2017

USING BIG DATA, MACHINE LEARNING AND PROCESS IMPROVEMENTS TO INCREASE PATIENT PAYMENT RATES

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EXECUTIVE SUMMARY

Improving Patient Payment Rates presents a case for the use of predictive analytics and patient centric messaging techniques, throughout the patient account lifecycle, supported by machine learning and intelligent design of experiment, to increase patient payment rates by 25% or more.

Key takeaways from the analysis include:

- **A serious threat to healthcare providers' financial security is the consumer's ability to pay their share.** The proliferation of high deductible plans, driven by employer and government policy, is shifting responsibility to the healthcare consumer at an unprecedented rate.

- **Patient responsibility payment rates have historically been low.**
    - The patient billing experience is frequently opaque, help is difficult to access, and payment options are inconvenient or impractical.
    - A patient's payment capacity is frequently stressed at the time of service due to breaks in income or unforeseen expenses.
    - Medical bill payment is frequently low on a consumer's payment hierarchy.

- **The healthcare provider faces a myriad of challenges in moving to a "retail" environment where arrangements for payment are made before delivery;**
    - Charges for healthcare services are frequently based on a "per drink" model and the final bill isn't known until after the services have been performed.
    - Similarly, the amount the patient will owe of the total is frequently not finalized until after the insurance company can apply the current remaining portion of a deductible and/or apply coinsurance rates to the final figure.
    - Basic services must be delivered, regardless of the patient's ability or willingness to pay.

- **Despite concerted effort and investment on new POS (Point of Service) payment tools and processes, improvements in payment rates have been elusive and insufficient to offset the rising tide of high deductible plans**.

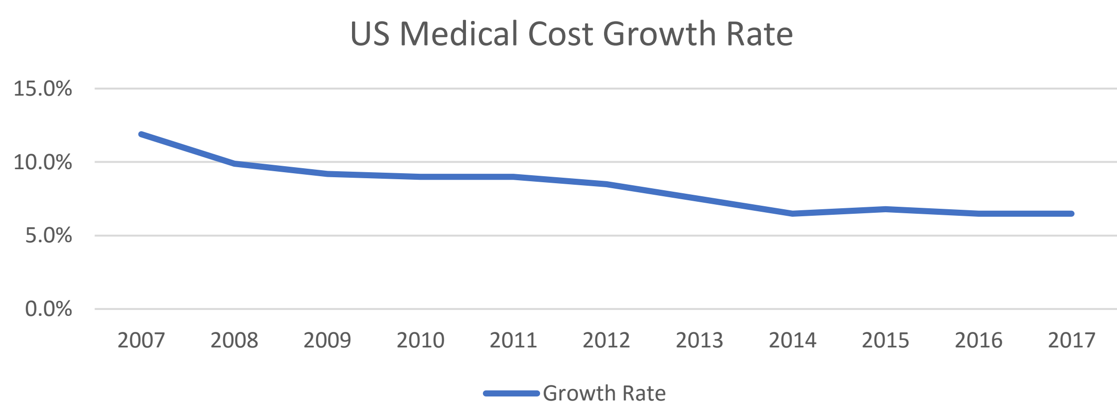
- **Analytically based predictions of patient behavior in concert with "next best offer" modeling, electronic messaging, and simplified bill presentment with convenient payment options, applied across the entire patient account lifecycle, can improve cash collection by more than 25% while materially improving patient engagement scores.**

- **Management should have a process for prioritizing, investing and implementing these new collection tools, from highest to lowest payback, to systemically improve cash flow until the point of decreasing marginal return is found.**

INTRODUCTION

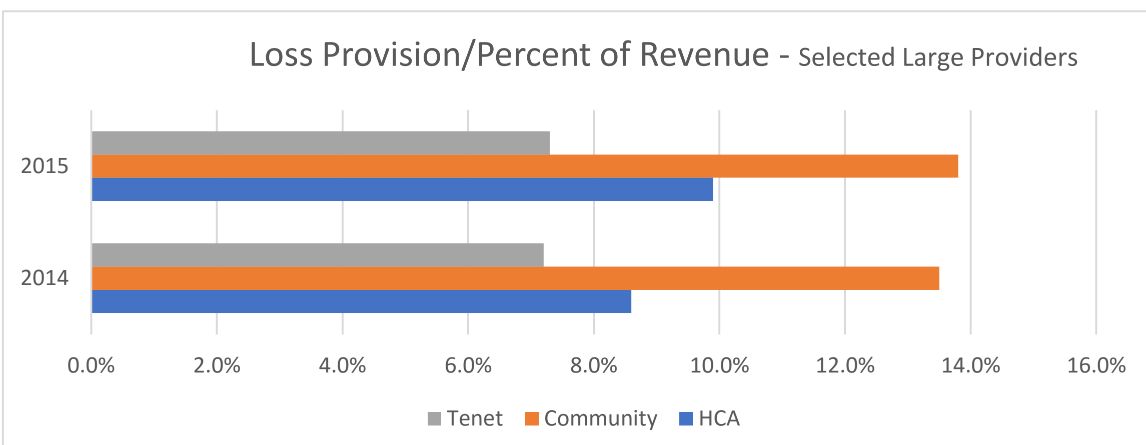
The medical cost trend in the U.S. (Figure 1) continues to outpace inflation. The flattening of the curve over recent years would suggest that cost containment strategies (principally high performance networks and PBM's) have run their course. Cost increases are driven primarily by price; however, the proliferation of retail clinics and urgent care centers has driven up utilization.

Figure 1: U.S. Medical Cost Growth Rate



Insurance companies have, among other cost containment strategies, shifted their offerings to higher deductible and coinsurance plans to moderate premium increases. Employers have shown a clear preference for these plans, as have those now insured under ACA. The shifting of health cost to consumers, however, has had unintended consequences on the bottom line of health care providers in the form of bad debt (Figure 2) and longer collection times.

Figure 2: Loss Provision/Percent of Revenue



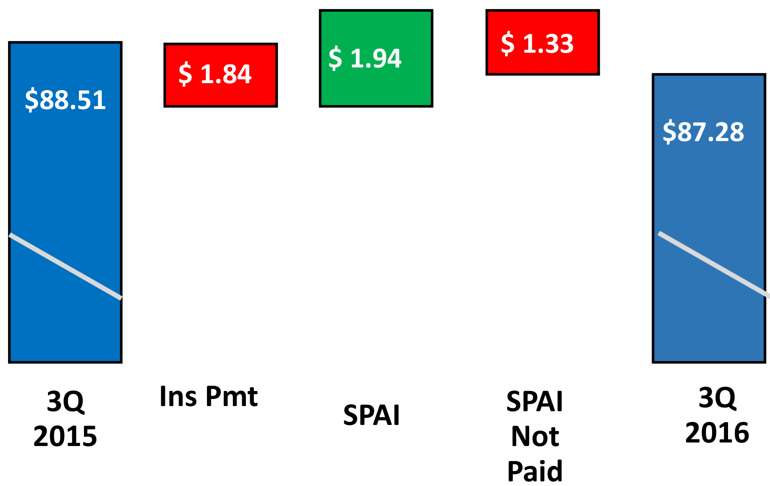
It is estimated that 40% of medical bad debt is due to patients unable or unwilling to pay deductibles, coinsurance, and copays.

HEALTH CARE PAYER TRENDS

The insurance industry has been successful in shifting costs back to providers and consumers.

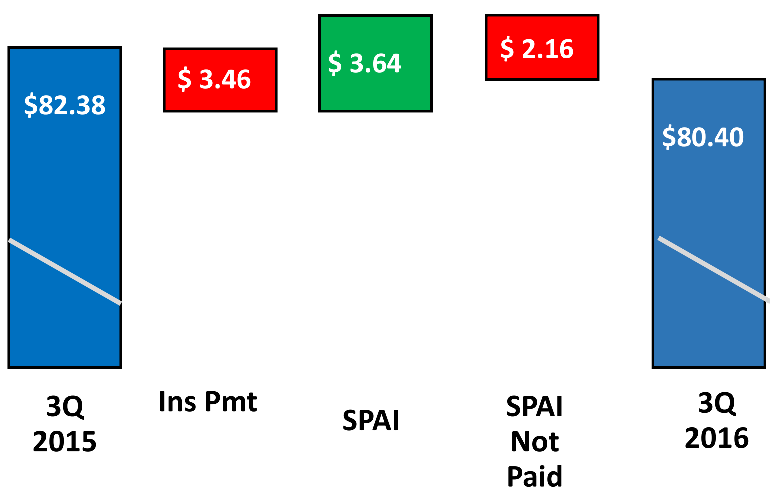
Payments for Inpatient services (Figure 3) by insurance companies have decreased by an estimated $1.84 on $100 of allowable charges due to lower reimbursement rates, and self-pay after insurance (SPAI) has increased $1.94 driven by deductibles and coinsurance. Most telling, SPAI not paid has increased by $1.33 resulting in a 1.23% decrease ($88.51 - $87.28) in hospital revenue on insured patients.

Figure 3: Inpatient Net Revenue On $100 Allowable



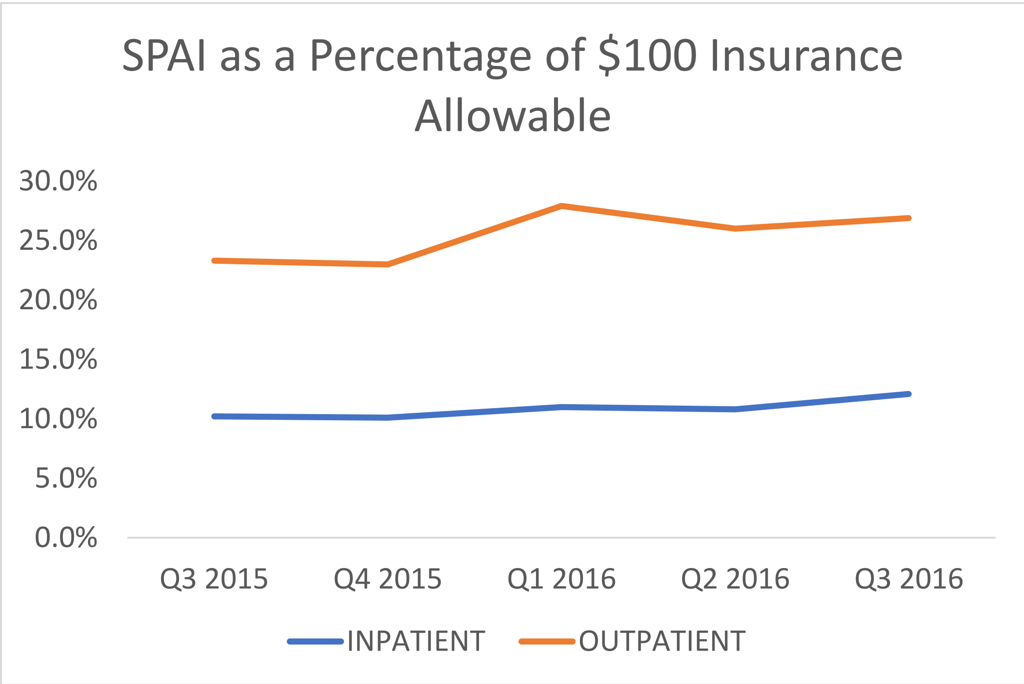
Similarly, payments for Outpatient services (Figure 4) by insurance companies have decreased by an estimated $3.46 on $100 of allowable charges due to lower reimbursement rates, and self-pay after insurance (SPAI) has increased $3.64 driven by deductibles and coinsurance. SPAI not paid has increased by $2.16 resulting in a 1.98 % decrease ($82.38 - $80.40) in provider revenue on insured patients.

Figure 4: Outpatient Net Revenue On $100 Allowable



The adoption rate of high deductible plans shows no sign of decreasing and continues to change the revenue landscape for both inpatient and outpatient providers. Further, the lack of transparency with the underlining shift in payer mix has exacerbated the providers financial risk and operating income. Self-pay after insurance (SPAI) is growing (Figure 5) and now accounts for an estimated 27% of Outpatient and 12% of Inpatient revenue on insured patients.

Figure 5: SPAI As a Percent Of $100 Insurance Allowable

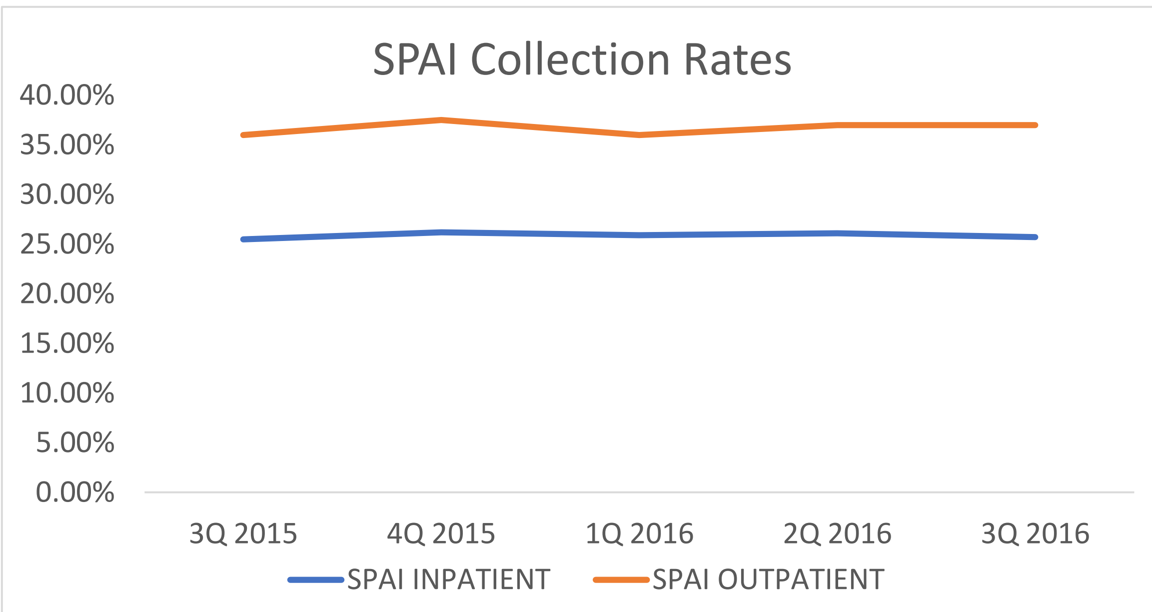


Downward pressures on insurance company reimbursement rates and income leakage from nonpayment of fees billed to patients brings financial pressure to hospitals and physicians as they grapple with operating complexity introduced with mergers, acquisitions, consolidations, platform migrations, and regulator mandated changes.

MEDICAL BILL PAYMENT TRENDS

The previously uninsured, upon getting insurance under the Affordable Care Act, are not paying for their portion of healthcare bills. This group is now being joined in greater numbers by those with high deductible insurance from employers who are cutting medical benefits and requiring employees to carry more of the financial burden for healthcare. SPAI (self-pay after insurance) collection rates (Figure 6) are static and show no indication of improving. Nearly one in 5 consumers now have a medical debt collection trade line in their bureau, and many, especially those with only one medical debt trade line, are otherwise "clean" bureaus [1].

Figure 6: SPAI Collection Rates



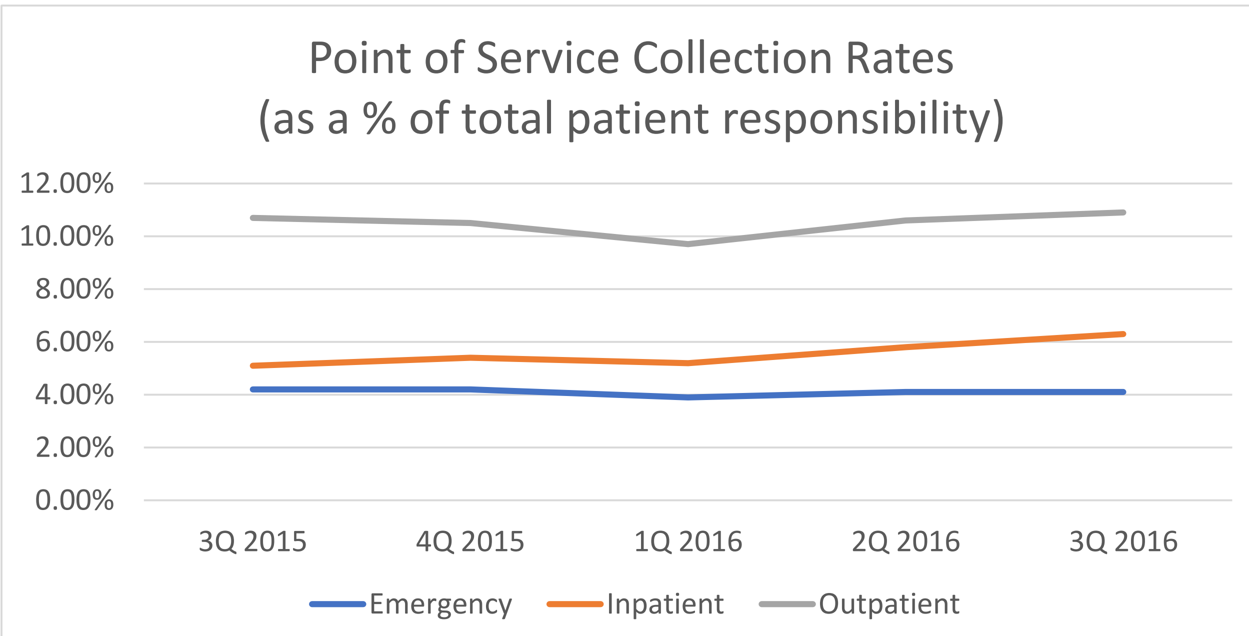
Patient responsibility payment rates have historically been low, attributable to:

- The patient billing experience is frequently opaque, help is difficult to access, and payment options are inconvenient or impractical.
- A patient's payment capacity is frequently stressed at the time of service due to breaks in income or unforeseen expenses.
- Medical bill payment is frequently low on a consumer's payment hierarchy.

Improving collection rates has proven to be difficult. Providers tend to focus on cost reduction as compared to revenue maximization. As a result, billing company contracts are normally a flat rate and there is no incentive to collect the next dollar of marginal revenue. Similarly, in-house billing operations frequently suffer from underinvestment in people and tool. Providers are also reluctant to send prewrite-off accounts to collection agencies due to historically poor results, high fees and loss of patients and referral sources due to hard core tactics. The net result is low intractable collection rates compounding margin erosion.

Point of service (POS) collection rates, as a percent of patient responsibility (Figure 7) are low. Despite concerted effort and investment in tools and processes to improve collection rates, particularly on the front end of service delivery (i.e.; requiring prepayments or deposits based on an estimate of charges to be incurred and/or estimate of unmet deductibles) ***improvement in payment point of service (POS) rates have been mixed (Figure 8) and insufficient to offset the rising tide of high deductible plans.***

Figure 7: Point of Service Collection Rates

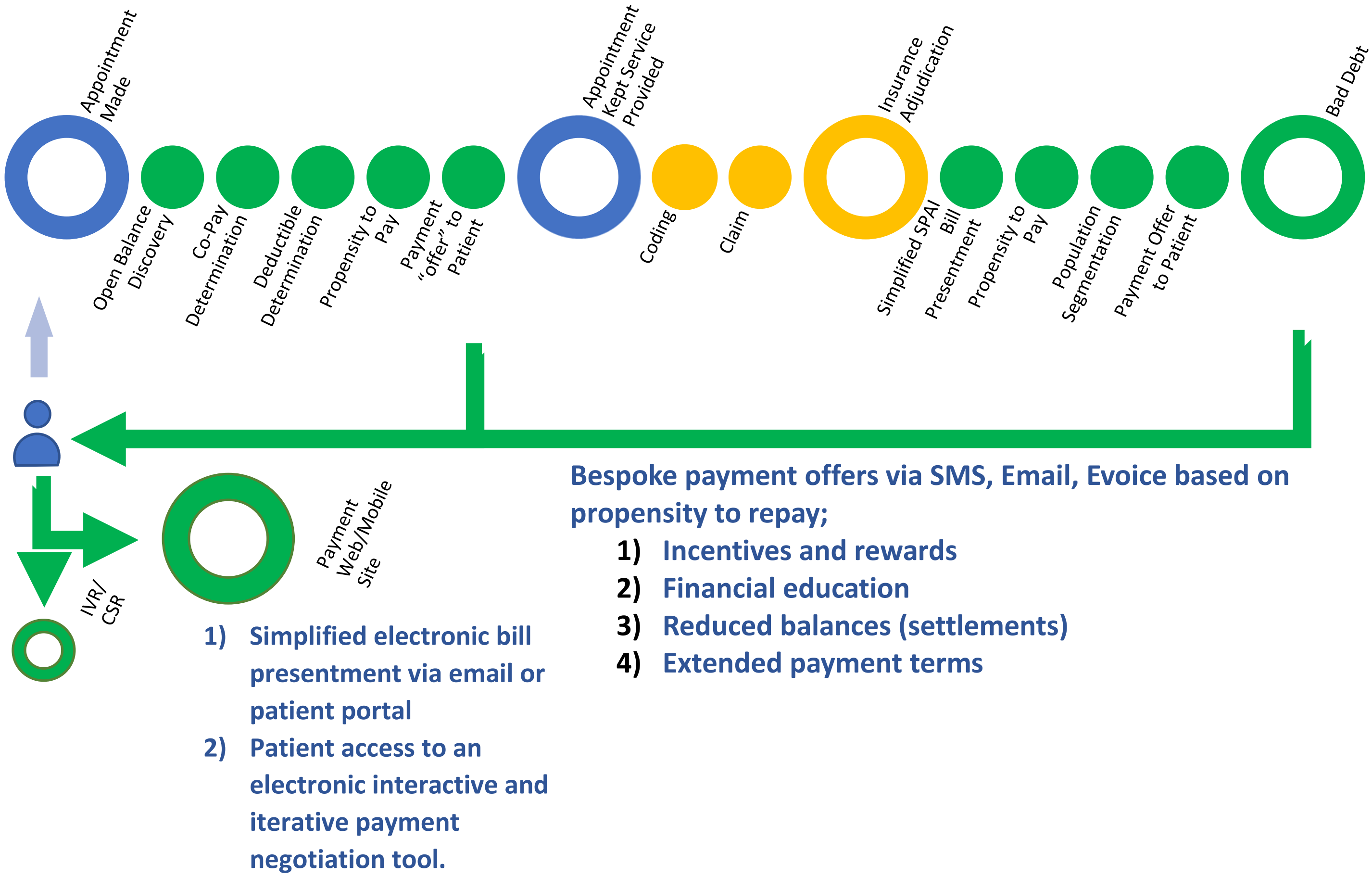


Moving to a "retail" environment where arrangements for payment are made before delivery has proven difficult:

- Charges for healthcare services are frequently based on a "per drink" model and the final bill isn't known until after the services have been performed.
- Similarly, the amount the patient will owe of the total is frequently not finalized until after the insurance company can apply the current remaining portion of a deductible and/or apply coinsurance rates to the final figure.
- Basic services must be delivered, regardless of the patient's ability or willingness to pay.
- Providers are frequently managing across disparate systems making standardization of processes and policies difficult.
- Education of care users and provider employees on the new realities of patient payment is a cultural shift and requires an innovative approach.

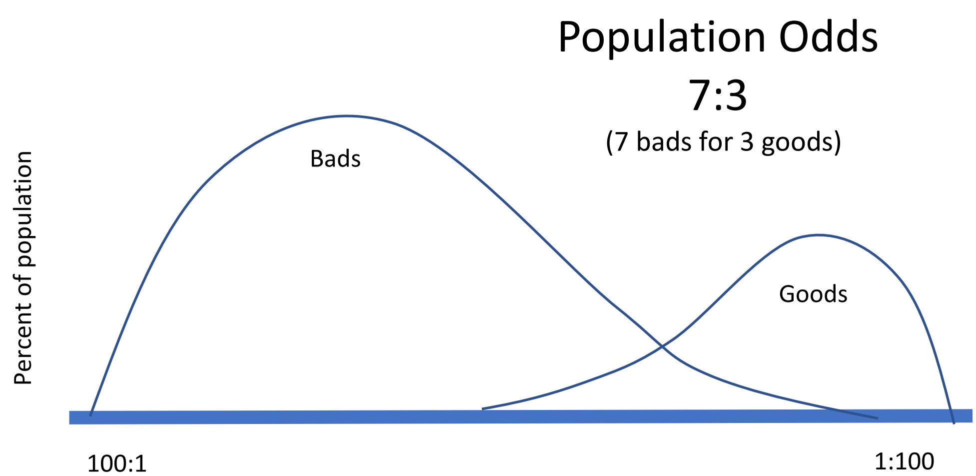
THE NEW PATIENT REVENUE CYCLE

Figure 8: The New Patient Revenue Cycle



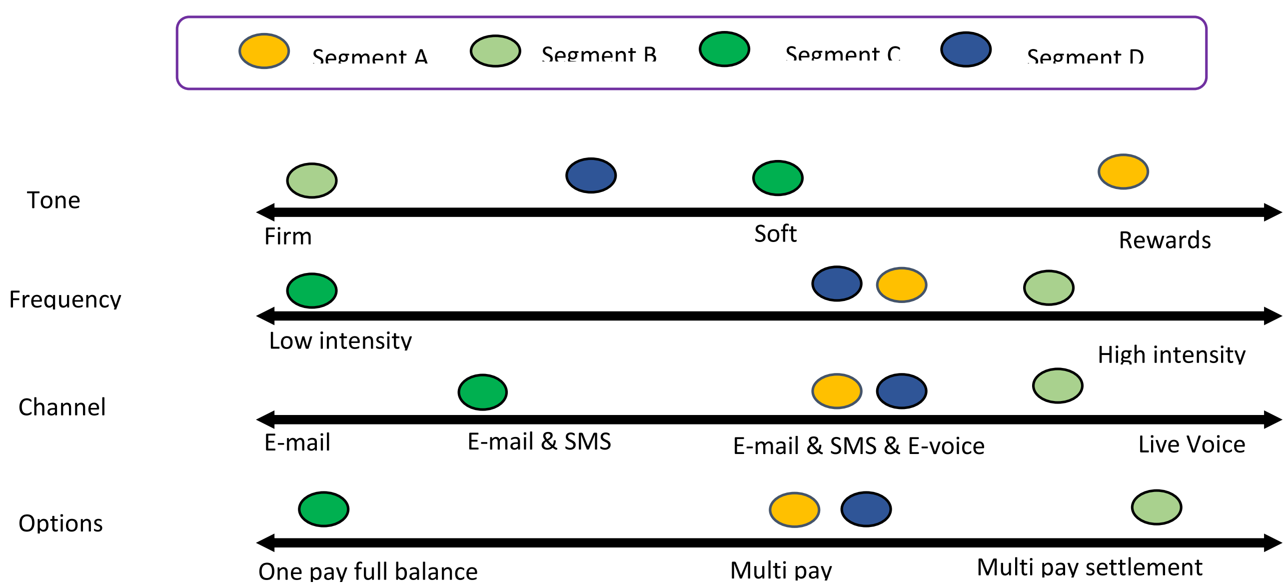
Given historically low patient payment rates it is tempting to conclude that little can be done to change the trend, or it would have been done. But providers have largely taken the approach in patient collections of doing the same thing repeatedly, but hopefully better than the last time. Figure 8 graphically presents a change in approach where a patient’s financial behavior tendencies are known and, more importantly providers understand how to influence that ***behavior across the entire patient account lifecycle***. Behavior should be understood in the context of how like patients pay the provider, not how like patients pay dissimilar creditors as found in credit bureaus. Given most debtors prefer the anonymity of electronic communication it would seem appropriate to use multiple patient electronic touch points and channels to communicate with the patient in clear simple terms what is owed and make offers that will incent and drive incremental, heretofore "uncollectable" payments. The bedrock of the approach is a behavior model which predicts, based on known attributes, good (paid as agreed) or bads (90+ days due), built on the performance of past patients of the provider who have the same attributes. The population can be distributed by odds of payment, figure 9 and further segmented to find pockets of opportunity.

Figure 9: Good and Bad Distribution



The key to optimizing the approach is to set up designs of experiment ("Challenger" strategy) to challenge conventional wisdom ("champion" strategy) which serve as the basis for understanding how to influence patient behavior. Strategy components (Figure 10) that can be tested are message frequency, tone, channel and offer against sub-segments. Machine learning is used to drive segmentation and optimize a set of strategies for maximum dollars collected.

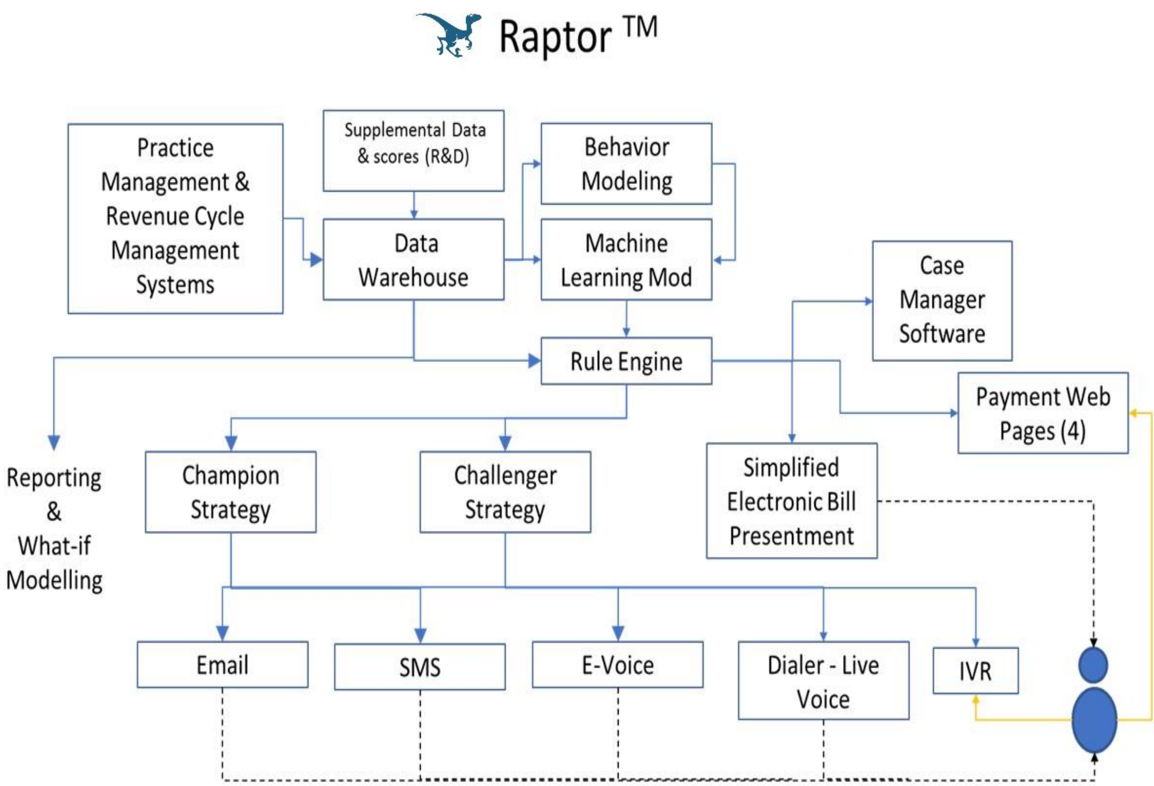
Figure 10: Population Segmentation and Treatment Options



PAYMENT RATES – EXPLORING THE FRONTIER

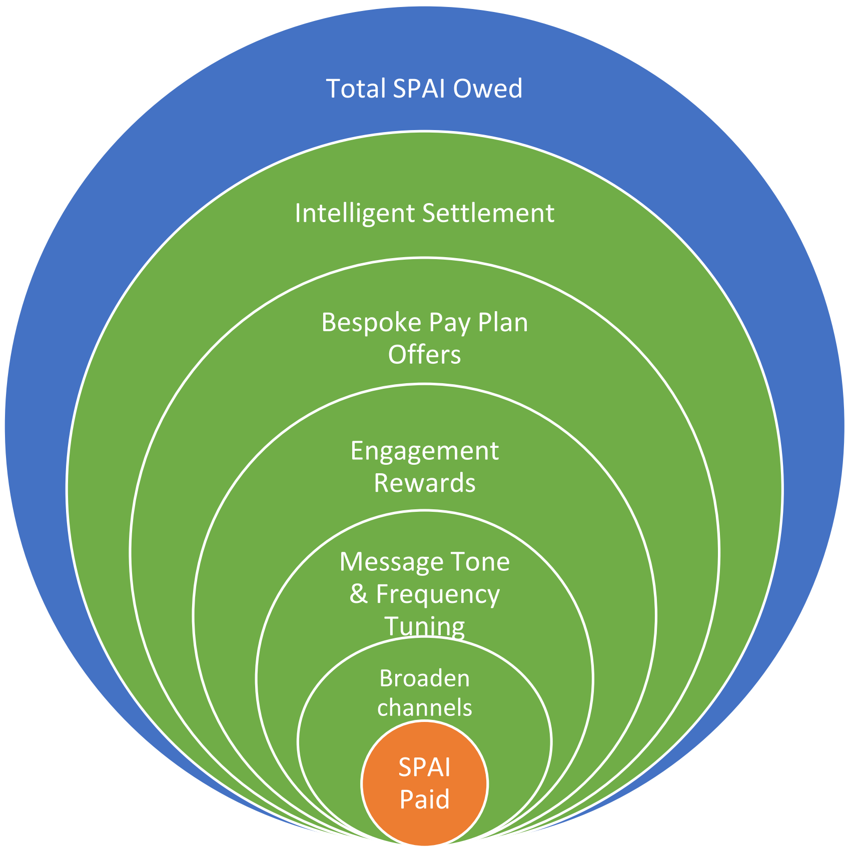
Careful organization deliberation is required to effectively roll out new tools such as scoring and machine learning (Figure 11) which are dependent upon data resident in the practice management and/or revenue cycle management platforms.

<u>Figure 11: Platform Requirements for Execution</u>



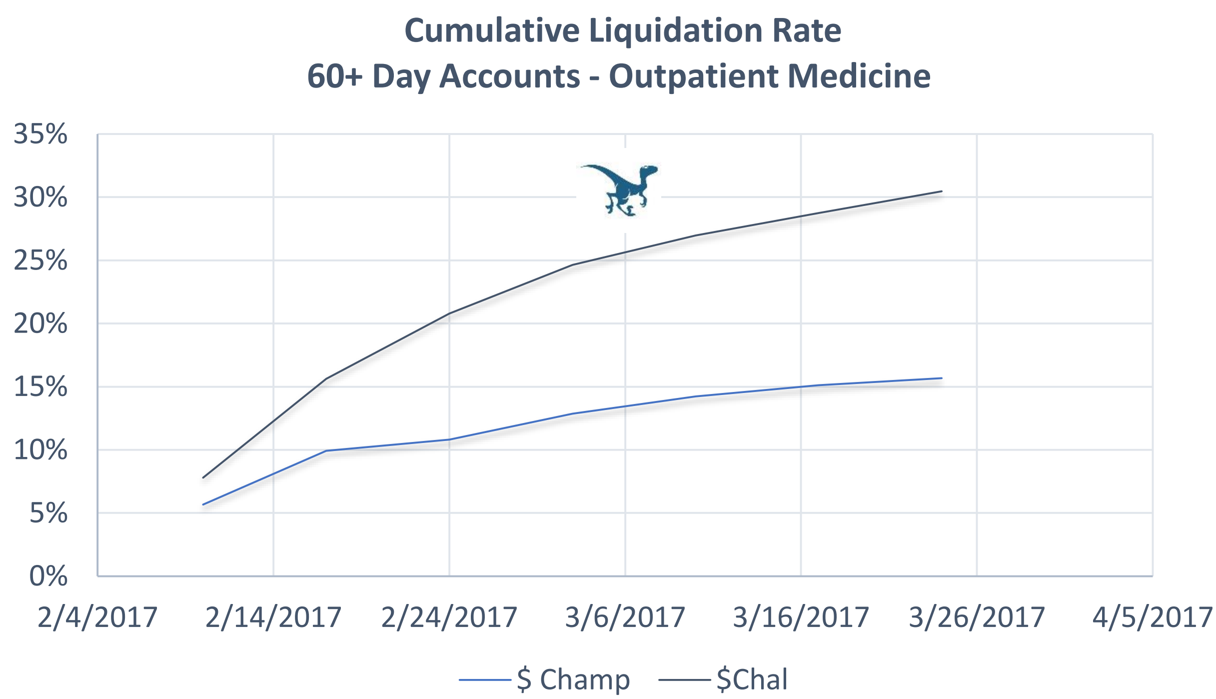
Rollouts should be staged for success to ensure organization buy-in and to foster a shared feeling of accomplishment. One successful approach brings first to the table functionality that requires a low level of effort but has a high return in the form of incremental cash collected. The organization would then add functionality, progressing through time to the initiatives that have similar positive returns, but are more complex in design and integration. Implementation of the basic tools will bring significant cash collection lift in predictable and sustainable “chunks” (figure 12).

Figure 12: Staging Functionality Roll-Out



Once completed the organization can focus on exploring the frontier of payment rate improvements by optimizing the functionality built, generating additional cash flow with minimal investment beyond analytic talent to exploit what has been built. Rigorous application of the tools and the design of experiment approach can produce dramatic results on heretofore intractable segments of the population, specifically 60+ due accounts (Figure 13)

Figure 13: Actual Performance Data – Noggintechs Raptor™ Technology



PLAN FOR ACTION

Patient payment rates will continue to challenge the financial health of all medical providers, facilities and hospital systems within the healthcare space. Although tremendously important, the current market approach of stronger patient insurance eligibility reviews and more payment options at time of service does not, and has not addressed the aggressively growing SPAI rates and transition to bad debt. In order to succeed at patient payments, health organizations need to be prepared to engage with the patient at all stages of the patient revenue cycle with a stronger shift towards SPAI. Predictive analytics should become a priority within an organizations RCM toolkit to continue to drive patient engagement, develop specific population models and maximize patient payment rates.

Organizations that embrace forward thinking methodologies will quickly adopt predictive payment analytics specific to their patient base. The key differentiation will be learning how an organizations patient base pays the organization and not how they pay other creditors. Once this is identified, medical practices, facilities and hospitals can take the next step to introduce incentive based rewards to boost patient payments. Critical to success will be the ability and speed in which an organization can adopt time proven financial services payment techniques.

Is your organization or business struggling with patient payments? Has your patient payment rate decreased in recent years? Are you struggling with SPAI? Have your bad debt write-off's increased as well as the need to engage with a collections company? Answering "yes" to any of these questions are early warning signs that you may need to change your processes to unlock the full financial potential of your organization. Noggintechs can walk you through this transition and set your organization up for the future and financial success. Contact us today to learn how.

ABOUT NOGGINTECHS

Noggintechs is a predictive analytics company that utilizes BIG data, machine learning and process improvements to increase payment rates in the medical financial services market. Utilizing our proven and proprietary software we call RAPTOR™; medical practices, facilities and hospital systems can expect to see an increase in payment rates by upwards of 25% or more. The power of RAPTOR™ allows us to build payment profiles based on a multitude of factors in a RCM system in addition to prior patient payment history. This makes our Noggintechs offering unique as we create financial treatment plans specific to how a patient pays a provider or facility and not how they may pay their monthly creditors.

These same medical business lines can expect to see expense reductions in their general billing operations as their patient base is introduced, trained and transitioned to electronic billing and communication. Not only does RAPTOR™ increase patient payment rates, our financial treatment planning tools also offer multiple payment options and plans in conjunction with settlement offers and financial planning. Noggintechs products create a healthy business bottom line, reduces the need for traditional collection companies, liquidates potential bad debt and increases engagement by giving patients a voice in their financial health.

Noggintechs works with multiple RCM software companies and has exclusive preferred pricing and relationships with one of the country's largest payment vendors. Our services can be tailored to the vital family practice all the way to the largest of hospital systems. Please contact us today to see how Noggintechs can introduce RAPTOR™ to your patient base and increase your financial health.

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SOURCES

Figure 1: PWC Behind the numbers 2017 health care and medical cost trends

Figure 2: SEC 10K

Figure 3-7: Crowe RCA Benchmarking Analysis November 2016 “Patient Responsibility on the Rise” on a subset of 199 hospitals

Figure 8-13: Noggintechs

FOOTNOTES

1) Consumer Credit Reports: A study of medical and non-medical collections, CFPB (Consumer Financial Protection Bureau) December 2014 pg. 7