

Hospital Price Transparency Rule XBRL Prototype¹

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This is a very basic prototype of implementing the Hospital Price Transparency Rule using the global standard XBRL syntax. For more information on XBRL, please see my blog².

XBRL offers an approach to representing information required by the Hospital Price Transparency Rule that is both human readable and a global standard machine-readable format. This is a very, very basic prototype which shows the fundamentals of how XBRL can be used for this task. The prototype provides a Microsoft Access database application for creating the information from a database, generates the XBRL in both raw XBRL format (machine readable) and Inline XBRL which is XBRL embedded within XHTML that is both human-readable and machine-readable.

To create the prototype, I took some information from a PDF provided by the Washington Health Alliance³. The information is contrived simply to create a simple demonstration that makes the major points that need to be raised. Information is provided in this working prototype for 5 hospitals for 2 services for one point in time and can be visualized via this simple fact table⁴:

#	Reporting Entity [Axis]	Period [Axis]	City	Hospital	Services	Concept	Fact Value	Unit	Rounding	Parenthetical Explanations
1	WSHA (https://www.wsha.org/)	2021-01-01	Puyallup	Multicare Good Samaritan Hospital	Urinary Tract Infection	Standard Price	33581	USD	INF	
2	WSHA (https://www.wsha.org/)	2021-01-01	Federal Way	St Francis Community Hospital	Stroke	Standard Price	29446	USD	INF	
3	WSHA (https://www.wsha.org/)	2021-01-01	Tacoma	St Joseph Medical Center	Stroke	Standard Price	33948	USD	INF	
4	WSHA (https://www.wsha.org/)	2021-01-01	Tacoma	Tacoma General Allenmore Hospital	Stroke	Standard Price	37066	USD	INF	
5	WSHA (https://www.wsha.org/)	2021-01-01	Federal Way	St Francis Community Hospital	Urinary Tract Infection	Standard Price	29446	USD	INF	
6	WSHA (https://www.wsha.org/)	2021-01-01	Tacoma	St Joseph Medical Center	Urinary Tract Infection	Standard Price	33948	USD	INF	
7	WSHA (https://www.wsha.org/)	2021-01-01	Lakewood	St Clare Hospital	Urinary Tract Infection	Standard Price	30818	USD	INF	
8	WSHA (https://www.wsha.org/)	2021-01-01	Tacoma	Tacoma General Allenmore Hospital	Urinary Tract Infection	Standard Price	1111	USD	INF	
9	WSHA (https://www.wsha.org/)	2021-01-01	Lakewood	St Clare Hospital	Stroke	Standard Price	30818	USD	INF	
10	WSHA (https://www.wsha.org/)	2021-01-01	Puyallup	Multicare Good Samaritan Hospital	Stroke	Standard Price	33581	USD	INF	

For this prototype, only 10 facts are provided (2 services times 5 hospitals) but could have been provided for any number of services for any number of hospitals. Only standard prices were provided but any other set of pricing information could have been created.

To begin, a standard model of the information was created using XBRL. The following is a human readable version of the model that was generated using off-the-shelf software for working with XBRL⁵:

¹ Hospital Price Transparency XBRL Prototype, <http://xbrl.squarespace.com/journal/2021/1/20/hospital-price-transparency-rule.html>

² XBRL.Squarespace.com blog, <http://xbrl.squarespace.com/>

³ Hospital Sticker Shock, Washington Health Alliance, <https://wahealthalliance.org/wp-content/uploads/2014/10/hospital-sticker-shock-report-standard.pdf>

⁴ Prototype Information, Fact Table, http://xbrl.azurewebsites.net/2021/cma/evidence-package/contents/index.html#NetworkFacts-StandardPrices-cms_Hypercube.html

⁵ Model, http://xbrl.azurewebsites.net/2021/cma/evidence-package/contents/index.html#NetworkStructure-StandardPrices-cms_Hypercube.html

#	Label	Report Element Class	Period Type	Balance	Name
1	Hypercube	[Table]			cms:Hypercube
2	City	[Axis]			cms:City
3	Tacoma	[Member]			cms:Tacoma
4	Puyallup	[Member]			cms:Puyallup
5	Lakewood	[Member]			cms:Lakewood
6	Federal Way	[Member]			cms:FederalWay
7	Hospital	[Axis]			cms:Hospital
8	Tacoma General Allenmore Hospital	[Member]			cms:TacomaGeneralAllenmoreHospital
9	St Joseph Medical Center	[Member]			cms:StJosephMedicalCenter
10	Multicare Good Samaritan Hospital	[Member]			cms:MulticareGoodSamaritanHospital
11	St Clare Hospital	[Member]			cms:StClareHospital
12	St Francis Community Hospital	[Member]			cms:StFrancisCommunityHospital
13	Services	[Axis]			cms:Services
14	Stroke	[Member]			cms:Stroke
15	Urinary Tract Infection	[Member]			cms:UrinaryTractInfection
16	Hypercube [Line Items]	[Line Items]			cms:HypercubeLineItems
17	Price [Set]	[Abstract]			cms:PriceSet
18	Standard Price	[Concept] Monetary	As Of		cms:StandardPrice

That model was used to create facts that are then reported in an XBRL instance. A human readable version of the XBRL instance with no formatting other than creating a tabular fact table is provided⁶:

City	Hospital	Service	Concept Aspect	Period Aspect	Fact Value
cms:FederalWay	cms:StFrancisCommunityHospital	cms:UrinaryTractInfection	cms:StandardPrice	2021-01-01	29,446
cms:Lakewood	cms:StClareHospital	cms:UrinaryTractInfection	cms:StandardPrice	2021-01-01	30,818
cms:Puyallup	cms:MulticareGoodSamaritanHospital	cms:UrinaryTractInfection	cms:StandardPrice	2021-01-01	33,581
cms:Tacoma	cms:StJosephMedicalCenter	cms:UrinaryTractInfection	cms:StandardPrice	2021-01-01	33,948
cms:Tacoma	cms:TacomaGeneralAllenmoreHospital	cms:UrinaryTractInfection	cms:StandardPrice	2021-01-01	1,111
cms:FederalWay	cms:StFrancisCommunityHospital	cms:Stroke	cms:StandardPrice	2021-01-01	29,446
cms:Lakewood	cms:StClareHospital	cms:Stroke	cms:StandardPrice	2021-01-01	30,818
cms:Puyallup	cms:MulticareGoodSamaritanHospital	cms:Stroke	cms:StandardPrice	2021-01-01	33,581
cms:Tacoma	cms:StJosephMedicalCenter	cms:Stroke	cms:StandardPrice	2021-01-01	33,948
cms:Tacoma	cms:TacomaGeneralAllenmoreHospital	cms:Stroke	cms:StandardPrice	2021-01-01	37,066

Those same facts can be rendered in a better format for humans within off-the-shelf software applications for working with XBRL: (effectively something like a pivot table)

Component: (Network and Table)					
Network	04 - Unknown - Standard Prices				
Table	Hypercube				
Reporting Entity [Axis]	WSHA https://www.wsha.org/				
Period [Axis]	2021-01-01				
Unit [Axis]	USD				
Hypercube [Line Items]	Price [Set]				
	Hospital	City			
	Tacoma General Allenmore Hospital	Multicare Good Samaritan Hospital	St Joseph Medical Center	St Clare Hospital	St Francis Community Hospital
Services	Tacoma	Puyallup	Tacoma	Lakewood	Federal Way
Stroke	37,066	33,581	33,948	30,818	29,446
Urinary Tract Infection	1,111	33,581	33,948	30,818	29,446

Below is the same information pivoted:

⁶ Inline XBRL, <http://xbrlsite.azurewebsites.net/2021/cma/instance-generated.html>

Reporting Entity [Axis]	WSHA https://www.wsha.org/		
Period [Axis]	2021-01-01		
Unit [Axis]	USD		
Hypercube [Line Items]	Price [Set]		
Services			
Hospital	City	Stroke	Urinary Tract Infection
Tacoma General Allenmore Hospital	Tacoma	37,066	1,111
Multicare Good Samaritan Hospital	Puyallup	33,581	33,581
St Joseph Medical Center	Tacoma	33,948	33,948
St Clare Hospital	Lakewood	30,818	30,818
St Francis Community Hospital	Federal Way	29,446	29,446

Information can be extracted from the raw XBRL instance or the Inline XBRL instance with similar amounts of effort⁷:

	A	B	C	D	E	F	G
1		Extract					
2							
3							
4	General information						
5	#	Hospital	City	Service	Date	Service Price	Link to XBRL instance:
6							
7	1	cms:StFrancisCommunityHospital	cms:FederalWay	cms:UrinaryTractInfection	2021-01-01	29,446	http://xbrlsite.azurewebsites.net/2021/cma/instance.xml
8	2	cms:StClareHospital	cms:Lakewood	cms:UrinaryTractInfection	2021-01-01	30,818	http://xbrlsite.azurewebsites.net/2021/cma/instance.xml
9	3	cms:MulticareGoodSamaritanHospital	cms:Puyallup	cms:UrinaryTractInfection	2021-01-01	33,581	http://xbrlsite.azurewebsites.net/2021/cma/instance.xml
10	4	cms:StJosephMedicalCenter	cms:Tacoma	cms:UrinaryTractInfection	2021-01-01	33,948	http://xbrlsite.azurewebsites.net/2021/cma/instance.xml
11	5	cms:TacomaGeneralAllenmoreHospital	cms:Tacoma	cms:UrinaryTractInfection	2021-01-01	1,111	http://xbrlsite.azurewebsites.net/2021/cma/instance.xml
12	6	cms:StFrancisCommunityHospital	cms:FederalWay	cms:Stroke	2021-01-01	29,446	http://xbrlsite.azurewebsites.net/2021/cma/instance.xml
13	7	cms:StClareHospital	cms:Lakewood	cms:Stroke	2021-01-01	30,818	http://xbrlsite.azurewebsites.net/2021/cma/instance.xml
14	8	cms:MulticareGoodSamaritanHospital	cms:Puyallup	cms:Stroke	2021-01-01	33,581	http://xbrlsite.azurewebsites.net/2021/cma/instance.xml
15	9	cms:StJosephMedicalCenter	cms:Tacoma	cms:Stroke	2021-01-01	33,948	http://xbrlsite.azurewebsites.net/2021/cma/instance.xml
16	10	cms:TacomaGeneralAllenmoreHospital	cms:Tacoma	cms:Stroke	2021-01-01	37,066	http://xbrlsite.azurewebsites.net/2021/cma/instance.xml
17							
18	12	cms:StFrancisCommunityHospital	cms:FederalWay	cms:UrinaryTractInfection	2021-01-01	29,446	http://xbrlsite.azurewebsites.net/2021/cma/instance.xml
19	13	cms:StClareHospital	cms:Lakewood	cms:UrinaryTractInfection	2021-01-01	30,818	http://xbrlsite.azurewebsites.net/2021/cma/instance.xml
20	14	cms:MulticareGoodSamaritanHospital	cms:Puyallup	cms:UrinaryTractInfection	2021-01-01	33,581	http://xbrlsite.azurewebsites.net/2021/cma/instance.xml
21	15	cms:StJosephMedicalCenter	cms:Tacoma	cms:UrinaryTractInfection	2021-01-01	33,948	http://xbrlsite.azurewebsites.net/2021/cma/instance.xml
22	16	cms:TacomaGeneralAllenmoreHospital	cms:Tacoma	cms:UrinaryTractInfection	2021-01-01	1,111	http://xbrlsite.azurewebsites.net/2021/cma/instance.xml
23	17	cms:StFrancisCommunityHospital	cms:FederalWay	cms:Stroke	2021-01-01	29,446	http://xbrlsite.azurewebsites.net/2021/cma/instance.xml
24	18	cms:StClareHospital	cms:Lakewood	cms:Stroke	2021-01-01	30,818	http://xbrlsite.azurewebsites.net/2021/cma/instance.xml
25	19	cms:MulticareGoodSamaritanHospital	cms:Puyallup	cms:Stroke	2021-01-01	33,581	http://xbrlsite.azurewebsites.net/2021/cma/instance.xml
26	20	cms:StJosephMedicalCenter	cms:Tacoma	cms:Stroke	2021-01-01	33,948	http://xbrlsite.azurewebsites.net/2021/cma/instance.xml
27							

The Excel code was created by in VBA by a CPA with only minimal programming skills. Clearly those with more programming skills can provide additional functionality. The Excel application, for this prototype, extracts information from the same file 6 times; but it just as well could have extracted information from 6,000 separate files and reorganized the information as deemed necessary.

All the files for this prototype are provided⁸.

The XBRL technical format is powerful, flexible, standard, and could very easily meet the needs for the Hospital Price Transparency Rule.

⁷ Excel-based Information Extraction tool, <http://xbrlsite.azurewebsites.net/2021/cma/Extraction-cms.zip>

⁸ All files for prototype, <http://xbrlsite.azurewebsites.net/2021/cma/>