

## Review Article

# Theory of Baseline Health- Utility of Magyar Curves

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## Abstract

Perturbations in baseline health can be detected by Magyar curves.

In patients with remarkable systemic inflammatory processes, considering the systemic process as a potential major determinant of their current and future dental disease state, is a critical determinant to address in managing the patient's clinical course. Therefore, utilizing the concept of a patient's baseline health will improve the clinicians understanding of each patient's responsiveness to and guide treatment. Magyar curves generated over extended periods of time on multiple empiric determinants is one visualization analysis which may prove of utility. Application of appropriate Artificial Intelligence apps to retrieve, analyze and structure archival information may quickly bring analysis such as this to the dental operatory.

## Introduction

In our original investigation [1] patients presenting with various inflammatory gum diseases, were treated with Cannabinoid Anti-Inflammatory Rinse (CAIR) with and without underlying systemic disease inflammation, CAIR is a CBD containing microemulsion made by melt emulsification [2]. Results of bleeding on probing (BOP) [3] and periodontal pocket depth (PPD) results from a series of case studies indicated CAIR treatment significantly reduced empiric measures of inflammatory gum disease. In the second Investigational Review Board (IRB) approved three-dose escalation study with the phytocannabinoid micellar formulation DenticDS™ PAIR, patients spanning mild to severe gingivitis revealed statistically significant (p-value 0.020) improvements in both bleeding points (BPs) when combined [4].

## Results

CAIR and DenticDS™ PAIR patients not undergoing prophylactic teeth cleanings before treatment.

Upon reviewing both studies patients treated without performing prophylactic cleanings, clear differences in their responses were seen (Figure 1). Patients without underlying inflammatory systemic disease benefited less and without continued treatment and sometimes even with treatment exams illustrated a move back towards their earlier levels of inflammation. Together, these studies highlight systemic inflammatory disease as a significant contributing factor to dental health even in some cases overwhelming oral anti-inflammatory treatments. Therefore, systemic disease must be considered as a potential impediment to dental health requiring medical consideration and consultation to achieve an overall well health outcome for the patient.

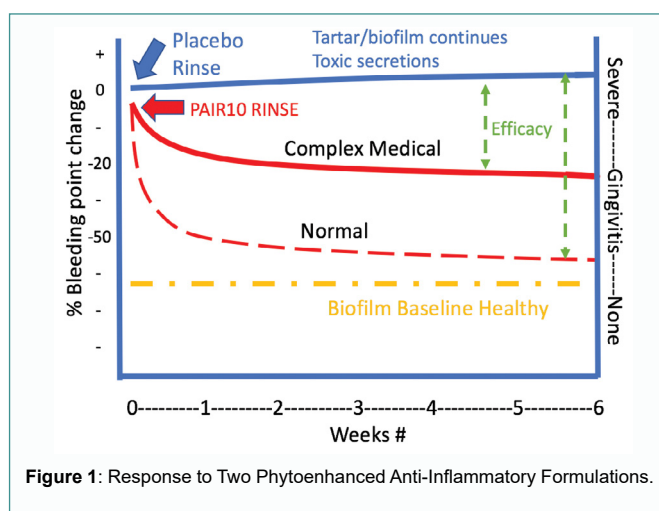


Figure 1: Response to Two Phytoenhanced Anti-Inflammatory Formulations.

Utilizing the historic data of these patients gained from these earlier studies, models of their clinical course over time following scheduled prophylactic cleanings an individual patient's dental health may be charted and illustrated here (i.e. Magyar Curves) against standard empiric measurements included BOP, gingival index (GI) and plaque index (PI).

The Magyar Curve illustrates the crucial role played by routine oral prophylaxis stemming the inevitable consequences of continuous biofilm formation, Figure 2. Routine prophylactic cleanings remove substantial biofilm, plaque and tartar. Continuous production of microbial biofilms [5] threatens long term oral health as the desired Baseline Healthy area is broken through between cleanings. Baseline Healthy is a clinical observation defined by little or no visual evidence of mucosal bleeding or gingival fragility by BOP, no sign of oral inflammation or active infective processes associated with teeth and bony structures or gingival tissues within the oral cavity and PPDs not greater than 5 mm.

## Modeled Results

In developing an understanding graphically of Baseline Health, as represented by Magyar curves, three distinct representations are developed (Figure 3). These are curves which represent (i) Patients with Systemic Disease risk; (ii) Patients with Hygiene risk without

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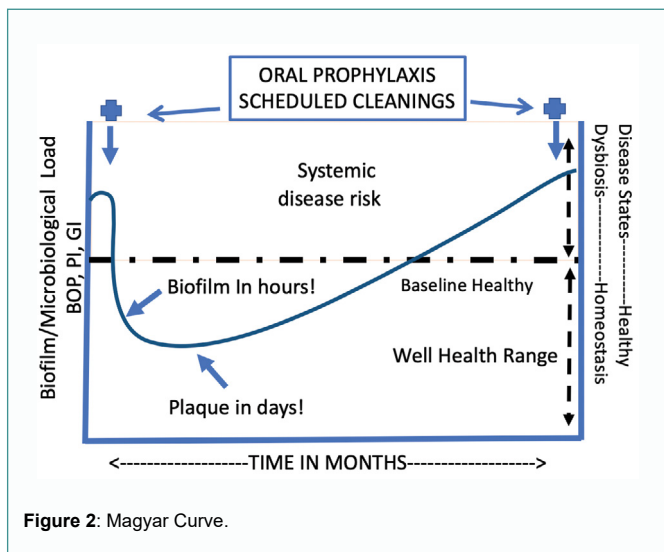


Figure 2: Magyar Curve.

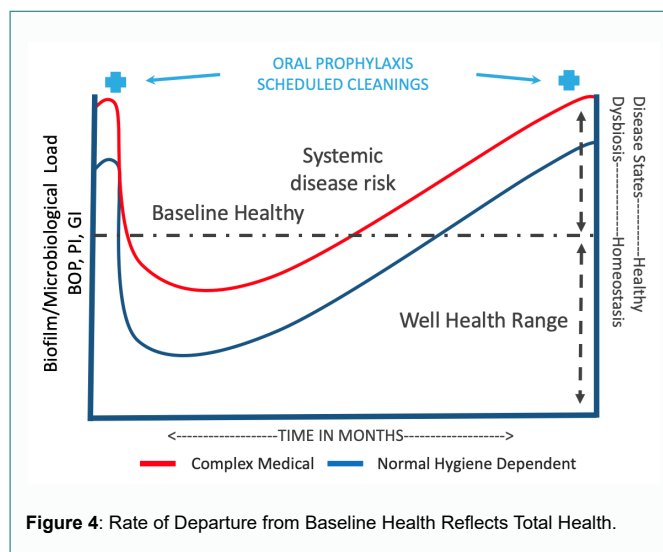


Figure 4: Rate of Departure from Baseline Health Reflects Total Health.

underlying systemic disease and (iii) Patients which are managed under a Prescriptive Continuing Care Program consisting of PDS PAIR Rinse, PAIR Gel and additional phytocannabinoid products [6] to keep patients within the Well Health Range.

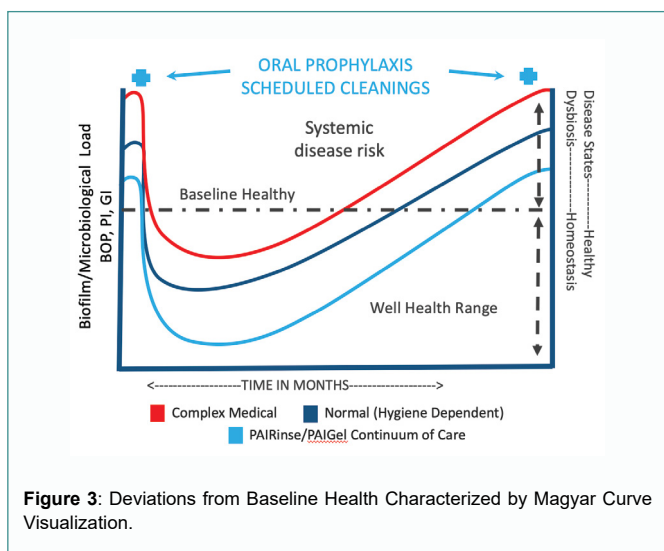


Figure 3: Deviations from Baseline Health Characterized by Magyar Curve Visualization.

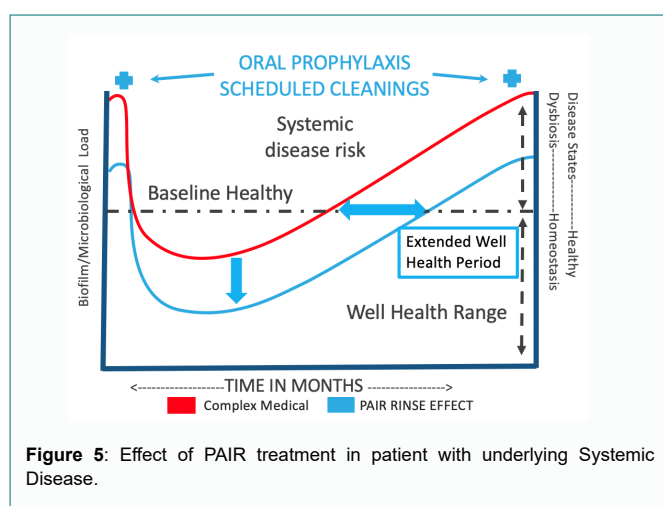


Figure 5: Effect of PAIR treatment in patient with underlying Systemic Disease.

Time spent in the Well Health Range between scheduled prophylactic cleanings is dependent upon both oral and systemic health, Figure 4. The effectiveness of routine prophylactic cleaning in removing plaque and tartar harboring toxic microbial biofilms results in patients spending more time in good oral health (i.e. Baseline Healthy). As a consequence, they are at subsequently less risk of advanced oral diseases, i.e. periodontitis, as well as suffering potential serious health consequences from microbial entry into the systemic circulatory system.

Example of patient with Professional cleaning who has history of multiple significant systemic pathologies predisposing to bleeding in part unrelated to oral inflammatory processes. PAIR therapy significantly attacked the oral inflammatory component as seen by the 40% reduction in empiric measurements, Figure 5. Notice the extended Well Health Period of time resulting following the oral prophylaxis with subsequent PAIR twice daily hygiene mouth rinses.

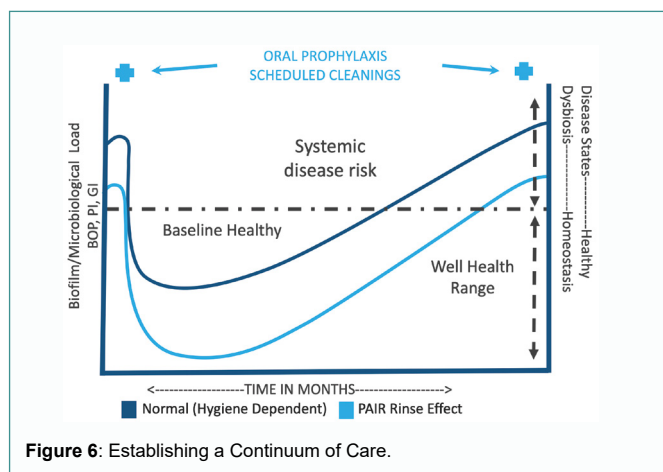


Figure 6: Establishing a Continuum of Care.

In the case presented graphically above our first question is what happened here? Something obviously resulted in a major move into the Systemic Disease Risk around the second schedule cleaning. At times, systemic health changes outside dental health and maintenance becomes a dominant negative factor in oral health, Figure 7. Returning the patient to well health necessitates medical care consultation and treatment. It is yet to be determined if these measurements, or similar more complicated sets of determinates can be used for: (i) Diagnostics- presence or absence of an influence; (ii) Prognostics- outcome likely/unlikely; (iii) Predictive- which treatment will benefit most; and / or (iv) Prescriptive- action to affect outcome (Figure 7).

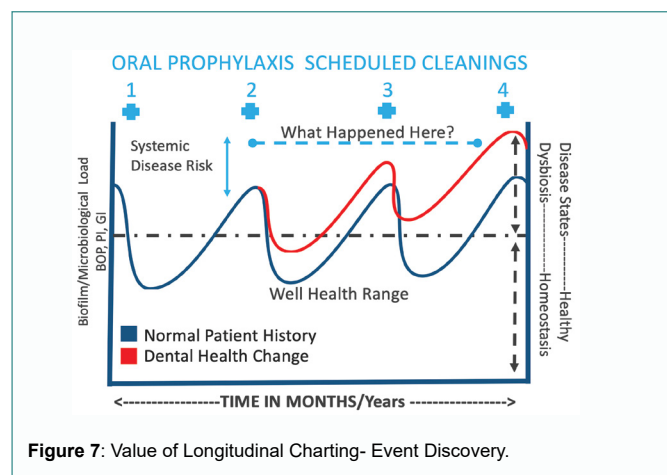


Figure 7: Value of Longitudinal Charting- Event Discovery.

## Discussion

In the original study published in this special issue [1] utilizing cannabidiol microemulsions (CAIR) of various concentrations it was found that original reduction in multiple empiric measurement of gingival health was reversed over time in patients with underlying systemic disease states. Visualization of this Analysis (i.e. Magyar Curves) in this manner, when extrapolated over time spanning operator exam, establishes each patient's characteristic deviation from baseline health thereby identifying their dental health state.

Understanding of the close and critical link of oral and systemic disease has heightened the awareness in both dentistry and medicine to consider closer consultation and offering of complementary services for the long-term well-being and health of patients whose care they share. With the advanced information technology applications available developing artificial intelligence algorithms to monitor clinical, laboratory and other empiric and observational data simultaneous a simple and understandable graphic representation would be welcome. By following a patient's data accumulated in the dental operator by chiefly hygienists over a period of time it becomes likely that small changes or drifts in those measures utilized here for example- BOP, PPD, gingival index (GI), plaque index (PI) measured routinely at prophylaxis scheduled cleanings becomes a valuable tool.

## Conclusion

In patients with remarkable systemic inflammatory processes, considering the systemic process as a potential major determinant of their current and future dental disease state, is a critical determinant to address in managing the patient's clinical course. Therefore, utilizing the concept of a patient's Baseline Health will improve the clinicians understanding of each patient's responsiveness to and guide treatment. Magyar Curves generated over extended periods of time on multiple empiric determinants is one visualization analysis which may prove of utility. Application of appropriate Artificial Intelligence apps to retrieve, analyze and structure archival information may quickly bring analysis such as this to the operatory.

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