HCAHPS Update Training

Welcome!

In the Update Training session, we will present:

• HCAHPS Program Updates
• Updates to HCAHPS *Quality Assurance Guidelines V13.0* (QAG)
• Calculation of HCAHPS Scores: From Raw Data to Publicly Reported Scores
• Updated Patient-Mix Adjustment: Service Line and Gender
HCAHPS Update Training

Online Question Submission
Illustration 1
Online Question Submission (cont’d)

Illustration 2

HCAHPS Update Training

March 2018
Online Question Submission (cont’d)

Illustration 3

HCAHPS Update Training

March 2018

CMS
HCAHPS Program Updates
March 2018
Overview of HCAHPS Updates

- Department of Defense Hospitals Joining HCAHPS
- CMS Released New Pain Management Questions for HCAHPS Effective with January 1, 2018 Discharges and Forward
- HCAHPS Patient-Mix Adjustment for Service Line and Gender
- Reminders: Data Submission
- New Survey Development at CMS
- HCAHPS Never Rests
- More Information on HCAHPS
Department of Defense Hospitals Joining HCAHPS

• In 2018, Department of Defense (DoD) hospitals will begin to participate in the HCAHPS Survey
  – Approximately 40 hospitals will participate
CMS Releases New Pain Management Questions for HCAHPS

- Effective with January 1, 2018 Discharges and Forward
- CMS has developed new questions about pain
  - Replaced original pain questions
- Emphasis on communication about pain during hospital stay
- New items were proposed in FY 2018 IPPS Rule
New Service Line Adjustment Uses 5 Categories Rather than 3

- The HCAHPS Patient-Mix Adjustment (PMA) model has been updated to incorporate more detailed information about patient Service Line and Gender.
- Prior to Quarter 1 2017, the patient-mix adjustment derived from this item distinguished between Medical, Surgical, and Maternity (3 categories).
- Beginning with Quarter 1 2017 discharges, the patient-mix adjustment will distinguish among Female Medical, Male Medical, Female Surgical, Male Surgical, and Maternity (5 categories).
  - Female Medical will serve as the reference category for this update.
Reminders: Data Submission

- Encourage and assist client hospitals to promptly enter survey vendor authorizations in QualityNet Exchange to avoid errors.
- Early submission of HCAHPS data provides time to correct errors (if any).
- Quality Checking data prior to submitting via QualityNet is important in order to avoid issues that could jeopardize hospitals APU.
New Survey Development at CMS

- Emergency Department Patient Experience of Care (EDPEC) Survey
  - Development continues
- Information on CMS Patient Experience Surveys:
April 2018 publicly reported scores are based on more than 3.0 million completed surveys from patients at 4,364 hospitals.

Every day more than 8,200 patients complete the HCAHPS Survey.

HCAHPS is a component of HVBP and Hospital Compare Overall Star Ratings.

HCAHPS scores are used in the Comprehensive Care for Joint Replacement Program.
More Information on HCAHPS

- Registration, applications, background information, reports, and HCAHPS Executive Insight:
  http://www.hcahpsonline.org
- Submitting HCAHPS data:
  https://www.qualitynet.org
- Publicly reported HCAHPS results:
  https://www.medicare.gov/hospitalcompare
- HCAHPS results Downloadable Database (DDB):
  https://Data.Medicare.gov
- HCAHPS in Hospital Value-Based Purchasing:
  https://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier2&cid=1228772039937
Updates to HCAHPS Quality Assurance Guidelines V13.0 (QAG)
Reminder: The FY 2018 IPPS Final Rule incorporates the Final Rules from previous years

- Refer to the following for details on HCAHPS requirements
  - FY 2011 IPPS Final Rule (75 FR 50220)
  - FY 2012 IPPS Final Rule (76 FR 51641 through 51643)
  - FY 2013 IPPS Final Rule (77 FR 53537 through 53538)
  - FY 2014 IPPS Final Rule (78 FR 50819 through 50820)
  - FY 2015 IPPS Final Rule (79 FR 50319 through 50449)
  - FY 2016 IPPS Final Rule (80 FR 49325 through 49843)
  - FY 2017 IPPS Final Rule (81 FR 56762 through 57345)
  - FY 2018 IPPS Final Rule (82 FR 35270 through 35393)
Reminder: HCAHPS Introduction Training

- Hospitals/Survey vendors that are new to HCAHPS must participate in HCAHPS Introduction Training
- New staff or subcontractors, or other organizations responsible for major functions of HCAHPS Survey administration, must participate in HCAHPS Introduction Training
- Organizations already approved may be required to participate in HCAHPS Introduction Training

*Introduction to HCAHPS Training is no longer offered live but is self-paced, via the internet*

*It must be fully completed before carrying out HCAHPS Survey functions*
Participation and Program Requirements (cont’d)

• Update: Minimum Business Requirements
  - Certain requirements for hospitals/survey vendors seeking approval to administer the HCAHPS Survey **must be demonstrated within a recent time period, as specified in the Relevant Survey Experience section of the QAG V13.0**
## HCAHPS Update Training

### Participation and Program Requirements *(cont’d)*

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Requirement</th>
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<tbody>
<tr>
<td><strong>Survey Experience</strong></td>
<td>- Self-administering Hospital: Hospital has conducted patient-specific</td>
</tr>
<tr>
<td></td>
<td>surveys as an organization within the most recent two-year time period</td>
</tr>
<tr>
<td></td>
<td>Mail, and/or Telephone, and/or Mixed Mode, and/or IVR survey experience</td>
</tr>
<tr>
<td></td>
<td>within the most recent two-year time period</td>
</tr>
<tr>
<td></td>
<td>- Survey Vendor: Survey vendor has conducted patient-specific surveys</td>
</tr>
<tr>
<td></td>
<td>as an organization within the most recent three-year time period</td>
</tr>
<tr>
<td></td>
<td>Mail, and/or Telephone, and/or Mixed Mode, and/or IVR survey experience</td>
</tr>
<tr>
<td></td>
<td>within the most recent three-year time period</td>
</tr>
<tr>
<td><strong>Number of Years in Business</strong></td>
<td>- Minimum three years</td>
</tr>
<tr>
<td></td>
<td>- Minimum four years</td>
</tr>
<tr>
<td><strong>Number of Years Conducting</strong></td>
<td>- Minimum two years in each selected mode of administration within the</td>
</tr>
<tr>
<td><strong>Patient-Specific Surveys</strong></td>
<td>most recent two-year time period</td>
</tr>
<tr>
<td></td>
<td>- Minimum three years in each selected mode of administration within the</td>
</tr>
<tr>
<td></td>
<td>most recent three-year time period</td>
</tr>
<tr>
<td><strong>Sampling Experience</strong></td>
<td>- One year prior experience selecting random sample based on specific</td>
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<tr>
<td><strong>Note: Hospitals/Survey vendors</strong></td>
<td>eligibility criteria within the most recent one-year time period</td>
</tr>
<tr>
<td></td>
<td>- Two years prior experience selecting random sample based on specific</td>
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<tr>
<td></td>
<td>eligibility criteria within the most recent two-year time period</td>
</tr>
<tr>
<td></td>
<td>- Work with contracted client hospital(s) to obtain patient data for</td>
</tr>
<tr>
<td></td>
<td>sampling via HIPAA-compliant electronic data transfer processes</td>
</tr>
<tr>
<td></td>
<td>- Adequately document sampling process</td>
</tr>
</tbody>
</table>

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**March 2018**

[ cms.gov ](https://www.cms.gov)
• Reminder: Quality Checks
  – Hospitals/Survey vendors must perform and document quality checks of electronic programming code periodically, on an annual basis, at a minimum
Sampling

• **Update: Codes to Determine Service Line**
  
  - **MS-DRG Codes updated to V.35**
    
    • Strongly recommend use of MS-DRG V.35 codes to assign Service Line
    
    • Crosswalk table to MS-DRGs V.35 updated
  
  - Regardless of the methodology used, the hospital/survey vendor must maintain documentation that demonstrates how the codes are crosswalked to HCAHPS Service Lines
• Clarification: Ineligible Discharge Status Code
  - Patients identified with discharge status code (UB-04 field location 17) “30 – Still a Patient” are **not** eligible for the HCAHPS Survey
  - These patients were never eligible for the HCAHPS Survey
• Clarification: Eligibility
  - Observation patients who do not have an inpatient admission are not eligible for the HCAHPS Survey, even if they have an overnight stay
Sampling (cont’d)

• Clarification: Patient Discharge Files and Sample Frames
  - All patient discharge files and HCAHPS sample frames must be retained and easily accessible for a minimum of three years
Sampling (cont’d)

- **Reminder:** De-duplication
  - Hospitals/Survey vendors are required on a monthly basis to de-duplicate *eligible* patients based on household and multiple discharges within the same calendar month.
  - De-duplication must be performed using the *sample frame, not the sample,* within each calendar month, utilizing address information (or telephone number for Telephone, Mixed and IVR modes) and the patient’s medical record number (or other unique identifier).
• **Reminder**: DSRS Sampling Requirement
  - Hospitals/Survey vendors must submit an Exception Request Form for CMS approval to use DSRS
  - See the Exception Request/Discrepancy Report Processes chapter in the QAG V13.0
Survey Administration

- **Update: All Modes of Survey Administration**
  - In August 2017, CMS announced plans to replace the three Pain Management questions with three new questions that focus on Communication About Pain.
  - The new pain items are required on all surveys administered to patients discharged from January 1, 2018 and forward.
• **Reminder**: All Modes of Survey Administration
  - Address and Telephone Number Updates
    • Hospitals/Survey vendors must use commercial software or other means to update addresses and telephone numbers provided by the hospital for sampled patients
    • It is strongly recommended that hospitals/survey vendors check the accuracy of all sampled patients’ contact information prior to survey fielding
Survey Administration (cont’d)

• Update: Mail and Mixed Survey Administration
  - Quality Control Guidelines
    • Hospitals/Survey vendors are responsible for the quality of work performed by any subcontractor(s), such as printers and fulfillment houses
      - Hospitals/Survey vendors must conduct on-site verification of printing and mailing data collection processes
        • It is strongly recommended that this is done on an annual basis, at a minimum
Survey Administration (cont’d)

- Update: Mail and Mixed Survey Administration
  - Quality Control Guidelines (cont’d)
    - If automated processes are being used to perform interval checks of survey material, then checks of the system or equipment must be performed regularly
    - Hospitals/Survey vendors must retain a record of all quality control activities and document these activities in the hospitals’/survey vendors’ QAPs
      - All materials relevant to survey administration are subject to review
Survey Administration (cont’d)

• Update: Telephone Only, Mixed Mode, IVR
  - Scheduled call backs
    • If the interviewer reaches the patient and is asked to call back at a more convenient time for the patient
      - Hospitals/ Survey vendors must schedule a telephone callback that accommodates the patient’s request for a specific day and time
      - The call back must be scheduled at the patient’s convenience between the hours of 9 AM and 9 PM respondent time within the data collection time period
Survey Administration (cont’d)

• Clarification: Telephone Only, Mixed Mode, IVR
  - Call attempts
    • It is strongly recommended that telephone attempts are made not only on weekdays, but on weekends also
Survey Administration (cont’d)

- Clarification: Telephone Only, Mixed Mode, IVR
  - Survey Introduction and FAQs
  - The stated time to complete the survey must be at least 8 minutes
• Clarifications: Telephone Only, Mixed Mode, IVR
  - Interviewer Guidelines
    • In instances where the patient is reluctant to answer “Yes” or “No” to the HCAHPS Survey question(s) and the patient’s intended response(s), either positive or negative is clear, the patient’s response should be accepted
    • Under no circumstances should interviewers invite a patient to discontinue the survey
      – When it is clear a respondent is likely to discontinue the survey, it is permissible for the interviewer to acknowledge the patient’s difficulty and offer a few words of encouragement such as “we have just a few more questions to go”
Survey Administration (cont’d)

• Update: Telephone Only, Mixed Mode
  - Quality Control Guidelines
    • Hospitals/Survey vendors are responsible for the quality of work performed by any subcontractor(s), such as call centers
      - Hospitals/ Survey vendors must conduct on-site verification of call centers, including live call monitoring and floor rounding
        • It is strongly recommended that this is done on an annual basis, at a minimum
Survey Administration (cont’d)

- Update: Telephone Only, Mixed Mode, IVR
  - Interviewing Systems
    - Survey administration must be conducted in accordance with the Telephone Consumer Protection Act (TCPA) regulations
    - Monitoring and recording of telephone calls
      - Follow state regulations
Data Specifications & Coding

• Clarification: 42 Calendar Day Initial Contact Period Rule
  - The “Eligible Discharges” field in the XML Header Record must include the count of patients who are **eligible** for the HCAHPS Survey
    • Include the patient even if the patient’s information is received from the hospital with discharge dates that are beyond the 42 calendar day initial contact period
      - **these patients must NOT be included in the HCAHPS Survey sample nor included in the “Sample Size” field count**
    • A Discrepancy Report must be filed when patient information is received beyond the 42 calendar day initial contact period

March 2018
Data Specifications & Coding (cont’d)

• Update: File Specifications Changed to Version 4.1
  - Appendix P – Data File Structure Version 4.1
  - Appendix Q – XML File Layout Version 4.1
• Header Record
  - Determination of Service Line: “Methodology used by a facility to determine whether a patient falls into one of the three service line categories eligible for HCAHPS Survey”

Note: Version 4.0 applies to 1Q and 2Q 2018 patient discharges
Version 4.1 applies to 3Q 2018 patient discharges and forward
Reminder: Switching Survey Vendors

- Hospitals that choose to switch from one survey vendor to another can **only** do so at the beginning of a calendar quarter.
- The dates entered into the discharge and data transmission fields must be entered in accordance with HCAHPS protocols.
  - Transmission End Date should be the last day for which the current survey vendor will be submitting data on the hospital’s behalf.
  - Discharge End Date should be the last day of the month the hospital will allow the current survey vendor to sample from eligible discharges. *The Discharge End Dates of the new and expiring survey vendor cannot overlap.*
- Survey vendors should work closely with their hospital clients, who are unfamiliar with the QualityNet Secure Portal, to complete the authorization at least 90 days prior to the data submission deadline.
• **Reminder**: Survey Vendor Authorization Dates
  
  - It is strongly recommended that the Discharge End Date and the Transmission End Date **be left blank** unless the survey authorization is terminated.
Reminder: Header Record in File Layout
- Complete once per monthly file
  • The survey mode and sample type must be the same for all three months within a quarter. Once you have uploaded your first month of data, you have the ability to re-upload that month and change the survey mode or sample type.
  • Once you have uploaded data for two months within a given quarter, you are locked into that survey mode and sample type and cannot change it for that quarter.
**Reminder**: For surveys done in Mixed Mode or IVR Mode, the Survey Completion Mode in the Patient Administrative Data Record must correspond with survey mode in the Header Record.

<table>
<thead>
<tr>
<th>Header Record</th>
<th>Patient Administrative Data Record</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey Mode</td>
<td>Survey Completion Mode</td>
</tr>
<tr>
<td>“3-Mixed Mode”</td>
<td>“1-Mixed Mode – Mail”</td>
</tr>
<tr>
<td></td>
<td>“2-Mixed Mode – Phone”</td>
</tr>
<tr>
<td>“4-IVR”</td>
<td>“3-IVR Mode – IVR”</td>
</tr>
<tr>
<td></td>
<td>“4-IVR Mode – Phone”</td>
</tr>
</tbody>
</table>
Oversight Activities

• **Update: On-site visits/conference calls**
  - The HCAHPS Project Director/Manager must be present at any HCAHPS on-site visit or conference call
  - If any HCAHPS processes are automated, then the programmer must be available during the visit or call to review the programming
• **Reminder: Survey Materials**
  - Hospitals/Survey vendors must submit for review formatted survey materials (including required changes, effective with July 2018 patient discharges) to HCAHPS Technical Assistance by **Friday, April 6, 2018**
    - Hospital/Survey vendors must include transitional phrases to supplemental questions and placement in the survey
Oversight Activities (cont’d)

• Reminder: HCAHPS Attestation Statement
  - Includes notice that the Quality Assurance Plan (QAP) has been updated
    • Due by **Friday, April 6, 2018**
  - Attestation form is in Appendix X
  - The QAP should **not** be submitted at this time
## Data Submission Timeline

<table>
<thead>
<tr>
<th>Month of Patient Discharges</th>
<th>Data Submission Deadline</th>
<th>Review and Correct Period</th>
<th>File Specifications Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>October, November and December 2017 (4Q17)</td>
<td>April 4, 2018</td>
<td>April 5-11, 2018</td>
<td>Version 3.9</td>
</tr>
<tr>
<td>January, February and March 2018 (1Q18)</td>
<td>July 5, 2018</td>
<td>July 6-12, 2018</td>
<td>Version 4.0</td>
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<tr>
<td>April, May and June 2017 (2Q18)</td>
<td>October 3, 2018</td>
<td>October 4-10, 2018</td>
<td>Version 4.0</td>
</tr>
<tr>
<td>July, August and September 2018 (3Q18)</td>
<td>January 3, 2019</td>
<td>January 4-10, 2019</td>
<td>Version 4.1</td>
</tr>
</tbody>
</table>
Questions?
Calculation of HCAHPS Scores: from Raw Data to Publicly Reported Scores
Overview

- Process Raw HCAHPS Data
- Calculate HCAHPS Scores with Example
  - HCAHPS Composite Measure Calculation
  - Patient-Mix Variables
  - Quarterly Weights
  - Final HCAHPS Scores
STEP 1: Process Raw HCAHPS Data
Process Raw HCAHPS Data

- Remove surveys for patients determined to be **ineligible** for HCAHPS
- Exclude surveys for patients that do not meet HCAHPS criteria for survey **completeness**
- HCAHPS scores are calculated from **eligible** and **completed** surveys
Reminders about Ineligible Patients

- If patient is determined to be ineligible pre-sampling, do not sample and do not include in Eligible Discharge Size.
- If patient is determined to be ineligible post-sampling, remove from the final Eligible Discharge Size.
Reminder about 42-day Initial Contact Period

• The Eligible Discharge Size must include all patients eligible for HCAHPS, even if the patient’s information is received from the hospital with discharge dates that are beyond the 42-day initial contact period
A Patient is Not Included in Score Calculations If...

- Not 18 years or older at time of admission
- Admission does not include at least one overnight stay
- Psychiatric MS-DRG/principal diagnosis at discharge
- “No-Publicity” patients
- Court/Law enforcement patients
- Foreign home address
- Discharged to hospice care
- Excluded due to state regulations
- Discharged to nursing homes and skilled nursing facilities
- 50% of the 18 core HCAHPS Survey items were not answered
STEP 2: HCAHPS Composite Measure Calculation
HCAHPS Update Training

HCAHPS “Boxes”

• “Top-Box”: most positive response category

• “Middle-Box”: “in-between” response category

• “Bottom-Box”: least positive response category
HCAHPS Composite Example

• Nurse Communication, “Top-Box”
  – “Always” is the most positive response category for all 3 questions that comprise Nurse Communication
    • Q1: Nurse courtesy and respect
    • Q2: Nurse listen
    • Q3: Nurse explain
HCAHPS Composite Example (cont’d)

1. During this hospital stay, how often did nurses treat you with **courtesy and respect**?

   1. □ Never
   2. □ Sometimes
   3. □ Usually
   4. □ Always
HCAHPS Composite Example (cont’d)

- Hospital A has 7 completed surveys

<table>
<thead>
<tr>
<th>Survey ID</th>
<th>Q1 Response</th>
<th>Nurse1 Top-Box</th>
<th>Q2 Response</th>
<th>Nurse2 Top-Box</th>
<th>Q3 Response</th>
<th>Nurse3 Top-Box</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>Always</td>
<td>1</td>
<td>Always</td>
<td>1</td>
<td>Always</td>
<td>1</td>
</tr>
<tr>
<td>002</td>
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<td>Never</td>
<td>0</td>
<td>Sometimes</td>
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<td>003</td>
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<td>1</td>
<td>Always</td>
<td>1</td>
<td>Always</td>
<td>1</td>
</tr>
</tbody>
</table>
HCAHPS Composite Example (cont’d)

Calculate mean for each of Nurse1 Top-Box, Nurse2 Top-Box, and Nurse3 Top-Box:

Nurse1 Top-Box mean = \( \frac{1+0+1+0+1+1+1}{7} = \frac{5}{7} \)

Nurse2 Top-Box mean = \( \frac{1+0+1+1+1+0+1}{7} = \frac{5}{7} \)

Nurse3 Top-Box mean = \( \frac{1+0+1+1+1+1+1}{7} = \frac{6}{7} \)
Nurse Communication composite score for Hospital A

Calculate the Nurse Communication composite mean (Y) as follows:

\[ Y = \frac{\text{Nurse1 Top-Box mean} + \text{Nurse2 Top-Box mean} + \text{Nurse3 Top-Box mean}}{3} = \frac{5/7 + 5/7 + 6/7}{3} = 0.762 \]
STEP 3: HCAHPS Patient-Mix Adjustment (PMA)
29. What is the highest grade or level of school that you have **completed**?

1. 8th grade or less
2. Some high school, but did not graduate
3. High school graduate or GED
4. Some college or 2-year degree
5. 4-year college graduate
6. More than 4-year college degree
Question 29 for Hospital A

- **Education:**
  - Derived from HCAHPS Survey (values range from 1 to 6)
  - Calculate the Education mean for Hospital A:

\[
H_{\text{EDUC}} = \frac{(4+1+\ldots+3)}{7} = \frac{22}{7} = 3.14
\]

<table>
<thead>
<tr>
<th>Survey ID</th>
<th>Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>4</td>
</tr>
<tr>
<td>002</td>
<td>1</td>
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<tr>
<td>003</td>
<td>6</td>
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<td>1</td>
</tr>
<tr>
<td>006</td>
<td>2</td>
</tr>
<tr>
<td>007</td>
<td>3</td>
</tr>
</tbody>
</table>
27. In general, how would you rate your overall health?

1 □ Excellent
2 □ Very Good
3 □ Good
4 □ Fair
5 □ Poor
Question 27 for Hospital A

- **Self-Rated Health:**
  - Derived from HCAHPS Survey (values range from 1 to 5)
  - Calculate the Self-Rated Health mean for Hospital A:

\[
H_{\text{HLTH}} = \frac{(5+5+\ldots+4)}{7} = \frac{24}{7} = 3.43
\]
Patient-Mix Variables: Language Spoken at Home

32. What language do you mainly speak at home?

1. English
2. Spanish
3. Chinese
4. Russian
5. Vietnamese
6. Portuguese
7. Some other language (please print)
Patient-Mix Variables: Language Spoken at Home (cont’d)

Language Spoken at Home for Hospital A

- Create 3 indicator (0 or 1) language variables: Spanish, Chinese, and Other Language (English is the reference)
- Other Language category includes Russian, Vietnamese, Portuguese, and Some Other Language patient responses

<table>
<thead>
<tr>
<th>Survey ID</th>
<th>Q32</th>
<th>Spanish</th>
<th>Chinese</th>
<th>Other Lang</th>
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</thead>
<tbody>
<tr>
<td>001</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>002</td>
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<tr>
<td>007</td>
<td>English</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
For Hospital A, calculate mean of each of the 3 language variables

\[
\begin{align*}
H_{\text{SPA}} &= (1+1+0+0+0+0+0) / 7 = 2/7 = 0.29 \\
H_{\text{CHI}} &= (0+0+0+0+0+1+0) / 7 = 1/7 = 0.14 \\
H_{\text{OTH}} &= (0+0+0+0+1+0+0) / 7 = 1/7 = 0.14
\end{align*}
\]
Patient-Mix Variables: Age Range

Age Ranges for Hospital A

- Create 7 indicator (0 or 1) age variables for each of the 8 age range groups (Age 85+ is the reference category):

<table>
<thead>
<tr>
<th>Survey ID</th>
<th>Age 18-24</th>
<th>Age 25-34</th>
<th>Age 35-44</th>
<th>Age 45-54</th>
<th>Age 55-64</th>
<th>Age 65-74</th>
<th>Age 75-84</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>002</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>003</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>004</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>005</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>006</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>007</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>
Patient-Mix Variables: Age Range (cont’d)

For Hospital A, calculate mean of each of the 7 age range variables

\[
\begin{align*}
H_{18-24} &= (0+0+0+0+1+0+0) / 7 = 1/7 = 0.14 \\
H_{25-34} &= (0+0+1+0+0+0+0) / 7 = 1/7 = 0.14 \\
H_{35-44} &= (0+0+0+0+0+1+0) / 7 = 1/7 = 0.14 \\
H_{45-54} &= (0+0+0+0+0+0+0) / 7 = 0/7 = 0.00 \\
H_{55-64} &= (0+1+0+0+0+0+0) / 7 = 1/7 = 0.14 \\
H_{65-74} &= (1+0+0+0+0+0+1) / 7 = 2/7 = 0.29 \\
H_{75-84} &= (0+0+0+0+0+0+0) / 7 = 0/7 = 0.00
\end{align*}
\]
Patient-Mix Variables: Service Line x Gender for Hospital A

- Create an indicator (0 or 1) variable for Maternity, Female Surgical, Male Surgical, and Male Medical (Female Medical is reference category):

<table>
<thead>
<tr>
<th>Survey ID</th>
<th>Service Line</th>
<th>Gender</th>
<th>Maternity</th>
<th>Female Surgical</th>
<th>Male Surgical</th>
<th>Male Medical</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>Surgical</td>
<td>M</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>002</td>
<td>Medical</td>
<td>F</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>003</td>
<td>Maternity</td>
<td>F</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>004</td>
<td>Medical</td>
<td>M</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>005</td>
<td>Maternity</td>
<td>F</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>006</td>
<td>Medical</td>
<td>M</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>007</td>
<td>Medical</td>
<td>F</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Patient-Mix Variables: Service Line x Gender (cont’d)

Calculate Hospital A’s mean for each of the 4 Service Line x Gender variables

\[
\begin{align*}
H_{\text{MAT}} &= \frac{0 + 0 + 1 + 0 + 1 + 0 + 0}{7} = \frac{2}{7} = 0.29 \\
H_{\text{FeSURG}} &= \frac{0 + 0 + 0 + 0 + 0 + 0 + 0}{7} = \frac{0}{7} = 0.00 \\
H_{\text{MaSURG}} &= \frac{1 + 0 + 0 + 0 + 0 + 0 + 0}{7} = \frac{1}{7} = 0.14 \\
H_{\text{MaMED}} &= \frac{0 + 0 + 0 + 1 + 0 + 1 + 0}{7} = \frac{2}{7} = 0.29
\end{align*}
\]
Patient-Mix Variables: Service Line x Age

- **Service Line x Age Interaction Variables**
  - Create single variable called *Age* that takes on values 1 through 8, to indicate a patient’s age range.

<table>
<thead>
<tr>
<th>Age Range:</th>
<th>18-24</th>
<th>25-34</th>
<th>35-44</th>
<th>45-54</th>
<th>55-64</th>
<th>65-74</th>
<th>75-84</th>
<th>85+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>
Patient-Mix Variables: Service Line x Age (cont’d)

Use variables Surgical, Maternity, and Age to create the following interaction variables:

- **Surgical**\*Age = (Surgical) x (Age)
- **Maternity**\*Age = (Maternity) x (Age)
Patient-Mix Variables: Service Line x Age (cont’d)

Service Line x Age Interaction for Hospital A

<table>
<thead>
<tr>
<th>Survey ID</th>
<th>Age</th>
<th>Maternity</th>
<th>Surgical</th>
<th>Maternity* Age</th>
<th>Surgical* Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>6</td>
<td>0</td>
<td>1</td>
<td>0*6 = 0</td>
<td>1*6 = 6</td>
</tr>
<tr>
<td>002</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0*5 = 0</td>
<td>0*5 = 0</td>
</tr>
<tr>
<td>003</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1*2 = 2</td>
<td>0*2 = 0</td>
</tr>
<tr>
<td>004</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>0*8 = 0</td>
<td>0*8 = 0</td>
</tr>
<tr>
<td>005</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1*1 = 1</td>
<td>0*8 = 0</td>
</tr>
<tr>
<td>006</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0*3 = 0</td>
<td>0*3 = 0</td>
</tr>
<tr>
<td>007</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0*6 = 0</td>
<td>0*6 = 0</td>
</tr>
</tbody>
</table>
Patient-Mix Variables: Service Line x Age (cont’d)

For Hospital A, calculate the mean for Maternity x Age and Surgical x Age variables:

\[ H_{MAT*AGE} = \frac{0+0+2+0+1+0+0}{7} = \frac{3}{7} = 0.43 \]

\[ H_{SURG*AGE} = \frac{6+0+0+0+0+0+0}{7} = \frac{6}{7} = 0.86 \]
Patient-Mix Variables: Response Percentile

- A survey’s **Lag Time** is required to create the PMA variable **Response Percentile**
- All completed surveys for a given **month** and hospital are ranked by **Lag Time**
  - **Lag Time** = # of days between patient’s discharge date and the date that data collection activities ended for the patient

\[
\text{Response Percentile} = \frac{\text{Lag Time Rank}}{\text{Monthly Sample Size}}
\]
## Patient-Mix Variables: Response Percentile (cont’d)

### Response Percentile for Hospital A

Response Percentile = Lag Time Rank / Monthly Sample Size

<table>
<thead>
<tr>
<th>Survey ID</th>
<th>Month</th>
<th>Lag Time (in days)</th>
<th>Lag Time Rank (by month)</th>
<th>Monthly Sample Size</th>
<th>Response Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>January</td>
<td>21</td>
<td>1</td>
<td>9</td>
<td>1/9</td>
</tr>
<tr>
<td>002</td>
<td>January</td>
<td>34</td>
<td>2</td>
<td>9</td>
<td>2/9</td>
</tr>
<tr>
<td>003</td>
<td>February</td>
<td>8</td>
<td>1</td>
<td>11</td>
<td>1/11</td>
</tr>
<tr>
<td>004</td>
<td>February</td>
<td>12</td>
<td>2</td>
<td>11</td>
<td>2/11</td>
</tr>
<tr>
<td>005</td>
<td>March</td>
<td>29</td>
<td>2</td>
<td>8</td>
<td>2/8</td>
</tr>
<tr>
<td>006</td>
<td>March</td>
<td>6</td>
<td>1</td>
<td>8</td>
<td>1/8</td>
</tr>
<tr>
<td>007</td>
<td>March</td>
<td>30</td>
<td>3</td>
<td>8</td>
<td>3/8</td>
</tr>
</tbody>
</table>
Patient-Mix Variables: Response Percentile (cont’d)

Calculate Hospital A’s mean Response Percentile for the quarter

\[ H_{RPCT} = \frac{\frac{1}{9} + \frac{2}{9} + \frac{1}{11} + \frac{2}{11} + \frac{2}{8} + \frac{1}{8} + \frac{3}{8}}{7} \]

= 0.19
3 Components needed for Hospital Patient Mix-Adjustment (PMA)

- **Hospital means** for each patient-mix variable (just calculated)
- **National means** for each patient mix variable found on [www.hcahpsonline.org](http://www.hcahpsonline.org)
- **Patient-level Adjustments** for each patient-mix variable found on [www.hcahpsonline.org](http://www.hcahpsonline.org)
### PMA Means for Hospital A

<table>
<thead>
<tr>
<th>Variable</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>$H_{EDUC}$</td>
<td>3.14</td>
</tr>
<tr>
<td>$H_{HLTH}$</td>
<td>3.43</td>
</tr>
<tr>
<td>$H_{SPA}$</td>
<td>0.29</td>
</tr>
<tr>
<td>$H_{CHI}$</td>
<td>0.14</td>
</tr>
<tr>
<td>$H_{OTH}$</td>
<td>0.14</td>
</tr>
<tr>
<td>$H_{18-24}$</td>
<td>0.14</td>
</tr>
<tr>
<td>$H_{25-34}$</td>
<td>0.14</td>
</tr>
<tr>
<td>$H_{35-44}$</td>
<td>0.14</td>
</tr>
<tr>
<td>$H_{45-54}$</td>
<td>0.00</td>
</tr>
<tr>
<td>$H_{55-64}$</td>
<td>0.14</td>
</tr>
<tr>
<td>$H_{65-74}$</td>
<td>0.29</td>
</tr>
<tr>
<td>$H_{75-84}$</td>
<td>0.00</td>
</tr>
<tr>
<td>$H_{MAT}$</td>
<td>0.29</td>
</tr>
<tr>
<td>$H_{FeSURG}$</td>
<td>0.00</td>
</tr>
<tr>
<td>$H_{MaSURG}$</td>
<td>0.14</td>
</tr>
<tr>
<td>$H_{MaMED}$</td>
<td>0.29</td>
</tr>
<tr>
<td>$H_{MAT*AGE}$</td>
<td>0.43</td>
</tr>
<tr>
<td>$H_{SURG*AGE}$</td>
<td>0.86</td>
</tr>
<tr>
<td>$H_{RPCT}$</td>
<td>0.19</td>
</tr>
</tbody>
</table>
### HCAHPS Update Training

**National Means for Patient-Mix Variables:**

Table 3 on www.hcahpsonline.org

<table>
<thead>
<tr>
<th>Patient-Mix Adjustment (PMA)</th>
<th>National Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education (per level; 1=8th grade or less and 6=More than 4-year college degree)</td>
<td>3.754</td>
</tr>
<tr>
<td>Self-Rated Health (per level; 1=Excellent and 5=Poor)</td>
<td>2.779</td>
</tr>
<tr>
<td>Response Percentile</td>
<td>13.1%</td>
</tr>
</tbody>
</table>

**LANGUAGE SPOKEN AT HOME**

- Spanish: 4.8%
- Chinese: 0.4%
- R/V/O (Russian, Vietnamese, Other): 1.9%
- English (REFERENCE): 93.0%

**AGE**

- Age 18-24: 2.9%
- Age 25-34: 9.0%
- Age 35-44: 5.9%
- Age 45-54: 8.7%
- Age 55-64: 18.6%
- Age 65-74: 27.00%
- Age 75-84: 19.7%
- Age 85+ (REFERENCE): 8.2%

**SERVICE LINE**

- Male Medical: 23.9%
- Male Surgical: 17.9%
- Female Surgical: 18.6%
- Female Maternity: 10.9%
- Female Medical (REFERENCE): 28.7%

**INTERACTIONS**

- Surgical Line * Age: 2.010
- Maternity Line * Age: 0.223
### National Means for Patient-Mix Variables (from Table 3) (cont’d)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
<th>Variable</th>
<th>Value</th>
<th>Variable</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$M_{EDUC}$</td>
<td>3.754</td>
<td>$M_{18-24}$</td>
<td>0.029</td>
<td>$M_{MAT}$</td>
<td>0.109</td>
</tr>
<tr>
<td>$M_{HLTH}$</td>
<td>2.779</td>
<td>$M_{25-34}$</td>
<td>0.090</td>
<td>$M_{FeSURG}$</td>
<td>0.186</td>
</tr>
<tr>
<td>$M_{SPA}$</td>
<td>0.048</td>
<td>$M_{35-44}$</td>
<td>0.059</td>
<td>$M_{MaSURG}$</td>
<td>0.179</td>
</tr>
<tr>
<td>$M_{CHI}$</td>
<td>0.004</td>
<td>$M_{45-54}$</td>
<td>0.087</td>
<td>$M_{MaMED}$</td>
<td>0.239</td>
</tr>
<tr>
<td>$M_{OTH}$</td>
<td>0.019</td>
<td>$M_{55-64}$</td>
<td>0.186</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>$M_{65-74}$</td>
<td>0.270</td>
<td>$M_{MAT*AGE}$</td>
<td>0.223</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$M_{75-84}$</td>
<td>0.197</td>
<td>$M_{SURG*AGE}$</td>
<td>2.010</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$M_{RPCT}$</td>
<td>0.131</td>
</tr>
</tbody>
</table>
### Patient-Level Adjustments for Patient-Mix Variables:

Table 1 on [www.hcahpsonline.org](http://www.hcahpsonline.org)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Education (per level; 1=8th grade or less and 5=more than 4-year college degree)</td>
<td>1.43%</td>
<td>1.46%</td>
<td>2.37%</td>
<td>2.01%</td>
<td>2.68%</td>
<td>1.47%</td>
<td>3.43%</td>
<td>0.44%</td>
<td>-0.56%</td>
<td>2.50%</td>
<td>1.00%</td>
</tr>
<tr>
<td>Self-Rated Health (per level; 1=Excellent and 5=Poor)</td>
<td>4.88%</td>
<td>4.79%</td>
<td>6.28%</td>
<td>6.71%</td>
<td>4.99%</td>
<td>4.17%</td>
<td>4.32%</td>
<td>1.05%</td>
<td>6.35%</td>
<td>6.33%</td>
<td>5.56%</td>
</tr>
<tr>
<td>Response Percentile (per 3% response percentile)</td>
<td>0.18%</td>
<td>0.18%</td>
<td>0.23%</td>
<td>0.17%</td>
<td>0.19%</td>
<td>0.07%</td>
<td>0.03%</td>
<td>0.04%</td>
<td>0.20%</td>
<td>0.17%</td>
<td>0.17%</td>
</tr>
<tr>
<td>Spanish</td>
<td>-0.71%</td>
<td>-2.57%</td>
<td>-1.42%</td>
<td>-4.91%</td>
<td>-2.87%</td>
<td>3.12%</td>
<td>-5.33%</td>
<td>-1.65%</td>
<td>0.02%</td>
<td>-11.94%</td>
<td>-9.31%</td>
</tr>
<tr>
<td>Chinese</td>
<td>7.03%</td>
<td>5.77%</td>
<td>7.68%</td>
<td>9.46%</td>
<td>4.90%</td>
<td>4.69%</td>
<td>-1.10%</td>
<td>-2.06%</td>
<td>12.97%</td>
<td>3.82%</td>
<td>3.63%</td>
</tr>
<tr>
<td>R/W/D (Russian, Vietnamese, Other)</td>
<td>1.05%</td>
<td>0.76%</td>
<td>2.39%</td>
<td>1.42%</td>
<td>-0.06%</td>
<td>2.52%</td>
<td>-6.42%</td>
<td>-0.47%</td>
<td>6.07%</td>
<td>1.40%</td>
<td>0.08%</td>
</tr>
<tr>
<td>English (REFERENCE)</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Age 18-24</td>
<td>1.67%</td>
<td>0.77%</td>
<td>3.19%</td>
<td>5.31%</td>
<td>-0.05%</td>
<td>-0.09%</td>
<td>-4.23%</td>
<td>-3.86%</td>
<td>-8.68%</td>
<td>14.96%</td>
<td>12.42%</td>
</tr>
<tr>
<td>Age 25-44</td>
<td>-0.74%</td>
<td>-0.85%</td>
<td>-1.18%</td>
<td>1.84%</td>
<td>-12.01%</td>
<td>-0.40%</td>
<td>-6.68%</td>
<td>-2.28%</td>
<td>-17.10%</td>
<td>31.41%</td>
<td>7.77%</td>
</tr>
<tr>
<td>Age 45-64</td>
<td>-3.23%</td>
<td>-3.16%</td>
<td>-6.28%</td>
<td>0.31%</td>
<td>-8.31%</td>
<td>5.06%</td>
<td>-6.37%</td>
<td>-4.43%</td>
<td>-12.28%</td>
<td>-4.28%</td>
<td>14.36%</td>
</tr>
<tr>
<td>Age 65+</td>
<td>-4.03%</td>
<td>-4.30%</td>
<td>-6.02%</td>
<td>-2.09%</td>
<td>-13.66%</td>
<td>-0.65%</td>
<td>-3.83%</td>
<td>-4.88%</td>
<td>-12.95%</td>
<td>3.88%</td>
<td>1.78%</td>
</tr>
<tr>
<td>Age 75+ (REFERENCE)</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Male Medical</td>
<td>-1.01%</td>
<td>0.53%</td>
<td>-2.06%</td>
<td>-0.38%</td>
<td>-1.28%</td>
<td>-6.59%</td>
<td>0.29%</td>
<td>-2.35%</td>
<td>-0.87%</td>
<td>-0.38%</td>
<td>-2.08%</td>
</tr>
<tr>
<td>Male Surgical</td>
<td>-0.82%</td>
<td>-7.70%</td>
<td>-3.12%</td>
<td>-1.88%</td>
<td>-4.34%</td>
<td>-7.13%</td>
<td>-1.34%</td>
<td>-4.19%</td>
<td>-4.42%</td>
<td>-6.66%</td>
<td>-7.35%</td>
</tr>
<tr>
<td>Female Surgical</td>
<td>-0.41%</td>
<td>-0.21%</td>
<td>-2.74%</td>
<td>-1.51%</td>
<td>0.03%</td>
<td>-2.93%</td>
<td>-0.08%</td>
<td>-2.95%</td>
<td>-6.65%</td>
<td>-4.98%</td>
<td></td>
</tr>
<tr>
<td>Female Maternity</td>
<td>-0.30%</td>
<td>-12.33%</td>
<td>-13.59%</td>
<td>-12.81%</td>
<td>-13.48%</td>
<td>-0.11%</td>
<td>-11.87%</td>
<td>-5.84%</td>
<td>-5.14%</td>
<td>-14.56%</td>
<td>-15.61%</td>
</tr>
<tr>
<td>Female Medical (REFERENCE)</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Surgical Line * Age</td>
<td>-0.19%</td>
<td>0.13%</td>
<td>-0.33%</td>
<td>0.50%</td>
<td>0.07%</td>
<td>-0.35%</td>
<td>0.13%</td>
<td>-0.22%</td>
<td>-0.01%</td>
<td>0.30%</td>
<td>0.21%</td>
</tr>
<tr>
<td>Maternity Line * Age</td>
<td>-0.71%</td>
<td>1.09%</td>
<td>0.40%</td>
<td>1.18%</td>
<td>2.28%</td>
<td>0.09%</td>
<td>0.24%</td>
<td>0.92%</td>
<td>1.32%</td>
<td>2.66%</td>
<td>2.40%</td>
</tr>
</tbody>
</table>
### Patient-Level Adjustments for Patient-Mix Variables (from Table 1) (cont’d)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Adjusted Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A_{EDUC}) = 1.43%</td>
<td>(A_{18-24} = 1.67%)</td>
</tr>
<tr>
<td>(A_{HLTH}) = 4.88%</td>
<td>(A_{25-34} = -0.74%)</td>
</tr>
<tr>
<td>(A_{SPA}) = -0.71%</td>
<td>(A_{35-44} = -1.72%)</td>
</tr>
<tr>
<td>(A_{CHI}) = 7.03%</td>
<td>(A_{45-54} = -4.03%)</td>
</tr>
<tr>
<td>(A_{OTH}) = 1.05%</td>
<td>(A_{55-64} = -4.93%)</td>
</tr>
<tr>
<td>(A_{OTH}) = 1.05%</td>
<td>(A_{65-74} = -5.41%)</td>
</tr>
<tr>
<td>(A_{75-84} = -3.15%)</td>
<td></td>
</tr>
</tbody>
</table>
HCAHPS Update Training

Using PMA Equation

PMA Equation:

\[
PMA = A_{EDUC} \times (H_{EDUC} - M_{EDUC}) + A_{HLTH} \times (H_{HLTH} - M_{HLTH}) + A_{SPA} \times (H_{SPA} - M_{SPA})
+ A_{CHI} \times (H_{CHI} - M_{CHI}) + A_{OTH} \times (H_{OTH} - M_{OTH}) + A_{RPCT} \times (H_{RPCT} - M_{RPCT})
+ A_{1824} \times (H_{1824} - M_{1824}) + A_{2534} \times (H_{2534} - M_{2534}) + A_{3544} \times (H_{3544} - M_{3544})
+ A_{4554} \times (H_{4554} - M_{4554}) + A_{5564} \times (H_{5564} - M_{5564}) + A_{6574} \times (H_{6574} - M_{6574})
+ A_{7584} \times (H_{7584} - M_{7584}) + A_{MAT} \times (H_{MAT} - M_{MAT}) + A_{FeSURG} \times (H_{FeSURG} - M_{FeSURG})
+ A_{MaSURG} \times (H_{MaSURG} - M_{MaSURG}) + A_{MaMED} \times (H_{MaMED} - M_{MaMED})
+ A_{MAT*AGE} \times (H_{MAT*AGE} - M_{MAT*AGE}) + A_{SURG*AGE} \times (H_{SURG*AGE} - M_{SURG*AGE})
\]

Net Adjustment for Hospital A:

\[
PMA = 0.0143 \times (3.14 - 3.754) + 0.0488 \times (3.43 - 2.779) + -0.0071 \times (0.29 - 0.048)
+ 0.0703 \times (0.14 - 0.004) + 0.0105 \times (0.14 - 0.019) + 0.180 \times (0.19 - 0.131)
+ 0.0167 \times (0.14 - 0.029) + -0.0074 \times (0.14 - 0.090) + -0.0172 \times (0.14 - 0.059)
+ -0.0403 \times (0.00 - 0.087) + -0.0493 \times (0.14 - 0.186) + -0.0541 \times (0.29 - 0.270)
+ -0.0315 \times (0.00 - 0.197) + -0.0630 \times (0.29 - 0.109) + 0.0046 \times (0.00 - 0.186)
+ -0.0082 \times (0.14 - 0.179) + -0.0101 \times (0.29 - 0.239)
+ 0.0071 \times (0.43 - 0.223) + -0.0019 \times (0.86 - 2.010) = 0.045
\]
STEP 4: HCAHPS Survey Mode Adjustment
HCAHPS Update Training

Survey Mode Adjustment

• Survey Mode Adjustment for Nurse Communication “Top-Box”:
  - Hospital A utilizes the **Telephone** mode

<table>
<thead>
<tr>
<th>HCAHPS Composite or Item: “Top-Box”</th>
<th>Telephone</th>
<th>Mixed</th>
<th>Active IVR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication with Nurses (“Always”)</td>
<td>-4.2%</td>
<td>-3.6%</td>
<td>-2.3%</td>
</tr>
<tr>
<td>Communication with Doctors (“Always”)</td>
<td>-2.8%</td>
<td>-1.8%</td>
<td>0.3%</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Hospital Rating (“9 or 10”)</td>
<td>-2.0%</td>
<td>-3.0%</td>
<td>4.0%</td>
</tr>
</tbody>
</table>
STEP 5: Final Quarterly Adjusted Score and Four-Quarter Average
Quarterly HCAHPS Adjusted Score

The sum of the unadjusted composite score (\(Y\)), hospital PMA, and survey mode adjustment comprise a hospital’s quarterly adjusted HCAHPS score (\(Y'\))

Nurse Communication “Top-Box” for Hospital A:

\[
Y' = Y + PMA + \text{Survey Mode Adjustment} \\
= 0.762 + 0.045 + -0.042 \\
= 0.765 \text{ (or 76.5\% )}
\]
Publicly Reported HCAHPS Scores and Quarterly Weights

Publicly reported HCAHPS scores are four-quarter hospital averages weighted proportionately to the number of eligible patients seen by the hospital in each of the four quarters.

- A weight is calculated for each of the four quarters based on the number of eligible patients in the quarter out of the total eligible patients in the Reporting Period for a hospital:

  \[
  \text{Quarterly Weight} = \frac{\text{Quarterly Eligibles}}{\text{Reporting Period Eligibles}}
  \]
For Hospital A for One Quarter:

- 80 eligible patients in the quarter out of 300 total eligible patients in the four-quarter Reporting Period would be a quarterly weight of:

\[
\frac{80}{300} = 0.27
\]

- Weighted quarterly score would be:

\[
(Y') \times \text{(quarterly weight)} = \text{weighted quarterly score}
\]

\[
0.765 \times 0.27 = 0.2066 \text{ or } 20.66\%
\]
Publicly Reported HCAHPS Scores and Quarterly Weights (cont’d)

Nurse Communication For Hospital A:

- Adjusted “Top-Box” scores for Nurse Communication and Eligible patient count for 4 quarters of Reporting Period

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Eligible Patients</th>
<th>Weight</th>
<th>Unweighted Quarterly Score</th>
<th>Weighted Quarterly Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>70 / 300 =</td>
<td>23%</td>
<td>71.50%</td>
<td>16.45%</td>
</tr>
<tr>
<td>2</td>
<td>60 / 300 =</td>
<td>20%</td>
<td>78.80%</td>
<td>15.76%</td>
</tr>
<tr>
<td>3</td>
<td>90 / 300 =</td>
<td>30%</td>
<td>79.90%</td>
<td>23.97%</td>
</tr>
<tr>
<td>4</td>
<td>80 / 300 =</td>
<td>27%</td>
<td>76.50%</td>
<td>20.66%</td>
</tr>
</tbody>
</table>

- Weighted quarterly scores are summed to create final, rounded Publicly Reported HCAHPS Scores:
  - $16.45\% + 15.76\% + 23.97\% + 20.66\% = 77\%$
Review of Score Calculation

- Identify eligible and completed surveys
- Calculate un-adjusted quarterly scores for each HCAHPS measure
- Calculate hospital-level patient-mix adjustment (PMA)
  - Requires calculation of means for all patient-mix variables and utilization of HCAHPS PMA Tables
- Application of survey mode adjustment
- Application of quarterly weights to quarterly scores
- Publicly reported HCAHPS scores = Four-quarter hospital averages weighted proportionately to the number of eligible patients seen by a hospital in each of the four quarters
Questions?
Break
Updated Patient-Mix Adjustment: Service Line and Gender
Reminder: HCAHPS Patient-Mix Adjustment

- CMS employs patient-mix adjustment to ensure fair comparisons across all hospitals participating in HCAHPS by adjusting for factors that are not under hospital control but which may affect HCAHPS scores.

- Publicly reported patient-mix adjustments are patient-level, not hospital-level, adjustments.
  - Hospital-level adjustments are a product of each patient-mix adjustment and the difference of each hospital’s % of patients in the given patient-mix category from the corresponding national average.
HCAHPS PMA Variables Prior to Q117

• Self-Rated Overall Health
• Education
• Language Spoken at Home
• Response Percentile
• Age (10-year categories)
• Service Line
  - Maternity
  - Surgical
• Service Line x Age Interaction
PMA Undergoes Continuous Refinement and Improvement

• Language spoken at home was originally 2 categories:
  - English
  - Non-English

• Since Q4 2013, language spoken at home includes 4 categories:
  - English
  - Spanish
  - Chinese
  - Other
Two Factors Drive the Importance of a PMA Adjuster

• How strongly the adjuster predicts CAHPS measures after controlling for other PMA variables
  – This is not changed for gender

• How much the adjuster varies across hospitals
  – This has increased for gender

• Gender is now a more important PMA variable than in previous CMS analysis
Adding VA Hospitals Increased Importance of Gender PMA

- VA hospitals have very high male proportions of patients
- Additional accounting for gender was needed for their comparisons with non-VA hospitals
- Does not require additional data collection
  - Gender already available
- Also improves PMA for all HCAHPS hospitals
Previous Adjustment for Service Line

- Since its national implementation in 2006, HCAHPS PMA differentiated between Medical, Surgical, and Maternity service lines
  - National distribution of service line rates:

<table>
<thead>
<tr>
<th></th>
<th>5th Percentile</th>
<th>Mean</th>
<th>95th Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical</td>
<td>26.0%</td>
<td>49.7%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Surgical</td>
<td>0.0%</td>
<td>37.6%</td>
<td>64.0%</td>
</tr>
<tr>
<td>Maternity</td>
<td>0.0%</td>
<td>12.7%</td>
<td>30.0%</td>
</tr>
</tbody>
</table>
Previous Adjustment for Maternity Service Line (cont’d)

• Top-Box patient-level adjustments ranged from -14.43% (Recommend) to +1.83% Cleanliness)
• 10 of 11 adjustments were negative, with a median of -11.85%

(Note: reference service line is Medical)
Previous Adjustment for Surgical Service Line (cont’d)

• Top-Box patient-level adjustments ranged from -8.69% (Doctor Communication) to +0.36% (Cleanliness)

• 8 of 11 adjustments were negative, with a median of -2.71%

(Note: reference service line is Medical)
# HCAHPS Update Training

## Previous Maternity and Surgical Top-Box PMA Adjustments

<table>
<thead>
<tr>
<th>HCAHPS Measure</th>
<th>Maternity Adjustment</th>
<th>Surgical Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse Comm.</td>
<td>-6.40%</td>
<td>0.33%</td>
</tr>
<tr>
<td>Doctor Comm.</td>
<td>-13.17%</td>
<td>-8.69%</td>
</tr>
<tr>
<td>Staff Resp.</td>
<td>-13.48%</td>
<td>0.03%</td>
</tr>
<tr>
<td>Pain Mgmt.</td>
<td>-13.02%</td>
<td>-2.71%</td>
</tr>
<tr>
<td>RX Comm.</td>
<td>-11.85%</td>
<td>-1.39%</td>
</tr>
<tr>
<td>Cleanliness</td>
<td>1.83%</td>
<td>0.36%</td>
</tr>
<tr>
<td>Quietness</td>
<td>-11.59%</td>
<td>-1.80%</td>
</tr>
<tr>
<td>Discharge Info.</td>
<td>-5.49%</td>
<td>-4.39%</td>
</tr>
<tr>
<td>Care Transition</td>
<td>-5.02%</td>
<td>-3.15%</td>
</tr>
<tr>
<td>Rating</td>
<td>-13.01%</td>
<td>-5.71%</td>
</tr>
<tr>
<td>Recommend</td>
<td>-14.43%</td>
<td>-5.28%</td>
</tr>
</tbody>
</table>
New Service Line Adjustments Uses 5 Categories Rather than 3:

<table>
<thead>
<tr>
<th>Service Line</th>
<th>5th Percentile</th>
<th>Mean</th>
<th>95th Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female Medical</td>
<td>8.9%</td>
<td>28.7%</td>
<td>63.2%</td>
</tr>
<tr>
<td>Female Surgical</td>
<td>0.0%</td>
<td>18.6%</td>
<td>32.4%</td>
</tr>
<tr>
<td>Maternity</td>
<td>0.0%</td>
<td>12.7%</td>
<td>30.0%</td>
</tr>
<tr>
<td>Male Medical</td>
<td>3.5%</td>
<td>23.9%</td>
<td>48.1%</td>
</tr>
<tr>
<td>Male Surgical</td>
<td>0.0%</td>
<td>17.9%</td>
<td>27.7%</td>
</tr>
</tbody>
</table>

(Note: reference category is Female Medical)
General Adjustment Patterns for Service Line x Gender

- **Maternity** Top-Box patient-level adjustment continues to be most negative
  - Median patient-level adjustment across the 11 HCAHPS measures was **-12.33%** (relative to Female Medical)
- **Male Surgical** adjustments next most negative (median adjustment **-6.19%**)
- Median adjustment for **Female Surgical** was **-2.93%**, followed by **Male Medical** (median adjustment **-1.01%**)

March 2018
Differences in Adjustment by Gender

- **Male Medical** adjustments generally more positive than Female Medical
  - Biggest difference with Cleanliness (-6.59%)
- **Male Surgical** adjustments generally more negative than Female Surgical
  - Biggest difference with Cleanliness (-7.16%)
## New Patient-Level Top-Box Adjustments for Service Line x Gender

<table>
<thead>
<tr>
<th>HCAHPS Measure</th>
<th>Male Medical</th>
<th>Male Surgical</th>
<th>Female Surgical</th>
<th>Maternity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse Comm.</td>
<td>-1.01%</td>
<td>-0.82%</td>
<td>0.46%</td>
<td>-6.30%</td>
</tr>
<tr>
<td>Doctor Comm.</td>
<td>0.53%</td>
<td>-7.70%</td>
<td>-8.21%</td>
<td>-12.33%</td>
</tr>
<tr>
<td>Staff Resp.</td>
<td>-2.06%</td>
<td>-3.12%</td>
<td>-0.85%</td>
<td>-13.99%</td>
</tr>
<tr>
<td>Pain Mgmt.</td>
<td>-0.38%</td>
<td>-3.88%</td>
<td>-2.74%</td>
<td>-12.81%</td>
</tr>
<tr>
<td>RX Comm.</td>
<td>-3.28%</td>
<td>-6.24%</td>
<td>-1.51%</td>
<td>-13.48%</td>
</tr>
<tr>
<td>Cleanliness</td>
<td>-6.59%</td>
<td>-7.13%</td>
<td>0.03%</td>
<td>-0.11%</td>
</tr>
<tr>
<td>Quietness</td>
<td>0.29%</td>
<td>-1.34%</td>
<td>-2.93%</td>
<td>-11.87%</td>
</tr>
<tr>
<td>Discharge Info.</td>
<td>-2.35%</td>
<td>-6.19%</td>
<td>-5.08%</td>
<td>-5.84%</td>
</tr>
<tr>
<td>Care Transition</td>
<td>-0.87%</td>
<td>-4.42%</td>
<td>-2.95%</td>
<td>-5.14%</td>
</tr>
<tr>
<td>Rating</td>
<td>-0.38%</td>
<td>-6.65%</td>
<td>-5.65%</td>
<td>-14.56%</td>
</tr>
<tr>
<td>Recommend</td>
<td>-2.08%</td>
<td>-7.25%</td>
<td>-4.98%</td>
<td>-15.61%</td>
</tr>
</tbody>
</table>
Effect of Implementing New PMA Model Small for Most Hospitals

- For 10 of 11 Top-Box measures (all but Cleanliness), the middle 98% of hospitals had adjustment changes between -1% and +1%
- Hospitals with unusually large or small proportions of female non-Maternity (Medical or Surgical) patients saw larger adjustments
Impact of New Service Line Categories Similar in Magnitude to Impact of New Language Categories

<table>
<thead>
<tr>
<th>HCAHPS Measure</th>
<th>2014 Language Spoken at Home Update: STD DEV of Difference</th>
<th>2017 Service Line x Gender Update: STD DEV of Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse Comm.</td>
<td>0.15</td>
<td>0.10</td>
</tr>
<tr>
<td>Doctor Comm.</td>
<td>0.16</td>
<td>0.05</td>
</tr>
<tr>
<td>Staff Resp.</td>
<td>0.21</td>
<td>0.20</td>
</tr>
<tr>
<td>Pain Mgmt.</td>
<td>0.32</td>
<td>0.07</td>
</tr>
<tr>
<td>RX Comm.</td>
<td>0.16</td>
<td>0.43</td>
</tr>
<tr>
<td>Cleanliness</td>
<td>0.15</td>
<td>0.61</td>
</tr>
<tr>
<td>Quietness</td>
<td>0.13</td>
<td>0.07</td>
</tr>
<tr>
<td>Discharge Info.</td>
<td>0.03</td>
<td>0.20</td>
</tr>
<tr>
<td>Care Transition</td>
<td>N/A</td>
<td>0.10</td>
</tr>
<tr>
<td>Rating</td>
<td><strong>0.63</strong></td>
<td>0.06</td>
</tr>
<tr>
<td>Recommend</td>
<td>0.38</td>
<td>0.20</td>
</tr>
</tbody>
</table>
Timeline: Adjustment for Service Line x Gender

- New service line x gender adjuster variables went into effect beginning with 1Q17 score adjustments
- New adjustments will roll in one quarter at a time
- Detailed PMAs will continue to be posted on http://www.hcahpsonline.org
## New Adjustments by Public Report

<table>
<thead>
<tr>
<th>Public Report</th>
<th>Previous Adjustment</th>
<th>New Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 2017</td>
<td>Q1 2016, Q2 2016, Q3 2016, Q4 2016</td>
<td></td>
</tr>
<tr>
<td>December 2017</td>
<td>Q2 2016, Q3 2016, Q4 2016</td>
<td>Q1 2017</td>
</tr>
<tr>
<td>April 2018</td>
<td>Q3 2016, Q4 2016</td>
<td>Q1 2017, Q2 2017</td>
</tr>
<tr>
<td>July 2018</td>
<td>Q4 2016</td>
<td>Q1 2017, Q2 2017, Q3 2017</td>
</tr>
<tr>
<td>October 2018</td>
<td></td>
<td>Q1 2017, Q2 2017, Q3 2017, Q4 2017</td>
</tr>
</tbody>
</table>
Reminder: Update PMA Equation for Estimating HCAHPS Scores

Q4 2016 PMA Equation:

\[
PMA = A_{EDUC} \times (H_{EDUC} - M_{EDUC}) + A_{HLTH} \times (H_{HLTH} - M_{HLTH}) \\
+ A_{SPA} \times (H_{SPA} - M_{SPA}) + A_{CHI} \times (H_{CHI} - M_{CHI}) + A_{RVO} \times (H_{RVO} - M_{RVO}) \\
+ A_{RPCT} \times (H_{RPCT} - M_{RPCT}) + A_{1824} \times (H_{1824} - M_{1824}) + A_{2534} \times (H_{2534} - M_{2534}) \\
+ ... \\
+ A_{MAT} \times (H_{MAT} - M_{MAT}) + A_{SURG} \times (H_{SURG} - M_{SURG}) \\
+ A_{MAT*AGE} \times (H_{MAT*AGE} - M_{MAT*AGE}) + A_{SURG*AGE} \times (H_{SURG*AGE} - M_{SURG*AGE})
\]

Q1 2017 PMA Equation:

\[
PMA = A_{EDUC} \times (H_{EDUC} - M_{EDUC}) + A_{HLTH} \times (H_{HLTH} - M_{HLTH}) \\
+ A_{SPA} \times (H_{SPA} - M_{SPA}) + A_{CHI} \times (H_{CHI} - M_{CHI}) + A_{RVO} \times (H_{RVO} - M_{RVO}) \\
+ A_{RPCT} \times (H_{RPCT} - M_{RPCT}) + A_{1824} \times (H_{1824} - M_{1824}) + A_{2534} \times (H_{2534} - M_{2534}) \\
+ ... \\
+ A_{MAT} \times (H_{MAT} - M_{MAT}) + A_{FeSURG} \times (H_{FeSURG} - M_{FeSURG}) \\
+ A_{MaSURG} \times (H_{MaSURG} - M_{MaSURG}) + A_{MaMED} \times (H_{MaMED} - M_{MaMED}) \\
+ A_{MAT*AGE} \times (H_{MAT*AGE} - M_{MAT*AGE}) + A_{SURG*AGE} \times (H_{SURG*AGE} - M_{SURG*AGE})
\]
Questions?
Next Steps

• Hospitals/Survey vendors:
  – Update QAP
  – Submit HCAHPS Attestation Statement
    • Due by April 6, 2018
    • Monitor the HCAHPS Web site for this document
  – Submit HCAHPS Survey materials
    • Due by April 6, 2018
  – Monitor the HCAHPS Web site:
    http://www.hcahpsonline.org
More Information and Resources

- Forms, background information, reports, and HCAHPS Executive Insight:
  http://www.hcahpsonline.org
- Submitting HCAHPS data:
  https://www.qualitynet.org
- Publicly reported HCAHPS results:
  https://www.medicare.gov/hospitalcompare
- HCAHPS results DDB:
  https://Data.Medicare.gov
Contact Us

HCAHPS Information and Technical Support

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