WHITEPAPER

PERSISTENT

MACRA AND HEALTHCARE IT

Persistent's approach to MACRA implementation

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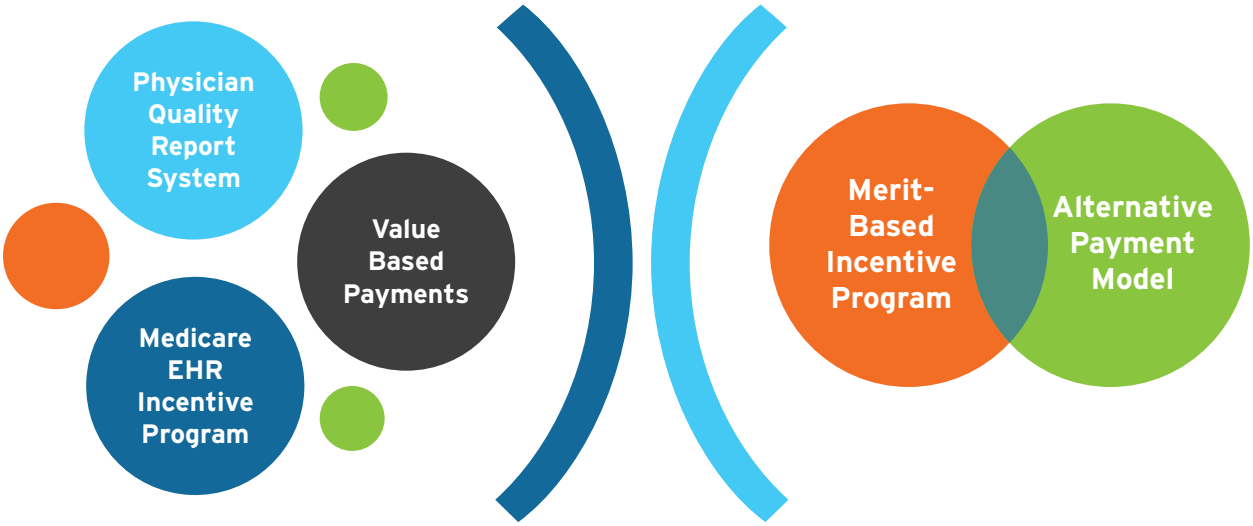
Outline

Background

In the history of US healthcare, we have witnessed instances that have redefined the course of healthcare. Not so long ago, the ACA (Affordable Care Act) has been one such instance that has brought in accountability by laying out the framework for value driven healthcare in an eco-system that centered on volume. New payment models were developed based on the quality of service provided and provisions were made to incentivize providers for the quality score achieved on the CMS (Center for Medicare and Medicaid services) defined quality measures.

As time passed, entities (Governing bodies, hospitals, IPAs etc.) that were directly or indirectly affected by new payment structure, started realizing lapses in the framework defined; data collected failed to provide deeper insights to truly assess the quality of care provided or the value of the outcomes derived. Another pain point was that the payment models always remained unstable.

Hence in October 2015 MACRA (Medicare and CHIP Reauthorization Act) was enacted to consolidate existing payment models into two new models and to improve the assessment process so that the right benefits and penalties can be applied to providers and clinician reimbursements.



So MACRA is combining existing payment models Physician Quality Report System (PQRS), Value Based Payments (VBP) and Medicare HER Incentive Program into two new payment models Merit Based Incentive Program (MIPS) and Alternative Payment Model (APM) respectively.

MACRA Objectives

The underlying objectives of the two new payment models are:

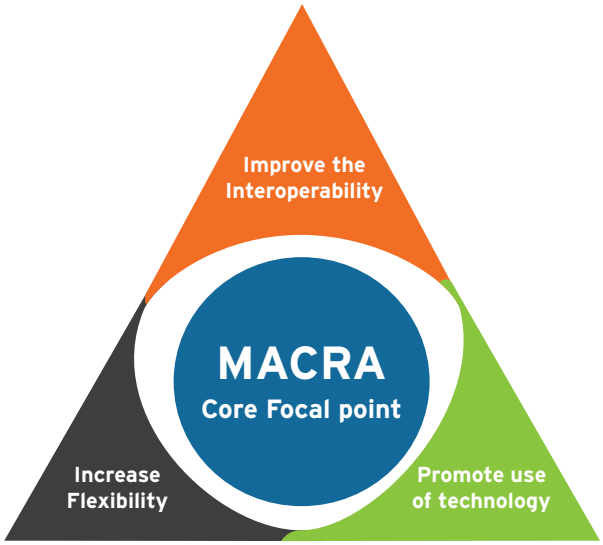
(i) To stabilize the payment structure which was evolving from the traditional fee-for-service payment model. Under the old structure, providers were always under pressure with the unpredictability of payment cuts from CMS. With the new quality payment model, CMS has substantiated the incentive and penalty model in a more scientific manner.

(ii) To improve the effectiveness of the value care by broadening the scope of care providers. The new care model makes the other care givers like physical therapists, nurse midwives, and clinical psychologists accountable along with the regular providers like Physicians, primary care providers, nurse practitioners and Physician Assistants.

As hospitals employ over 70% of these entities, hospitals across the US will be significantly tasked in order to ensure adoption and maintain compliance with the new program.

MACRA Goals

The consequential objectives that will get achieved in the due course of implementation of MACRA are –



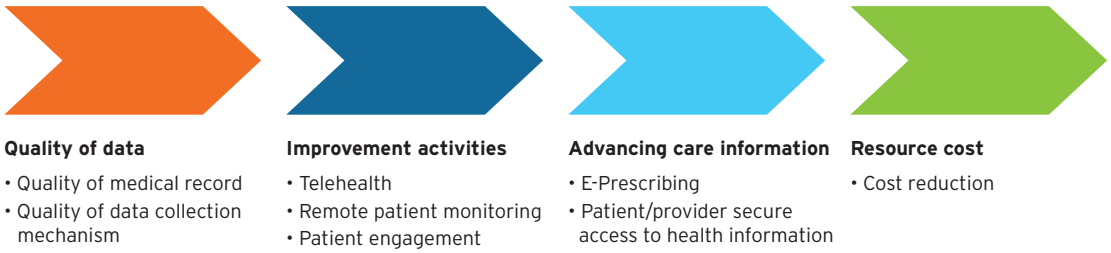
- **Improved interoperability**
  Data exchange between the provider and other peripheral systems is extremely important to improve the quality of care. MACRA emphasizes on quality of data and care hence provider needs to develop the infrastructure to improve the interoperability across various data sources.

- **Increased flexibility**
  The payment models under ACA were lacking predictable, rigid evaluation criteria were one of the major reason for unpredictability. Unless provider scores 100% on quality evaluation criteria he would not be eligible for incentives. So in MACRA, CMS has removed the rigidity by introducing a composite

performance scoring mechanism to bring flexibility in quality evaluation. *They have divided the assessment parameters broadly into four categories with 50% weighting on Quality of data, 15% for Improvement Activities, 25% on Advancing Care Information and 10% on Resource Use.

(*Source - https://qpp.cms.gov/docs/Quality_Payment_Program_Overview_Fact_Sheet.pdf)

The diagram below indicates various features of the four assessment categories and the overarching objectives that the program aims to drive therein



- **Better use of Healthcare technology**
  Although ACA encouraged providers to adopt the new technology since it was not a part of evaluation criteria many providers focused on meeting quality score and not on the implementation of new technology.

  In MACRA, use of new technology is part of the assessment process, nearly 35% weighting is given on how effectively provider implements various tools and technologies to make the care more connected, more engaging for a patient. New care models such as virtual care through telehealth, remote patient monitoring, and e-prescription are going to gain more popularity with MACRA. These models are helping providers to increase their outreach even with lesser workforce and time.

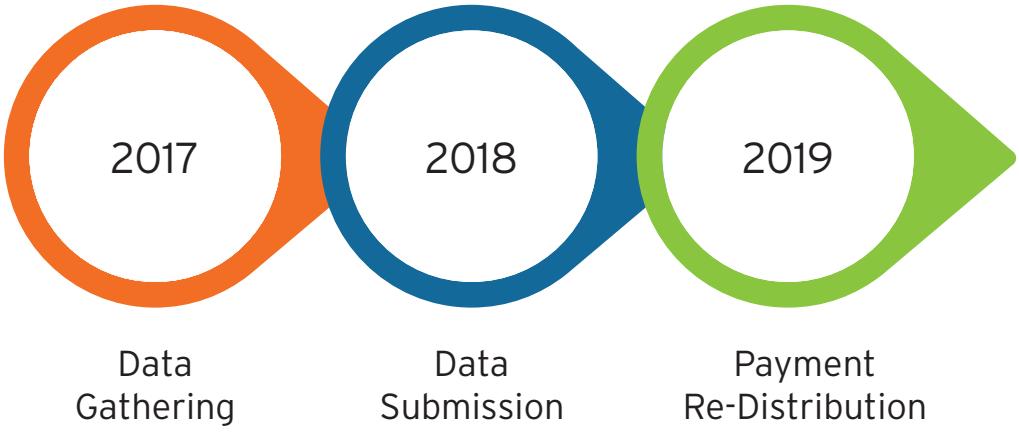
New Payment models under MACRA

As stated above, MACRA is replacing old models which are based on *SGR model with fixed annual payments. Let's understand these two models in detail below –

(*Source - https://en.wikipedia.org/wiki/Medicare_Sustainable_Growth_Rate)

Merit-Based Incentive Program (MIPS)

Nearly 90% of providers will be eligible for MIPS. The three-phase implementation plan as defined by CMS outlines technological planning that healthcare provider needs to do to meet the implementation deadlines.



Phase 1 - Data gathering:

In order to assess the provider, CMS has proposed a three-pronged approach for data collection -

- Claims data
- Practitioner Survey
- Direct observation

In order to assess the provider, CMS has proposed a three-pronged approach for data collection -

When a provider submits claim data, they need to ensure that data is collected across specialties, geographic location, practice size, practice model, patient acuity and differing practice patterns.Hence it is absolutely important that the data collected from different data sources should be meaningful and structured. Electronic data capture and the creation of HIE (Health information exchanges) improves data quality.

Some of the providers who have already setup a mechanism for data capture (HIE), will be able to submit full or partial data for the year 2017 and earn incentives from CMS.

Phase 2 - Data Submission:

CMS has provided three options for data submission, a provider who submits some data become eligible for small payment adjustment, if submits partial data then become eligible for small positive adjustment or if he submits a full data then he becomes eligible for modest positive adjustment.

CMS has also provided additional flexibility to the provider to choose “What data to report” and “How to report”. CMS will analyze the submitted data based on standard parameters to arrive at a composite score for payment re-distribution. A provider with right tools can analyze its own data and measure data quality against the quality measures predefined by CMS.

Phase 3 - Payment Re-distribution:

MACRA will replace the existing payment model with two new payment systems MIPS and AMP. The new incentive/penalty mechanism for payment redistribution will affect the revenue cycle.

CMS defined following payment redistribution model and implementation will start from 2019. Please see the table below for additional details –

Year	Incentive	Penalty
2019	+4%	-4%
2020	+5%	-5%
2021	+7%	-7%
2022 and onwards	+9%	-9%

Some of the existing and new challenges that we foresee in the revenue cycle due to the payment re-distribution are as follows –

- Ensure provider receives the reimbursement as per new payment redistribution rules
- Improve patient experience by keeping the patient updated regarding relevant financial information.
- Improve the coordination between operations, finance, and provider
- Clinical documentation (EHR/EMR)

Advanced Alternative Payment Model (APM)

The advanced APM provides additional incentives to the provider for high quality and cost efficient care. Nearly 10% of the providers will be eligible for APM. Providers who fail to meet the APM target will be eligible for benefits under MIPS as well.

*APMs are a risk-based arrangement between Payer and Provider with the most common being ACO (Accountable Care Organization). The pre-conditions to participate in Advanced APM are as follows -

1. The Participant needs to bear some part of financial risks
2. Base payment on quality measure will be comparable to base payment in MIPS
3. Participant is expected to use a certified HER

(*Source - https://qpp.cms.gov/docs/Quality_Payment_Program_Overview_Fact_Sheet.pdf)

In 2017, the following models are Advanced APMs, if the provider eligible to participate in one or more below-mentioned programs and meet the program specific targets then he will be eligible for additional 5% bonus. **For the first performance year, data reporting will be through MIPS**.

- Comprehensive ESRD Care (CEC) - Two-Sided Risk
  *The Comprehensive ESRD Care (CEC) Model is designed to identify, test, and evaluate new ways to improve care for Medicare beneficiaries with End-Stage Renal Disease (ESRD).

  (*Refer for more details - https://innovation.cms.gov/initiatives/comprehensive-esrd-care/)

- Comprehensive Primary Care Plus (CPC+)
  *Comprehensive Primary Care Plus (CPC+) is a national advanced primary care medical home model that aims to strengthen primary care through regionally-based multi-payer payment reform and care delivery transformation.

  (*Refer for more details - https://innovation.cms.gov/initiatives/comprehensive-primary-care-plus)

- Next Generation ACO Model
  *Building upon experience from the Pioneer ACO Model and the Medicare Shared Savings Program (Shared Savings Program), the Next Generation ACO Model offers a new opportunity in accountable care

  (*Refer for more details- https://innovation.cms.gov/initiatives/Next-Generation-ACO-Model/)

- Shared Savings Program - Track 2/Track 3
  *The Shared Savings Program is a key component of the Medicare delivery system reform initiatives included in the Affordable Care Act and is a new approach to the delivery of health care.

  (*Refer for more details- https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/sharedsavingsprogram/index.html)

- Oncology Care Model (OCM) - Two-Sided Risk
  *Oncology Care Model, which aims to provide higher quality, more highly coordinated oncology care at the same or lower cost to Medicare.

  (*Refer for more details - https://innovation.cms.gov/initiatives/oncology-care/)

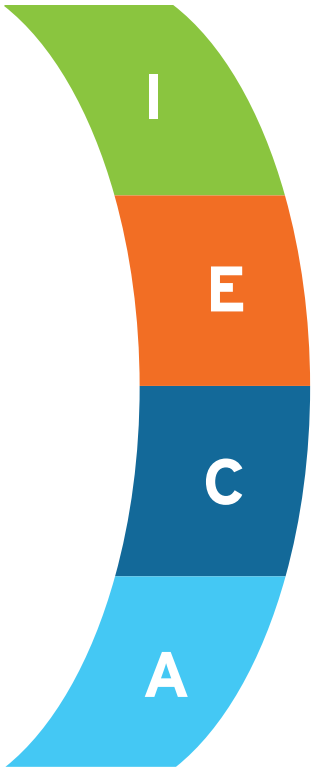
- Comprehensive Care for Joint Replacement (CJR) Payment Model (Track 1- CEHRT)
  *The Comprehensive Care for Joint Replacement (CJR) model aims to support better and more efficient care for beneficiaries undergoing the most common inpatient surgeries for Medicare beneficiaries

  (*Refer for more details - https://innovation.cms.gov/initiatives/cjr)

Assessing the impact of MACRA on healthcare IT

Industry experts believe that MACRA is going to generate a lot of opportunities in healthcare IT. It's IT impact can be illustrated with the proposed quality scoring mechanism. 35% weighting to use of latest technology (Telehealth, e-Prescription or virtual care etc.) and 50% weighting on the quality of data reported (IT infrastructure to gather meaningful data).

In order to implement MACRA, Healthcare IT would have to be geared to address the following challenges -



INTEGRATION
Assist provider in capturing data from various data sources.

ENGAGEMENT
Better patient engagement, regular health updates and follow-up. Work as team.

COORDINATION
Care coordination especially for the patient suffering from chronic diseases.

ANALYTICS
Analytics and Reporting to assess waste (e.g. holes in the RCM) and reduce costs.

1. **Integration** – The healthcare ecosystem constitutes of multiple data sources (Hospitals, Labs, Pharmacy etc) and if these data sources work in silos, data exchange is limited and quality of patient care is subsequently impacted. Under ACA many public and private institutes implemented the HIE (Health information exchange) program to integrate different systems and enable better information exchange. However, it has been observed that many data sources are still not integrated and if integrated, interoperability still is a major concern. With MACRA, health systems integration using latest industry standards is mandated, the absence of which will prevent providers from gathering the required data. In coming days we will see more and more institutions working on following initiatives -

    a) EHR/EMR integration
    b) Implementation of HIS (Hospital information systems)
    c) Developing connectors to connect asynchronous data sources
    d) Patient and Provider portals
    e) Public health and clinical data register

2. **Engagement** – Better patient engagement will result in better quality of healthcare. If the care process is simplified, patient satisfaction scores will improve and also result in savings e.g. For refills, in the traditional care model, the patient has to procure a prescription by visiting the physician's office and is mandated to pay a standards copay. With digital technology, the patient can request for a refill online (without a copay or minimal copay).

Services that need to be developed for better patient engagement are –

    a) Developing web and mobile based solution for appointment scheduling and follow-ups
    b) Gamification for better patient involvement, adoption, and adherence to the treatment plan.
    c) Telemedicine, e-prescription

3. **Coordination** - In case of a patient suffering from chronic diseases, follow-ups becomes a very important part of treatment. For a Provider or care coordinator, it is very difficult to continuously follow up with the patient and change the course of medical treatment based on current health condition. A solution like care coordinator portal helps in overcome these challenges. Care Coordinator portal provides access to the patient's health data and based on current value of health parameters right action can be taken at right time. E.g. For a diabetic care coordinator, the portal will have a current value of blood glucose level, medication routine etc. If there is any alteration in routine and the blood glucose level falls below or rises above the normal limit, then the care coordinator can provide the required guidance to the patient.

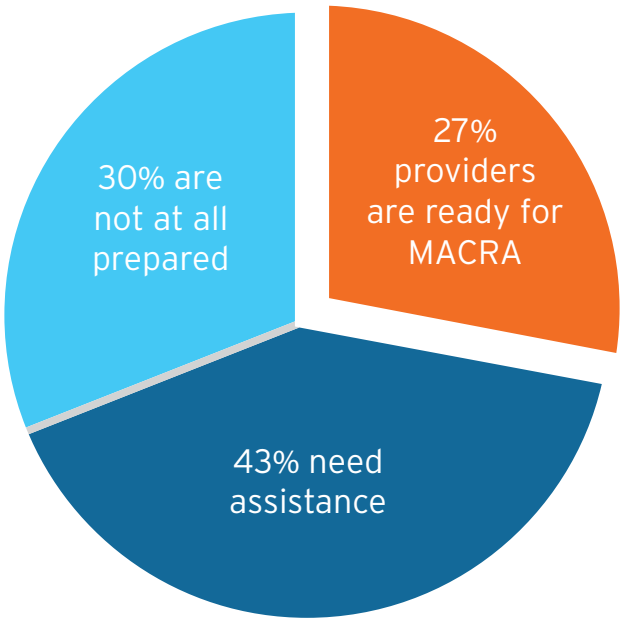
    In MACRA, both patient engagement and care coordination are part of quality evaluation criteria and carries more than 35% weight during the composite scoring.

4. **Analytics** – Data analytics plays a vital role in healthcare, especially when it comes to measuring the quality of healthcare with the help quantifying health data. It can also help in identifying the areas of improvement, therefore in MACRA quality of data carries more weight than the other factors. If a provider wants to improve his MACRA score then he can use the right analytical tools to determine his quality score and take appropriate actions to improve it.

(Note: - The healthcare IT impact of MIPS and APM is almost similar, the only difference is in the way incentive program will be implemented.)

Industry readiness

*A recent survey indicates that only 27% of providers are ready for MACRA; these providers leverage infrastructures such as EHR, HIE, patient and provider portals etc. to gather meaningful data to perform the quality assessment. A staggering 73% would need help in setting up relevant MACRA IT infrastructure.



(*Source - https://www.healthcare-informatics.com/sites/healthcare-informatics.com/files/whitepapers/MACRO-Survey-SERVO.PDF)

MACRA readiness can be broadly categorized into following three heads

1. **Operational readiness**

   Under this head, provider focus would be on creating of infrastructure and provide training to support staff so that they can be implemented in day to day operations

   a. Creating the infrastructure for data gathering or data capture from external data sources as per MACRA approved format.
   b. Implementation of digital technology in daily operation e.g. telehealth, remote patient

2. **Financial readiness**

   a. Understand the payment model under MIPS and APM
   b. Make investment in operational readiness
   c. Multi-year financial projection based on direct data (Claims data, clinical documentation) and indirect data (Survey results or third party observations)

3. **Reporting and Monitoring readiness**

   a. Develop real time reporting and monitoring system so that any operational and functional adjustment can be done
   b. Risk scoring mechanism
   c. Audit ready documentation

Persistent IT offerings to enable MACRA implementations

Persistent has several offerings for the provider to help them with their MACRA implementation. In this section, we will discuss some of our solutions and industry experience that can be leveraged for successful MACRA compliance.

Connected Health Framework

Connected Health Framework is Persistent's approach transforming Healthcare to Digital world. The 9 pillars of the connected framework are constructed keeping in mind the current and future necessities of various entities in the healthcare ecosystem.

The connected framework is our one stop solution framework to enable MACRA implementation, e.g. Pillars like "One digital platform" and "IoT" can help provide to connect various data sources and external medical devices with his in house application. Similarly, the other pillars are providing the implementation approach for virtual care or telehealth etc. For more details about the connected health please refer the link - https://www.persistent.com/connected-healthcare/

Here are some of our solutions delivered to healthcare clients -

Challenges	Solution provided
Poor rate of patient engagement	We have developed the web/android based applications that can be used as a mode of engaging the patient while he waits for doctor's appointment. We were able to increase **monthly patient registration by 92.11%** with deeper patient engagement by leveraging gamification for one of the public health providers.
Integration with different EMRs and external systems	Our team of industry experts specialized in regulatory requirements and standards. We make use of HL7 and FHIR to securely handle the data from various EMR sources and also developed Common Data Model accessible to EMRs

Developing data connectors

Data gathering often results in integration of an asynchronous data and datasets. As MACRA is assessing both provider and clinician on the same quality measure, so it's necessary to have quick data interchange between them. We have designed and developed, a standard, scalable and efficient connector for interoperability between EHR systems and clinical research systems to facilitate the seamless integration of healthcare and clinical data using current industry standards e.g. Continuity Care Document (CCD) from HL7 for EMR (Electronic medical record) and CDASH from CDISC (Clinical Data Interchange Standards Consortium).

For more information about connector capability please refer the link -

http://identity.persistent.com/products/connectors/

***Persistent also partnered with Apigee to build their FHIR API-based Solution**, FHIR APIs and a healthcare developer portal to help hospitals meet the demand for data interoperability, deliver patient-centric healthcare, and move faster to the digital world.

(*Source - https://apigee.com/about/press-release/apigee-announces-apigee-health-apix-help-speed-delivery-patient-centric-digital)

Healthcare accelerators in Salesforce

Implementing the various tools and digital technologies to improve the patient engagement, patient satisfaction, and better care coordination are mandatory in MACRA. Persistent has partnered with Salesforce to create Patient/ Provider portals using full force. We work with major providers and payers in the US, helping them in better customer experience with the services like e-prescription, referral and relationship and acute care management etc.

Provider Relation

- Provider onboarding
- Clinical Integration

Referral Management

- Patient access
- Patient enrollment
- Referral Management

Care coordination

- Ambulatory care
- Chronic care
- Patient assessment

Acute care

- Transition care
- Discharge management
- Bundled payments

Oncology care model

- Distress Management
- Treatment planning

For more information about our Salesforce capability please refer the link –

https://www.persistent.com/salesforce/healthcare/

Data reporting and analytics

MACRA provides the flexibility to the provider to decide what data they want to submit but it should give an appropriate insight on the quality of care so that right score can be calculated. If the provider is ready with data gathering mechanism then using right analytical tools he can do the self-assessment on various quality measures defined by CMS.

Persistent strongly believes in the importance of data integration and the need to build a data platform as part of the digital transformation. We have a separate practice that only dedicated to Data Science, and we provide a wide range of services that deal with data across various segment in the LHSC domain. Also, our own IP "ShareInsights" helps our healthcare clients in end-to-end analytics by applying 3 layer approach that is "Fast", "Flexible" and "Future Ready".

FAST

Unearth Insights Faster.
70% reduction in time to insight

FLEXIBLE

Connect seamlessly to variety of data sources
Analyze structured as well as unstructured data
Extend the platform by plugging in R and python

FUTURE READY

Perform complex 'Machine Learning'
Predict accurately with 'Predictive Analytics'
Collaborate with multiple stakeholders

For more information about the Persistent's analytics practice please refer the link –

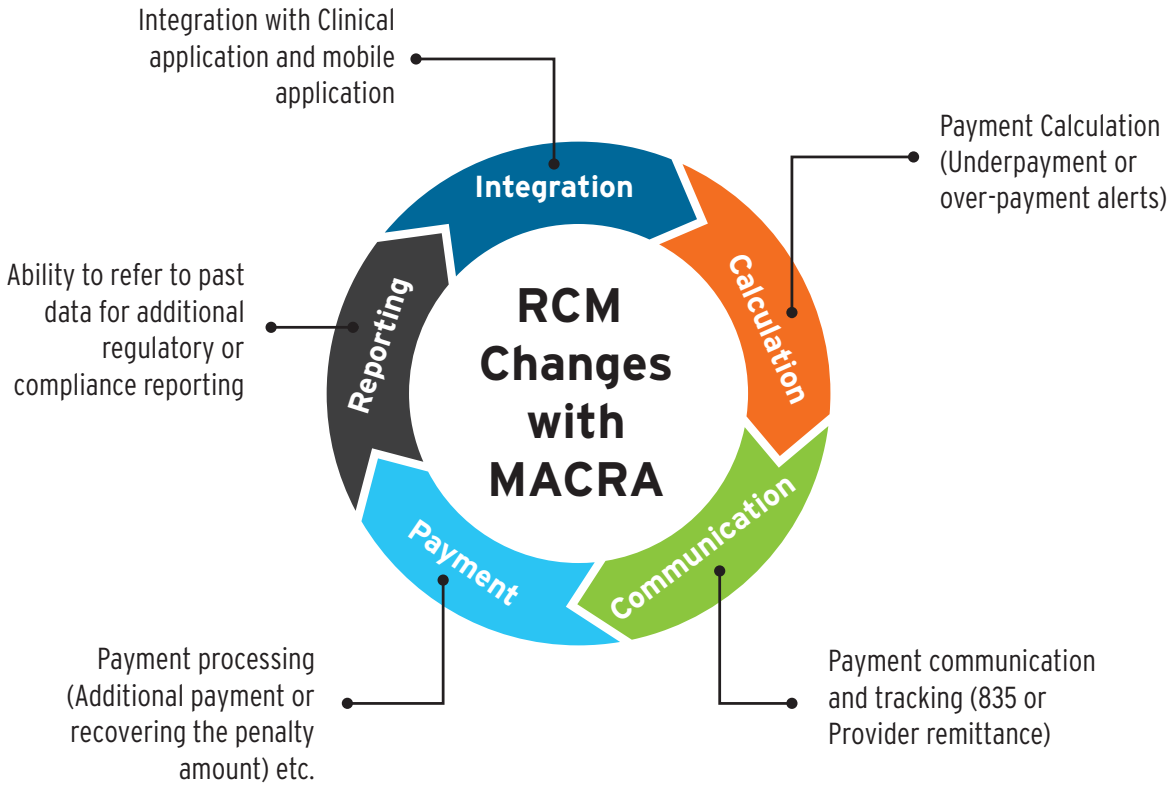
https://www.persistent.com/big-data/

Some of our achievements in healthcare analytics –

- Reduced time to analyse prescription data from days to minutes
- Health patterns and trends helped in better anticipation and treatment of the patient
- Eliminated litigation costs entailed due to occurence of prescription errors.
- Real time analysis and alerts helped quick and accurate decisions
- **Our claims management** solutions brought down the claim settlement time from **months to weeks for one of the largest independent provider**

RCM (Revenue cycle management)

Payment redistribution which is part of both MIPS and APM requires updating the RCM process with the changes similar to what was done for value based payments. At high level, the expected RCM changes would be as follows



Integrating the external systems (Clinical, pharmacy) with various RCM sub systems is quintessential for a couple of reasons, firstly for quality data gathering and secondly to reduce the revenue leakages.

Our Connectors developed with latest HL7 guidelines to integrate the Payer/Provider RCM systems with the clinical applications can help in faster data interchange and improve the efficiency of the entire revenue cycle.

Some of the challenges we successfully overcame for our clients

Challenges	Solutions
Payment errors and long wait time for performance reimbursement	Reduction in payment errors by 11%.Streamlined the reimbursement process that resulted in additional $1 - $3 million savings.
Improve the accuracy reimbursement for health care providers	Accurate reimbursement by integrating with 3M Grouper Plus System (GPS) software has proprietary to the logic of grouping the input codes (like CPT4, HCPC, ICD 9 & 10), with the output codes (like APG, DRG)

Healthcare @ Persistent

Persistent has more than 2 decades of experience in working in healthcare and life science domain. Our Life Sciences and Healthcare Practice acts as the technology catalyst for Medical Device, Pharmaceutical industries, Providers, and Payers by implementing solutions to accelerate the IT roadmap.

Persistent has proven expertise across Social, Mobile, Analytics, and Cloud technology platforms and in-depth knowledge in regulatory standards (HL7, HIPAA, EDI, NCPDP, DICOM,ICD, SNOMED-CT, LOINC, Rx Norm, CCD, CPT) and industry standard compliances (ISO 13485, ISO 14971, IEC 62304, MU, FDA 21 CFR Part 11) needed to support Health IT and eHealth initiatives.

Persistent's customers benefit from the industry's best and brightest software engineers and technology consultants whose expertise spans niche technologies to the most advanced next generation Big Data & Analytics, Cloud, Social and Mobile technologies.

We have worked with over 120 customers in the Life Science and Healthcare industry, including several of the Fortune 500 Healthcare & Life Science organizations.

Together with our technology partners, we are building on the vision for Healthcare to deliver better patient care at lower costs using enhanced resources and technology.

Hospital/Provider/ ACO	Payors/Health Plans/Insurance	Pharmacy	Pharma & Medical Devices	Laboratory R&D & Diagnostics	
• Reimbursement & Denial Management • Clinical & Operations Business Intelligence • Care Transitions & Population Health Management • EMR & HIS Integration • Medical & Wearable Device Data Integration • mHealth • Application Development, QA & Testing	• Member Management & Engagement • BPM Automation for Claims & HIX Management • Care Transitions & Population Health Management • Application Development, QA & Testing	• Member Management & Engagement • Care Transitions & Population Health Management • Application Development, QA & Testing	• Multi-Channel Marketing, Salesforce Effectiveness • BPM for Brand Mgmt., Product Labelling, and Pharmacy-vigilance • Product Lifecycle Management (PLM) • Application Dev, QA & Testing	• Lab Automation • Lab Information Management • Lab Mobility • Driver Development • Bioinformatics • Clinical Trial Process Management • Bio banking • Application Development, QA & Testing • Pharmacogenomics & Personalized Medicine • Clinical and Molecular (variant) data integration	**Services**
Data Interoperability & Integration: HL7 conversion, application & data integration with tools such as Intersystems Ensemble, Cloverleaf, Mirth, etc., & standards (EDI, X12, HL7, ICD, ISO/IEEE 11073) based integrations in enterprise software development & implementation. **Regulatory Compliance:** 21 CFR Part 11, ISO 13485, ISO 14971, IEC 62304, 510K software development standards					**Standards & Compliance**
• Patient, Physician Portal • Care Social • Ohum careBI - Reporting • DeviceIntX - Medical Device Integration • ICD-10 Assurance • Care Mobility • Clinical Trials Cloud (ePRO, RBM, Oncology CDM)	• Patient, Physician Portal • Care Social • BPM for Payors • Care Mobility • Ohum careBI - Reporting • ShareInsights (Big Data) • ICD-10 Assurance	• Patient, Physician Portal • ShareInsights(Big Data) • Care Mobility • Care Social • Ohum careBI - Reporting	• Patient, Physician Portal • MCM • BPM (PaxPro/Appian) • ShareInsights (Big Data) • ENOVIA for PLM • Clinical Trials Cloud (ePRO, RBM, Oncology CDM)	• Driver Central • Galaxie CDS • ChemLMS & LIMS • SanGenix for NGS/Genomics • Bio banking Cloud • Clinical Trials Cloud (ePRO, RBM, Oncology CDM)	**Solution Accelerators**

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PERSISTENT

About Persistent Systems

Persistent Systems (BSE & NSE: PERSISTENT) builds software that drives our customers' business; enterprises and software product companies with software at the core of their digital transformation. For more information, please visit: www.persistent.com

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