Transforming Data into Actionable Knowledge

AIPHD Dental Informatics Colloquium, San Antonio TX

Our mission is to improve the oral health of all.

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January 20, 2017

Transforming Big and SMALL Data in Oral Health

- It is not about the Data
- Oral Health Priority Conditions
- Medical Waste in Oral Health
- Big data for understanding trends & improving clinical outcomes
- "Small" data for quality improvement
- Training the next generation
- Enhanced user experience with Big data

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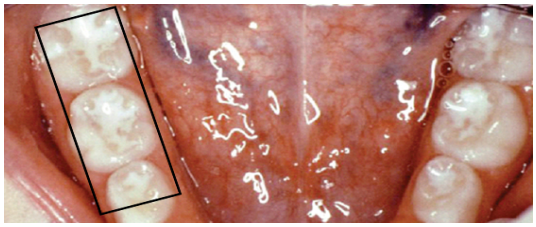
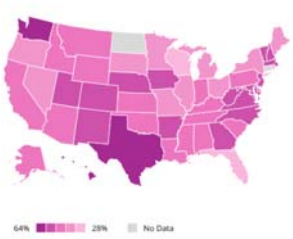
BIG DATA for Clinical Outcomes



DATA for Public Policy



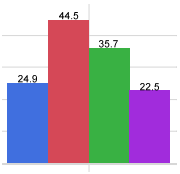
BIG DATA for Reducing Medical Waste

Operating Room

Emergency Department

DATA for Quality

Quality Measures



Quality Improvement

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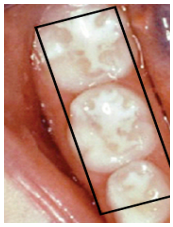
BIG DATA for Clinical Outcomes



DATA for Public Policy

Health of a Population

Experience of Care

Per Capita Cost

IHI *Triple* Aim

BIG DATA for

Operating Roo

ıprovement

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Oral Health

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AcademyHealth

January 24, 2017
11:00 a.m. - 12:00 p.m. ET

Addressing Oral Health in Health Policy

ow.ly/2jgF307CmYg

Co-Moderators

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Director, Analytics and Publication - DentaQuest Institute

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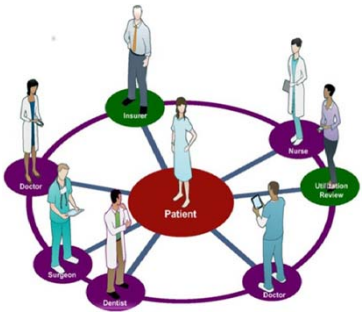
DentaQuest Institute Mission and Approach

Mission: *Improve the Oral Health of All*

Promote optimal oral health through efficient and effective care and prevention.



Knowledge → **Routine Practice**

Basic Research
Developing new knowledge on the etiology and epidemiology of disease

Applied Research
Testing new prevention and treatment methods in clinical practice

Think Tank
Compiling, processing and disseminating information to inform practice and policy

Quality Improvement
Overcoming clinical and process barriers to make care more efficient and effective

Technical Assistance
Supporting practitioners in making practice changes to improve care

DentaQuest Institute Approach

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Oppo ment in Dentistry

Guest Editorial

Improving Quality in Dentistry: An Imperative for the Profession

Dental caries is a transmissible disease and the most common chronic disease affecting U.S. children, five times more common than asthma and seven times more common than hay fever. Caries prevalence increases with age, rising from one in four U.S. children aged two to five years to nine out of 10 adults aged 20-64.[1] Disparities in caries persist among racial and ethnic groups, with untreated tooth decay higher for Hispanic and non-Hispanic black children and adults compared to non-Hispanic whites.[2] Poor oral health complicates other serious conditions such as heart disease and diabetes.[3] Moreover, Medicaid spends over half a billion dollars annually on dental-related emergency department visits, which often only manage symptoms rather than addressing the underlying cause.[4] These observations are indicative of a national system of oral health care that falls short of adequately addressing the needs of the general public. While dental practitioners are rightfully proud of the skilled care they provide to individual patients, there are growing signs that the oral health care delivery system is in need of significant improvement.

Over the past 24 years, the field of medicine has addressed its quality chasm by applying industrial quality improvement methods to the design or redesign of care systems.[5,6] Quality improvement (QI) involves the use of measurement and practical, on-the-job testing to establish workplace processes whose goal is to reliably deliver evidence-based care to every patient, every time. The goal is the triple aim: better patient experiences, improved population health status, and reduced per-capita cost of care.[7] Worldwide, QI has advanced in health care through the pioneering efforts of the Institute for Healthcare Improvement (IHI) and a myriad of health care organizations working to increasingly adopt and apply QI methods. Support for QI in healthcare is reflected in the Department of Health and Human Services National Strategy for Quality Improvement in Health Care, the Patient-Centered Medical Home initiative, the Centers for Medicare and Medicaid Innovation initiative, and other programs.[7] The National Quality Forum, a public-private partnership founded in 1999 to establish the standard, evidence-based measures to assess patient safety, health outcomes, and health care costs across a wide range of clinical domains, has been instrumental in supporting these initiatives.[8] Like any other reform movement, QI in health care has its share of methodological disputes and vocal critics. However, QI has unquestionably made care safer and more effective for millions of Americans.[9]

Most dental providers, however, remain unfamiliar with QI. Although federal agencies, commercial insurers, and payer organizations have begun to support the use of QI in dentistry, more must be done to fully engage the support of the dental community.[10] The need to improve systems of oral health care, together with the increasing use of QI in other health care sectors, make it imperative that dental professionals create the culture and systems necessary to apply QI principles and activities for the benefit of our patients, the public at large, and our profession.

Following the Breakthrough Series Model pioneered by IHI to support provider and practice changes through collaborative learning, the DentaQuest Institute set out in 2008 to engage dental professionals to work together to develop a disease management (DM) approach to reduce early childhood caries (ECC). The ECC Collaborative began with just two participating organizations: Boston Children's Hospital and St. Joseph's Health Services in Rhode Island. The first two phases of the ECC Collaborative focused on developing and testing a DM protocol based on the best available clinical evidence to prevent and manage ECC. The protocol includes seven components: caries risk assessment, effective communication, engaging patients and caregivers in managing their oral health, caries charting, fluorides and other remineralizing strategies, and risk-based recare intervals with restorative treatment as needed and desired by patients and families.

In Phase III of the ECC Collaborative (2013-2015), 32 federally-qualified health centers (FQHCs), hospital-based dental clinics and private practices worked collaboratively to implement the DM protocol with patients from six to 60 months of age. Participation in this program led to increased completion of risk assessment and self-management goals for children, improved collaboration with medical departments, increased pediatric patient volume, and improved communication and relationships with patients and their families. By employing QI techniques including ongoing measurement, participating offices were able to redesign workflows that ultimately led to improved outcomes for their patients.[11]

A QI learning collaborative employing the IHI Breakthrough Series model also has been launched in Los Angeles County as part of a program focused on increasing the capacity of FQHCs and other safety net clinics to serve as dental homes for over 50,000 young children and pregnant women and increasing parent's and caretakers' awareness of the importance of oral health for young children. The UCLA-First 5 LA Oral Health Program, which thus far has engaged 22 local FQHCs and community clinics as partners, is working with QI teams of dental, medical, and community outreach professionals and staff members to implement improved risk-based, integrated systems of care within clinics and surrounding communities. Teams are using QI methods to analyze and redesign workflows, improve care coordination and case management, and implement risked-based, culturally sensitive caries prevention and DM strategies for the diverse populations served by partner clinics. Preliminary evaluations reveal substantial increases in service delivery for diagnostic, preventive and treatment services in participating clinics.[12]

274 GUEST EDITORIAL

What we know
DESIRED

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Boston Children's Hospital and Harvard School of Dental Medicine, Boston, Mass.

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Opportunity for Improvement in Dentistry

- Focused prevention
- Assess and manage risk
- Support behavior change
- Repair defects

What we know DESIRED

THE GAP

- Applying evidence
- Changing processes
- Training workforce
- Educating parents
- Using information technology
- Aligning payment

- Prevention essentially the same for everyone
- Little focus on self-management
- 6-month recall visits
- Restore teeth

What we do ACTUAL

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DentaQuest Institute Impact Map

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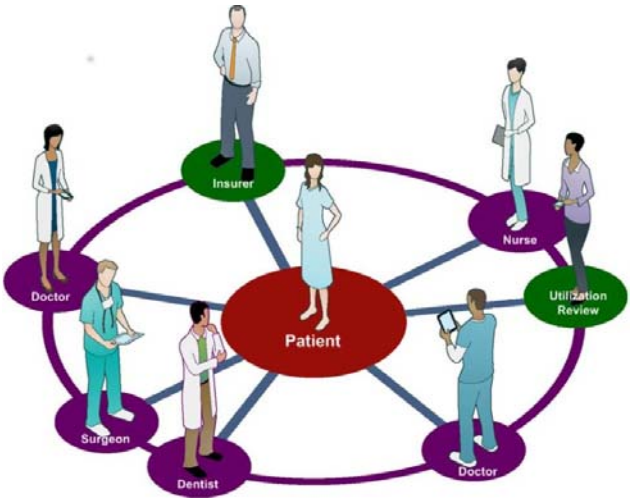
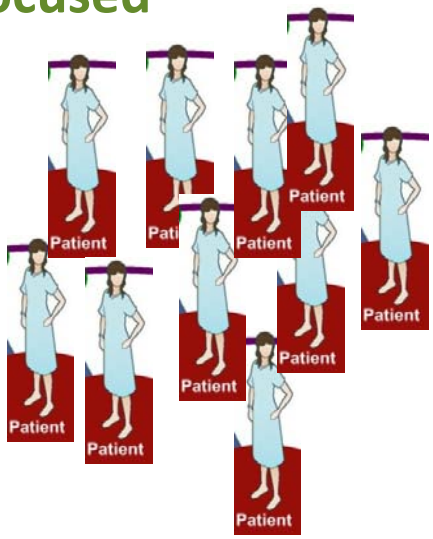
Patient Centered Population Focused





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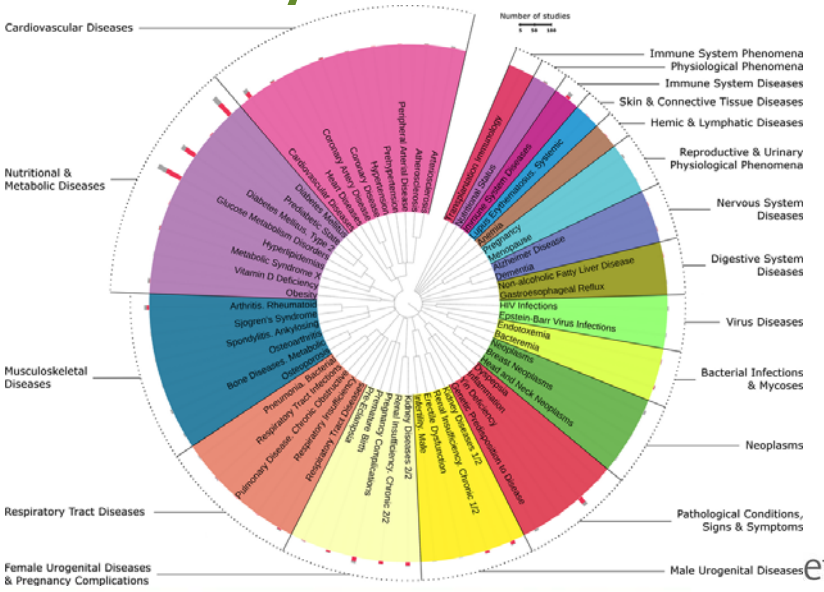
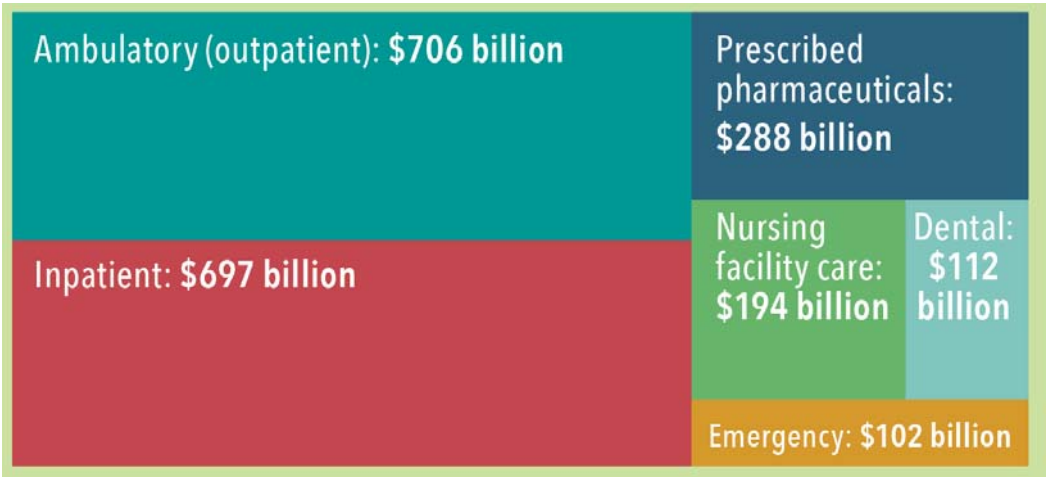
Oral Health and Systemic Health



Monsarrat et al. Journal of Clinical Periodontology 2016

2013 Health Care Spending in the United States



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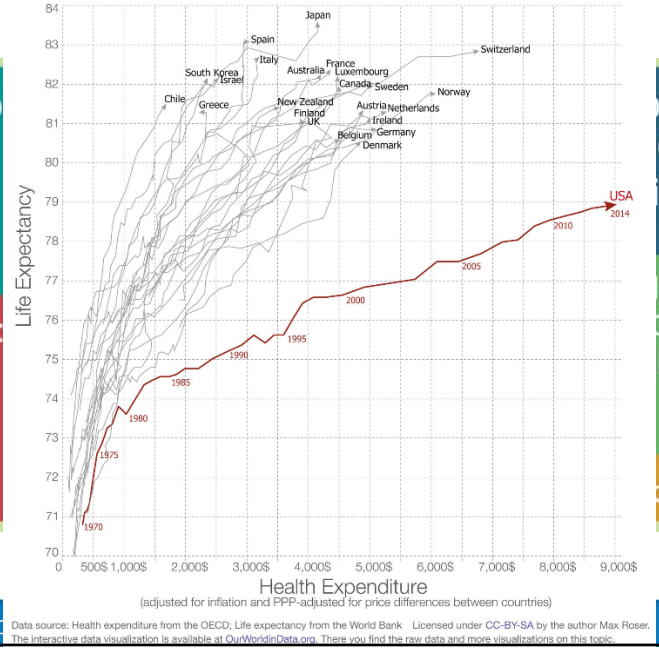
Dieleman *et al* JAMA Dec 17 2016 US spending on personal health care and public health, 1996–2013

2013 Hea ited States



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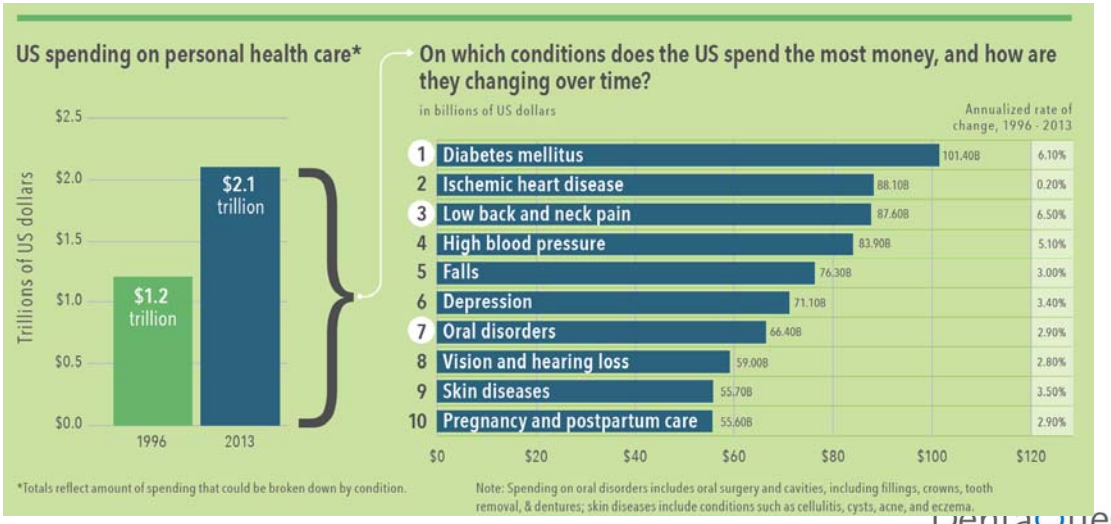

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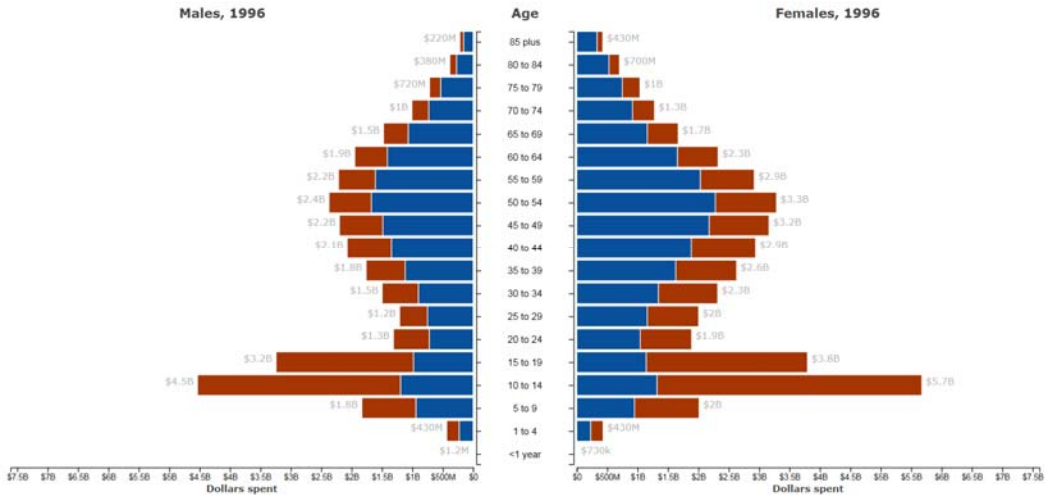
1996 Dental Spending in the United States



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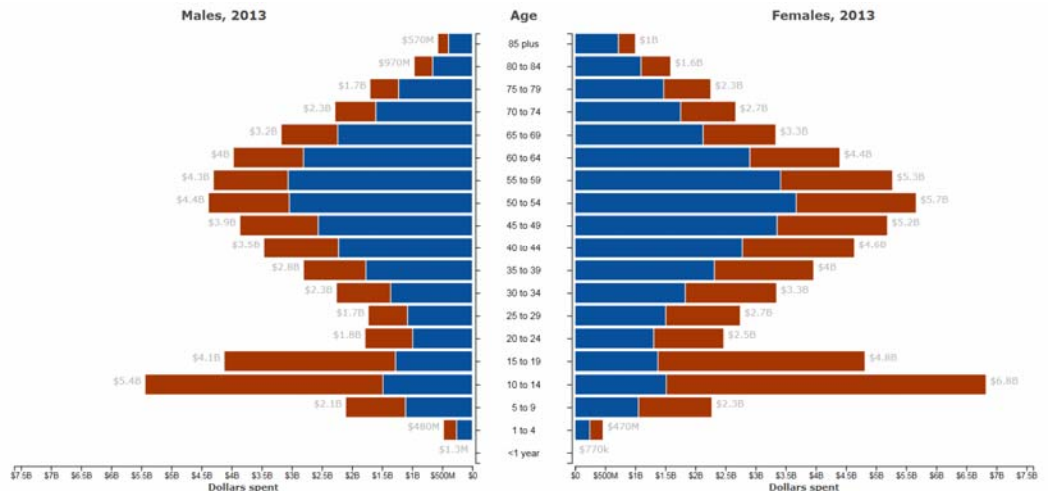
2013 Dental Spending in the United States



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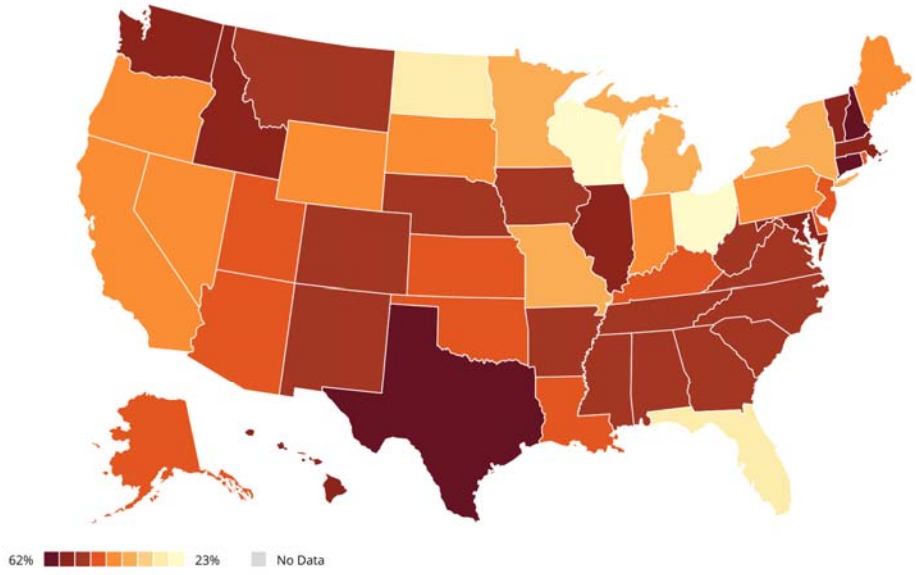
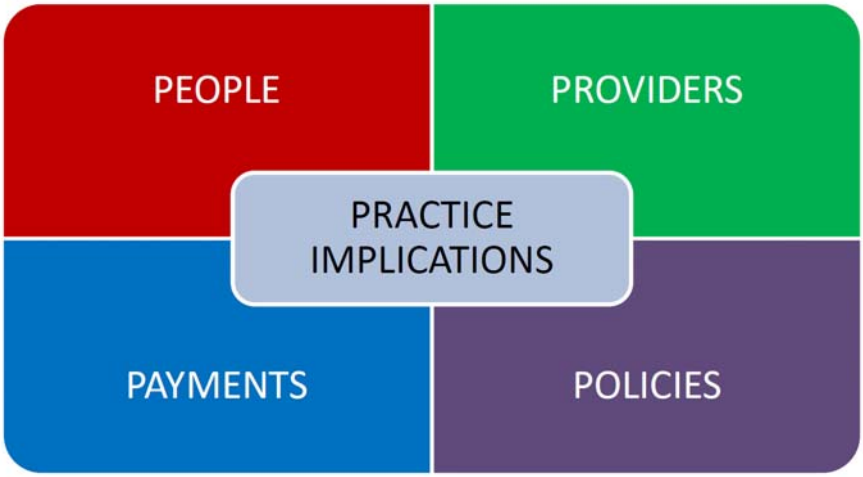
2013 Access to Dental Service (0-20 years)



CRITICAL TRENDS AFFECTING THE FUTURE OF DENTISTRY



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Dental Services Expenditures Aggregate and per Capita Amounts, Percent Distribution and Annual Percent Change by Source of Funds: Calendar Years 2009-2025

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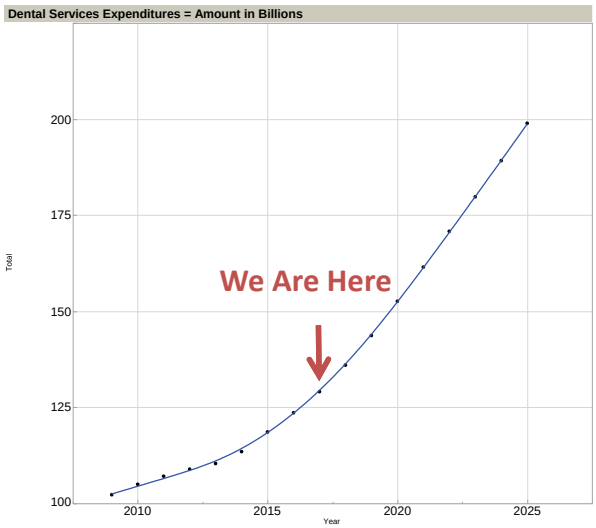

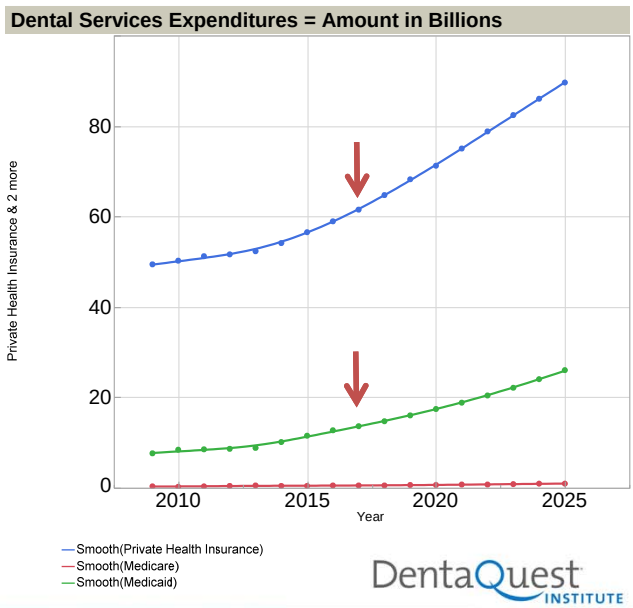

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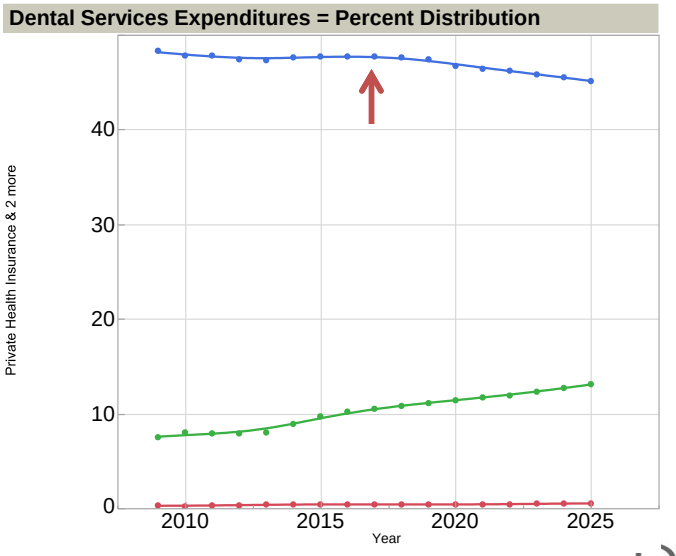

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Priority Conditions

MEASURE PRIORITIZATION ADVISORY COMMITTEE REPORT

Prioritization of High-Impact Medicare Conditions and Measure Gaps

May 2010

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National Quality Forum, 2010

Priority Conditions

- Committee was charged with prioritizing the top 20 high-impact Medicare conditions
- The list of the top 20 high-impact Medicare conditions was provided to NQF by HHS, as those conditions that account for 95 percent of Medicare costs based on an analysis of claims in CMS' Chronic Conditions Warehouse

	Condition	Votes
1.	Major Depression	30
2.	Congestive Heart Failure	25
3.	Ischemic Heart Disease	24
4.	Diabetes	24
5.	Stroke/Transient Ischemic Attack	24
6.	Alzheimer's Disease	22
7.	Breast Cancer	20
8.	Chronic Obstructive Pulmonary Disease	15
9.	Acute Myocardial Infarction	14
10.	Colorectal Cancer	14
11.	Hip/Pelvic Fracture	8
12.	Chronic Renal Disease	7
13.	Prostate Cancer	6
14.	Rheumatoid Arthritis/Osteoarthritis	6
15.	Atrial Fibrillation	5
16.	Lung Cancer	2
17.	Cataract	1
18.	Osteoporosis	1
19.	Glaucoma	0
20.	Endometrial Cancer	0

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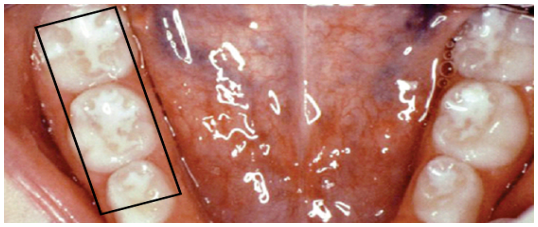
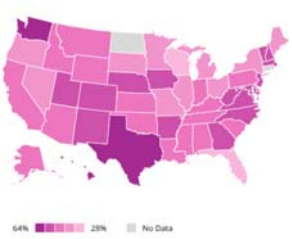
National Quality Forum, 2010

BIG DATA for Clinical Outcomes



DATA for Public Policy



BIG DATA for Reducing Medical Waste

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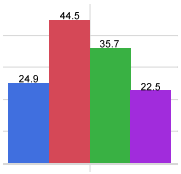
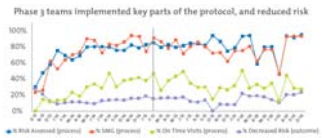


Quality Improvement



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Longevity of Restorative Treatments in Pediatric Patients: Evidence Based Dentistry in the Era of the EHR

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Longevity of Restorative Treatments in Pediatric Patients: Evidence Based Dentistry in the Era of the EHR

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Levels of Evidence