



Centricity Healthcare
User Group

Spring 2010

Integrating Centricity EMR with Oregon Immunization Alerts, An Immunization Registry



Presenters

- **John Kilty, MD, Pediatrician**
 - **The Children's Clinic**
Portland, OR
- **David Erickson, President**
 - **Lost Creek Consulting, Inc.**
Dexter, OR



The Children's Clinic

- **Two offices**
- **Pediatrics only**
- **17 FTE, 26 providers, 160 total staff**
- **Approximately 50,000 active patients, birth to 20 years old**
- **4300 vaccines/month (non-flu)**
- **35 staff administering shots**



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The Children's Clinic





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Immunization Data

- **Represents one of the most important parts of the pediatric patient's chart**



Immunization Data

- **Information integrity is vital to our ability to council and provide patients with the standard vaccine regimens**



Immunization Data

- **Previously, vaccine administration data was sent to state database representatives weekly based on electronic billing reports**



EMR/Centricity Experience

- **Live on Centricity 5.6 for five years**
- **Transition from paper to EMR over a 2-3 year period**



Transfer of previous vaccine data from paper chart to EMR

- **Either manual transcription of data or electronic transfer from Oregon's electronic database (started in 1999)**



Transfer of previous vaccine data from paper chart to EMR

- **Contracted outside consultant to complete two serial data transfers of approximately 450,000 data points**



Transfer of previous vaccine data from paper chart to EMR

- **Also continued to manually check and reconcile patient's electronic vaccine record with Oregon State database**



Immunization Forms

- **Form types:**
 - **“Status Form” contains current status of vaccine history with dates, organized in an intuitive format for the providers/staff**



Immunization Forms

- **Form types:**
 - **“Printed Report” needs to be comprehensible by family members and school/daycare administrator**



Flexibility of Shot Forms

The first was built to accommodate the large transfer of Oregon State vaccine data, but was somewhat inflexible in terms of visible real estate and allowing for new and combination vaccines



Flexibility of Shot Forms

Our second form improved our ability to add new vaccines in a logical order and allowed for combination vaccines to be cross referenced



Flexibility of Shot Forms

**Continue to struggle with
adding new vaccines without
observation terms and
combination vaccines**



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Immunization Program

**David Erickson, President
Lost Creek Consulting**



Immunization Program

**STATE IMMUNIZATION
REGISTRIES ARE ON
THE GOVERNMENT'S
LIST OF TOP 25
“MEANINGFUL USE”
REQUIREMENTS**



Issues - 1

- **Current registries have slow, cumbersome websites**
- **Frequent updates are required**
- **Staff time to update websites can take hours per day**
 - **Cost of a nurse's time**
 - **Opportunity cost of nurse's time**



Issues – 2

- **Many sources for immunizations to be given**
 - Pharmacy outreach
 - Dept. Health clinics
 - Multiple doctors
 - Hospitals (newborn's, etc.)



Issues – 3

- **Many manufacturers, many combo vaccines**
 - DPT, TDP, DTaP, TDaP, Pediarix, Pentacel, Kinrix
- **Multiple states**
 - Migrant families
 - Job-related relocations



LCC ImmsLink

- **Goals**

- **Quick comparison of historical imms recorded in the system**
- **No more manual duplicate entries into the system for new patients**
- **Quicker upload of data into the state's immunization registry**



LCC ImmsLink

- **Results desired**
 - **Hours of staff time saved**
 - **Quality and accuracy of data translates into improved quality of care for all patients**



Upload Issues

- **Centricity EMR database**
 - **Data is currently stored in obs terms**
 - **There are many custom obs terms**
 - **Requires consistent uploading**
 - **Requires frequent updating**
 - **Historical differences in coding**



Download/Reconciliation Process

- **Request a patient list and Select a patient**
- **Request list of immunizations**
- **Compare EMR list to Registry list**
- **Provider approves/corrects immunization lists**
- **Update local list**
- **Update registry**



Download/Reconciliation Issues

- **User identification / authorization**
- **Username/password management**
- **Patient identification**
 - Multiple records for a patient
 - Multiple patients with the same name
 - Incomplete data
- **Multiple registries**
- **Processing combinations/equivalents**
- **HIPPA and security**



Opportunities

- **A nurse can spend as many as 3 hours each day updating immunizations**
- **There can be multiple nurses doing this at a clinic**
- **The clinic can keep more accurate records, both for patient care and billing purposes**



Opportunities

- **There is an increased focus on sharing data**
- **There is a general lack of automation in clinics**
- **This could be a driving force for clinic automation of pediatrics and family practices**



LCC Immunization Program

What it is:

- **A full-featured product based on the clinic's EMR database**
- **Fully integrated into the provider's workflow**
 - **Providers stay focused on patient care**
 - **Providers don't spend time operating state registry websites**



LCC Immunization Program

What it is:

- **Maintains more accurate and time-sensitive patient records**
- **Enhances opportunity costs and time efficiencies**



LCC Immunization Program

How it works:

The Imms Cross Reference Editor

- Maps the Obs terms in your EMR database to the values in the state registries
- Conducts a careful review of variations in how historical data has been stored



LCC Immunization Program

How it works:

The Imms Cross Reference Editor

- Updates the immunizations database each time a new immunization (such as H1N1) or combination immunization (such as Pentacel) are introduced
- Allows your clinic the ability to describe and map the way obs terms are used to record all immunizations



LCC Immunization Program

- Edit the LCC Imms Xref Editor

Immunization XRef Editor

LCC Update Imm Families Report Connection Help

Select An Immunization Group
Group: DTAP Series: 5

Change Immunization Group
Add Group Delete Group Change Group Change Series

Select by CPT
CPT Search

Centricity OBS Terms
Validate Update Copy Dn

	Base	Admin	Route	Site	Mfr	Vis	Lot	Exp	Vfc
	DTAP #1	DTAP #1BY	DTAP #1Rte	DTAP #1SITE	DTAP #1Mfr	DTAP #1 VIS	DTAP #1Lot	DTAP #1EXP	DTAP #1VFC
	DTAP #2	DTAP #2BY	DTAP #2RTE	DTAP #2SITE	DTAP #2MFR	DTAP #2 VIS	DTAP #2LOT	DTAP #2EXP	DTAP #2VFC
	DTAP #3	DTAP #3BY	DTAP #3RTE	DTAP #3SITE	DTAP #3MFR	DTAP #3 VIS	DTAP #3LOT	DTAP #3EXP	DTAP #3VFC
	DTAP #4	DTAP #4BY	DTAP #4RTE	DTAP #4SITE	DTAP #4MFR	DTAP #4 VIS	DTAP #4LOT	DTAP #4EXP	DTAP #4VFC
	DTAP #5	DTAP #5BY	DTAP #5RTE	DTAP #5SITE	DTAP #5MFR	DTAP #5 VIS	DTAP #5LOT	DTAP #5EXP	DTAP #5VFC

Immunization Codes
Update

	ObsValue	CPT	CVX	Historical
	*	90700	20	<input type="checkbox"/>
	given	90700	20	<input type="checkbox"/>
	Historical	90700	20	<input checked="" type="checkbox"/>
▶*				<input type="checkbox"/>



LCC Immunization Program

- Edit the LCC Imms Xref Families

Immunization XRef Editor

LCC Add Family Update Imm Combos / Maps File Save Connection

	Immunization Name	Immunization Code	Component 1	Component 2	Component 3	Component 4	Component 5	Component 6
▶	Hep A	86708	HEP A	▼	▼	▼	▼	▼
	Hep A	90632	HEP A	▼	▼	▼	▼	▼
	Hep A	90633	HEP A	▼	▼	▼	▼	▼
	Hep A	90634	HEP A	▼	▼	▼	▼	▼
	Hib	90645	HIB	▼	▼	▼	▼	▼
	Hib	90646	HIB	▼	▼	▼	▼	▼
	Influenza	90655	FLUX VAX	▼	▼	▼	▼	▼
	Influenza	90657	FLUX VAX	▼	▼	▼	▼	▼
	Rotavir	90680	ROTAVIR	▼	▼	▼	▼	▼
	DTaP	90700	DPT	▼	▼	▼	▼	▼
	DTaP	90701	DPT	▼	▼	▼	▼	▼
	MMR	90707	MENINGOC VAX	▼	▼	▼	▼	▼
	Pediarix	90723	DPT	▼	HEP B	▼	IPV	▼
*			▼	▼	▼	▼	▼	▼



LCC Immunization Program

How it works:

- **The Uploader**

- Reads your database looking for new immunizations added since the last time it was run
- Automatically builds HL7 messages to transmit to the Registry
- Quickly and easily uploads data to registries on demand or on a schedule you create



LCC Immunization Program

How it works:

- **The Uploader**

- Data is extracted from your EMR database, not the billing system, as not all data is available from the billing database
- Sends either CPT or CVX codes to your registry plus lot numbers, manufacturer, site of vaccination, administered by, ...



LCC Immunization Program

How it works:

- **The Reconciler**
 - Connects to the state IIS registries with one keystroke
 - Queries the state IIS registries for comparison of patient's local EMR records to patient's state registry records



LCC Immunization Program

How it works:

- **The Reconciler**

- Downloads state patient records into your local EMR database with one key stroke, ensuring permanent, complete and accurate records for each patient



LCC Immunization Program

- **Select a patient**

Select Patient -

Drag a column header here to group by that column

PID	Source	Patient ID	Last	First	Sex	DOB
> PID	SR	5063958	ERICKSON	DAVID	M	6/8/1952 12:...
PID	SR	807087	ERICKSON	DAVID		7/6/1978 12:...
PID	SR	5088825	ERICKSON	DAVID		11/7/1941 1...
PID	SR	1776789	ERICKSON	DAVID		7/20/1966 1...
PID	SR	303076	ERICKSON	DAVID		2/23/1943 1...
PID	SR	117798	ERICKSON	DAVID		8/11/1991 1...
PID	SR	2340314	ERICKSON	DAVID		3/6/1997 12:...
PID	SR	2686575	ERICKSON	DAVID		6/30/1959 1...
PID	SR	1075131	ERICKSON	DAVID		3/18/1951 1...
PID	SR	4495294	ERICKSON	DAVID		11/15/1940 ...
PID	SR	1365971	ERICKSON	DAVID		5/17/1918 1...
PID	SR	270356	ERICKSON	DAVID		9/30/1955 1...
PID	SR	3197218	ERICKSON	DAVID		3/9/1958 12:...
PID	SR	1388347	ERICKSON	DAVID		9/19/1942 1...
PID	SR	759677	ERICKSON	DAVID		11/4/1962 1...
PID	SR	590013	ERICKSON	DAVID		8/22/1990 1...
PID	SR	4924143	ERICKSON	DAVID		10/13/1992 ...
PID	SR	1223158	ERICKSON	DAVID		6/20/1983 1...
PID	SR	2308412	ERICKSON	DAVID		2/11/1995 1...
PID	SR	3045843	ERICKSON	DAVID		5/13/1959 1...

Return



LCC Immunization Program

- Compare EMR records to Registry records

The screenshot shows the 'LCC Immunization Reconciliation' application window. It features a navigation bar with tabs: 'LCC', 'Reconciliation', 'Forecast', 'Commit List', and 'Communications Log and Status'. The 'Reconciliation' tab is active. The interface is split into two main panels: 'EMR Patient Information' on the left and 'Registry Information' on the right. Both panels show patient details and a list of immunization records with columns for 'Select', 'Source', 'Name', 'Date', 'Code', and 'Name'. The 'EMR Patient Information' panel shows patient ID 70-TEST001, Erickson, David, 6/8/1952, M. The 'Registry Information' panel shows patient ID 5063958, ERICKSON, DAVID, M, 6/8/1952. Both panels have 'Select All', 'Deselect All', and 'Reset' buttons. The 'Registry Information' panel also has 'Get Registry', 'Reconcile', and 'Return' buttons. A 'Debug' button is located in the top right of the Registry Information panel. The status bar at the bottom left of the EMR panel indicates 'Registry data complete'.

EMR Patient Information P
70-TEST001, Erickson, David, 6/8/1952, M,

Drag a column header here to group by that column

Select	Sou...	Name	Date	Code	Nam...
<input checked="" type="checkbox"/>	E	DPT #1	12/11/...	CPT-9...	DPT #1
<input type="checkbox"/>	E	DTAP #1	12/11/...	CPT-9...	DTAP #1
<input type="checkbox"/>	E	DTP/H...	12/11/...	CPT-9...	DTP/HI...
<input type="checkbox"/>	E	FLU VAX	12/11/...	CPT-9...	FLU VAX
<input type="checkbox"/>	E	HEMIN...	12/11/...	CPT-9...	HEMIN...
<input type="checkbox"/>	E	HEPBV...	12/11/...	CPT-9...	HEPBV...
<input type="checkbox"/>	E	IPV #1	12/11/...	CPT-9...	IPV #1
<input type="checkbox"/>	E	MEASL...	12/11/...	CPT-9...	MEASL...
<input type="checkbox"/>	E	MMR #1	12/11/...	CPT-9...	MMR #1
<input type="checkbox"/>	E	PNEU...	12/11/...	CPT-9...	PNEUM...
<input type="checkbox"/>	E	TD #1	12/11/...	CPT-9...	TD #1
<input type="checkbox"/>	E	VARIC...	12/11/...	CPT-9...	VARIC...

Select All Deselect All Reset

Registry data complete

Registry Information Debug
5063958, ERICKSON, DAVID, M, 6/8/1952

Drag a column header here to group by that column

Select	Name	Date	Code
<input checked="" type="checkbox"/>	Hep A 2 dos...	10/19/2004	CPT-90633
<input type="checkbox"/>	Hep A 2 dos...	11/18/2006	CPT-90633
<input type="checkbox"/>	Hepatitis B--...	2/1/2000	CPT-90744
<input type="checkbox"/>	Hepatitis B--...	3/1/2000	CPT-90744
<input type="checkbox"/>	Hepatitis B--...	4/1/2000	CPT-90744
<input type="checkbox"/>	MMR	1/4/2006	CPT-90707
<input type="checkbox"/>	MMR	2/16/2007	CPT-90707
<input type="checkbox"/>	Novel Influe...	10/5/2009	CPT-90663
<input type="checkbox"/>	OPV	10/19/2004	CPT-90712
<input type="checkbox"/>	OPV	1/4/2006	CPT-90712

Select All Deselect All Reset

Get Registry Reconcile Return



LCC Immunization Program

- Select Registry records not in the EMR

The screenshot displays the 'LCC Immunization Reconciliation' application window. It features two main panels: 'EMR Patient Information' and 'Registry Information'. The 'EMR Patient Information' panel shows patient details for '70-TEST001, Erickson, David, 6/8/1952, M' and a list of immunizations. The 'Registry Information' panel shows details for '5063958, ERICKSON, DAVID, M, 6/8/1952' and a list of registry records. A red arrow points to the 'Select All' button in the Registry Information panel.

EMR Patient Information

70-TEST001, Erickson, David, 6/8/1952, M,

Select	Sou...	Name	Date	Code	Nam...
<input type="checkbox"/>	E	DPT #1	12/11/...	CPT-9...	DPT #1
<input type="checkbox"/>	E	DTAP #1	12/11/...	CPT-9...	DTAP #1
<input type="checkbox"/>	E	DTP/H...	12/11/...	CPT-9...	DTP/HI...
<input type="checkbox"/>	E	FLU VAX	12/11/...	CPT-9...	FLU VAX
<input type="checkbox"/>	E	HEMIN...	12/11/...	CPT-9...	HEMIN...
<input type="checkbox"/>	E	HEPBV...	12/11/...	CPT-9...	HEPBV...
<input type="checkbox"/>	E	IPV #1	12/11/...	CPT-9...	IPV #1
<input type="checkbox"/>	E	MEASL...	12/11/...	CPT-9...	MEASL...
<input type="checkbox"/>	E	MMR #1	12/11/...	CPT-9...	MMR #1
<input type="checkbox"/>	E	PNEU...	12/11/...	CPT-9...	PNEUM...
<input type="checkbox"/>	E	TD #1	12/11/...	CPT-9...	TD #1
<input type="checkbox"/>	E	VARIC...	12/11/...	CPT-9...	VARIC...

Select All Deselect All Reset

Registry data complete

Registry Information

5063958, ERICKSON, DAVID, M, 6/8/1952

Select	Name	Date	Code
<input checked="" type="checkbox"/>	Hep A 2 dos...	10/19/2004	CPT-90633
<input checked="" type="checkbox"/>	Hep A 2 dos...	11/18/2006	CPT-90633
<input checked="" type="checkbox"/>	Hepatitis B--...	2/1/2000	CPT-90744
<input checked="" type="checkbox"/>	Hepatitis B--...	3/1/2000	CPT-90744
<input checked="" type="checkbox"/>	Hepatitis B--...	4/1/2000	CPT-90744
<input checked="" type="checkbox"/>	MMR	1/4/2006	CPT-90707
<input checked="" type="checkbox"/>	MMR	2/16/2007	CPT-90707
<input checked="" type="checkbox"/>	Novel Influe...	10/5/2009	CPT-90663
<input checked="" type="checkbox"/>	OPV	10/19/2004	CPT-90712
<input checked="" type="checkbox"/>	OPV	1/4/2006	CPT-90712

Select All Deselect All Reset

Get Registry Reconcile Return



LCC Immunization Program

- Import Registry records to Patient EMR chart

Centricity Physician Office - NOT FOR PATIENT USE - Harry S. Winston MD @ Southside Clinic (sutrain) - 3/24/2010 2:11 PM - [Chart]

Go Actions Options Help

Desktop Chart Appts Reg Reports New View Print Help EXIT

David Erickson CHECK PROTOCOLS Home: 5419374265 Work: None
57 Year Male (DOB: 06/08/1952) Patient ID: 70-TEST001 Insurance: Group:

Find Pt. Protocols Graphs Updates Desk Meds Rx-File Allergies Functions Flowchart Orders End-User

OregonAlertsImport1 : David Erickson

Download from Oregon Alerts Immunization Flowsheet

Oregon Alerts

Immunizations Add modify by hand: Modify Flowsheet

Added new observation of IPV #3: 90713 (12/11/2009 14:11)
Added new observation of HEPBVAX#5: 90731 (12/11/2009 14:11)
Added new observation of HEPVAX #2: 90633 (11/18/2006 14:11)
Added new observation of IPV #2: 90713 (01/04/2006 14:11)
Added new observation of HEPBVAX#4: 90744 (04/01/2000 14:11)
Added new observation of HEPBVAX#3: 90744 (03/01/2000 14:11)
Added new observation of HEPBVAX#2: 90744 (02/01/2000 14:11)

Prev Form (Ctrl+PgUp) Next Form (Ctrl+PgDn) Close



LCC Immunization Program

How it works:

- **Reporting**

- Uses the Cross Reference table to create an immunization report for each patient based on your system's data



LCC Immunization Program

How it works:

- **Reporting**
 - Displays immunization forecasts from state IIS registries that have a forecasting function
 - State registries provide full reporting capabilities from their database to cross reference with reports from your database



LCC Immunization Program

Report

test6.rtf - WordPad

File Edit View Insert Format Help

fswissArial 10

Name: David Erickson
DOB: 6/8/1952
Age: 693 mos (57yrs & 9mos)

Immunization History:

Vaccine Series	Vaccine Name	Date
	<DTAP #1>	1/1/0001
	<DTAP #1>	1/1/0001
D/T SERIES	TD	12/11/2009
	DTP HIB	12/11/2009
	DPT	12/11/2009
FLU	DTP HIB	12/11/2009
	FLU VAX	12/11/2009
	DTP HIB	12/11/2009
HEP A	HEP A	11/18/2006
HEP B	HEP B	2/1/2000
	HEP B	3/1/2000
	HEP B	4/1/2000
	HEP B	12/11/2009
HIB	HIB	12/11/2009
MMR	MEASLES	12/11/2009
	MMR	12/11/2009
PNEUMONIA	PNEUMOVAX	12/11/2009
POLIO	IPV	1/4/2006
	IPV	12/11/2009
	OPV	12/11/2009
	IPV	12/11/2009
VARICELLA	VARICELLA	12/11/2009

For Help, press F1

NUM



Why State Immunization Registries

- **They save money by ensuring patients get only the immunizations they need**
- **They provide a secure site of single record storage for school, day care, camp and other requirements**
- **They locate patients in low coverage communities to provide targeted intervention**



Why State Immunization Registries

- **They integrate immunization services with public health functions, such as lead and vision screening**
- **New vaccines are continuously added to the recommended immunization schedule**
- **They identify at-risk patients in the event of disease outbreaks or natural disasters**



Why State Immunization Registries

- **There are approximately 4 million births/yr**
- **By age 2, children will need up to twenty vaccines**
- **Roughly 21% of children are over-immunized**
- **Roughly 2.1 million children are under-immunized and are at risk for disease**
- **Approximately 22% of children see two immunization providers in their first 2 years of life, making it difficult to track records**



Benefits of State Immunization Registries

For Physicians:

- **Allows providers to stay focused on patient care**
- **Provides a consistent method for accurately assessing the immunization status and current needs of patients**
- **Facilitate disease prevention with accurate and timely immunization records for each patient**



Benefits of State Immunization Registries

For Patients:

- **Reduces over-vaccination of new patients**
- **Relieves burden of keeping track of immunizations due and received**
- **Tracks outcomes (reactions) and contacts in case of recalls**
- **Sends out reminders to patients**



Benefits of State Immunization Registries

For RNs, PAs, NPs, and other Providers:

- **Flags high-risk patients for timely annual influenza, pneumonia and other vaccinations**
- **Streamlines immunization processes, saving time and money**
- **Increases immunization data quality and completeness**



Benefits of State Immunization Registries

For RNs, PAs, NPs, and other Providers:

- **Generates timely immunization reports (e.g. HEDIS, CASA and other quality improvement initiatives)**
- **Allows expeditious tracking of vaccines in case of shortages and during manufacturer recalls**



Benefits of State Immunization Registries

For Office Managers:

- **Saves staff time pursuing immunization histories from previous providers**
- **Tracks administered vaccines to ensure proper reimbursement from health plans and state agencies**
- **Provides official documentation of vaccination histories, reducing over-vaccination of new patients**



Benefits of State Immunization Registries

For Office Managers:

- Automates vaccine inventory, expediting ordering procedures
- Calculates immunizations needed in accordance with the latest ACIP vaccine recommendations and intervals



Benefits of State Immunization Registries

For the Country:

- **Helps decrease healthcare costs with better control of immunization requirements for patients**
- **Helps track regional/national trends of immunization effectiveness**
- **Helps decrease healthcare costs by flagging high-risk patients for timely annual influenza, pneumonia and other vaccinations.**



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Questions?