
- *the patient had Staph Scalded Skin and was diagnosed with severe eczema*
- *what I dislike is when comments would suggest biopsy anyway and a second referral ensues... what type of biopsy would be suggested should be added since most of us can do a biopsy*
- *quite variable depending on dermatologist responding...some are excellent, others are a lot less helpful*
- *sometimes consult note a bit generic and lacking detail*
- *consults have sometimes not been very thorough*
- *can depend on the consultant, however usually very satisfied*
- *depends on consultant...some better than others*
- *the default derm I have not found to be so helpful but since selecting Dr⁴ the consults have been of very high quality*
- *can depend on the consultant, however usually very satisfied*
- *depends on consultant...some better than others*

Complimentary comments

- *timeliness is main benefit*
- *great handouts*

⁴ The name of the dermatologist has been removed

- *sometimes a bit brief, but typically very good and helpful*
- *awesome service especially for rural practice*
- *very clear in terms of both diagnosis and management*
- *I especially like when you added the ability to email the dermatologist with follow-up questions*
- *it's truly excellent, relevant*
- *this is one of the most useful tools in my practice, I could be your poster child, love it and recommend it to all my colleagues*
- *very worthwhile service It takes one year to see a dermatologist in our area...I am able to provide care quicker...I can also make sure all tx options are explored before an office derm consult is needed*
- *great treatment options*
- *it has been helpful to be able to ask follow-up questions*

✓ **Benefit of BC ConsultDerm to patients**

The main benefits of teledermatology for patients are reduced patient wait time for a consultation and the start of treatment, reduction in the need to travel to a dermatology clinic and reduced patient travel costs and the inconveniences associated with waiting and travelling.

Referring clinicians were asked their opinion on this aspect of BC ConsultDerm and 87%, on average, report their patients received these benefits.

Table RQ 22				
My use of BC ConsultDerm has had the following result for my patients:				
<i>Benefit Category</i>	<i>Yes</i>	<i>No</i>	<i>Uncertain</i>	<i>Total</i>
Reduced patient wait time	234 (89%)	14 (5%)	14 (5%)	262 (100%)
Reduced need for patient travel	233 (89%)	15 (6%)	14 (5%)	262 (100%)
Reduced cost to patients	219 (84%)	28 (11%)	12 (6%)	262 (100%)

✓ **New BC ConsultDerm services**

Along with its conventional store-and-forward teledermatology service, BC ConsultDerm offers teledermoscopy to assist in the diagnosis of melanoma. Referring clinicians were asked about this service (RQ 23) and 92% said they were not familiar with it; 87% said they would like to learn (RQ 24).

The portability of BC ConsultDerm enables its use in a number of settings in addition to a primary care office. It can be used in the patient’s home or residential facility, in the emergency department: virtually anywhere a digital photograph can be taken. Referring clinicians were asked if they were aware of the benefits of such portability (RQ 25); 57% said they were familiar and 43% said they

were not. Asked (RQ 26) if they would like to learn more about this, referring clinicians were divided with 49% saying they would and 51% saying they would not.

✓ **Patient satisfaction with BC ConsultDerm**

Referring clinicians were asked to comment on behalf their patients about satisfaction. 83% suggest their patients are satisfied or very satisfied with their teledermatology experience. 16% were neutral on the matter, less than 1% said their patients were dissatisfied.

Table RQ 27		
How satisfied are your patients with their teledermatology experience?		
<i>Level of satisfaction</i>	<i>Number</i>	<i>% of Total</i>
Very Satisfied	115	45%
Satisfied	97	38%
Neutral	42	16%
Dissatisfied	1	<1%
Very Dissatisfied	0	0%
Total	255	100%

Referring clinicians provided the following comments (RQ 28) on patient satisfaction:

- *they love the fact that they don't have to wait several months to see a dermatologist*
- *they think it is a godsend*
- *mostly reduced wait time*
- *patients are very impressed with the technology, the results and the timeliness in achieving a consult*
- *I am extremely satisfied...clients not always getting great news so mixed...they love the expert opinion though*
- *they like how quickly we get an answer...waits in our area right now are over a year*
- *was easier when you could get a timely appointment with a derm and have them see the patient...somewhat labour intensive to take pictures, download, upload and then fill in the boxes...cannot really delegate this job...part of reason no one wants to be a GP anymore*
- *a trip away is \$1000 from our remote location*
- *patients are impressed with the speed of the consults and usually with the suggested treatments*
- *they still will want to see a 'live' dermatologist, but at least there is treatment available while waiting*
- *patients have actively participated by emailing me better photos to expedite the process this obviously makes them part of the team and results in improved satisfaction*
- *no wait and no need for expensive travel*

- *it would be nice if the consultant would follow patients they have reviewed by teledermatology*
- *speeds up diagnosis and initiation of treatment drastically - I'm not sure patients realize how much time is saved*
- *nice to be able to do the biopsy before the patient is seen by derm, if necessary...saves costly trips for rural patients*
- *it's great as my patients are home bound*

✓ **Improving BC ConsultDerm for clinicians or patients**

The final item (RQ 29) on the questionnaire gave physicians and nurse practitioners who registered on BC ConsultDerm an opportunity to make suggestions for its improvement. 47% offered suggestions which are grouped under the following headings (recognizing that there is some overlap): education and training; general use; apps and mobile apps; integration of teledermatology and EMR; promotion and increased use; and clinical content and referring clinician/dermatologist relations. They have been abstracted directly from the questionnaires and are listed here:

Education and training suggestions

Some referring clinicians would likely benefit from a formalized approach to training on how to use BC ConsultDerm, others see value in continuing education in dermatology.

- *perhaps send us an educational email about an interesting dermatologist case and include referral information Q 3 month*
- *training module/demonstration on how to use the service*
- *please provide information/orientation session for first time users*
- *education re how to use service*
- *it would be nice to get some links to references with regard to the case with consult result*
- *add educational component on dermatology and training with study credits for those new to using this resource*

Suggestions on day-to-day use of BC ConsultDerm

The most frequently occurring suggestion for improvement involved entering patient demographics, an activity described as time consuming and tedious. Several referred to the need for overall more user-friendly interface and timely access to technical help when needed.

- *try to ensure no technical difficulties--this kills the whole thing pretty quickly*
- *simplify the computer process*
- *easier way to enter patient demographics that takes less time*
- *takes too long to input the patient data*

Report on the Interim Evaluation of BC ConsultDerm

- *make contact info more accessible*
- *I haven't bothered to retry since so much difficulty at onset. I send e-referrals directly*
- *If one has trouble with access (forgotten user name or password) you need someone available...otherwise it is useless which is what I found...I used it initially but then when I forgot my access info I found there was no support and I had to not rely on it*
- *improve the patient demographic entry section*
- *a bit tedious to enter patient demographic info - can't you just go with PHN*
- *make website faster, ability to print off referral with attachments easily*
- *improve website...put links to patient info printouts*
- *the messaging thing doesn't work...link it to an email rather than inbox*
- *It takes way too long to enter all the patient information*
- *double entry of patient demographics is a waste of time for physicians*
- *could not upload photos despite trying on multiple computers/file types and contacting technical assistance*
- *improved tech of website*
- *I need IT help - maybe a stepwise link to website*
- *it might help to be able to send a video clip*
- *easier access*
- *easier photo attachment from phone, laptop, etc. less patient info to type in*
- *make it more user friendly*
- *less onerous to put patient demographics in*
- *simplify the registration process*
- *incorporating tele health as a possible addition if photos aren't enough*
- *submitting the question and uploading the pictures takes me an average of 30 minute...I would not use the service unless there was a substantial amount of urgency or benefit to the patient*
- *auto populate patient data*
- *adjust the template to allow for standardized format of the information received from the dermatologist would be helpful*
- *it needs to be very easy to use*
- *need more guidance on how to use for technophobes like me*
- *hard to access help for password resets*
- *easier login*
- *make it simple*
- *data entry inefficient*

Suggestions regarding a telederm app/mobile app

Several clinicians suggested developing or improving an app for BC ConsultDerm.

- *sometimes the app crashes...hard to upload photos*
- *develop a mobile application....like Snapchat for derm conditions*

Report on the Interim Evaluation of BC ConsultDerm

- *is there a website or smartphone app*
- *develop an app for iPhone use - to generate the consult at the same time photos are taken*
- *an iPhone app*
- *an app for my phone*
- *an app where you could take a picture and upload direct to BC ConsultDerm would be useful*
- *get an app*
- *improve the app...soon*

Suggestions specifically mentioning an EMR

By far, the most common suggestion for improvement was the need for integration with office EMR systems. Referring clinicians would like to be able to access BC ConsultDerm from their EMR.

- *hard to use from EMR...I have to take picture, take it home, and do consult from home, so I do not use it currently...I would love to be able to use it from my EMR directly*
- *it has to be easier to use - if EMRs could auto-populate - difficult to use during the patient encounter if busy - must do at the end of the day - an additional work load*
- *have a way to integrate into EMR*
- *sending the consultation by electronic fax so the document can be directly imported into my patient's file in my EMR*
- *auto-fill patient data from EMR to the form in Consult Derm*
- *integration with the EMR will be great*
- *can it send e-referral consultation letters direct to my EMR*
- *work with EMR vendors to streamline the process*
- *integrate into the EMR please*
- *If it could be incorporated in our EMR so we don't need to fill out the demographics section manually*
- *it would be great if the report could interface with our EMR*
- *the major limitation to using consult dermatology is the tremendous number of steps required for me to activate and follow through with a consult...process needs to be streamlined (or perhaps it is and I just haven't figured it out)...Currently I have to take photos, upload them to computer, shrink the resolution to allow it to attach to the consultation, then attach them to the consult (which I often try to type at home while the photos are stored on our office computer) I then have to add the photos to our common drive and to our EMR. I then receive the consult dermatology response from my email, print it, then scan it to computer at the office, then add it as a consultation attachment to the EMR. In our electronic age, this is a ridiculous number of steps which seems redundant*
- *connect directly to the EMR is so the entry of demographic information could be avoided*
- *the user interface is clumsy for me, attaching images and receiving consults back into the EMR*
- *I'd like to be able to access it more easily from the EMR*

Report on the Interim Evaluation of BC ConsultDerm

- *it is very time consuming to upload photos in my EMR to telederm*
- *printable version of your consult sent to put in our EMR charts*
- *make better integration with my EMR...unfortunately, I cannot upload photos from my EMR to BC ConsultDerm...therefore, I have to access ConsultDerm from my iPad...I take the photos with my iPhone at work...upload them to the EMR...then when I get home, also upload to my iPad, and then access Consult Derm - bit of a painful process*
- *EMR integration is going to be key*
- *integration patient data from EMR*
- *reports send directly to EMR or referrals made through EMRs*
- *I need to be able to do it simply from my EMR*
- *entering patient demographics is cumbersome...not sure if could be linked to EMR in future to avoid having to enter all fields manually*

Suggestions for promotion and increased uptake and use of BC ConsultDerm

The common theme here is that BC ConsultDerm has great potential and that more nurse practitioners and doctors would use it if they were made aware of it.

- *I have heard that not all doctors in the neighbouring community are using this service. I'm wondering how familiar all doctors are with it...perhaps an attempt could be made to introduce it at some of the regional MAC meetings via videoconference or something*
- *make it simpler and advertise it better*
- *perhaps pay GP's to use it*
- *I would like to hear more about the Dermoscopy option*
- *you will get much wider uptake and respect and goodwill if you make contract mutually protective and shared legal accountability...I hope you will do something about that*
- *maybe send an email reminder on a regular monthly email newsletter on a topic*
- *I think that every 6 months a quick email re: turn-around time for consults*
- *a yearly email reminder on the program with an invite to the service with a demo available so new-comers could 'see' how it works*
- *need a fee item for referring physician*
- *no suggestions...just don't fold*
- *a fee code for this application*
- *don't think everyone is aware of it*
- *let clinicians know its available and what the service provides*
- *get all dermatologists on it*
- *not many of my colleagues are aware of this service*
- *yes email all users on a regular basis (q 6 months) detailing on how to utilize the service*
- *set it up for nationwide use (Canada)*
- *it was especially useful even in the urban setting when we had a more severe shortage of Dermatologists that would see MSP/medical cases*
- *I find most GPs are unaware it exists*

Suggestions relating to clinical content and referring clinician/dermatologist relations

These suggestions address the relationship between referring clinician and dermatologist:

- *am unclear as to how many times I can ask for follow up email questions for each case....do I need to submit a new consult, in particular for chronic conditions...mail function is a little clunky and doesn't notify you of incoming messages*
- *perhaps the opportunity to discuss over phone after initial report or Rx*
- *allowing back and forth discussion between doctor and consulting physician...currently, case gets closed once dermatologist responds...but what if I need further clarification*
- *add a little option for interaction...texting*
- *an information package on what should be biopsied would be useful...this would save patients a second trip to the office before diagnosis*
- *maybe copy consult to patient's email*
- *feedback to dermatologists on how satisfied clinicians are with response*
- *there is no way to ask additional questions (at least that I can figure out) about cases...in some situations this would be helpful*
- *provide option for dermatologist to phone requesting MD*
- *occasionally it would be nice to do a follow-up and I haven't done this as I assume it is a one-time consult*
- *more detail in consult note option to f/u with telephone consult with dermatologist*
- *paediatric cases streamed to paediatric derms*
- *more specific Rx especially if compounded*
- *turn-around time is amazing*
- *provide more detailed education on the conditions identified, rather than just a proposed treatment plan, so that I may learn better from my consults*
- *when we used it, although asking for our specific dermatologist she did not get that request and did not see the consult*
- *make it easier for follow up*
- *specialists: please give DDx...give some teaching on typical/atypical presentation of skin disease*
- *would appreciate the ability to go back and add photos to an existing consult and resend...at the moment, I have to start over again if there is any errors with linking photos*

Summary

Overall, 38% of referring clinicians who received an invitation completed this survey. By way of comparison, pan-Canadian response to the 2014 National Physician Survey was 16% and for BC family physicians it was 15.4%. The findings of this survey are intended for internal quality improvement use by BC ConsultDerm; they should not be taken to reflect the views of physicians and nurse practitioners in BC about teledermatology.

Response to this survey was greatest among the medical specialists (52%) followed by nurse practitioners (45%) and general practitioners, family physicians (35%).

Almost one half (48%) reported being licenced to practice in Canada less than 10 years. More respondents identified their practice being located in Vancouver Island Health (28%) compared to other regional health authorities. This is not surprising as the teledermatology initiative started on Salt Spring Island and has operated there longer than in other regions. Asked to describe the population they served, an urban or suburban population was the most common (53%) response.

Not every clinician who registered with BC ConsultDerm has used it. In this survey 17% of respondents say that they did not use it. Asked why, the main reasons are: technical issues, especially entering patient demographics and linking with the office electronic medical record; not needing it because they have access to a dermatologist; and finally, just forgetting about it.

Using BC ConsultDerm

Compared to the alternatives, 76% say that they figured out how to use BC ConsultDerm by themselves. This is not an unreasonable finding because the web-based system is clinically coherent; manuals and step-by-step user guides have been developed by Microquest, Inc. and Dr. Barclay and colleagues. However, consideration should be given to a more formal and systematic approach to registration and training. Online video instruction and FAQs may assist referring clinicians in solving a problem before they resort to seeking technical support. The clinicians' comments identify problems with image uploads so that is one area where support may be useful to users.

These matters aside, 88% of respondents have been able to use BC ConsultDerm without seeking technical assistance. Of the 33 who sought support, only three were dissatisfied or very dissatisfied with the service.

Satisfaction with privacy and confidentiality provisions of BC ConsultDerm was high with 91% being satisfied or very satisfied. The common thread to comments on this topic is that clinicians assume that BC ConsultDerm meets provincial standards. One clinician suggested that a clear statement regarding these matters be posted on the website.

Timeliness of reporting

The ability to obtain a dermatology consultation quickly, within several days, compared to the significantly longer wait times for a clinic consultation is a hallmark of a teledermatology initiative. 95% of respondents were satisfied or very satisfied with this aspect of performance.

Compatibility with an electronic medical record

The ability of a teledermatology program to effectively integrate with a practice's electronic medical record (EMR) system is a highly desired feature, according to survey respondents. At the time of this survey BC ConsultDerm did not offer such integration. 92% said their practices use an

EMR system and they want functional integration with BC ConsultDerm. In some cases, the lack of integration was cited as a reason for not using the system.

BC ConsultDerm and dermatology knowledge base

82% of referring clinicians who used BC ConsultDerm expressed the view that its use had enhanced their case-specific knowledge base. As one respondent says: “...consults provide reassurance that I am diagnosing and managing patients correctly and treatment options that I can apply to future patients.”

Satisfaction with BC ConsultDerm reports

The main outcome of a teledermatology system is the dermatologist’s report. 93% of referring clinicians said they were satisfied or very satisfied with the clinical information and advice they receive from BC ConsultDerm. Despite this very high rating, referring clinicians offer a broad array of critical comments, which could inform quality improvement undertakings.

Patient satisfaction with BC ConsultDerm

The main beneficiary of BC ConsultDerm is the patient who does not have to wait to see a dermatologist in a clinic, who does not have to bear the expenses, direct and indirect, of travelling to see a dermatologist and who can, potentially, be started on treatment much sooner than through conventional office or clinic-based dermatology.

Referring clinicians are in a very good position to say whether or not their patients are satisfied with their teledermatology experience. This survey asked the family physicians, nurse practitioners and medical specialists to speculate on patient satisfaction. 83% replied that patients are satisfied or very satisfied. One commented that even if the patient wanted to see “...a ‘live’ dermatologist...there is treatment available while waiting.”

Benefit of BC ConsultDerm to patients

In addition to their estimation of patient satisfaction, discussed above, this survey asked referring clinicians about specific benefits. 89% said that by using BC ConsultDerm their patients experienced reduced wait times and reduced need for travel; 84% said participation in BC ConsultDerm resulted in reduced costs to patients. As one clinician says: “This is a really great service to patients and physicians alike. I may only use it once every two or three months but I have always found it helpful and it has saved my patients many long and expensive trips to the city for 5 minute after six month wait consults. I would really miss it if it were to disappear.”

Extended BC ConsultDerm services

Teledermatology is potentially portable in that it can be run from any device that incorporates a digital camera and access to the internet. This includes many cell phones and tablet computers. An app was specifically designed for the Apple iPhone. Portability allows access to BC ConsultDerm wherever a clinician sees a patient. This could be in a physician’s office, in a patient’s home, in a

hospital a prison or residential facility or in a public place. Asked if they were aware of the portability potential of BC ConsultDerm, 57% said they were aware and 49% said they would like to learn more about it.

When asked if they were aware of teledermoscopy services offered by BC ConsultDerm, 92% said they were unaware. 87% said they would like to know more about it.

Improving BC ConsultDerm for patients, doctors and nurse clinicians

The final question asked physicians and nurse practitioners to offer their suggestions for improving BC ConsultDerm and 47% did so. Their input covered a broad range of subjects and is grouped as follows. Thirty three identified a need to address general usability issues and most recommended making it easier to use. Twenty three suggested improvements in integrating BC ConsultDerm with their office EMR systems, simplifying the entering of patient demographics. Nineteen provided suggestion for increased participation by referring clinicians and dermatologists. Nineteen made suggestions on ways to improve communication between referring clinicians and dermatologists on a particular case. Nine pointed to difficulties with the existing app or asked for an app to be developed. Several commented on continuing medical education possibilities for BC ConsultDerm and on training.

❖ **Conclusion & Next Steps**

This survey of referring clinicians describes a teledermatology system that is effective in delivering benefits to patients. 95% are satisfied with the time it takes to obtain a BC ConsultDerm report; 91% believe privacy and confidentiality considerations are properly addressed; 93% are satisfied with the reports they receive. Patients benefit by reduced wait times, reduced need for travel and reduced cost and inconveniences associated with waiting and travelling.

While these key outcomes are positive and encouraging, physicians and nurse practitioners who responded to this survey sent clear messages regarding the technical and operational challenges they meet in using BC ConsultDerm. All of these should be taken into consideration by the Shared Care Teledermatology Committee as it develops a plan to increase the numbers of referring clinicians, address the technical problems with the information technology and develop quality assurance mechanisms.

CHAPTER 5 COMPARING THE VIEWS OF DERMATOLOGISTS & REFERRING CLINICIANS

Acknowledging their differing but complementary roles within BC ConsultDerm, similar questions were put to referring clinicians and dermatologists and comparisons may offer useful insights to the Shared Care Tele dermatology Committee in its work to improve the service.

Marked differences between the two are found in response rate to the survey, in years in practice, learning how to use the system and satisfaction with the information BC ConsultDerm provides them with.

❖ **Response rate**

As shown in Table 5.1, the referring clinician response rate was 38% and for dermatologists it was 73%. These are acceptable and very good results, respectively. By way of comparison, the pan-Canadian response to the 2014 National Physician Survey was 16% and for BC family physicians it was 15.4%.

<i>Category</i>	<i>Dermatologists</i>	<i>Referring Clinicians</i>
Invitations sent	11	845
Responses received	8	319
Response rate	73%	38%

Response rate differences may be explained by the differing roles and relative size of the two groups of respondents. Of the 11 dermatologists, 8 replied. These physicians are directly involved with every consultation and they are paid for their service. In comparison, the referring clinicians group is large and diverse, consisting of doctors and nurse practitioners. They use BC ConsultDerm relatively infrequently. They have documented barriers to their use of the service, although they value it highly.

❖ **Years in practice**

Table 5.2 shows key differences between the two groups in the length of time they have been licenced to practice in BC. The dermatologist group is clinically homogenous but the referring clinician group is quite diverse, made up of physicians of varying specialties, medical residents and nurse practitioners.

48% of the referring group compared to 13% of dermatologists have been in practice less than 10 years. In contrast 50% of dermatologists compared to 15% of the referring group have been in practice 30 or more years.

Table 5.2		
Years Licenced to Practice in Canada		
<i>Years in practice</i>	<i>Dermatologists</i>	<i>Referring Clinicians</i>
9 years or less	13%	48%
10 to 19 years	25%	20%
20 to 29 years	13%	17%
30 years or more	50%	15%

To some extent age is correlated to years in practice. The difference between the groups is striking but not surprising given the median age of BC dermatologists is 59 years⁵ and the referring group, one would expect because of its diverse make up, is younger. The former made very few critical comments about the technology while the latter were generous in their praise but also drew attention to BC ConsultDerm’s deficiencies

❖ **Learning BC ConsultDerm**

There is also a difference in how both groups learned to use the system (Table 5.3); twice as many referring clinicians reported they were largely self-taught, figuring it out for themselves. While this is not a good finding or a bad one, it does suggest that BC ConsultDerm training be standardized and that all new recruits be trained and able to demonstrate proficiency.

Table 5.3		
How did you learn to use BC ConsultDerm?		
<i>Learning method</i>	<i>Dermatologists</i>	<i>Referring Clinicians</i>
Organized BC ConsultDerm Training	63%	24%
Largely, figured it out myself	37%	76%

For example, the dermatologists were of the opinion that improvements in image capture and transmittal by referring clinicians is warranted. Standardization may help to rectify that situation making the system more effective and efficient.

❖ **Privacy and confidentiality**

When asked for their opinion on BC ConsultDerm’s provisions for protection of privacy and confidentiality (Table 5.4), both groups expressed high levels of satisfaction. In their comments, some said that they assume that BC ConsultDerm meets provincial standards, including College of Physicians and Surgeons of BC endorsement. One suggests posting a definitive statement on this matter on the BC ConsultDerm website.

⁵ See Chapter 1 of this report

Table 5.4		
Satisfaction with provisions for protection of privacy and confidentiality		
<i>Years in practice</i>	<i>Dermatologists</i>	<i>Referring Clinicians</i>
Satisfied and very satisfied	100%	91%
Responses received	8	315
Response rate	73%	44%

❖ Technical support

One half of dermatologists and 12% of referring clinicians say they sought technical assistance after having registered on BC ConsultDerm (Table 5.5). Although the numbers are relatively small, this finding may support the need for enhanced training for both groups of clinicians. In a system where timeliness is central to its success, technical assistance should perform at a very high level.

Table 5.5		
Seeking and evaluating technical assistance		
<i>Category</i>	<i>Dermatologists</i>	<i>Referring Clinicians</i>
Those who sought technical assistance	4 (50%)	32 (12%)
Those who were satisfied or v satisfied with assistance	3 (75%)	22 (64%)

❖ Satisfaction with important elements of teledermatology

The final comparison addresses overall satisfaction with BC ConsultDerm by the two clinical groups. Referring clinicians were asked to rate their satisfaction with the reports they receive and dermatologists with the clinical information and images they receive.

As seen in Table 5.6, 93% of referring physicians and nurse practitioners were satisfied or very satisfied. That said, a number of them provided comments, some quite critical in nature but with constructive overtones. 56% of dermatologists were satisfied or very satisfied with what they receive from the referring clinicians, suggesting room for improvement in this area.

Table 5.6		
Percent satisfied and very satisfied with information received		
<i>Type of information</i>	<i>Dermatologists</i>	<i>Referring Clinicians</i>
Reports from dermatologists	-	93%
Information from referring clinicians	56%	-

In summary, some of the marked differences in response by the referring clinicians compared to the dermatologists will be a feature of the diversity of their experience in practice, their role in BC Consult derm and the small number of dermatologist responding. These findings, in the context of

the utilization data review (Chapter 2) and the verbatim comments by respondents will be valuable to the Teledermatology Committee.

CHAPTER 6 CONCLUSIONS and RECOMMENDATIONS

This evaluation reviewed BC ConsultDerm utilization data and surveyed the dermatologists and referring clinicians participating in the initiative. Consistent with those findings, it makes recommendations, outlined below, for extending the service, improving it for referring clinicians and dermatologists and for patients.

Consistent with one of the goals of the Shared Care Committee, BC ConsultDerm embodies collaboration among physicians, specialists and general practitioners, based on the application of information technology. It has the capability to expedite the start-up of patient management plans for diseases of the skin, nails and hair. It removes the barriers patients now face in relation to wait time and costs of travel to dermatology practices which, the literature demonstrates, are becoming increasingly rare.

This evaluation reviewed BC ConsultDerm in light of elements Shared Care's framework for creating a responsive and accessible health system as articulated by the Institute for Healthcare Improvement (2015), specifically the Triple Aim. As demonstrated by Cooper and Barclay (undated) this teledermatology initiative has the capacity to reduce the per capita cost of care for BC's publicly funded health system. This finding is supplemented by economic evaluations in Canada (Ndegwa, 2010) and from other countries (Coates, 2015). Further, BC ConsultDerm has improved the dermatology patient experience, according to the views of referring physicians and nurse practitioners.

The alignment of BC ConsultDerm with these goals notwithstanding, in light of demographic trends, the increasing incidence of dermatologic diseases and the relative decrease in the number of dermatologists, this evaluation respectfully submits the following recommendations:

❖ Recommendations for the Ministry of Health

1. In light of the proven benefits of teledermatology for patients, of its effectiveness and efficiency, of its alignment with elements of the triple aim and with goals of the Shared Care Committee, teledermatology should be provided an insured service in BC in the context of its overarching telemedicine strategy. In the interim, operation should continue with resources being dedicated to operations, recruitment and quality improvement as appropriate.

❖ Recommendations to BC ConsultDerm Committee

1. BC ConsultDerm develop a process to integrate its information technology with referring clinicians' electronic medical record systems
2. BC ConsultDerm develop a promotion and recruitment plan to attract more referring clinicians
3. BC ConsultDerm review the registration, credentialing, training and consultation request processes with a view to making them effective and transparent to dermatologists and referring clinicians

Report on the Interim Evaluation of BC ConsultDerm

4. BC ConsultDerm develop performance benchmarks and operational targets for consultation response time and other variables of interest to the committee
5. BC ConsultDerm develop mechanisms to generate operations reports to monitor the integrity and quality of the data collected, to review utilization and other measures of performance and quality of interest to the Shared Care Dermatology Committee

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