ANNUAL REPORT ON EQUITY IN HEALTH CARE QUALITY 2014

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1. INTRODUCTION

This is the seventh MGH Annual Report on Equity in Health Care Quality (AREHQ), known formerly as the Racial and Ethnic Disparities Dashboard. The goal of the AREHQ is to monitor several key components of quality by race, ethnicity, and language proficiency in order to identify where disparities exist for racial and ethnic minorities and patients with limited English proficiency. It was developed in response to The Institute of Medicine (IOM) Report, Crossing the Quality Chasm, which identifies equity – the principle that quality of care should not vary by race, ethnicity, or gender – as one of six pillars of quality.[1]

Massachusetts General Hospital (MGH) has been responsive to the recommendations of the Chasm report, as well as another important IOM Report entitled Unequal Treatment, which highlighted that minorities, even those with health insurance, often receive lower quality care than their White counterparts. Unequal Treatment defines disparities as "racial or ethnic differences in the quality of healthcare that are not due to access-related factors or clinical needs, preferences, and appropriateness of intervention."[2] In some cases, it can be challenging to tease out the root causes of differences identified in the data. For example, some differences may be due to variation in clinical appropriateness or cultural preference, while some may reflect a true disparity in the quality of care provided due to structural factors, cultural competency of providers, communication barriers, and a host of other factors.

The AREHQ provides an analysis of key quality measures stratified by patient race, ethnicity, and language proficiency. It also identifies key areas for quality improvement and reports on the progress of initiatives currently addressing disparities at MGH. Working with various departments to stratify data stored in their own systems is a high priority, and 2014 marks the second year that departmental-level measures are being reported. This year's report includes measures in Pediatrics and OB/GYN, two areas where MGH sees a high proportion of minority patients. Working closely with clinicians and quality leaders in these departments, we examined key measures where anecdotal evidence and/or evidence in the national literature suggest disparities exist for minority patients. The group anticipates working with the Department of Surgery and the Emergency Department to examine new measures for inclusion in the future.

Not only does the AREHQ allow us to measure the equity of the care provided, but given that it was the first of its kind in the nation, it establishes MGH as a national leader in monitoring and addressing disparities and promoting high quality care for all patients, regardless of race, ethnicity, culture, socioeconomic status, or language proficiency. Several hospitals around the country have followed MGH's efforts in this arena and have sought expertise through the Disparities Leadership Program to develop similar reports and dashboards for their organizations. In 2014 MGH was selected out of 200 applicants nationwide to receive the American Hospital Association's inaugural Equity of Care award for this work. MGH also received the Association of American Medical Colleges 2014 Learning Health System Challenge award for its equity and quality improvement efforts.

Highlights of the information in this report are posted publicly on the MGH Quality and Safety website at *http://qualityandsafety.massgeneral.org/measures/*.

2. 2014 AREHQ EXECUTIVE SUMMARY

Now in its seventh year at MGH, the AREHQ provides an analysis of key quality measures stratified by patient race, ethnicity, and language proficiency. It identifies areas for quality improvement and reports on the progress of initiatives currently addressing disparities at MGH. 2014 marks the second year of reporting on departmental level measures (Obstetrics and Pediatrics) by race, ethnicity, and language proficiency in addition to the standard process measures required by CMS and the Joint Commission. White and English-speaking groups are used as the reference group for statistical analyses throughout the report.

Background: Description of our patients

- In calendar year 2013, as in previous years, the racial and ethnic makeup of MGH's patient population roughly mirrored the catchment area.
- In CY 2013 92% of MGH's patients were English-speaking, compared to 77% of the catchment area population. The proportion of patients with limited English proficiency seen at MGH is not representative of the catchment area population.
- More African American and Hispanic patients are seen in the Emergency Department than inpatient services. There is also variation in the distribution among racial and ethnic minority patients within inpatient services.
- A relatively higher proportion of minority patients are seen in MGH's health centers (Chelsea, Charlestown, and Revere) and in all primary care locations than in outpatient specialty care practices. Hispanic representation in the health centers is higher than any other area of the hospital system (27% vs. 4.5% at MGH main campus and satellite practices).
- Pediatrics, Obstetrics/Gynecology, and Burns are among the top inpatient services accessed across all racial and ethnic minority groups. For White patients, the top services include Urology, Orthopedics, and Neurosurgery.

Green Light: Areas where care is equitable or improving

National Hospital Quality Measures (NHQM)

- Rates of evidence-based inpatient clinical care, as measured by the NHQMs (CY 2011-2013), were equitable across racial and ethnic groups for all measures related to heart failure, AMI, pneumonia, and surgical care. There were no statistically lower rates among the Other race and primary language groups compared to White and English-speaking patients.

Primary Care Linkage

- The gap between patient cohorts that are not linked to a primary care physician or a specific practice has decreased over time. This is an important marker of quality. Overall, roughly 4% of patients are not linked, and there is no significant gap between racial and ethnic groups.

HEDIS Measures

- In contrast to the 2013 report, disparities were not found in the area of cervical and colorectal cancer screening for Asian patients compared to White patients or for cervical cancer screening for patients in the Other category compared to the White group.

Well-Child Visits

- There were no disparities identified for well-child visits for children ages 3-6 years.

Inpatient Patient Experience: HCAHPS

- HCAHPS data show no statistically lower ratings between racial and ethnic minority groups and the White reference group for the following: overall hospital recommendation, quiet at night, and discharge information. Hispanics provided significantly higher ratings in 9 out of 10 measures.
- Patients who indicated Spanish as their primary language provided significantly higher ratings in 9 out of 10 measures (The HCAHPS survey is conducted in English and Spanish).

Obstetrics

- No disparities were found between racial/ethnic and primary language groupings in the timing and selection of antibiotic for cesarean section or elective delivery between 37 and 39 weeks.

Orange Light: Disparities exist but are lessening from previous year

Obstetrics

- The 2013 AREHQ showed a disparity between English-speaking and Other primary language patients in administration/documentation of intrapartum antibiotic prophylaxis for Group B Strep (2008-2012). Results from 2009-2011 and 2010-2012 show a disparity by primary language, whereas results from the 2011-2013 time period show no disparity.

Red Light: Newly discovered disparities or areas that require further investigation

HEDIS Measures

- Analysis of HEDIS measures revealed a disparity in the rates of prostate cancer screening for Hispanic men.
- Patients in the Other race category have lower rates of screening for breast and colorectal cancer, as well as for diabetes care (HbA1c testing).

Patient Experience: HCAHPS and C/G-CAHPS

- Asians reported significantly less positive experiences than non-Hispanic Whites for 3 of 10 HCAHPS measures.
- American Indians reported less positive experiences than non-Hispanic Whites for 4 of 10 HCAHPS measures.
- Disparities were identified for almost all racial and ethnic minority groups, as well as for Spanish-speaking patients, for both C/G-CAHPS measures.
- For Pediatric C/G-CAHPS, overall provider rating was lower for Black/African American pediatric patients compared to White pediatric patients.

Well-Child Visits

- Disparities in well-child visits for children 0-15 months were identified between the White and Other race and English and Other primary language groups.

3. BACKGROUND

3.1 DATA USED IN THIS REPORT

The data in this report are drawn from a wide variety of institutional sources, including:

- IDX ambulatory scheduling system
- PATCOM patient registration system
- TSI/EPSI billing system
- Longitudinal Medical Record System
- Partners' Community Healthcare, Inc. claims
- H-CAHPS and CG-CAHPS patient experience survey data
- Medical record review
- D4Q, Quality Net, UHC
- Interpreter Services

The time periods for the data vary depending on the measure and availability of data being presented. In several cases, groups needed to be combined into White and Other and English-speaking and Other groupings in order to meet minimum sample size requirements. For some measures, multiple years of data have been combined to ensure that sample sizes are adequate to draw conclusions. White and English-speaking groups are used as the reference group for statistical analyses throughout the report. Finally, the naming conventions for the data elements are based on the nomenclature of the data sources. This explains why in some cases "White" is used, while in other cases "Non-Hispanic White" is used.

3.2 COLLECTION OF DATA ON RACE, ETHNICITY, AND LANGUAGE AT MGH

With respect to data collected for the period covered by this report, the following protocols were in place for the collection of patient race, ethnicity, and language data.[1] When patients presented for initial registration, registrars asked them to identify first their race and then their ethnicity using categories that are standard across the state. Patients were able to select more than one choice. Whether a patient identified as Hispanic/Latino was included in the question about race, and there were codes for identifying ethnicity at a more granular level (e.g., Puerto Rican, Bosnian, Sudanese, etc.). MGH's process for collecting data on race and ethnicity during this time period differed from the Office of Management and Budget (OMB) standards. The OMB standards include five categories for data on race (American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, and White) and two categories for data on ethnicity (Hispanic or Latino or Not Hispanic or Latino.

When a patient asks why MGH requests these data, registration staff are trained to explain that we collect this information to better serve the hospital's diverse patient population. Because self-identification is the gold standard for collecting reliable data on race and ethnicity,3 registrars are trained never to enter their perception of the patient's race or ethnicity. If a patient does not wish to provide this information, registrars select the value of "Declined." Patients rarely decline to answer these questions (0.9% decline rate for race, and 3.4% decline rate for ethnicity in 2013). If a patient's stated race or ethnicity is not an option available to

[1]In July 2014, MGH transitioned from its existing registration and billing system to Epic as part of the Partners-wide *e*Care implementation. In doing so, MGH will change its race and ethnicity data collection slightly. These changes are not relevant for the time period covered in this report. The 2015 AREHQ will describe the changes resulting from the transition to Epic in further detail.

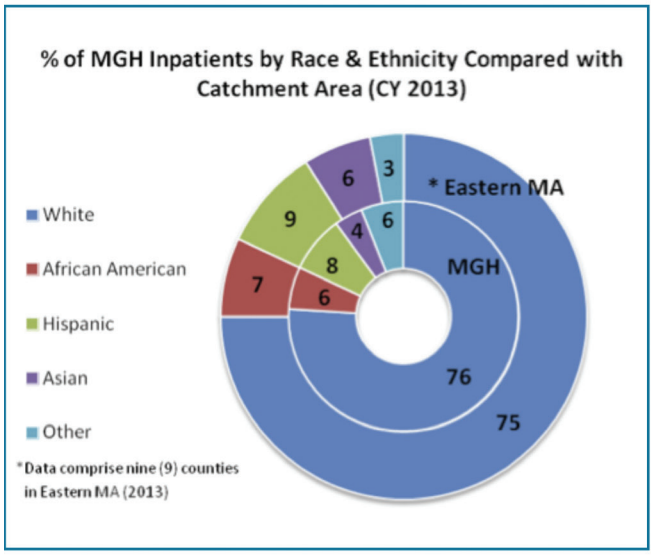
registrars in the computer system, the patient is registered with a code of "Other," and additional information is entered in the free text fields to communicate the person's self-reported race or ethnicity. During this reporting timeframe, registrars collected data on patients' preferred languages with the question, "In what language do you prefer to discuss health-related concerns?" All data collected at the patient's initial MGH registration, including data on race, ethnicity, and language, are confirmed during subsequent registration updates. The accuracy of this data has increased markedly in the last decade as a result of standardizing the methodology for objectively assessing race.

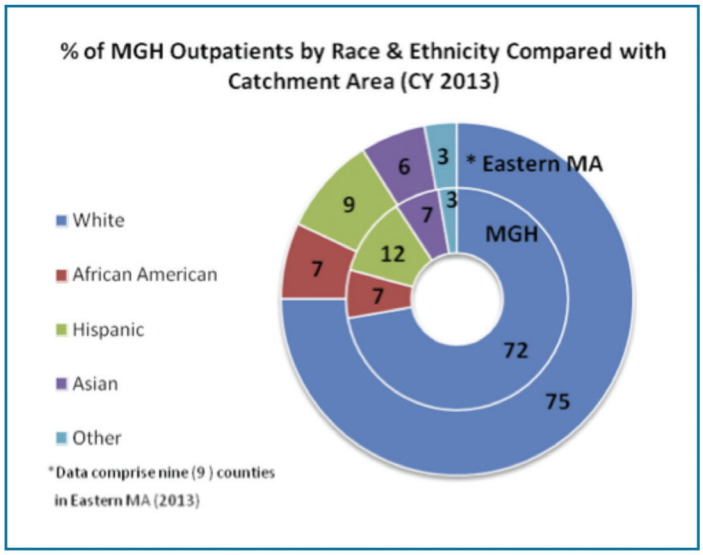
3.3 MGH PATIENT DIVERSITY & WHERE WE SEE OUR PATIENTS

This section provides a graphical overview of the racial, ethnic, and linguistic diversity of patients receiving care at MGH during calendar year 2013 compared with the diversity of MGH's catchment area (9 counties in Eastern Massachusetts).[2] In previous years, MGH's inpatient population had a similar racial/ethnic profile to that of its catchment area. In CY 2013, the racial/ethnic makeup of MGH's inpatient population also mirrored the catchment area.[3]

MGH's outpatients (primary and specialty care) largely reflect the catchment area demographics as well, with the proportion of White patients 3% less and Hispanic patients 3% more than the regional comparison.

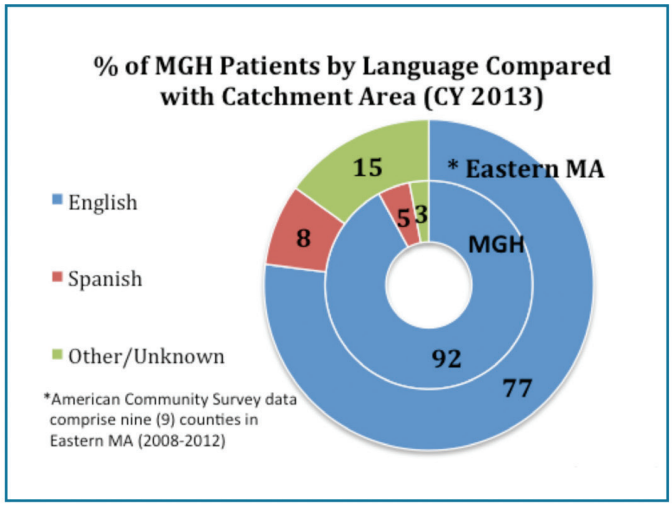
The third chart compares patient primary language spoken at home for MGH for CY 2013 with primary language data for the general population of Eastern Massachussets as a whole from the American Community Survey, 2008 to 2012.[4] The ACS is a monthly supplemental survey to the decennial national census (2012) of approximately 5,000 households/individuals (60,000 annually) from which various population demographics are calculated. MGH's population is weighted more heavily towards the English-speaking population at 92% relative to the catchment area as a whole. The percent of patients whose language is unknown at MGH is low at 0.04%.





[2]The nine counties in MGH's catchment area include Barnstable, Bristol, Dues, Essex, Middlesex, Nantucket, Norfolk, Plymouth, and Suffolk.

[3]In prior years, some demographic patient data were excluded from this analysis because the race and ethnicity data was not captured for patient encounters into the hospital legacy systems. As a result of system enhancement since the 2013 AREHQ, these data are now captured, resulting in a decline in the percentage of MGH's White patients from 80% to 76% and an increase in the "Other" category from 1% to 6%.



As the following table shows, the racial and ethnic profile of MGH patients varies by setting.

- A greater proportion of patients in the health centers are from minority racial and ethnic groups than in the on-campus and satellite primary care practices.
- Hispanic representation in the health centers is higher than any other area of the hospital system, followed by the Emergency Department. Asian representation is also higher in the health centers than other areas of the system, although the difference is not as great.
- MGH sees a greater proportion of minority patients in its emergency department than in inpatient services.
- The highest percentage of African American patients is seen in the Emergency Department.

Where We Saw Our Patients in CY 2013

	Race/Ethnicity				
	White	African American	Hispanic	Asian	Other/ Unknown
Setting	**Percent**				
Inpatient Care					
Inpatient discharges	76.0	5.8	8.0	4.0	6.0
Emergency Department					
Emergency Department visits	69.6	9.9	14.2	4.1	2.2
Outpatient Primary Care					
All locations	72.3	7.0	11.5	6.5	2.7
Health center	56.3	7.5	26.9	6.5	2.8
On-Campus and Satellite Practices	79.6	6.7	4.5	6.4	2.7
Outpatient Specialty Care					
Specialty care visits	81.2	4.9	7.8	4.6	4.2

Health Centers include Back Bay, Charlestown, Chelsea, and Revere.

There is considerable variation in the distribution among racial and ethnic minority patients within inpatient services. Pediatrics and Obstetrics/Gynecology see a larger proportion of minority patients than other inpatient services due to their larger Hispanic population. Substantially fewer minority patients are seen in the inpatient specialty clinics.

Patient Distribution among MGH Inpatient Services in CY 2013

	Race/Ethnicity				
	White	African American	Hispanic	Asian	Other/Unknown
Inpatient Service	**Percent of Admissions**				
Burns	71.2	10.8	8.2	3.8	6.0
Medicine	82.3	5.9	6.5	2.9	2.4
Obstetrics/Gynecology	62.7	7.8	16.8	8.8	3.8
Pediatrics	60.6	9.4	19.8	4.5	5.8
Psychiatry	72.2	9.5	12.2	3.0	3.1
Oral Maxillofacial	75.3	4.7	7.4	7.4	5.3
Orthopedics	87.7	2.9	4.8	2.5	2.0
Neurosurgery	85.2	2.9	4.9	3.6	3.4
Neurology	80.5	5.6	4.6	4.8	4.6
Surgery	84.2	3.9	5.6	2.8	3.4
Urology	88.3	3.4	4.7	1.7	1.8

4. RACIAL AND ETHNIC DISPARITIES: STANDARD REPORTING MEASURES

4.1 INPATIENT CLINICAL QUALITY INDICATORS

National Hospital Quality Measures

MGH reports National Hospital Quality Measures (NHQMs) on acute myocardial infarction, heart failure, pneumonia care, and surgical care to CMS and the Joint Commission as part of external reporting mandates. The NHQMs are reported by race for White and Other, and primary language is shown for English and Other. Even with three years of data, there are a limited number of minority patients, with an even smaller number in any particular racial/ethnic group; therefore, we oversample for all measures except AMI. The data below show no disparities in the NHQMs for the Other race and primary language groups when compared to White patients.

MGH has been reporting on these measures in the AREHQ since 2006, as they provide an opportunity to look at potential disparities in the hospital among key clinical processes. However, a number of NHQMs have been discontinued by CMS because performance has topped out at or near 100%. Evidence of disparities lessens as providers approach uniform high quality on these public measures, which is why public reporting of quality measures is a sound intervention for reducing between provider disparities. Measures that were discontinued in the 2014 report include smoking counseling for acute myocardial infarction and the following pneumonia measures: pneumococcal vaccination, initial antibiotics <6 hours, smoking counseling, and influenza vaccination.

National Hospital Quality Measures, 2011-2013

	Race				Primary Language			
NHQMs	White		Other		English		Other	
	N	%	N	%	N	%	N	%
Heart Failure								
Left ventricular assessment	684	100	150	100	742	100	92	100
ACE-inhibitor at discharge	137	96	47	98	160	96	24	100
Discharge instructions	512	90	138	91	56	90	84	90
Acute Myocardial Infarction								
ASA at arrival	1,896	~100	394	~100	2,025	99	265	~100
ASA at discharge	1,741	99	363	99	1,861	99	243	~100
ACE-inhibitor at discharge	182	93	32	97	188	94	27	93
ß-blocker at discharge	1,698	99	351	99	1,811	99	242	~100
Percutaneous Coronary Intervention < 90 min.	114	94	30	100	133	95	13	100
Pneumonia								
Blood culture timing	258	96	48	97	280	97	26	100
Selection of antibiotics (non-ICU)	173	90	34	82	193	88	14	93
Surgical Care								
Antibiotics <1h before surgery	1,303	99	177	99	1,387	99	93	100
Selection of antibiotics	1,307	99	178	99	1,392	99	293	~100
Discontinuation of antibiotics after surgery	1,259	95	174	99	1,343	96	90	96
Hair removal	2,118	~100	274	99	2,253	99	139	99
VTE ordered	787	99	111	98	842	99	56	100
VTE received	1,179	99	171	98	1,265	99	85	99
Controlled 6am post-op glucose‡	385	91	44	95	405	92	24	83
ß-Blocker 24 hrs prior to recovery‡	767	98	80	100	792	98	55	96

Ns vary as each measure includes only eligible patients as defined by the National Hospital Quality Measures.
‡Cardiac surgery patients only.

Influenza Vaccination

The literature shows that rates of vaccination among adults > 18 years are significantly lower among Hispanics and non-Hispanic Blacks than among non-Hispanic Whites.[5] Hispanic patients whose preferred language is Spanish are significantly less likely to receive flu vaccinations compared with those who prefer to speak English.[6,7] Possible explanations for these disparities include language barriers and poor communication between providers and patients, patient knowledge and attitudes toward flu vaccination, and health provider bias.[8,9]

The 2013 report showed a disparity between English-speaking patients and patients with limited English proficiency (LEP) with regard to flu vaccinations for patients with pneumonia (CY 2010-2012). Ninety-three percent of English-speaking patients with pneumonia received the flu vaccine, compared to just 83% of patients in the "Other" primary language category (results were significant at $p<0.05$).

The NHQM measure of influenza vaccination for patients with pneumonia was discontinued in 2013, and subsequently the Disparities Reporting Committee explored alternatives for tracking flu vaccinations. In 2012 a new measure, which measures flu immunizations for all inpatients regardless of diagnosis, was introduced by CMS and The Joint Commission.[10] The new flu immunization measure is more robust because it includes all inpatients, yielding higher numbers for analysis. Although the available data from 2012 Q4-2013 Q1 (below) suggest no disparities within this broader population, we cannot be certain how this compares with data reported previously in the AREHQ due to the change in the metric.

Inpatient Influenza Vaccination Rates

Race/Ethnicity

	White		African American		Hispanic		Asian		All Other (excludes unknown)	
Time Period	N	%	N	%	N	%	N	%	N	%
2012 Q4 – 2013 Q1	426	99.4	31	96.8	25	100.0	45	100.0	4	100.0
2013 Q4 – 2014 Q1	444	95.0	20	100.0	24	100.0	47	97.9	4	98.9

Primary Language

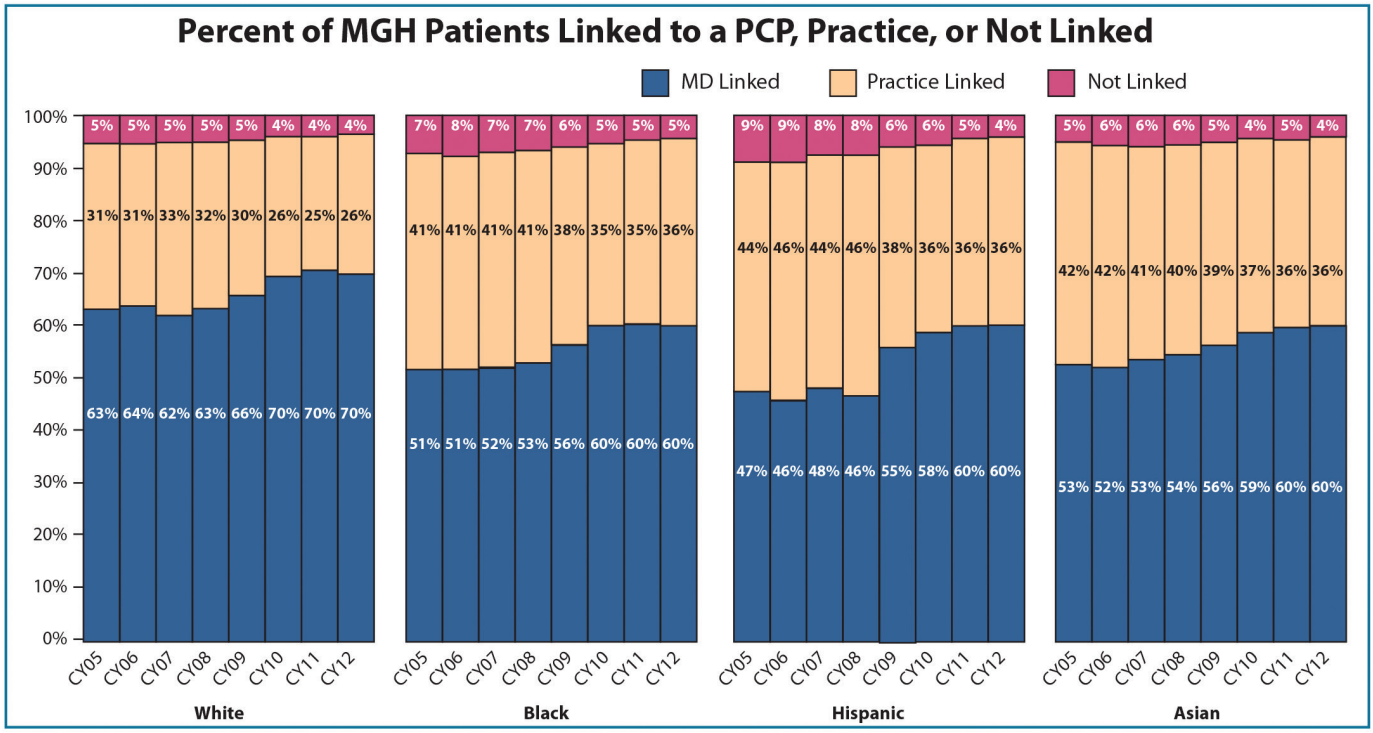
	English		Spanish		All non-English, including Spanish (excludes unknown)	
Time Period	N	%	N	%	N	%
2012 Q4 – 2013 Q1	501	99.0	24	97.4	38	100.0
2013 Q4 – 2014 Q1	488	95.5	32	96.9	56	98.2

4.2 OUTPATIENT CLINICAL QUALITY INDICATORS

Linking Patients to Primary Care Physicians

National literature has demonstrated that people with a usual source of care tend to have better health outcomes and experience fewer disparities.[11] Being linked to a Primary Care Physician is especially important, as PCPs develop ongoing relationships with patients and provide integrated services in the context of the patients' family and community.[11] In one study, patients who identified the ED or a hospital outpatient clinic as their usual source of care were more likely to postpone care than those who identified a specific practice as their usual source of care. Racial and ethnic disparities disappeared when controlling for usual source of care.[12] Finally, patients who have both a usual place of care and a usual care provider have consistently higher rates of having received preventative services than those who are linked to a usual place of care only or are not linked at all.[13]

The Primary Care Operations Improvement (PCOI) program has developed a method for determining whether individual patients are linked to a specific primary care physician (MD linked), are not linked to a specific physician but are linked to a specific practice (practice linked), or are not linked to a specific physician or practice (not linked). Overall, approximately 67% of MGH primary care patients are linked to a specific physician, 29% are linked to a practice, and 4% are not linked. When tracking of linkage began in 2005 there was variation by race and ethnicity. Comparison between cohorts shows that linkage to physicians has steadily increased in all groups. Minority cohorts are still more likely to be linked to a practice than to specific primary care physicians, but the gap is closing. In 2013, there was no significant difference in cohorts for percent of patients not linked to a practice.



MGH primary care practices include health center sites (Charlestown, Chelsea, Everett, North End [added 2012], and Revere) and non-health center sites (Ambulatory Practice of the Future [added 2010], Back Bay, Beacon Hill, Bulfinch Medical Group, Downtown, Internal Medicine Associates, Mass General Medical Group, Primary Care Associates [added 2012], Primary Care Boston [added 2011], Revere Broadway, Senior Health, Women's Health, and Waltham). Each year's cohort includes all unique patients linked to that primary care practice over the prior 3 calendar years. Data are CY2005 through CY2012.

HEDIS Measures by Linkage Category

The outpatient clinical quality indicators were supplied by the Primary Care Operations Innovation program and show performance measures based on HEDIS (Healthcare Effectiveness Data and Information Set) standards for patients seen between January 1, 2011 and December 31, 2013. As in other sections of the report, results are based on comparison of racial and ethnic minority groups to the White reference group. For nearly all comparisons, adherence rates were higher for patients linked to a physician compared to patients linked to a practice. These findings indicate an opportunity to evaluate the practice-specific model to identify opportunities for performance improvement. While there are differences in adherence rates for each measure by race, patterns are not consistent across measures, and the results are not adjusted for clinical severity.

Racial and ethnic disparities were found at MGH in four out of seven measures analyzed:

- Prostate cancer screening rates were lower for Hispanics than Whites, with an overall decline in rates across all groups from the 2013 to 2014 AREHQ. The national literature indicates that the prostate cancer incidence rate is lower among Hispanics than non-Hispanic Whites, a difference that may be driven by lower rates of prostate-specific antigen testing in this population.[14]
- Breast and colorectal cancer screening rates were lower for patients in the Other race category, which includes but is not limited to multiracial patients.
- The rate of having received HbA1c testing within the last year was lower for patients in the Other race category. Additionally, rates of HbA1c testing for all groups dropped substantially from those in the 2013 report due to the fact that two HbA1c tests are now required to satisfy this measure, whereas only one test was required in the past.

The following results reflect some notable differences from the 2013 AREHQ. Asian patients were previously found to have lower rates of screening for cervical and colorectal cancer compared to White patients, and the disparity in colorectal cancer screening rates was persistent across reporting cycles. These disparities are not evident this year's report. A slight reduction in the colorectal cancer screening rate for White patients appears to have driven the elimination of the statistical difference between Asian and White patients.

HEDIS Quality Indicators, 2011-2013

	Race/Ethnicity									
	White		African American		Hispanic		Asian		Other (excludes unknown	
Service	N	%	N	%	N	%	N	%	N	%
Preventative Screening										
Breast cancer screening (women 42-74 years old)										
Physician linked	31,790	84.5	2,212	**86.2***	2,920	**87.8***	2,236	85.0	198	82.3
Practice linked	6,103	70.9	742	71.7	815	75.3	500	68.4	80	**60.0***
Cervical cancer screening (women 21-64 years old, excluding those with total hysterectomy)										
Physician linked	31,639	82.5	2,450	**85.7***	4,485	**90.6***	3,076	81.4	257	82.5
Practice linked	15,829	74.7	1,629	**79.7***	3,156	**84.8***	1,916	72.0	218	76.6
Colorectal cancer screening (individuals 52-75 years old)										
Physician linked	41,468	78.6	2,403	**81.2***	2,635	**81.1***	2,189	74.0	188	**70.2***
Practice linked	6,523	65.2	826	65.4	724	69.1	444	63.5	81	**55.6***
Prostate cancer screening (men 52-69 years old)										
Physician linked	14,875	66.0	849	**72.6***	989	**58.0***	730	52.3	79	57.0
Practice linked	2,583	43.6	347	44.4	275	**29.5***	162	34.6	28	42.9
Diabetes Care										
Any LDL cholesterol test within the last year										
Physician linked	7,990	86.6	1,134	**88.6***	1,447	88.5	704	**88.8***	77	81.8
Practice linked	1,514	65.2	466	70.0	443	69.1	193	62.7	49	63.3
Two HbA1c test within the last year										
Physician linked	7,990	72.2	1,134	**73.7***	1,447	**77.1***	704	**78.3***	77	62.3
Practice linked	1,514	47.0	466	**54.3***	443	**55.3***	193	**47.2***	49	**28.6***
Coronary Artery Disease										
Any LDL cholesterol test within the last year										
Physician linked	7,295	83.2	272	85.7	327	83.8	240	87.5	23	73.9
Practice linked	1,418	60.7	141	71.6	143	68.5	74	71.6	23	73.9

**P < 0.05, difference in screening adherence comparing selected race group to those in the White race category, controlling for patient age, practice location, and gender if applicable. Significantly lower scores are in red. Significantly higher scores are in green.*

Note: Outpatient clinical quality indicators were supplied by the Primary Care Operations Improvement program. MGH primary care practices include health center sites (Charlestown, Chelsea, Everett, North End [added 2012], and Revere) and non-health center sites (Ambulatory Practice of the Future [added 2010], Back Bay, Beacon Hill, Bulfinch Medical Group, Downtown, Everett, Internal Medicine Associates, Mass General Medical Group, Primary Care Associates [added 2012], Primary Care Boston [added 2011], Revere Broadway, Senior Health, Women's Health, and Waltham). Each year's cohort includes all unique patients linked to that primary care practice over the prior 3 calendar years." Non-Partners data are not completely captured. Data sources vary for each outcome, so one should focus on relative differences rather than absolute differences among measures and physician/practice linkages.

White is the reference for racial and ethnic group comparison. The "Other" category includes all races other than White, Asian, Black, or Hispanic, including Native American, Pacific Islander, and Declined to Answer. The computer system also allows for a choice of Other.

Patient Experiences with Care: Analysis of HCAHPS and C/G-CAHPS

MGH has been collecting patient experience data through the inpatient HCAHPS survey since 2007 and the ambulatory C/G-CAHPS survey since 2008. Surveys are administered in English and Spanish. This 2014 report reflects January 2011 through December 2013 data. Results are presented as the percentage of patients who provide the most positive response to a given question, divided by the number of patients who provide any response to the question.

In contrast to prior reports, the C/G-CAHPS measures included below are limited to Provider Rating and Provider Recommendation. A new version of the C/G-CAHPS survey was implemented in January 2013, and the rating scales (with the exception of Provider Rating and Provider Recommendation) were reduced from six to four response options. As a result, data are not comparable across the survey versions for all but these two measures.

2014 report results show differences by race, ethnicity, and language in the following areas:

Inpatient (HCAHPS):

- Asian patients reported significantly less positive experiences than non-Hispanic Whites for 3 of 10 measures.
- American Indians reported significantly less positive experiences than Whites for 4 of 10 measures.
- Hispanics reported significantly more positive experiences with care than non-Hispanic Whites for 9 of 10 measures.
- Black/African American patients reported more positive experiences than non-Hispanic Whites in 5 of 10 measures.
- Spanish speaking respondents reported significantly more positive experiences compared to the English-speaking cohort for 9 out of 10 inpatient measures.
- There were no statistically lower ratings between racial and ethnic minority groups and the White reference group for the following: overall hospital recommendation, quiet at night, and discharge information. Hispanics provided significantly higher ratings in 9 out of 10 measures.

Outpatient (C/G-CAHPS):

- Disparities exist for all racial and ethnic minority groups compared to White patients for overall provider rating and willingness to recommend provider, with two exceptions; overall provider rating shows no significant difference between Whites and American Indians, and Pacific Islanders provided significantly higher ratings than Whites for willingness to recommend provider.
- Spanish-speaking respondents provided significantly lower overall provider ratings than English-speaking patients.

Differences among certain racial and ethnic groups should be interpreted with caution, as it cannot be assumed that higher scores, for example, are indicative of better patient experience. There may be cultural barriers or norms at play, as well as perceptions of bias and discrimination, that impact how different groups perceive their care experiences, as well as the healthcare system more broadly.[15,16]

Overall, the survey results are consistent with research in the field that demonstrates variations in patient-reported experiences by characteristics such as race, ethnicity, and culture.[17] However, it is important not to generalize or stereotype entire populations based on these findings, given the incredible diversity within each of the racial and ethnic categories. Instead, ways to explore the root causes of these differences and strategies to address them, as appropriate, must be considered.

Patient Experience Reports, CY 2011-2013

% of Responses in Best Category[ab]

Race/Ethnicity

HCAHPS (Inpatient)	Non-Hispanic White	Hispanic	Black/African-American	Asian	American Indian	Pacific Islander	Multiple Races
Overall hospital rating	81% (N=13,198)	**89%*** (N=849)	78% (N=517)	**72%*** (N=383)	67% (N=21)	75% (N=8)	79% (N=479)
Overall hospital recommendation	91% (N=13,555)	**94%*** (N=888)	90% (N=541)	88% (N=409)	81% (N=21)	90% (N=10)	89% (N=503)
Nurse communication [c]	81% (N=13,728)	**87%*** (N=976)	**85%*** (N=557)	79% (N=438)	**61%*** (N=25)	73% (N=11)	80% (N=522)
Doctor communication [c]	82% (N=13,727)	**91%*** (N=953)	**84%** (N=557)	82% (N=430)	**62%*** (N=25)	88% (N=11)	80% (N=521)
Quiet at night	45% (N=13,529)	**70%*** (N=918)	**63%*** (N=548)	**57%*** (N=418)	57% (N=23)	**73%*** (N=11)	**56%*** (N=509)
Room cleanliness	73% (N=13,512)	**77%*** (N=922)	72% (N=546)	**63%*** (N=416)	75% (N=24)	82% (N=11)	75% (N=510)
Pain control [c, d]	72% (N=9,067)	**80%*** (N=661)	**77%*** (N=386)	70% (N=316)	**44%*** (N=16)	88% (N=8)	69% (N=375)
Medication information [c, d]	64% (N=7,822)	**77%*** (N=408)	**69%*** (N=266)	62% (N=236)	**36%*** (N=11)	75% (N=2)	63% (N=257)
Discharge information [c, d]	91% (N=11,837)	92% (N=837)	90% (N=485)	91% (N=373)	85% (N=22)	90% (N=11)	90% (N=428)
Staff responsiveness [c, d]	63% (N=12,417)	**75%*** (N=887)	61% (N=512)	**58%*** (N=399)	53% (N=23)	50% (N=9)	63% (N=470)

Primary Language

HCAHPS (Inpatient)	English	Spanish
Overall hospital rating	80% (N=16,280)	**91%*** (N=476)
Overall hospital recommendation	90% (N=16,814)	**94%*** (N=484)
Nurse communicationc	81% (N=18,065)	**87%*** (N=530)
Doctor communicationc	82% (N=17,700)	**90%*** (N=521)
Quiet at night	47% (N=17,227)	**74%*** (N=501)
Room cleanliness	72% (N=17,228)	**77%*** (N=509)
Pain control [c, d]	72% (N=11,622)	**80%*** (N=344)
Medication information [c, d]	64% (N=9,615)	**76%*** (N=211)
Discharge information [c, d]	91% (N=14,807)	93% (N=462)
Staff responsiveness [c, d]	62% (N=16,129)	**77%*** (N=476)

Race/Ethnicity							
C/G-CAHPS (Ambulatory)	Non-Hispanic White	Hispanic	Black/African-American	Asian	American Indian	Pacific Islander	Other Races[e]
Overall provider rating	85% (N=58,356)	82%* (N=4,990)	80%* (N=2,538)	71%* (N=2,407)	82% (N=202)	77%* (N=73)	79%* (N=2,643)
Willingness to recommend provider	90% (N=57,601)	89%* (N=5,183)	89%* (N=2,556)	81%* (N=2,483)	85%* (N=192)	93%* (N=71)	87%* (N=2,487)

Primary Language		
C/G-CAHPS (Ambulatory)	English	Spanish
Overall provider rating	84% (N=66,731)	82%* (N=3,679)
Willingness to recommend provider	90% (N=65,543)	91%* (N=3,598)

**P < 0.05, difference in responses for patients reporting belonging to selected race group compared to the White respondents; for languages, differences are compared to the English group. Patients declining to report any racial information are excluded from all subgroup comparisons. Significantly higher scores are shown in green, significantly lower scores in red.*

Statistical Method: For the individual measures, Chi Square or Fisher Exact (if the count in one group is less than 5) test was used to compare the difference of top box distribution between White and Other racial groups. For the composite measures that contain multiple items, T-Test was used to assess the mean difference on percentage of top box responses for all composite items between White and Other racial groups. Patients who declined to report racial information are excluded from analysis.

[a] The scores were calculated as the sum of item numerators divided by the sum of item denominators in each racial group.

[b] White is the reference for racial and ethnic group comparison, and English is the reference for primary language comparison.

[c] Composite of two or more measures. Composite scores calculated as the sum of item numerators divided by the sum of item denominators.

[d] Results reflect responses of those eligible for the questions based on screener questions.

[e] CG-CAHPS uses the category of Other Races, which can include, but is not limited to multi-racial respondents.

5. DEPARTMENT-SPECIFIC QUALITY MEASURES

This marks the second year that MGH has added new, departmental-level measures to the Annual Report on Equity in Healthcare Quality. Included are data from analyses of several new measures in the Department of Pediatrics and the Department of Obstetrics.

5.1 PEDIATRICS

Pediatric Patient Experience

In addition to the overall patient experience data presented earlier in the report, outpatient pediatric patient experience data by race and primary language (C/G-CAHPS data, Jan. 2011-Dec. 2013) were examined. Ratings reflect responses provided by the child's caregiver.

- Black/African American respondents reported significantly lower overall provider ratings than Whites.
- In the 2013 report, respondents in the Other race category reported a significantly lower provider rating; no difference is seen in the data for this reporting period.
- There are no disparities in ratings between English and Spanish-speaking respondents.

Ambulatory patient experience is a key area for quality improvement in 2014. Pediatric practices will be encouraged to consider opportunities to address this disparity in their improvement plans.

These results show fewer disparities than the overall HCAHPS and C/G-CAHPS results. This is consistent with a large national study that found that the care provided to children is generally perceived more positively than care provided to adults. Research is limited on disparities in pediatric C/G-CAHPS results.[18]

Pediatric CG-CAHPS, 2011-2013

% of Responses in Best Category[a,b]

Race/Ethnicity

Pediatric C/G-CAHPS (Ambulatory) Jan 2011-Dec 2013 Race/Ethnicity	Non-Hispanic White	Hispanic	Black/African-American	Asian	American Indian	Pacific Islander	Other Races[c]
Overall provider rating	79% (N=4,791)	**83%*** (N=1,626)	**77%*** (N=480)	70% (N=656)	76% (N=25)	67%) (N=6)	76% (N=669)
Willingness to recommend provider	88% (N=5,102)	90% (N=1,731)	89% (N=511)	82% (N=708)	82% (N=28)	86% (N=7)	**91%*** (N=626)

Primary Language

Pediatric C/G-CAHPS (Ambulatory) Jan 2011-Dec 2013	English	Spanish
Overall provider rating	78% (N=6,966)	82% (N=1,303)
Willingness to recommend provider	88% (N=7,366)	91% (N=1,300)

**P < 0.05, difference in responses for patients reporting belonging to selected race group compared to the White respondents; for language, differences are compared to the English group. Patients declining to report racial information are excluded from all subgroup comparisons. Significantly lower scores are compared to the White Scores and are shown in red, significantly higher scores are in green.*

Statistical Method: For the individual measures, Chi Square or Fisher Exact (if the count in one group is less than 5) test was used to compare the difference of top box distribution between White and Other racial groups. For the composite measures that contain multiple items, T-Test was used to assess the mean difference on percentage of top box responses for all composite items between White and Other racial groups. Patients who declined to report racial information are excluded from analysis.

[a] The scores were calculated as the sum of item numerators divided by the sum of item denominators in each racial group.

[b] White is the reference for racial and ethnic group comparison, and English is the reference for primary language comparison.

[c] CG-CAHPS uses the category of Other Races, which can include, but is not limited to someone who identifies as being multi-racial.

Well-Child Visits

The American Academy of Pediatrics recommends that well children receive frequent preventative care in the first three years of life to chart developmental and behavioral growth, as well as screen for potentially life threatening illnesses.[19] Well-child care visits may help decrease hospitalizations. One study that looked at an integrative healthcare system found that poor well-child care visit adherence was associated with an increased risk for ambulatory care-sensitive hospitalizations for children younger than 3.5 years old.[20]

While overall adherence rates have improved since the 1990s, disparities between racial and ethnic groups have persisted, and in some cases, worsened.[21] According to the latest National Disparities Report, Black children have lower rates of well-child visits compared with their White counterparts, while Hispanic children have lower rates than White, Black, and other non-Hispanic children.[22] This may be related to the lack of a usual source of care.[23] An analysis of the Medical Expenditure Panel Survey (MEPS) found that among Medicaid and privately insured children, African American and Latino children were roughly twice as likely as White children to lack a usual source of care. Another study found that children in households where English is not the primary language more often had no usual source of care and had made no medical or preventive dental visits in the previous year.[24]

The well-child visit measure requires at least six well-infant visits for infants ages 0-15 months and one well-child visit in the last year for children ages 3-6 years. Analysis of the measure shows a disparity in the rate of well-child visits for children ages 0-15 months in the Other race and primary language groupings. The department is addressing well-child visits as one of their key quality improvement measures in 2014. The disparity in the 0-15 month old age category will be highlighted with the pediatric practices, along with a request for improvement plans to address the disparities in this measure.

Adherence Rates for Well-Child Visits, CY 2012

	Race				Primary Language			
Well-Child Visits	White		Other		English		Other	
	N	%	N	%	N	%	N	%
0-15 months old	1,124	57	1,233	48*	1,819	57	591	46*
3-5 years old	25	92.0	76	97.0	56	94.6	47	97.9

**Comparison is statistically significant at P<0.05, using CHI Square test. Patients declining to report any racial information are excluded from all subgroup comparisons. Significantly lower scores are compared to the scores for White and English-speaking patients and are shown in red.*

5.2 OBSTETRICS

Maternity Measures

As part of the MassHealth Pay-for-Performance Program's quality reporting requirements, MGH reports on the following maternity measures:

- Intrapartum antibiotic prophylaxis for GBS
- Timing of antibiotic for cesarean section
- Selection of antibiotic for cesarean section
- Elective delivery between 37 and 39 weeks

Where available, data are reported for three-year periods to assist in the identification of trends.

MassHealth Maternity Measures

	Race				Primary Language			
Maternity Measures	White		Other		English		Other	
	N	%	N	%	N	%	N	%
Intrapartum antibiotic prophylaxis for GBS								
2008 Q1 – 2010 Q4	38	94.7	167	88.0	83	92.8	125	86.4
2009 Q1 – 2011 Q4	40	97.5	130	90.8	69	98.6	102	**88.2***
2010 Q1 – 2012 Q4	56	98.2	176	91.5	108	97.2	125	**89.6***
2011 Q1 – 2013 Q4	71	94.4	217	92.6	145	95.2	144	91.0
Timing of antibiotic for cesarean section								
2010 Q1 – 2012 Q4	140	96.4	274	97.4	220	96.4	198	97.5
2011 Q1 – 2013 Q4	165	97.6	341	98.2	286	97.6	227	97.8
Selection of antibiotic for cesarean section								
2010 Q1 – 2012 Q4	140	96.4	274	97.4	220	96.4	198	97.5
2011 Q1 – 2013 Q4	165	100.0	341	100.0	286	100.0	227	100.0
Elective Delivery >37 and <39 Weeks Delivery								
2011 Q3 – 2013 Q4	25	92.0	76	97.0	56	94.6	47	97.9

**Comparison is statistically significant at P<0.05, using CHI Square/Fischer's Exact test. Patients declining to report any racial information are excluded from all subgroup comparisons. Significantly lower scores are compared to the scores for White and English-speaking patients and are shown in red.*

No disparities were found in the timing and selection of antibiotic for cesarean section or elective delivery between 37 and 39 weeks.

Data for the 2009-2011 and 2010-2012 time periods show a disparity in administration/documentation of appropriate intrapartum antibiotic prophylaxis for Group B streptococcus among eligible patients with limited English proficiency at MGH.

Group B strep (GBS) is a bacterium that can cause life-threatening infections in newborns.[25,26] Perinatal GBS infection is preventable with the administration of intrapartum antibiotics to women at risk of transmitting the bacterium their newborns, largely as determined by results of screening cultures.[27] Studies have confirmed

that Black infants have higher rates of early-onset GBS compared with Whites, and that Black women are more likely to carry GBS, a known risk factor for late-onset disease.[28,29,30,31,32,33,34,35] Additionally, a 2002-2003 study in North Carolina found that Hispanic women receiving care at a hospital or health department clinic were less likely to receive prenatal screening for GBS.[27] Another study in Northern California found that Black women were less likely to be screened, seemingly related to practice variation in an era before screening was the standard of care for GBS prevention.[32]

Based on chart review analysis, the Department of Obstetrics has reported that the disparity for the 2009-2011 and 2010-2012 timeframes are partially attributable to precipitous deliveries, defined as a labor that lasts no more than three hours from onset of regular contractions to delivery, as well as unscheduled Caesarean sections. While data from the 2011-2013 period do not show a disparity, MGH will be proactively exploring ways to sustain the improvement. The Department of Obstetrics has identified the following potential next steps:

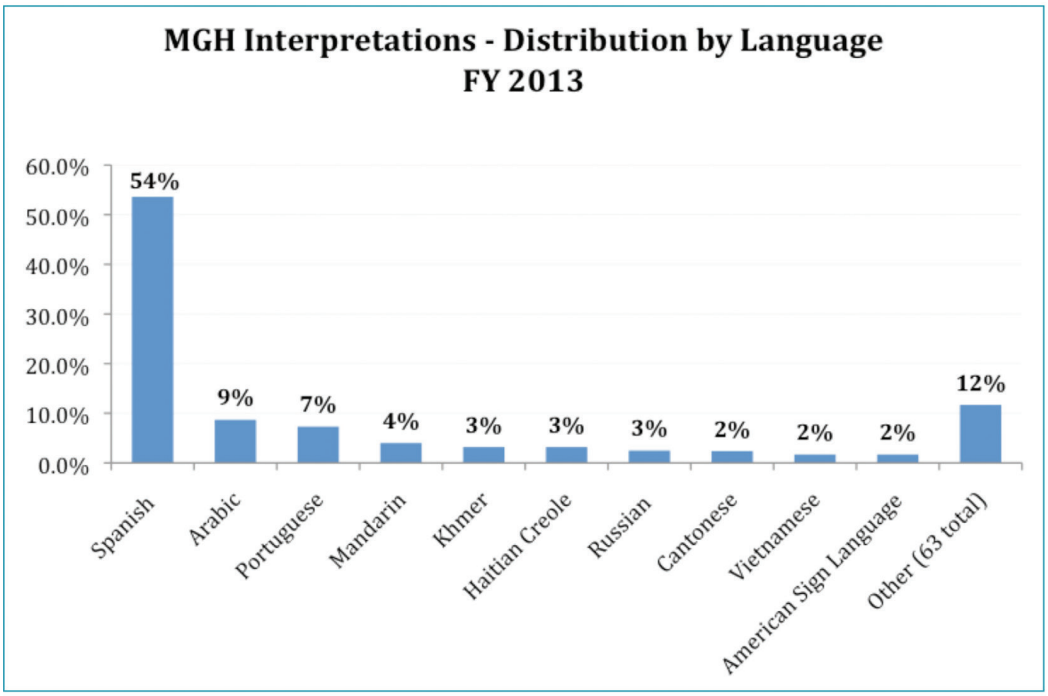
- Combined messaging to providers and patients to address the need for early arrival for patients who are GBS+
- Exploring whether patients with LEP are receiving adequate interpreter services, especially when communicating regarding the arrival time required to receive antibiotic prophylaxis for GBS
- Provider interventions to address the need for certain patients who are GBS+ and undergoing c-section to receive antibiotic prophylaxis for GBS prior to being sent to the operating room

6. RACIAL AND ETHNIC DISPARITIES: IMPROVEMENT INITIATIVES

6.1 CARING FOR PATIENTS WITH LIMITED ENGLISH PROFICIENCY

Communicating with Our Patients

In FY 2013, MGH Interpreter Services provided a total of 132,675 interpretations in 73 different languages, including American Sign Language (ASL). The following chart shows the distribution by language.



MGH provided a total of 57,337 face-to-face interpretations in FY 2013, along with 67,731 telephonic and 7,607 video interpretations. All modalities saw increases in volume in the past year. Contributing factors for the increase include continued education of staff through in-services in individual clinical practices and inpatient units, as well as continued focus on improving access to professional interpreters.

In 2013 a new vendor was brought on to provide medical interpreters over the phone, and with this new partnership additional devices (telephones) were deployed throughout many new areas of the hospital, making it easier for staff to be able to communicate with patients more often and in a timely manner.

Improving Care for Patients with Limited English Proficiency

The role of language barriers and their impact on adverse events is now receiving greater attention. Recent research suggests that adverse events that affect patients with limited English proficiency (LEP) are more frequently caused by communication problems and more likely to result in serious harm, compared to English speaking patients.[36] Language barriers also lead to longer length of stay and higher readmission rates.[37] To address this, the Joint Commission has developed a set of standards on patient-centered communication that emphasize the importance of language, cultural competence, and patient-centered care, and hospitals seeking accreditation were expected to comply with these recommendations as of 2012.

As part of efforts to develop strategies and systems to prevent medical errors and address disparities between patients with LEP and English-speaking patients, following initiatives are being undertaken:

Interpreter Rounds

Interpreter rounds were re-designed in 2014 in an effort to make this a more robust program with a sustainable and systematic approach and to complement hourly rounding on inpatient units. The objectives continue to be the same: to educate patients on the availability and benefit of working with professional medical interpreters

in person, by telephone, or by video and to advocate for patients and providers to use the available language resources for safer and higher quality patient care. During rounds interpreters inform patients that interpreter services are available free of charge at any time of day they need it. They also distribute language cards to patients, a tool to facilitate patients requesting interpreters or calling Interpreter Services when they need to contact their providers by telephone. Interpreters also distribute Point-To-Talk booklets, a tool to help patients communicate simple needs to their clinicians. Interpreters will also facilitate communication with the providers on the spot if the patient has questions and clinicians are available. Otherwise, they use the in-room white boards to write the patient's question on the board for the medical team. Staff on the units have found this approach very helpful. During rounds interpreters also assess how patients' language needs have been met. In most cases, patients who were rounded on by medical interpreters increased their usage of interpreter services.

Executive Quality & Safety Rounds

The Director of Interpreter Services (DIS) accompanies the Center for Quality and Safety team and Senior Executive on an intermittent basis on Walk Rounds to various inpatient and ambulatory practice units. The rounds include targeted questions for staff on their concerns and questions regarding caring for patients with limited English proficiency. If a number of issues are raised, the DIS will return to the unit for follow-up education. To date, the DIS has visited twelve units with the Executive team. One of the issues addressed with staff has been best practices when caring for patients with limited English proficiency, particularly the use of technology (IPOPs and VPOPs) vs. in-person interpreters.

Training for MGH Clinicians on Providing Safe Care for Patients with LEP

In 2012-2013, the Disparities Solutions Center, in collaboration with the MGH Institute of Health Professions (IHP), developed and pilot tested an interprofessional curriculum for medical and nursing students on providing safe, effective care for patients with limited English proficiency. The course was pilot tested with faculty and students from Harvard Medical School and MGH IHP. A key theme arising from focus groups with students and faculty was the need to provide training for health care providers, in addition to including this in required curricula for students in the health professions.

As a result, the DSC adapted the e-learning program for health care providers at MGH. Two 15-20 minute modules are being pilot tested with the Department of Obstetrics and select groups of providers in Patient Care Services in 2014. Module 1 provides the evidence base for disparities and high rate of medical errors for patients with LEP, while Module 2 provides concrete strategies for working effectively with interpreters and other members of the care team to provide safe, high quality care for patients with LEP. This module addresses the dangers associated with using ad hoc interpreters, as well as the risks associated with trying to get by with inadequate language skills. Providers are also trained on the expanded role of interpreters as cultural brokers and patient advocates. Data from pilot testing will be compiled and reviewed, with the aim of expanding the training to all providers through the MGPO Quality Incentives Program and Patient Care Services in 2015.

REFERENCES

1. Institute of Medicine Committee on Quality of Health Care in America. *Crossing the Quality Chasm: A new health system for the 21st century.* National Academies Press; 2001.
2. Smedley BD, Stith AY, Nelson AR. *Unequal Treatment: Confronting racial and ethnic disparities in health care* (full printed version). National Academies Press; 2002.
3. Health Research and Educational Trust. *Reducing health care disparities: Collection and use of race, ethnicity and language data.* Chicago: Health Research & Educational Trust; 2013.
4. United States Census Bureau. American Community Survey. American FactFinder 2008-2012.
5. Seasonal Influenza Vaccination Coverage-United States, 2009-10 and 2010-11. *CDC Health Disparities and Inequalities Report-United States,* MMWR Vol 62 (Suppl 3): Centers for Disease Control and Prevention; 2013:65-68.
6. Pearson WS, Zhao G, Ford ES. An Analysis of Language as a Barrier to Receiving Influenza Vaccinations among an Elderly Hispanic Population in the United States. *Advances in Preventive Medicine.* 2011;2011:298787.
7. DuBard CA, Gizlice Z. Language spoken and differences in health status, access to care, and receipt of preventive services among US Hispanics. *American Journal of Public Health.* Nov 2008;98(11):2021-2028.
8. Fiscella K. Commentary – anatomy of racial disparity in influenza vaccination. *Health Services Research.* Apr 2005;40(2):539-549.
9. Haviland AM, Elliott MN, Hambarsoomian K, Lurie N. Immunization disparities by Hispanic ethnicity and language preference. *Archives of Internal Medicine.* Jan 24 2011;171(2):158-165.
10. Joint Commission. Centers for Medicare and Medicaid Services. Specifications Manual for National Hospital Inpatient Quality Measures v4.3b. 2014.
11. 2020 Topics & Objectives: Access to Health Services. *US Department of Health and Human Services http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=1.* Accessed 19 December, 2013.
12. Shi L, Nie X, Wang TF. Type of usual source of care and access to care. *The Journal of Ambulatory Care Management.* Jul-Sep 2013;36(3):209-221.
13. Blewett LA, Johnson PJ, Lee B, Scal PB. When a usual source of care and usual provider matter: adult prevention and screening services. *Journal of General Internal Medicine.* Sep 2008;23(9):1354-1360.
14. American Cancer Society. *Cancer Facts & Figures for Hispanics/Latinos 2012-2014.* Atlanta: American Cancer Society;2012.
15. Joint Pew Hispanic Center and Robert Wood Johnson Foundation. *Hispanics and Healthcare in the United States: Access, Information, and Knowledge.* August 2008.
16. Sorkin DH, Ngo-Metzger Q, De Alba I. Racial/ethnic discrimination in health care: impact on perceived quality of care. *Journal of General Internal Medicine.* May 2010;25(5):390-396.
17. Elliott MN, Lehrman WG, Goldstein E, Hambarsoomian K, Beckett MK, Giordano LA. Do hospitals rank differently on HCAHPS for different patient subgroups? *Medical Care Research and Review.* 2010;67(1):56-73.
18. Chen AY, Elliott MN, Spritzer KL, et al. Differences in CAHPS reports and ratings of health care provided to adults and children. *Medical Care.* Nov 2012;50 Suppl:S35-39.
19. Geoffrey RS, Cynthia B, Graham AB, 3rd, et al. 2014 recommendations for pediatric preventive health care. *Pediatrics.* Mar 2014;133(3):568-570.
20. Tom JO, Mangione-Smith R, Grossman DC, Solomon C, Tseng CW. Well-child care visits and risk of ambulatory care-sensitive hospitalizations. *The American Journal of Managed Care.* May 2013;19(5):354-360.
21. Abdus S, Selden TM. Adherence with recommended well-child visits has grown, but large gaps persist among various socioeconomic groups. *Health Affairs.* Mar 2013;32(3):508-515.
22. Agency for Healthcare Research and Quality. *2013 National Healthcare Disparities Report.* Rockville, MD May 2014.
23. Lillie-Blanton M, Paradise J, Thomas M, Jacobs P, DiJulio B. *Racial/Ethnic Disparities in Access to Care Among Children: How Does Medicaid Do in Closing the Gaps?* : The Henry J. Kaiser Family Foundation; December 2009.

24. Flores G, Tomany-Korman SC. The language spoken at home and disparities in medical and dental health, access to care, and use of services in US children. *Pediatrics.* Jun 2008;121(6):e1703-1714.

25. MedicineNet. Definition of Infection, group B strep. *Medterms http://www.medterms.com/script/main/art.asp?articlekey=8352.* Accessed July 1, 2013.

26. About Group B Strep. *Centers for Disease Control and Prevention http://www.cdc.gov/groupbstrep/about/index.html.* Accessed July 1, 2013.

27. Disparities in universal prenatal screening for group B streptococcus – North Carolina, 2002-2003. *Morbidity and Mortality Weekly Report.* Vol 28: Centers for Disease Control and Prevention; 2005:700-703.

28. Phares CR, Lynfield R, Farley MM, et al. Epidemiology of invasive group B streptococcal disease in the United States, 1999-2005. *JAMA : the Journal of the American Medical Association.* May 7 2008;299(17):2056-2065.

29. Schrag SJ, Zell ER, Lynfield R, et al. A population-based comparison of strategies to prevent early-onset group B streptococcal disease in neonates. *The New England Journal of Medicine.* Jul 25 2002;347(4):233-239.

30. Schuchat A, Wenger JD. Epidemiology of group B streptococcal disease. Risk factors, prevention strategies, and vaccine development. *Epidemiologic Reviews.* 1994;16(2):374-402.

31. Trends in perinatal group B streptococcal disease - United States, 2000-2006. *Morbidity and Mortality Weekly Report.* Vol 58: Centers for Disease Control and Prevention; 2009:109-112.

32. Bryant AS, Cheng YW, Caughey AB. Equality in obstetrical care: racial/ethnic variation in group B streptococcus screening. *Maternal Child Health Journal.* Nov 2011;15(8):1160-1165.

33. Taylor JK, Hall RW, Dupre AR. The incidence of group B streptococcus in the vaginal tracts of pregnant women in central Alabama. *Clinical Laboratory Science: Journal of the American Society for Medical Technology.* Winter 2002;15(1):16-17.

34. Hickman ME, Rench MA, Ferrieri P, Baker CJ. Changing epidemiology of group B streptococcal colonization. *Pediatrics.* 1999;104(2):203-209.

35. Newton ER, Butler MC, Shain RN. Sexual behavior and vaginal colonization by group B streptococcus among minority women. *Obstetrics & Gynecology.* 1996;88(4):577-582.

36. Divi C, Koss RG, Schmaltz SP, Loeb JM. Language proficiency and adverse events in US hospitals: a pilot study. *International Journal for Quality in Health Care : Journal of the International Society for Quality in Health Care / ISQua.* Apr 2007;19(2):60-67.

37. Lindholm M, Hargraves JL, Ferguson WJ, Reed G. Professional language interpretation and inpatient length of stay and readmission rates. *Journal of General Internal Medicine.* Oct 2012;27(10):1294-1299.

APPENDIX A

Data Sources for 2014 AREHQ

Data/Measures	Source of Data/Measures	Dates Presented in 2014 AREHQ
Catchment Area Demographics	Marketing database (MDW)	CY 2013
Patient Population by Setting	ED Share (EDECS, EDIS); IDX (scheduling), PATCOM (registration)	CY 2013
Patient Distribution among Inpatient Services	TSI/EPSI (MGH billing systems)	CY 2013
National Hospital Quality Measures	Chart Reviews; D4Q, QualityNet, UHC	CY 2011-2013
Influenza Vaccination	Chart Reviews; D4Q, QualityNet, UHC	2012 Q4-2013 Q1 2013 Q4-2014 Q1
Patient Linkage PCOI Program Measures	Primary Care Operations Improvement Program (PCOI)	CY 2003-2012
HEDIS Quality Measures	PCOI	CY 2011-2012
Patient Experience: H-CAHPS & CG-CAHPS	QDM (external system with patient satisfaction data)	CY 2011-2013
Caring for Patients with Limited English Proficiency	MGH Interpreter Services	CY 2013
Obstetrics/Gynecology Measures	Data submitted to MassHealth through UHC (external database)	CY 2008-2013
Well-Child Visits	MGH Performance Analysis & Improvement Unit Pediatric Dashboard	CY 2012