

IHS Diabetes Care and Outcomes Audit

**Audit 2022 Reports:
Basics and Beyond**

**IHS Division of Diabetes Treatment and Prevention
March 1, 2022**

Topics

1. Audit reports - what are they and how to get them
2. Changes for 2022
3. Reading reports, including how statistics are calculated
4. Reviewing reports and graphs for potential data issues

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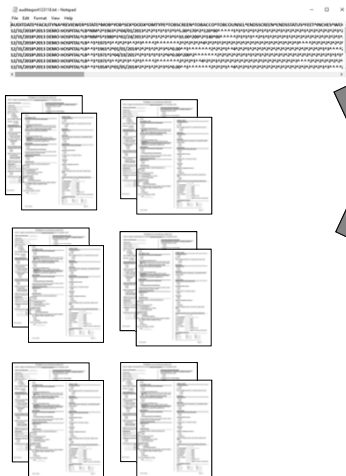
Abbreviations

- **ADC** = Area Diabetes Consultant
- **AI/AN** = American Indian/Alaska Native
- **Audit** = IHS Diabetes Care and Outcomes Audit
- **BP = Best Practice** = SDPI Diabetes Best Practice
- **DDTP** = IHS Division of Diabetes Treatment and Prevention
- **DMS** = RPMS Diabetes Management System
- **GPRA** = Government Performance and Results Act
- **EMR** = Electronic Medical Record (RPMS or other)
- **I/T/U** = IHS, Tribal, and Urban
- **RKM** = Required Key Measure
- **RPMS** = IHS Resource and Patient Management System
- **SDPI** = Special Diabetes Program for Indians
- **SOS** = SDPI Outcomes System

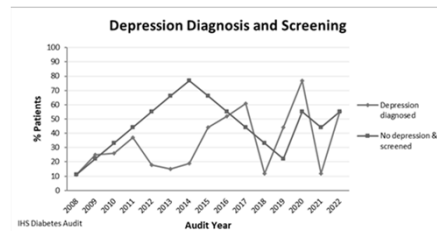
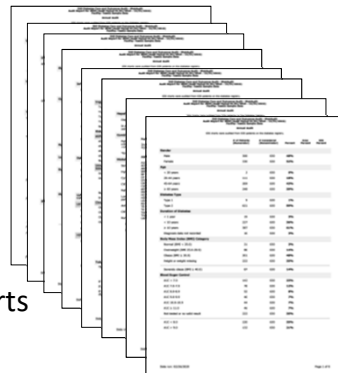
Audit Report Basics

Data to Reports (Input to Output)

Input=Audit data
file or paper forms



Output=reports
and graphs



What are Audit Reports (capital R)

- The Audit Report (capital R) provides a basic summary of the data elements in the Audit for each year.
- Results are presented as the number and percent of patients who 'meet' each report item. For example, 63% of Audited patients have blood pressure <140/<90.
- Audit Reports can be obtained from the WebAudit or RPMS/DMS and possible other EMR systems. Results should be the same IF run on the same patients and at the same date and time (exception is minor differences due to rounding).
 - IHS and Area results are provided on the WebAudit version for comparison, once all data are final.

Other Audit reports (lowercase R)

- **Other** Audit summary reports (lowercase r) for each year are available via the WebAudit and/or RPMS:
 - SDPI Key Measures (subset of main Audit Report):
WebAudit and RPMS
 - Means: WebAudit only
- **Graphs** of Audit results over time for selected measures are available via the WebAudit.
 - Trends Graphs
 - Means Graphs

How to get Audit reports

NOTE: WebAudit access is limited to individuals who participate in conducting Audits OR as determined by facility staff. RPMS/DMS access is determined by facility staff.

1. If you do have access to the WebAudit and/or RPMS:
 - WebAudit: <https://www.ihs.gov/diabetes/audit/>
 - RPMS: <https://www.ihs.gov/diabetes/audit/audit-rpms-dms-information/>
2. If you do not have WebAudit or RPMS access:
 - Request from your facility
 - Contact your Area Diabetes Consultant

Audit Report - WebAudit

First several items from page 1 of 8:

IHS Diabetes Care and Outcomes Audit - WebAudit
Audit Report for 2022 (Audit Period 01/01/2021 - 12/31/2021)
Facility: Test02 Sample Data

Annual Audit

87 charts were audited from 87 patients determined to be eligible by Test02 Sample Data.
Unless otherwise specified, time period for each item is the 12-month Audit Period.

	# of Patients (Numerator)	# Considered (Denominator)	Percent	Area Percent	IHS Percent
Gender					
Male	44	87	51%		
Female	43	87	49%		
Age					
< 20 years	0	87	0%		
20-44 years	15	87	17%		
45-64 years	50	87	57%		
≥ 65 years	22	87	25%		
Diabetes Type					
Type 1	4	87	5%		
Type 2	83	87	95%		

Audit Report – RPMS/DMS

First several items from page 1:

LAB	Sep 22, 2021	Page 1	
IHS Diabetes Care and Outcomes Audit - RPMS Audit			
Audit Report for 2022 (Audit Period 01/01/2012 to 12/31/2012)			
Facility: 2021 DEMO HOSPITAL (INST)			
Annual Audit			
959 patients were audited			
Unless otherwise specified, time period for each item is the 12-month Audit Period			

	# of Patients (Numerator)	# Considered (Denominator)	Percent
*** NOTE: 13 Patients were not included in this report because their date of onset was after the Audit period end date.			
Gender			
Male	390	959	41%
Female	569	959	59%
Age			
<20 years	37	959	4%
20-44 years	144	959	15%
45-64 years	401	959	42%
>=65 years	377	959	39%
Diabetes Type			
Type 1	34	959	4%
Type 2	925	959	96%
Duration of Diabetes			
<1 year	5	959	1%
<10 years	79	959	8%

Audit Report – General Info

- Results are presented as the number and percent of patients who 'meet' each report item.
- Items may be reported for:
 - All patients
 - A subgroup of patients: items reported for subgroups are indicated by keywords "In" or "If" (e.g., In patients aged 40-75). Some are also indented.
 - Both of the above
- Order is not the same as the Audit Form.
- Patients with missing values for an item are counted in the denominator for most items.
- There are some changes to Audit Report every year. Some years these are minor, others more extensive.

Audit Report Changes for 2022

Audit Report Changes

- **When:** Audit Report (capital R) changes are made each year for the Annual Audit.
- **Why**
 1. Currency - To align with IHS and other national standards and reports, such as, IHS GPRA measures.
 2. Consistency – To be consistent with other materials from IHS and the Division of Diabetes.
 3. Clarity - To facilitate understanding of each item on the report.
 4. Completeness - To provide all the necessary information for interpreting the report items.

Audit Report Changes for 2022

1. **General:** Minor changes to wording for some items.
2. **Additions:** Details on following slides.

Cardiovascular Disease (CVD) Section

Cardiovascular Disease (CVD)

CVD diagnosed ever	20	87	23%
CVD and mean BP <140/<90	13	20	65%
CVD and not current tobacco user	16	20	80%
CVD and aspirin or other antiplatelet/anticoagulant therapy currently prescribed	17	20	85%
CVD and GLP-1 receptor agonist currently prescribed	7	20	35%
CVD and SGLT-2 inhibitor currently prescribed	4	20	20%
CVD and statin currently prescribed* *Excludes patients with an allergy, intolerance, or contraindication	17	20	85%

Chronic Kidney Disease (CKD) Section

Chronic Kidney Disease (CKD) (In age ≥ 18 years)			
CKD ²	33	87	38%
CKD ² and mean BP <140/<90	19	33	58%
CKD ² and ACE Inhibitor or ARB currently prescribed	24	33	73%
CKD ² and GLP-1 receptor agonist currently prescribed	13	33	39%
CKD ² and SGLT-2 inhibitor currently prescribed	4	33	12%
CKD Stage			
Normal: eGFR ≥60 ml/min and UACR <30 mg/g	31	87	36%
Stages 1 and 2: eGFR ≥60 ml/min and UACR ≥30 mg/g	18	87	21%
Stage 3: eGFR 30-59 ml/min	12	87	14%
Stage 4: eGFR 15-29 ml/min	2	87	2%
Stage 5: eGFR <15 ml/min	0	87	0%
Undetermined	24	87	28%

SDPI RKM Best Practice Changes for 2022

1. **General:** Minor changes to wording for some items.
2. **Specific:** Details on following slides.
 - a. Hepatitis C (HCV) Screening
 - b. Immunizations: Hepatitis B
 - c. Tuberculosis (TB) Screening

Hepatitis C (HCV) Screening

- Numerator: now includes HCV diagnosed ever
- Denominator: now includes all patients age 18 years and older

2021

Hepatitis C (HCV) Screening

In patients not diagnosed with HCV and age \geq 18 years, screened ever	113	165	68%
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2022

Hepatitis C (HCV) Screening

In age \geq 18 years, screened for HCV ever or HCV diagnosed ever	67	87	77%
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Immunizations: Hepatitis B

- Numerator: now includes immune to hepatitis B
- Denominator: now includes immune to hepatitis B

2021

Immunizations: Hepatitis B

Hepatitis B complete series - ever	107	169	63%
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2022

Immunizations: Hepatitis B

Hepatitis B complete series ever or immune to hepatitis B	38	87	44%
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Tuberculosis (TB) Screening

- Numerator: now includes TB diagnosed ever
- Denominator: now includes TB diagnosed ever

2021

Tuberculosis (TB) Screening

If not diagnosed with TB ever, TB test done ever (skin test or blood test)	110	152	72%
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2022

Tuberculosis (TB) Screening

TB test done ever or TB diagnosed ever	35	87	40%
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How to read Audit Reports

Blood Sugar Control


- Percent calculation for A1C<7.0:

Numerator = 21 = number of patients Audited with A1C<7.0
Denominator = 87 = number of patients Audited

- All patients in one main category and can also be in <8.0 or >9.0
- Sum of Percents for all main categories = 100%
- Important to individualize A1C goals

Audit Form – page 1

Audit Report – WebAudit page 5

<p>  DEPARTMENT OF HEALTH AND HUMAN SERVICES STATE OF NEW JERSEY Division of Public Health Bureau of Disease Prevention and Control Immunization Branch Immunization Services Section </p>					
Immunization		N Number of Children	C Coverage	Rate Percent	Rate Percent
Influenza vaccine during health period		17	87	40%	40%
Pneumococcal/PPSV23 - once		50	87	94%	94%
Tdap/Td/IPV/DTaP - past 10 years		68	87	94%	94%
Hep A vaccine		36	87	94%	94%
If all vaccines, regardless if complete - once		18	87	94%	94%
Hepatitis B - 3 doses		1	87	94%	94%
In previous year a 101 series (Hepatitis B recombinant)		1	87	94%	94%
Hepatitis C - 3 doses		18	87	94%	94%
Immunization - active diseases					
Yes		13	87	100%	100%
No		10	87	100%	100%
In patients without active diagnosis, screened for depression during health period					
Screened		65	71	92%	92%
Not screened		7	71	92%	92%
Child had any of the following conditions in the last 12 months					
Yes		75	87	94%	94%
No		12	87	94%	94%
Child with mild weight		15	87	100%	100%
Child with mild height		15	87	100%	100%
Child with mild weight		9	87	100%	100%
Not tested in or no valid result		12	87	100%	100%
Child with mild weight		75	87	94%	94%
No					
HIV - child weight		22	41	63%	63%
HIV - child height		14	41	63%	63%
Not tested in or no valid result		7	41	63%	63%
HIV - child weight		12	41	63%	63%
HIV - child height		14	41	63%	63%
Not tested in or no valid result		8	41	63%	63%

Depression an active problem/diagnosis:

☐ 1 Yes

→ Screened for depression (during Audit period):

☐₁ Yes

☐₂ No

Depression an Active Problem

Yes	15	87	17%
No	72	87	83%
In patients without active depression, screened for depression during Audit period			
Screened	65	72	90%
Not screened	7	72	10%

Example 3 continued

	# of Patients (Numerator)	# Considered (Denominator)	Percent
Depression an Active Problem			
Yes	15	87	17%
No	72	87	83%
In patients without active depression, screened for depression during Audit period			
Screened	65	72	90%
Not screened	7	72	10%

- Percent calculation for depression screening:

$$\frac{65}{72} = 0.90$$

$$0.90 \times 100 = 90\%$$

Numerator = 65 = number of patients Audited that were Screened

Denominator = 72 = number patients Audited with No Depression (NOT total number of patients Audited)

- All patients in only one category
- Sum of Percents for all categories = 100%

Example 4: All that apply – DM Therapy

Audit Form – page 1

BHS Diabetes Care and Outcomes Audit, 2022

NOTE: It is highly recommended that you review the [Audit 2022 instructions](#) prior to conducting an audit.

Audit Period Ending Date: ____/____/____

Facility Name: _____

Reviewer Initials: _____

State of residence: _____

Months/Year of birth: ____/____

Sex: ☐ Male ☐ Female ☐ Unknown

Date of diabetes diagnosis: ____/____/____

DM Type: ☐ Type 1 ☐ Type 2

Tobacco/Nicotine use

Screened for tobacco use (during audit period): ☐ Yes ☐ No

Tobacco use status (most recent): ☐ Current user ☐ Not a current user ☐ Not documented

Education cessation counseling/education received (during audit period): ☐ Yes ☐ No

Electronic Medication Dispensing System (EMDS) Screened for EMDS use (during audit period): ☐ Yes ☐ No

EMDS use status (most recent): ☐ Current user ☐ Not a current user ☐ Not documented

*EMDS include: vials, repackagers, vial pens, insulin pens, electronic syringes (injection or vial), and vial pens

Vital statistics

Height (last visit): _____ ft _____ in

Weight (last in audit period): _____ lb

Hypertension (physician/diagnosis ever): ☐ Yes ☐ No

Blood pressure (last 3 during audit period): _____/_____/_____/_____/_____/_____

Examinations (during audit period)

Foot (comprehensive or "diabetic", including evaluation of sensation and vascular status): ☐ Yes ☐ No

Eye (dilated exam or retinal imaging): ☐ Yes ☐ No

Dental: ☐ Yes ☐ No

Mental health

Depression as active problem/diagnosis: ☐ Yes ☐ No

Screened for depression (during audit period): ☐ Yes ☐ No

Education (during audit period)

Education: ☐ K12 ☐ Both K12 and other ☐ Other ☐ None

Physical activity: ☐ Yes ☐ No

Other diabetes: ☐ Yes ☐ No

Diabetes Therapy

Select all prescribed (as of the end of the audit period):

☐ 1 None of the following

☐ 2 Insulin

☐ 3 Metformin [Glucophage, others]

☐ 4 Sulfonylurea [glipizide, glyburide, glimepiride]

☐ 5 DPP-4 inhibitor [sitagliptin (Nesina), linagliptin (Tradjenta), saxagliptin (Onglyza), sitagliptin (Januvia)]

☐ 6 GLP-1 receptor agonist [dulaglutide (Trulicity), exenatide (Byetta, Bydureon), liraglutide (Victoza, Saxenda), lixisenatide (Adlyxin), semaglutide (Ozempic, Rybelsus, Wegovy)]

☐ 7 SGLT-2 inhibitor [canagliflozin (Invokana), dapagliflozin (Farxiga), empagliflozin (Jardiance), ertugliflozin (Steglatro)]

☐ 8 Pioglitazone (Actos) or rosiglitazone [Avandia]

☐ 9 Acarbose (Precose) or miglitol [Glyset]

☐ 10 Repaglinide (Prandin) or nateglinide [Starlin]

☐ 11 Pramlintide [Symlin]

☐ 12 Bromocriptine [Cycloset]

☐ 13 Colesevelam [Welchol]

CONTINUED ON PAGE 2. Be sure to complete both pages for all audited patients.

Version: 9/2/2021 Page 1 of 2

Example 4: DM Therapy continued

Audit Report – WebAudit page 3

Diabetes Treatment				
Number of diabetes medications currently prescribed				
None	16	87	18%	
One medication	18	87	21%	
Two medications	23	87	26%	
Three medications	21	87	24%	
Four or more medications	9	87	10%	
Diabetes meds currently prescribed, alone or in combination				
Insulin	35	87	40%	
Metformin [Glucophage, others]	52	87	60%	
Sulfonylurea [glyburide, glipizide, others]	26	87	30%	
DPP-4 inhibitor [alogliptin (Nesina), linagliptin (Tradjenta), saxagliptin (Onglyza), sitagliptin (Januvia)]	16	87	18%	
GLP-1 receptor agonist [dulaglutide (Trulicity), exenatide (Byetta, Bydureon), liraglutide (Victoza, Saxenda), lixisenatide (Abylin), semaglutide (Ozempic, Rybelsus, Wegovy)]	23	87	26%	
SGLT-2 inhibitor [canagliflozin (Invokana), dapagliflozin (Farigla), empagliflozin (Jardiance), ertugliflozin (Steglatro)]	9	87	10%	
Pioglitazone [Actos] or rosiglitazone [Avandia]	4	87	5%	
Acarbose [Precose] or miglitol [Glyset]	0	87	0%	
Repaglinide [Prandin] or nateglinide [Starlix]	0	87	0%	
Pramlintide [Symlin]	0	87	0%	
Bromocriptine [Cycloset]	0	87	0%	
Colesevelam [Welchol]	0	87	0%	
Diabetes Treatment				
Number of diabetes medications currently prescribed				
None	16	87	18%	
One medication	18	87	21%	
Two medications	23	87	26%	
Three medications	21	87	24%	
Four or more medications	9	87	10%	
Diabetes meds currently prescribed, alone or in combination				
Insulin	35	87	40%	
Metformin [Glucophage, others]	52	87	60%	
Sulfonylurea [glyburide, glipizide, others]	26	87	30%	
DPP-4 inhibitor [alogliptin (Nesina), linagliptin (Tradjenta), saxagliptin (Onglyza), sitagliptin (Januvia)]	16	87	18%	
GLP-1 receptor agonist [dulaglutide (Trulicity), exenatide (Byetta, Bydureon), liraglutide (Victoza, Saxenda), lixisenatide (Abylin), semaglutide (Ozempic, Rybelsus, Wegovy)]	23	87	26%	
SGLT-2 inhibitor [canagliflozin (Invokana), dapagliflozin (Farigla), empagliflozin (Jardiance), ertugliflozin (Steglatro)]	9	87	10%	
Pioglitazone [Actos] or rosiglitazone [Avandia]	4	87	5%	
Acarbose [Precose] or miglitol [Glyset]	0	87	0%	
Repaglinide [Prandin] or nateglinide [Starlix]	0	87	0%	
Pramlintide [Symlin]	0	87	0%	
Bromocriptine [Cycloset]	0	87	0%	
Colesevelam [Welchol]	0	87	0%	

Example 4: DM Therapy continued

Two sections for this item:

- How many medications currently prescribed
- Which medications

Notes:

- Sum of percentages for section 1=100%
- Sum of percentages for section 2 can be >100% because patients can be on more than one med

Diabetes Treatment				
1	Number of diabetes medications currently prescribed			
	None	16	87	18%
	One medication	18	87	21%
	Two medications	23	87	26%
	Three medications	21	87	24%
2	Diabetes meds currently prescribed, alone or in combination			
	Insulin	35	87	40%
	Metformin [Glucophage, others]	52	87	60%
	Sulfonylurea [glyburide, glipizide, others]	26	87	30%
	DPP-4 inhibitor [alogliptin (Nesina), linagliptin (Tradjenta), saxagliptin (Onglyza), sitagliptin (Januvia)]	16	87	18%
	GLP-1 receptor agonist [dulaglutide (Trulicity), exenatide (Byetta, Bydureon), liraglutide (Victoza, Saxenda), lixisenatide (Abylin), semaglutide (Ozempic, Rybelsus, Wegovy)]	23	87	26%
	SGLT-2 inhibitor [canagliflozin (Invokana), dapagliflozin (Farigla), empagliflozin (Jardiance), ertugliflozin (Steglatro)]	9	87	10%
	Pioglitazone [Actos] or rosiglitazone [Avandia]	4	87	5%
	Acarbose [Precose] or miglitol [Glyset]	0	87	0%
	Repaglinide [Prandin] or nateglinide [Starlix]	0	87	0%
	Pramlintide [Symlin]	0	87	0%
	Bromocriptine [Cycloset]	0	87	0%
	Colesevelam [Welchol]	0	87	0%

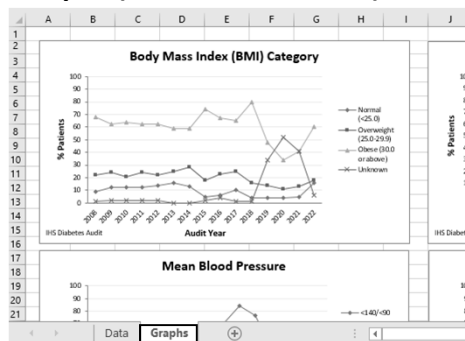
Trends Graphs

- Available in the WebAudit.
- Two tabs: Data and Graphs.

Data (all measures)

ITEM	DATAFIELD	2008 %	2009 %	2010 %	2011 %	2012 %	2013 %
1	Number of Records						
2	Gender: Male	33	32	35	36	35	38
3	Gender: Female	67	68	65	64	65	63
4	Age: < 20 years	2	2	1	1	1	0
5	Age: 20-44 years	23	24	25	25	25	31
6	Age: 45-64 years	48	46	44	48	46	45
7	Age: 65 years and older	27	29	30	27	28	24
8	Diabetes Type: 1	0	0	0	0	0	0
9	Diabetes Type: 2	100	100	100	100	100	100
10	Duration of Diabetes: < 1 year	8	4	4	4	3	0
11	Duration of Diabetes: < 10	62	57	54	51	46	46
12	Duration of Diabetes: 10 years	38	43	46	49	54	54
13	Duration of Diabetes:	0	0	0	0	0	0

Graphs (selected measures)



Annual Audit Report Review – General Guidance

- Print or pull up on screen:**
 - Annual Audit Reports from the WebAudit for 2022 and 2021.
 - Trends Graphs from the WebAudit.
- Review Audit Report for 2022.**
 - Number of patients:**
 - Number included in Audit should be equal to or smaller than number in registry (aka eligible patients).
 - Number Audited and eligible for 2022 vs. 2021: Are they similar or different with good reason?
 - Missing data:** Are there unexpectedly large amounts of missing data for any items?
 - Extreme values:** Are there rows with unexpectedly low (near 0%) or high (near 100%) values?

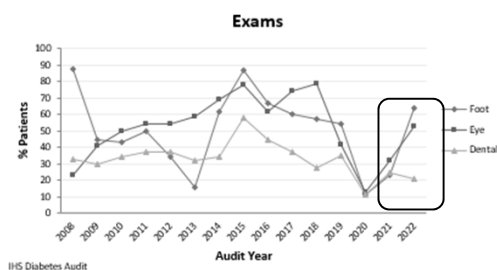
Annual Audit Report Review – Guidance (continued)

3. Review Trends Graphs: Look for “big” changes from 2021 to 2022.

- **Data tab:** Review DIFF 2022-2021 column.

	A	B	O	P	Q	R
1	ITEM#	Report Item [Subgroup, if applicable]	2020%	2021%	2022%	DIFF 2022-2021
85	83 Exams: Foot		11	23	64	41
86	84 Exams: Eye		13	32	53	21
87	85 Exams: Dental		11	25	21	-4

- **Graphs tab:** Look for “spikes” up or down from 2021 to 2022.



Annual Audit Report Review – Guidance (continued)

4. If any issues are found during review, correct data as needed in RPMS or in the WebAudit.

- i. For Electronic Audits:
 - a. Best to correct in RPMS (or other system), create a new data file, and reupload to the WebAudit.
 - b. If corrections are made in the WebAudit, they should also be made in your EMR.
- ii. For Manual Audits, make changes to individual records in the WebAudit.

Audit Resources

1. **Website:** <https://www.ihs.gov/diabetes> -> Select "IHS Diabetes Audit" from menu
 - Materials: Form, Instructions, Checklists, RPMS/DMS documentation
 - Training: Live, recorded, DMS
 - Other information and resources
2. **Support**
 - **Audit team (WebAudit and general questions):** email diabetesaudit@ihs.gov
 - **Area Diabetes Consultants/Area Audit Support**
 - **RPMS questions and support (OIT Service Desk):**
<https://www.ihs.gov/Helpdesk/>
 - **RPMS recorded training (including DMS):**
<https://www.ihs.gov/rpms/training/recording-and-material-library/>

WebAudit Demo

Questions?