Reducing Unwarranted Clinical Variability through Patient Visit Frequency

October 2025 Update

Healogics Wound Science Initiative

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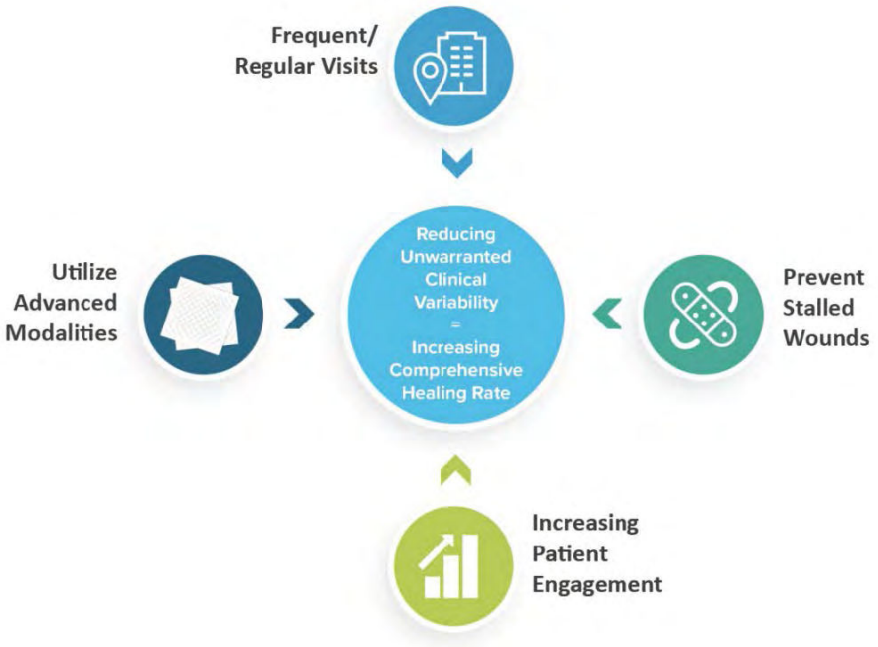
INTRODUCTION

As part of our Patient First focus, Healogics® is dedicated to continuously improving patient outcomes. Several years ago a systematic process was developed to identify and evaluate critical topics to determine the levers which would result in reducing unwarranted clinical variability across our organization and improve Comprehensive Healing Rates (CHR) amongst our patients. Four levers were identified utilizing the "CLEAR" (or Clinically-Led, Evidence- based, Analytically-driven, Research-informed) approach, which involved reviewing internal and external research to identify evidence-based recommendations.

Patient visit frequency, along with preventing stalled wounds, increasing patient engagement and utilizing advanced modalities, were identified as four key levers to reduce unwarranted clinical variability and improve CHR. In this updated paper we will be focusing on the existing evidence and research supporting the lever of patient visit frequency, as well providing some new and updated findings since the release of the initial version of this white paper. Research and support for each of the additional levers can be found in our other white papers.

Visit frequency is often poorly understood, and the clinical impact on the patient's outcome can be heavily influenced by a provider's decision to see a patient regularly or on an intermittent basis. Oftentimes the decision to see a patient in follow-up reflects the provider's schedule, clinic capacity, the distance a patient has to travel or simply a gut feeling that the provider has surrounding how often follow-up is necessary.

Rarely, however, are these decisions based on data and evidence. When reviewing the data from our electronic medical record database, we find widespread variability in visit frequency amongst our providers, despite a consistent pattern correlating increased frequency of visits and higher healing rates.



VISIT FREQUENCY IN CHRONIC DISEASE MANAGEMENT

Visit frequency and patient outcomes is not a topic unique to wound care. Support exists in medical literature for better outcomes in the treatment of chronic diseases with more frequent visits, such as in the management of hypertension control, diabetes and cholesterol. Peer-reviewed research studies have demonstrated both short-term and long-term benefits of higher visit frequency. For instance, one retrospective study of over 5,000 patients with diabetes and chronic hypertension[1] demonstrated a direct relationship between blood pressure control and visit frequency. The more frequently patients had encounters during a hypertensive period, the faster their blood pressure decreased and was able to normalize. They also found that patients who were seen more frequently had a higher likelihood of maintaining blood pressure normalization two years after the onset of the hypertensive period. The greatest benefit was found in patients who were seen at the most frequent encounter intervals (<= 2 weeks).

Additional studies of patients with diabetes have yielded similar results, demonstrating higher visit frequency led to a higher likelihood of meeting treatment goals[2], as well as faster achievement of their A1C, blood pressure, and cholesterol targets.[3]

The benefits of higher visit frequency are not limited to patients with diabetes. A study of patients with rheumatoid arthritis[4] found that the number of annual visits to rheumatologists was directly correlated with improvements in pain scores and functional disability metrics. Another study[5] examined patients newly diagnosed with hypertension and found that those with uncontrolled blood pressure had fewer encounters and longer days between visits in the first year after diagnosis than those who achieved blood pressure control. These studies are just some examples of how higher visit frequency has been shown to improve the management of chronic diseases.

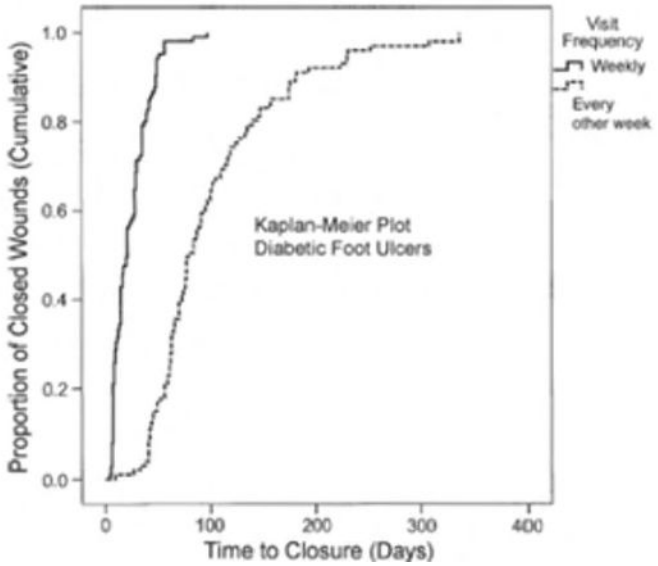
VISIT FREQUENCY IN WOUND CARE

There have been few attempts to analyze the potential impact of visit frequency in wound care, although those that have addressed the question have concluded that a positive correlation does exist between visit frequency and overall healing rates.

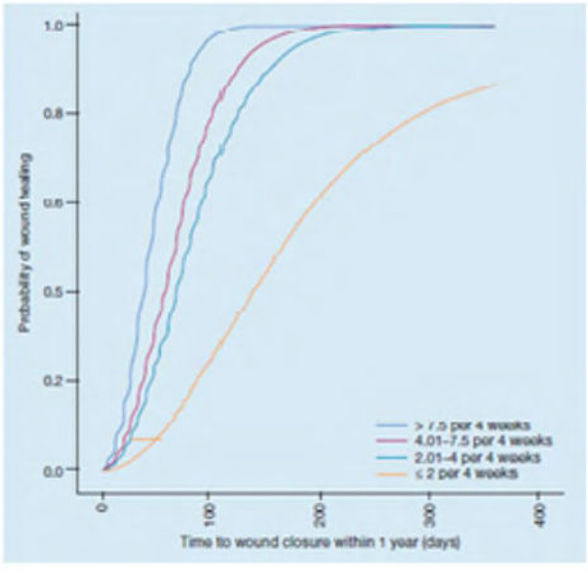
In 2012, the first study specific to visit frequency and wound outcomes was published using a subset of data from Healogics wound database[6]. This study was limited in that only a small number of Wound Care Centers® and wounds were included, the size and depth of wounds were restricted, and visit frequency was only evaluated in the first four weeks. Despite limitations, it was found that patients seen weekly in the first four weeks of treatment had significantly higher healing rates and shorter time to closure than those seen less frequently.

In response to the 2012 Healogics publication, independent wound care researchers who were critical of the limitations of the study conducted a similar study using a wound registry database of wounds not treated at Healogics Centers. Using a larger study sample of almost 40,000 diabetic foot ulcers, the researchers found similar results to the earlier Healogics paper, with those seen more frequently having higher likelihood to heal and faster time to closure.

Figure 1. Comparison of results from the two studies on visit frequency and wound care.



Warriner, et al.



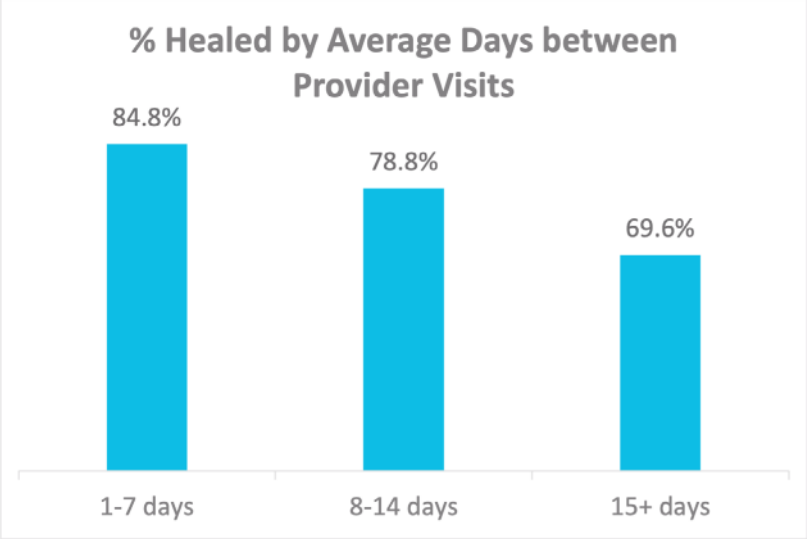
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VISIT FREQUENCY IS IMPORTANT THROUGHOUT TREATMENT

As part of our ongoing commitment to improving clinical quality, Healogics has conducted additional research to address the limited literature on visit frequency in wound care and confirm and expand upon the findings referenced above. While the existing literature previously has focused exclusively on visit frequency in the first four weeks of wound care treatment, we wanted to better understand the impact of visit frequency across the entire episode of care. In this updated edition of our original white paper, we will include some new research and analysis to supplement our original findings.

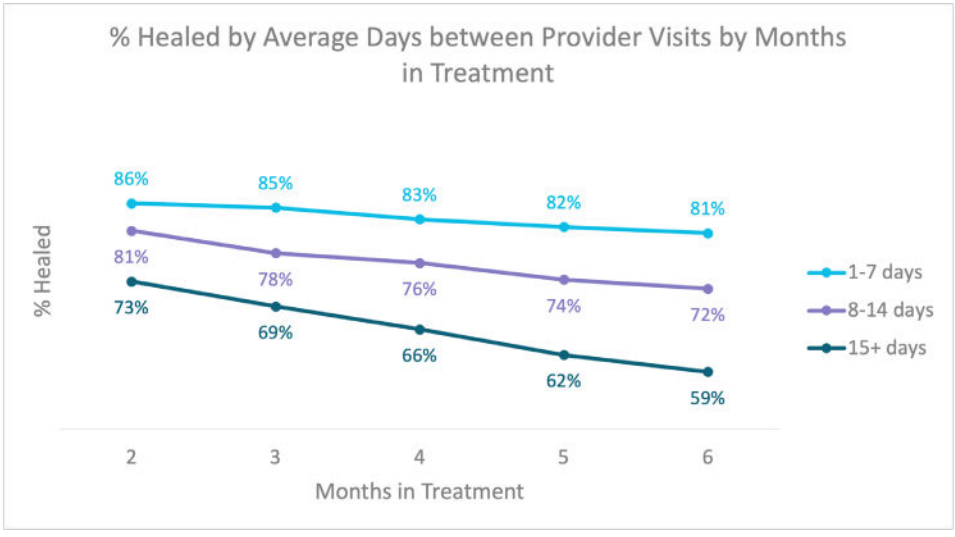
Similar to what we had seen in our previous analysis of patients discharged in 2019, in our updated analysis of all patients discharged between July 2023 and June 2025 and in treatment for at least 30 days but less than 6 months (Figure 2; n: 415,149), we found that those who were seen at least weekly throughout their treatment course had the highest wound healing outcomes. Additionally, as average time between visits increased, healing decreased.

Figure 2. CHR by the average days between provider visits for patients discharged between July 2023 and June 2025.



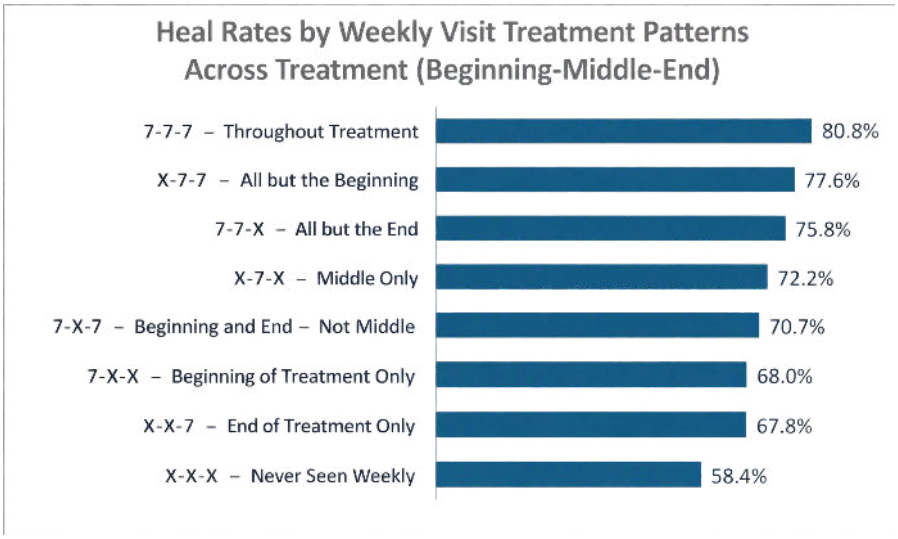
These patterns persisted regardless of total time in treatment (Figure 3), with those seen more frequently having the highest healing rates over time, and those seen the least often (more than every 2 weeks on average) having the lowest healing outcomes over time. Additionally, for those who were seen less than every 2 weeks on average across their treatment course, the rate of healing drops the most drastically, averaging nearly a 4-percentage point drop for each month they are in treatment. In contrast, those who were seen weekly experienced a much lower rate of decline over time, averaging only a 1 percentage point decrease for each subsequent month in treatment.

Figure 3. CHR by the average days between provider visits across their episode of care by total months in treatment for patients discharged between July 2023 and June 2025.



This data is consistent to what we had seen from our previous analysis examining weekly visits patterns across the treatment course on patients discharged in 2019 (Figure 4). Similar to the analysis above, patients who had weekly visits throughout their treatment had the highest healing rates compared to those who had different visit patterns. Those having more consistent time periods of weekly visits across treatment, whether it be in both the middle and end, or beginning and middle, also had better outcomes than those who only had weekly visits at the beginning of treatment or end of treatment. This further emphasizes the importance of continuity of care throughout the treatment course.

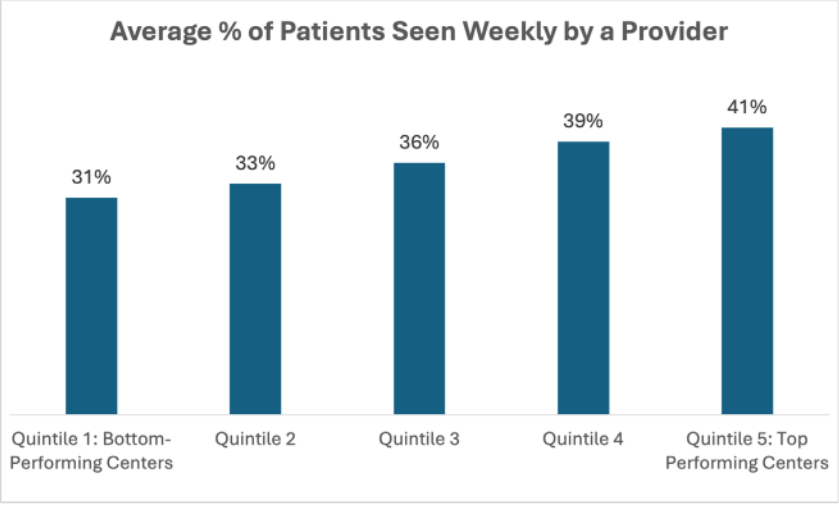
Figure 4. CHR by the patterns of weekly visits across the episode of care in for patients discharged in 2019 and in treatment a minimum of 3 months.



VISIT FREQUENCY IS A TOP DRIVER OF CLINICAL VARIABILITY

In order to better understand the role of care continuity and other causes of clinical variability in healing rates, a retrospective study utilizing Healogics data was conducted and published in 2022. More than 100 potential variables were initially evaluated, including zip code population data, Center characteristics, hospital partner characteristics, and treatment and operational metrics, to help explain why certain Centers have different healing rates than we would expect. In the final model predicting Centers' expected versus observed healing rates, all three of the care continuity variables included (weekly provider visits, weekly nurse visits, and cancellation rates) were found to be the top predictors explaining center performance, just after the area's unemployment rate. In other words, above all other Center and demographic characteristics of the Center locality, one of the biggest factor in clinical variability was the Center's ability to see patients on a regular basis. Additional data from the study, shown in Figure 5, demonstrates the relationship between Center performance and weekly visit rates, with Centers performing much better than expected based on their patient mix having the highest weekly visit rates, and those performing much lower than expected having the lowest weekly visit rates.

Figure 5. Average percent of patients seen weekly by a provider by their Observed versus Expected healing rate quintile (data from Cho, et al.[7]).



An additional and unexpected finding from this study showed that the impact of weekly visits had an even larger beneficial effect within more disadvantaged populations. Specifically in areas where Centers' had higher rates of African American residents, achieving higher weekly visit rates was even more impactful on increasing healing rates than in populations with fewer African Americans (Figure 6). This finding reemphasizes the importance of maintaining regular continuity of care, especially in populations with potentially fewer resources.

Figure 6. Marginal Effect of Weekly Provider Visit Rate on Clinic's Healing Performance Over the Proportion of African American Residents in a Clinic's Catchment Area (data from Cho, et al.[7]).

Proportion of African American residents in clinic's catchment area	Estimated marginal effect of a 10% increase in the weekly provider visit on clinic's healing performance	95% Confidence Interval	
		Upper CI	Lower CI
10%	2.30	3.27	1.33
20%	2.77	3.77	1.76
30%	3.23	4.47	1.99
40%	3.69	5.27	2.12
50%	4.16	6.13	2.18
60%	4.62	7.02	2.22
70%	5.08	7.92	2.25
80%	5.55	8.83	2.27

OTHER CONSIDERATIONS DRIVING POSITIVE OUTCOMES WITH MORE FREQUENT VISITS

The underlying mechanisms in which higher frequency visits drive positive wound outcomes may be deeper than just receiving regular wound care itself. Intuitively, having more frequent visits allow patients more opportunity for earlier assessment and detection of issues that can impede the healing process, like infections, or non-adherence to home care. This alone may be enough to improve one's likelihood to heal.

The potential inherent benefit of frequent visits independent of treatment modalities is highlighted in the results of a randomized clinical trial8 of human cell-based therapy on venous leg ulcers (VLU) that failed to improve healing outcomes over the standard of care. Both the treatment and standard of care control groups were required to visit weekly and both attained a higher than average healing rate for VLUs at week 12. With the standard of care group reaching high heal rates and rates similar to those with advanced treatment, this demonstrates the potential positive impact of close patient follow-up over the potential advantages of advanced treatment modalities.

Another potential mechanism driving positive outcomes is building a trusting and supportive patient-provider relationship through regular visits. A 2024 study[9] of patients with chronic pain followed over 12 months found that patients who perceived their provider to be highly empathetic consistently reported better pain and health-related quality of life outcomes than those seen by less empathetic providers. Another key finding was that perceived provider empathy had a stronger association with these positive outcomes than more traditional pain treatments, including non-pharmacological treatments, opioids, and surgical intervention, highlighting that the patient-provider relationship is an essential component in successful patient care. Additionally, a systematic review[10] of 55 studies across various primary and secondary care settings found that having a positive patient expe-rience, including perceived quality of patient-provider communication, provider trust, and continuity of care, is positively associ-ated with better health outcomes, treatment adherence, and increased use of preventive care services. These studies highlight that providing an environment where patients feel comfortable to share and feel understood by their provider can drive better health behaviors and lead to more positive treatment outcomes. Having regular, weekly visits can help to increase the accessi-bility, contact, and familiarity with a provider, thereby enhancing communication and trust, fostering a positive patient-provider relationship.

There is further evidence that more frequent visits can provide additional pathways for improved healing via increased social interaction and support. A randomized controlled study of those with leg ulcers[11] found that those who were treated in a model emphasizing socialization and peer support had significantly better healing rates as well as well-being than those treated via home visits. The results of this study suggest that the social environment may have advantages other than just the provision of consistent, evidenced-based care. As is often seen in our own Centers, a bond can be formed between the patient and the care team across their episode of care. As suggested by this study as well as other researchers[12] social interaction and support may be additional mechanisms by which visit frequency can drive improved wound healing beyond the effects of consistent care.

SUMMARY AND CONCLUSIONS

Healogics continues to be focused on improving patient care by reducing unwarranted clinical variability and increasing CHR. One lever to do so is by ensuring patients are seen frequently. The medical literature across various chronic diseases, including wound care (by both Healogics and independent researchers), continue to demonstrate better outcomes with more frequent visits, particularly in those who are seen weekly. Frequent visits throughout the course of care allow any potential disruptions to healing to be identified and intervened upon earlier. Additionally, research suggests visit frequency can also evoke other positive mechanisms on wound healing, including increased trust and support in the patient-provider relationship, reduced social isolation and increased social support. These impacts may be especially beneficial in more disadvantaged populations, leading to more equitable outcomes.

In order to heal more patients, reduce time to closure and reduce unwarranted clinical variability, it is important to identify opportunities to maintain and/or improve visit frequency throughout patients' span of treatment.

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