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## Evolution and challenges of store-and-forward teledermatology for skin diseases of elderly in long-term care facilities: results of a five-year analysis

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50

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52

53 Store-and-forward teledermatology (TD)

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55 **Data availability statement:** Data results are available upon reasonable request to the

56 corresponding author.

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62 By 2030, 20% of the population will be > 65 years<sup>1</sup>, with an eventual increase in admissions to  
63 long-term care facilities(LTCF).In parallel, the incidence of skin conditions is rising, with >27  
64 million visits to dermatologists and >5 million new skin cancers each year, mostly in older  
65 adults.<sup>1</sup>While store-and-forward teledermatology(SFTD) helps overcome travel burden among  
66 elderly, it is important for geriatricians to avoid overexploiting its usage and recognize its  
67 limitations. The purpose of our study was to assess SFTD usage by LTCF geriatricians over a 5-  
68 year period.

69 We prospectively collected all SFTD requests(clinical images with medical information on  
70 ORTIF platform®)sent by LTCF geriatricians to our university hospital TD program since its  
71 implementation in January 2016 until December 2020. We collected:patients' demographic  
72 characteristics, urgency of the case according to requesters, qualitative rating of supplied  
73 information from 1 to 4, suspected diagnosis, management plan, median time to complete final  
74 response, and number of no-shows to scheduled procedures.Results are presented in Table 1. In  
75 total, 27/115(23%) of scheduled patients for biopsies/excisions failed to show up.

76 Satisfaction with SFTD on one hand, and shortage of dermatologists on another hand, explain the  
77 increased requests over years. In 2020, COVID-19 caused a decrease in requests number and an  
78 increase in time for response completion. During the pandemic, LTCF physicians seemed more  
79 concerned about COVID-19 than other health issues.<sup>2</sup> Unexpectedly, even though access to  
80 teledermatology expertise was possible, studies show decrease in SFTD requests from LTCF for  
81 dermatological reasons other than COVID-19 cutaneous signs.<sup>2</sup> An increase in infections in 2018  
82 was due to an outbreak of scabies. The proportion of urgent cases didn't increase over time,  
83 showing no unnecessary use of SFTD by geriatricians. In SFTD, quality of supplied information

84 depends on the type of dermatosis and the category of patients.<sup>3</sup> For example, SFTD requests for  
85 lower limb infections frequently have low quality of information that limit STFD usage in these  
86 cases.<sup>3</sup> In contrast, teledermatologists highly rated the quality of supplied information by  
87 geriatricians. In fact, skin cancer is the commonest cause of LTCF requests by SFTD, and it is  
88 the perfect model for a spot-diagnosis in teledermatology.<sup>3</sup> Geriatricians are also well-exposed to  
89 skin diseases compared to other physicians, as the prevalence of skin conditions is high among  
90 elderly.<sup>5</sup> This optimizes outcomes of SFTD since less exchanges are needed to supply patient  
91 information. As a quarter of patients didn't need a follow-up with a dermatologist, unnecessary  
92 travel for patients in LTCF was limited<sup>3</sup>. However, around a quarter of patients for whom a  
93 biopsy or excision was scheduled did not show up. Unexpectedly, the proportion did not  
94 decrease over the years. This issue needs to be addressed because it creates a limitation for SFTD  
95 use in elderly. Many studies have focused on the accuracy of SFTD in making skin diagnoses in  
96 elderly. But, the impact of integrating an innovation in a conventional process should not only  
97 evaluate the diagnosis outcome compared to standard care, but also key performance indicators,  
98 such as time, cost and resources.<sup>4</sup> In fact, SFTD is supposed to be time-saving and cost-effective,  
99 but no-shows waste system performance. While several studies have demonstrated a sustained  
100 decrease in no-show rates after implementation of teledermatology,<sup>6,7</sup> this does not seem to be  
101 the case for SFTD used in elderly.

102 In conclusion, adopting SFTD in the practice of LTCF is an effective tool<sup>8-10</sup> to meet skin needs  
103 of elderly. SFTD was able to avoid unnecessary travels, with a fast time response. It also  
104 provided direct treatments to patients who don't require follow-ups and referred those who need  
105 further assessment or interventions to a specialized department. Nevertheless, it is essential to  
106 conduct future studies to investigate the causes of no-shows post-SFTD in this population. This

107 would help us design a specific geriatric pathway that ensures access to care, while mitigating  
108 no-shows that result in wasting of considerable time, manpower, and resources.

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