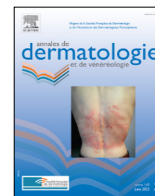




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Research letter

Tele-expertise assessment of chronic wounds by advanced practice dermatology nurses



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ARTICLE INFO

Article history:

Received 1 September 2023

Accepted 7 March 2024

Keywords:

Dermatology

Telemedicine

Advanced Nurse Practitioner

Chronic wound healing

Community networks

1. Introduction

Chronic wounds in dermatology consist mainly of leg ulcers, pressure sores and diabetic foot ulcers [1]. Their prevalence is estimated at 10% of the French population, with over-representation of the elderly [1]. Most of these wounds are managed at home by nurses and general practitioners (GPs), even though they consider themselves to be insufficiently trained in this field [2]. In this context, access to telemedicine tools could help both patients and primary care professionals [3]. Telemedicine is defined as the remote delivery of health services by health professionals using telecommunication technologies [4]. When nurses provide these services, it is referred to as telecare. For dermatology, this approach appears to be suitable and relevant [5–7]. However, there is limited data on the telecare activity of nurses in dermatology. In France, nursing telecare practice has been regulated since 2021 [8], but it remains subject to regulatory, organisational, and ethical adjustments [9]. The recent introduction in the French healthcare system of Advanced Nurse Practitioners (ANPs), professionals authorised to follow patients with specific pathologies in place of physicians, necessitates consideration of the distribution of roles and responsibilities, particularly regarding physicians [10]. In this context,

our study aimed to assess the theoretical feasibility of chronic wound management through tele-expertise (TLE) by ANPs in dermatology.

2. Methods

2.1. Design and setting

This was a cross-sectional, observational, descriptive, single-centre study. It was conducted in the dermatology department of the University Hospital Centre of Angers from November 2020 to May 2021.

2.2. Participants:

The study population included all patients with chronic wounds, for whom a healthcare professional had made a teleconsultation request from the region on the telehealth platform Covaliaweb <https://www.esante-paysdelaloire.fr/nos-services/solution-regionale-telesante-90-84.html>. The exclusion criteria were as follows: requests from patients hospitalised in the investigator's institution; requests from outside the reference area of the expert centre; requests not originating from the reference territory of the expert centre; incomplete requests.

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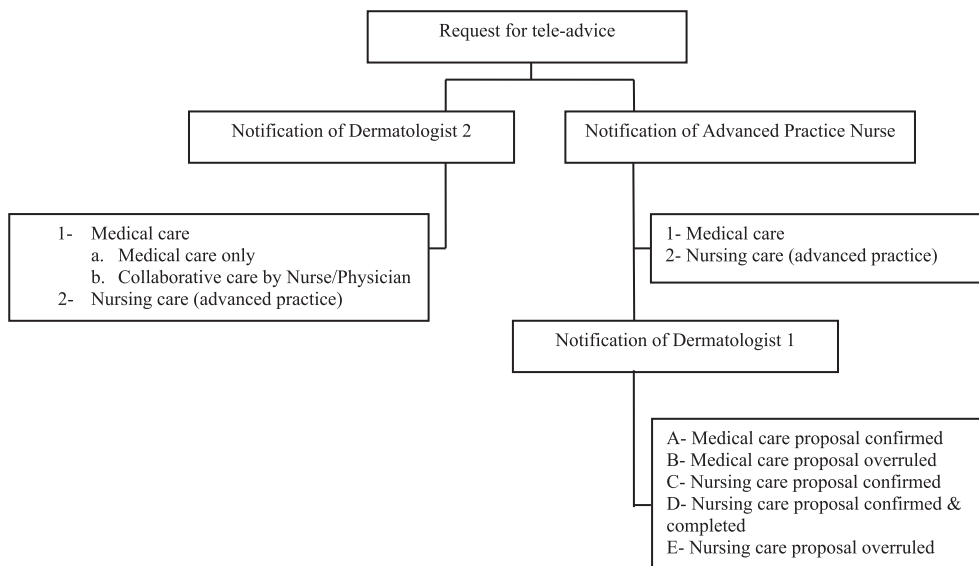


Fig. 1. Flow chart for response to requests.

2.3. Data collection

Each request was first sent to the ANP. The ANP then categorised the request as 1) manageable by the ANP or 2) requiring medical expertise. The ANP then provided a clinical management recommendation. The request for advice and the ANP's clinical management proposal were subsequently forwarded to a dermatologist (D1, referred to as supervisor), who classified the nursing proposals into five categories: A) deemed medical by the ANP and D1 confirmed the management proposal, B) deemed medical by the ANP, and D1 rejected the proposal (nursing care), C) considered manageable by the ANP and confirmed by the D1, D) considered manageable by the ANP and confirmed but supplemented by the D1, and E) considered manageable by the ANP, but the D1 rejected the proposal (medical care). At the same time, a second dermatologist (D2, referred to as the final evaluator), blind to the proposals of the first two professionals, evaluated each initial teleconsultation request. He divided these requests into two categories: 1) manageable by the ANP, and 2) requiring medical

expertise. The process is shown in Fig. 1. The primary objective of the study was to evaluate whether dermatologist D1 confirmed the ANP's guidance and management decisions regarding chronic wounds. The secondary objective was to compare the guidance and management decisions regarding chronic wounds made by the ANP with those of dermatologist D2. The study protocol was approved by the ethics committee of the University Hospital Centre of Angers under the number 2021-075.

3. Results

3.1. Characteristics of participants

Fifty-five teleconsultations were included in the study (Fig. 2). These requests involved 31 females and 24 males with an average age of 80.1 years for females and 79.8 years for males (Table 1). For 72.7% of the requests (n = 40), the patients were not previously known to the department.

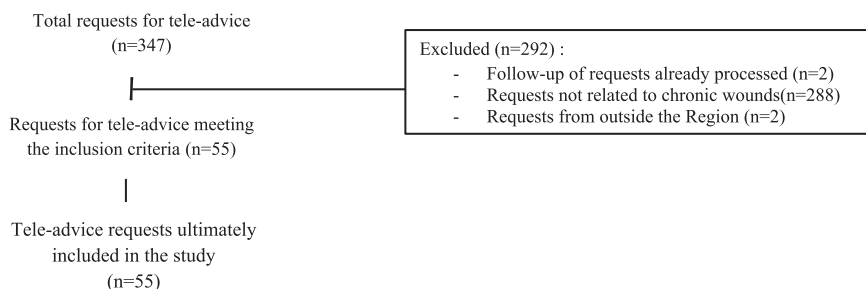


Fig. 2. Study flow chart.

3.2. Outcomes

Of the 55 cases, the ANP estimated that 43 (78.2%) required medical management. D1 agreed with the proposed management for 31 cases, accounting for 72% of the ANP's decisions. The ANP estimated that 12 (21.8%) could be managed by the ANP alone. D1 agreed with this approach for 9 cases, representing 75% of the ANP's decisions (Fig. 3). For the 55 TLE requests initially examined by the ANP, no difference in orientation was found between the decisions of the ANP and those of D2. These results are summarised in Table 2.

Table 1
Patient and wounds characteristics. SD: standard deviation.

Patient and wound characteristics	Global population (n = 55)
Mean age, years (SD)	79.7 (17.1)
- Female	79.8 (15.5)
- Male	80.1 (19.5)
Gender, n (%)	
- Female	31 (56.4)
- Male	24 (43.6)
Place of residence, n (%)	
- Personal domicile	31 (56.4)
- Facility	24 (43.6)
Administrative status, n (%)	
- Known by the department	15 (27.3)
- Unknown by the department	40 (72.7)
Wound type	
- Ulcers, n (%)	38 (69.1)
- Stasis dermatitis, n (%)	8 (14.5)
- Others, n (%)	9 (16.3)
Wound site	
- Lower limbs, n (%)	38 (69.1)
- Other, n (%)	17 (30.9)

4. Discussion

This study demonstrates the feasibility of evaluating chronic wounds through TLE by an ANP in dermatology. In our study, the ANP was able to define the scope of their action and estimated that 21.8% of teleconsultation requests could be managed alone. These requests mostly concerned patients already seen and/or followed by a physician in the department or institution. It was judged that 78.2% of the requests required an initial medical opinion. This need for medical advice could be motivated by hyper-granulating aspects justifying a biopsy, or wound sites other than the lower limbs and buttocks (scalp, face, neck, arms, back, or whole body). This good concordance in management demonstrates the reliability of the clinical judgment of the ANP, who is competent in his or her field of practice [11]. It also implies teamwork and mutual trust, which are essential for implementation of ANPs [11]. Despite this agreement between the dermatologists and the ANP, the number of teleconsultations manageable by the ANP alone remains low. These teleconsultations mainly concern vascular wounds (venous, mixed, or arterial ulcers), plantar perforating ulcers, and pressure sores. It is important to note that at the time of the study, the French regulatory framework did not allow direct patient access to the ANP without prior medical advice. This may have influenced the results of our study because, in the case of new patients, the ANP was legally obliged to consult the physician. Our study focused on remotely requested opinions via a teleconsultation platform. This teledermatology approach had been previously been studied and shown to be effective in wound care [7,12]. Lau *et al* had shown that telemedicine practice is likely to enhance professional collaboration and opportunities for professional development [13]. To our knowledge, there is no study on the implementation of ANPs in teledermatology, despite the growth of this approach [5,6]. Integrating telemedicine into advanced nursing practice, as suggested by Reed, appears rewarding for clinicians and beneficial for patients [14]. The French regulatory framework does not allow ANPs to be directly recruited for TLE

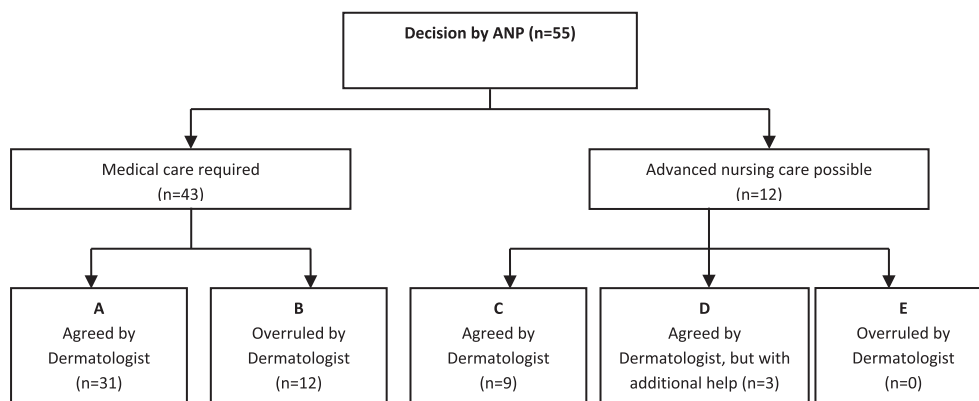


Fig. 3. Dermatologist 1 classification of ANP proposal.

Table 2
Comparative analysis: decision-making between Advanced Nurse Practitioner (ANP) and Dermatologist 2.

	Orientation by Advanced Nurse Practitioner	Guidance by Dermatologist 2	p*
Cared for solely by an ANP, n (%)	12 (21.8)	14 (25.5)	0.65
Care requiring a physician's intervention, n (%)	43 (78.2)	41 (74.5)	
Total	55 (100)	55 (100)	

* Chi² test.

activities, including in dermatology. However, the results of our study open up a real possibility of expanding the scope of ANP action in remote therapeutic support for patients with chronic wounds and of evolving the current regulatory texts. The recent opening of direct access to ANP in May 2023, albeit under certain conditions, is a perfect illustration of this [15].

Conflicts of interest

Clarisse Robin: 2022: AbbVie, Inresa, Thuasne, Urgo, Convatec. 2021: Fresenius KABI France. 2020: Pfizer SAS, Lohmann & Rausher. 2019: MSD, Sanofi Aventis.

Edmond Démoulin: Abbvie.

The other authors: none.

Funding source

No funding was received for this research.

Acknowledgment

The authors would like to thank Dr Angélique Marchand and Dr Florence Perrinnet for their contributions and support throughout this research project.

References

- [1] Meaume S, Kerihuel JC, Fromantin I, et al. Workload and prevalence of open wounds in the community: French Vulnerability initiative. *J Wound Care* 2012;21:62, 64, 66 passim. <https://doi.org/10.12968/jowc.2012.21.2.62>.
- [2] Lupon E, Turrian U, Malloizel-Delaunay J, et al. Internes en médecine et cicatrisation des plaies: une étude descriptive multicentrique entre février et avril 2018. *J Med Vasc* 2019;44:324–30. <https://doi.org/10.1016/j.idmv.2019.06.003>.
- [3] Jenkins RL, White P. Telehealth advancing nursing practice. *Nurs Outlook* 2001;49:100–5. <https://doi.org/10.1067/mno.2001.111933>.
- [4] Jain A, Way D, Gupta V, et al. Development and assessment of an artificial intelligence-based tool for skin condition diagnosis by primary care physicians and nurse practitioners in tele dermatology practices. *JAMA Netw Open* 2021;4:e217249. <https://doi.org/10.1001/jamanetworkopen.2021.7249>.
- [5] Pasadyn SR, McAfee JL, Vij A, et al. Store-and-forward tele dermatology impact on diagnosis, treatment and dermatology referrals: comparison between practice settings. *J Telemed Telecare* 2022;28:177–81. <https://doi.org/10.1177/1357633X20925269>.
- [6] Ridard E, Secember H, Carvalho-Lallement P, et al. Indicateurs en télé dermatologie : une revue de la littérature. *Ann Dermatol Venerol* 2020;147:602–17. <https://doi.org/10.1016/j.annder.2020.01.024>.
- [7] Sood A, Granick MS, Trial C, et al. The role of telemedicine in wound care: A review and analysis of a database of 5,795 patients from a mobile wound-healing center in Languedoc-Roussillon, France. *Plast Reconstr Surg* 2016;138:248S–56S. <https://doi.org/10.1097/PRS.0000000000002702>.
- [8] Décret n° 2021-707 du 3 juin 2021 relatif à la télésanté. 2021. [French Decree No.2021-707 of 3 June 2021 on telehealth. 2021.] <https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000043596730> (accessed March 6, 2024).
- [9] Chaet D, Clearfield R, Sabin JE, et al. Ethical practice in Telehealth and Telemedicine. *J Gen Intern Med* 2017;32:1136–40. <https://doi.org/10.1007/s11606-017-4082-2>.
- [10] La M-F. télémédecine et les nouvelles formes de coopération entre médecins et soignants. *Soins* 2016;61:31–4. <https://doi.org/10.1016/j.soins.2016.09.005>.
- [11] Colson S, Schwingrouber J, Evans C, et al. The creation and implementation of advanced practice nursing in France: experiences from the field. *Int Nurs Rev* 2021;68:412–9. <https://doi.org/10.1111/inr.12684>.
- [12] Téot L, Geri C, Lano J, et al. Complex wound healing outcomes for outpatients receiving care via telemedicine, home health, or wound clinic: a randomized controlled trial. *Int J Low Extrem Wounds* 2020;19:197–204. <https://doi.org/10.1177/1534734619894485>.
- [13] Lau GJ, Loiselle CG. Les outils de cybersanté et les soins infirmiers en oncologie: perceptions infirmières et contributions aux soins des patients et à la pratique avancée. *CONJ* 2018;28:125–31. <https://doi.org/10.5737/23688076282125131>.
- [14] Reed K. Telemedicine: Benefits to advanced practice nursing and the communities they serve. *J Amer Acad Nurse Practitioners* 2005;17:176–80. <https://doi.org/10.1111/j.1745-7599.2005.0029.x>.
- [15] Chamboredon P. Infirmier en pratique avancée, un statut en plein essor [Advanced practice nurse, a growing status]. *Soins* 2023;68:50–2. <https://doi.org/10.1016/j.soins.2023.04.015>.