

Can paediatric and adolescent gynecological care be delivered via Telehealth?

Erin Barlow MD^{1,2}, Anjali Aggarwal MD FRCSC¹, Joley Johnstone RN¹, Lisa Allen MD FRCSC¹, Sari Kives MD FRCSC¹, Melanie Ornstein MD FRCSC¹, Rachel F Spitzer MD MPH FRCSC¹, Nicolette Caccia MD Med FRCSC¹

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OBJECTIVE: Paediatric and adolescent gynecology (PAG) is an evolving subspecialty, with patients often having to travel large distances to access care. The goal of the present study was to assess whether Telehealth (TH) would be appropriate for PAG services in a tertiary care centre and to determine patient/family interest.

METHODS: The present study was a prospective observational study of patients who attended PAG clinics over the course of one year. Patient data collected on each visit included postal code, diagnosis, availability of a local hospital with TH, patient appropriateness for TH and patient/family reasons for accepting TH. Visits were stratified by diagnosis to determine if certain conditions were more amenable to TH.

RESULTS: From the total visits through the year (July 15, 2008 to July 15, 2009), 1541 (79.6%) patients were approached for participation; 8 (0.5%) declined. The final sample size was 1533 patient visits. Four hundred sixty-nine visits (30.6%) were potentially appropriate for TH based on geography. According to clinic physicians, only 51 of these 469 visits (10.9%) were appropriate for TH. The main reasons for being inappropriate were the need for physical examination (n=238, 57.0%), imaging (n=57, 13.6%), or issues regarding sexuality/privacy (n=45, 10.8%). Of the 51 appropriate visits, 28 patients/families (55.0%) expressed interest in TH. Of those not interested in TH, the main reasons included the desire for a face-to-face encounter and the need to coordinate with other health care appointments.

CONCLUSION: Of the patient visits considered for TH (based on the fact that patients lived a considerable distance from the hospital), 10.9% were deemed appropriate for TH by the PAG team, but 45.0% of families/patients in this group said they would prefer a traditional clinic visit. Currently, TH appears to be appropriate for only a small subset of patients/families.

Key Words: Adolescent gynecology; Paediatric gynecology; Telehealth; Telemedicine

Paediatric and adolescent gynecology is an evolving subspecialty with few established tertiary care centres. Many patients subsequently have to travel long distances to receive care, which can create a substantial financial and temporal burden. It is generally believed that the use of Telehealth (TH) could lower costs, and improve both access to care and patient satisfaction (1, 2). TH has been successfully used in other areas of medicine to improve health care for certain populations (3). Within the paediatric population, TH has been studied in various medical subspecialties including

La télésanté peut-elle permettre de prodiguer des soins gynécologiques aux enfants et aux adolescentes?

OBJECTIF : La gynécologie pour les enfants et les adolescentes (GEA) est une surspécialité en évolution, et les patientes doivent souvent parcourir de longues distances pour accéder aux soins. La présente étude visait à évaluer si la télésanté (TS) peut convenir pour prodiguer des services de GEA dans un centre de soins tertiaires et pour déterminer l'intérêt des patientes et de la famille.

MÉTHODOLOGIE : La présente étude d'observation prospective portait sur des patientes qui avaient fréquenté des cliniques de GEA pendant un an. Les données sur les patientes colligées à chaque visite incluaient le code postal, le diagnostic, l'accès à un hôpital local doté de la TS, l'applicabilité des patientes à la TS et les raisons pour que la patiente et sa famille acceptent la TS. Les visites étaient stratifiées selon le diagnostic afin de déterminer si certaines maladies étaient plus acceptables pour la télésanté.

RÉSULTATS : D'après le nombre total de visites tout au long de l'année (du 15 juillet 2008 au 15 juillet 2009), les chercheurs ont demandé à 1 541 patientes (79,6 %) de participer, mais huit (0,5 %) ont refusé. La dimension définitive de l'échantillon était de 1 533 visites-patients. Quarante cent soixante-neuf visites (30,6 %) avaient le potentiel de convenir à la TS d'après le facteur géographique. Selon les médecins de la clinique, seulement 51 de ces 469 visites (10,9 %) convenaient à la TS. Les principales raisons des rejets étaient la nécessité de procéder à un examen physique (n=238, 57,0 %) ou à une imagerie (n=57, 13,6 %) ou les questions relatives à la sexualité ou au respect de la vie privée (n=45, 10,8 %). Des 51 visites pertinentes, 28 patientes ou familles (55,0 %) ont exprimé leur intérêt envers la TS. Parmi les personnes qui n'y étaient pas intéressées, les principales raisons invoquées étaient le souhait d'une rencontre en personne et la nécessité de coordonner avec d'autres rendez-vous de santé.

CONCLUSION : Parmi les visites de patientes envisagées pour la TS (parce que les patientes vivaient très loin de l'hôpital), 11 % étaient réputées convenir selon l'équipe de GEA, mais 45,0 % des familles et des patientes de ce groupe affirmaient préférer une visite classique en clinique. Pour l'instant, la TS semble convenir seulement à un petit sous-groupe de patientes et de familles.

radiology, dermatology, cardiology, endocrinology, pulmonology and psychiatry (4,5). Several large studies have shown very high rates of patient and caregiver satisfaction (4,6).

The feasibility of delivering quality care within the subspecialty of PAG via TH has not been investigated. The present article aims to assess whether TH, in the form of a videoconferencing link with a local hospital, would be an appropriate method of providing care for those families referred to our clinic, and to determine patient/family interest in receiving such services.

¹Department of Pediatric and Adolescent Gynecology, The Hospital for Sick Children, Toronto, Ontario; ²Department of Obstetrics and Gynecology, University of Massachusetts Memorial Healthcare, Worcester, Massachusetts, USA

Correspondence: Dr Erin Barlow, Department of Obstetrics and Gynecology, University of Massachusetts Memorial Healthcare, 119 Belmont Street, Worcester, Massachusetts, 01605 USA. Telephone 508-334-6255, fax 508-334-6063, e-mail Erin.Barlow2@umassmemorial.org

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TABLE 1
Overall distribution of visits according to diagnosis between the nonGTA and GTA

	nonGTA (n=469)		GTA (n=1064)		P
	Visits, n	nonGTA visits, %	Visits, n	GTA visits, %	
Menstrual suppression	48	10.2	70	6.6	<0.05
Congenital anomalies	45	9.6	58	5.5	<0.01
Lichen sclerosis	13	2.8	10	0.9	<0.01
Menorrhagia	63	13.4	164	15.4	NS
Vulvar other	49	10.5	82	7.7	NS
Amenorrhoea	37	7.9	77	7.2	NS
Pain	27	5.8	47	4.4	NS
PCOS	23	4.9	67	6.3	NS
Dysmenorrhoea	23	4.9	79	7.4	NS
Labial agglutination	22	4.7	36	3.4	NS
Endocrine	22	4.7	36	3.4	NS
Contraception	18	3.8	57	5.4	NS
Other	10	2.1	22	2.1	NS
Adnexal mass	40	8.5	134	12.6	<0.05
Oligomenorrhoea	17	3.6	73	6.9	<0.05
Vulvovaginitis	12	2.6	52	4.9	<0.05

GTA Greater Toronto area; NS Not significant; PCOS Polycystic ovary syndrome

METHODS

Research ethics approval was obtained from the Research Ethics Boards at the Hospital for Sick Children in Toronto (HSC) (Ontario), for a prospective observational study of patients attending the PAG clinics for one year. Written consent was obtained from the patient or family at each visit. Data collected included: postal code of the patient's home (to determine distance traveled to the hospital), diagnosis, availability of a local hospital providing TH, and appropriateness for patient assessment via TH. Based on their postal code, patients were classified as from the Greater Toronto Area (GTA) or nonGTA using the Statistics Canada definition.

The appropriateness of the visit for TH was determined by the health care provider on the day of the patient visit. The health care provider was a member of the PAG team, which comprised five staff physicians and a fellow. The reasons for exclusion from TH were selected from a standard list that was predetermined and agreed upon by the research team. These reasons included: need for a physical examination, need for imaging, consults related to sexuality and contraception, need for laboratory investigations, issues related to disclosure, patient has easy access to the HSC, need for multidisciplinary care, and lack of a local hospital that would support TH.

Patients/families were asked if they would participate in TH and reasons for accepting or declining TH were documented using a patient/family survey. It was assumed that patients who lived in the GTA were inappropriate for TH. Data were entered into Microsoft Excel and analyzed using χ^2 tests and t-tests as appropriate.

RESULTS

Of the 1935 total patient-visits to the PAG clinic between July 15, 2008 and July 15, 2009, 1541 (79.6%) patients were approached for participation, of which eight (0.5%) declined. A final sample size of 1533 patient-visits was obtained. Four hundred sixty-nine visits (30.6%) in the PAG clinic were for patients from outside the immediate hospital catchment area (ie, nonGTA) and therefore were potential candidates for TH. These patients traveled a mean

TABLE 2
Distribution of the proportion of Telehealth (TH) appropriate visits according to diagnosis

Diagnosis Type	Total visits per diagnosis (nonGTA)	TH appropriate visits n, (%)
Contraception	18	6 (33.0)
Polycystic ovary syndrome	23	5 (22.0)
Dysmenorrhoea	23	5 (22.0)
Menorrhagia	63	13 (21.0)
Menses suppression	48	11 (21.0)
Pain	27	3 (11.0)
Adnexal mass	40	3 (7.5)
Oligomenorrhoea	17	2 (2.8)
Amenorrhoea	37	1 (2.7)
Congenital anomalies	45	1 (2.2)
Vulvar other	49	1 (2.0)
Endocrine	22	0 (0.0)
Labial agglutination	22	0 (0.0)
Lichen sclerosis	13	0 (0.0)
Vulvovaginitis	12	0 (0.0)
Other	10	0 (0.0)
Total	469	51

TABLE 3
Distribution of reasons why visits were deemed inappropriate for Telehealth by the paediatric and adolescent gynecology team

Reason	
Physical examination required	56.0
Imaging required	13.0
Other	13.0
Sexuality/contraception	10.0
Lab investigations required	9.0
Disclosure issues	5.0
Easy access to The Hospital for Sick Children*	4.0
Multidisciplinary care requiring other clinic visits	4.0
Local hospital does not have Telehealth available	0.7

Data presented as %. * Toronto, Ontario

of 75.8 km (range 18 km to 925 km) based on their postal code, compared to those within the GTA who traveled a mean of 15.8 km (range 1 km to 70 km). The overlap in the range of distances between the GTA and nonGTA is secondary to the fact that the boundaries of the immediate catchment area (ie, GTA) were assigned according to distance from Toronto, as well as the access to downtown via a major highway.

The difference in overall distribution of diagnoses between the visits for patients from the GTA versus the nonGTA was significant ($P<0.0001$). There was a significantly greater proportion of patient visits for congenital anomalies, lichen sclerosis and menstrual suppression from outside the GTA (Table 1).

The distribution of the proportion of TH appropriate visits by diagnosis is displayed in Table 2. The overall distribution of diagnoses for the TH appropriate versus TH inappropriate visits (as determined by the PAG team) was statistically significant ($P<0.0001$). The diagnoses with the greatest proportion of visits considered TH appropriate were: contraception, menorrhagia, dysmenorrhoea, polycystic ovary syndrome and menstrual suppression.

Of those from outside the GTA, only 51 patient visits (10.9%) were considered by the PAG team to be appropriate for TH. Table 3 shows the distribution of reasons why visits were deemed inappropriate. A large number (56.0%) were considered inappropriate

due to the need for a physical examination, followed by the need for imaging (13.0%), 'other' (13.0%), and sexuality/contraception issues (10.0%). The mean distance traveled for the TH appropriate visits and those considered not appropriate was 75.3 km and 75.9 km, respectively, which was not statistically significant ($P=0.96$).

Of the 51 patient-visits considered appropriate, 28 patients/families (55.0%) expressed interest in TH. The reasons for being interested in or declining TH are displayed in Table 4. Convenience for the family (86%) and convenience for the patient (66.0%) were the two most common reasons for a positive response. The two most common reasons for declining TH were having another appointment at the HSC (45.0%) or wanting a face to face encounter (41.0%).

DISCUSSION

Successful integration of TH in any specialty will depend on many factors, including patient need, provider comfort and availability of the appropriate resources. Of the patients referred to our PAG clinic who were eligible for TH, as indicated by their distance from the hospital, only a small percentage of visits were considered appropriate by the PAG team (10.9%). It is important to note that these visits make up only about 3.3% of the total clinic visits for the time period studied. Our results show that the distance traveled, beyond the immediate catchment area, did not influence the judgment as to whether they were felt to be TH appropriate. Rather, the need for physical examinations, pelvic imaging and/or counseling regarding sexual health was considered by the PAG team to be barriers to TH.

The barriers to providing care via TH in PAG are related to the issues surrounding the privacy of the adolescent that are intrinsic to our specialty. The gynecologic examination may not be amenable to videoconferencing. In addition, we often discuss sensitive issues with our patients including sexuality, substance use and other risk taking behaviours without their parents present. This may be perceived as a barrier to TH, secondary to our inexperience with maintaining privacy with this modality of care. It is likely that PAG providers are sensitive to issues regarding sexual health, because of the perception that confidentiality may be breached (or that the adolescent will fear it will be breached) with the use of TH. It is generally accepted that teens will be more likely to access care if they feel their privacy will be respected (7). As adolescence is a time where young women are more likely to engage in risk-taking behaviours that could have significant long-term effects, we must be sure that access to and availability of confidential services are not compromised by the addition of TH.

Interestingly, just under one-half of the families offered TH declined. The two most common reasons for declining TH were that the families had other appointments at the HSC or that they preferred a face-to-face encounter. The former reflects the medical complexity of the patients that are often referred to the PAG clinic at the HSC, which may have influenced patient or family interest in TH. The desire to sit with the health care provider face-to-face highlights one of the insurmountable barriers to TH. Patients/families may have declined due to the desire for a more personal (and presumably more private) experience with the health care provider. In fact, there are those who warn against the overuse of TH for this reason, in fear that we are losing some of the 'art' of medicine (8).

Interestingly, there was also a significant difference in the distribution of diagnoses between patients deemed appropriate for TH compared with patients deemed inappropriate for TH. PAG providers in this study felt that the greatest proportion of TH appropriate visits by diagnosis were for contraception. These visits were likely follow-up visits or for those patients who have no

TABLE 4
Reasons for patients/families being interested in or declining Telehealth

Reasons for wanting Telehealth (n=29)	Reasons for not wanting Telehealth (n=22)		
Convenient for family	86.0 (n=25)	Other HSC appointment	45.0 (n=10)
Convenient for patient	66.0 (n=19)	Wants face to face visit	41.0 (n=9)
Presence of FP/pediatrician	10.0 (n=3)	Local hospital not convenient	5.0 (n=1)
Presence of Family/caregiver	7.0 (n=1)	Wants physical exam	0
		Other social opportunities if travel to Toronto	0

Data presented as %. FP Family practitioner; HSC The Hospital for Sick Children (Toronto, Ontario)

difficulty discussing contraception in a nonprivate setting. Alternatively, there were also many visits that were not appropriate based on the perceived need for a more private forum to discuss contraception in the setting of more complex sexual health issues. Other diagnoses considered TH appropriate by proportion of visits were: menorrhagia, dysmenorrhea, polycystic ovary syndrome and menstrual suppression. In this study, however, there were a significantly greater proportion of patients seen for congenital anomalies, lichen sclerosis and menstrual suppression from outside the GTA. This difference in diagnostic category may partially explain the small number of visits (51/469) that were felt appropriate for TH, because these patients had more complex conditions. It is therefore important to consider our referral patterns from outside the GTA when assessing the need for TH.

Many consultations at our PAG clinic are for menstrual suppression in the developmentally delayed adolescent. It appears this group may be a population on which we could focus our TH efforts, because these visits are considered amenable to TH and are a common referral from outside the GTA. This type of consultation does not usually require a physical examination or imaging. The convenience of TH would greatly benefit these families, because it is often very difficult to attend a clinical visit given the physical challenges inherent in this population of patients.

One explanation for the low percentage of visits deemed TH appropriate might be that only a small number of consultations have been performed to date using TH in PAG at the HSC, and as a result our staff is relatively inexperienced in using this type of assessment. This will likely improve as TH becomes more integrated into our general practice. A study done by Karp et al (4) reported that the more experience faculty had with telemedicine, the more positive they were about it. Almost one-third of these providers indicated that this change was due to their increased personal experience with telemedicine (4). However, it is unlikely that experience will be able to overcome the challenges involved in the gynecologic physical examination, which providers cited as the most common reason (56.0%) for deeming a patient TH inappropriate.

There are several limitations to our study. The first is that our patient population was very homogenous because they were all referred from one specific geographical region. Our results may not be generalizable to other parts of Canada, specifically those that are considered more rural. Our study population was also mostly English-speaking only and, therefore, may not reflect the needs of patients from other backgrounds. This study also did not differentiate between new and follow-up visits. We often give medical advice to established patients over the phone, which is an alternative form of TH. In this way we may have selected out a group of patients who may have been considered TH appropriate if they had

attended the clinic for a follow-up visit. Follow-up visits (such as those cited above for contraception) would likely be more amenable to TH because they often do not require a physical examination or additional investigation. Finally, this study assessed visits and not patients, meaning that, in the course of a year, some patients could have been included more than once. This study design may have overestimated the number of individual patients who may have benefitted from TH in the PAG clinic.

CONCLUSION

In our specialty, the use of TH may be appropriate for only a subset of patients and families to increase the ease of access to care in specific diagnostic categories. Considering all factors (the judgment of appropriateness by the PAG team and patient/family desire), only about 6.0% (28/469) of visits from outside the GTA were considered amenable to TH. Although many of the barriers to TH are intrinsic to the nature of PAG, it is possible that, as the acceptance and use of TH increases in the general medical community, we may find ways in which it can be utilized within this subspecialty. Ideally, we would like to have the ability to provide equal access to quality care for all patients independent of their geographical location.

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