



Development and Implementation of Immunization Certificate Validation Tool (ICVT)

Brian K. Moore

**Immunization Registry Unit Manager
2013 American Immunization Registry
Association Conference**

Development and Implementation of Immunization Certificate Validation Tool



- * What is ICVT? Software application built on .NET designed to:
 - * Produce a complete Official TN Immunization Certificate (IC) that does not require the signature of a healthcare provider when records pass validation process
 - * Compare patient's record in the immunization registry against TN immunization requirements for pre-school or school attendance
 - * Validate immunization records that meet the state's pre-school and school requirements as "passed"
 - * Identify needed vaccines, if record fails validation process

Development and Implementation of Immunization Certificate Validation Tool



- * Why we created ICVT
 - * To give non-physician health care providers ability to generate complete ICs for parents
 - * To streamline the process of ensuring appropriate immunization prior to school entry
 - * To save time and eliminate frustration for health care providers, parents and school personnel seeking to ensure that immunization requirements are met

Development and Implementation of Immunization Certificate Validation Tool



- * Why we created ICVT
 - * Provide Clinical Decision Support, Reliable Quality
 - * Verify valid doses of vaccines
 - * Identify invalid doses of vaccine
 - * Give providers an indication of needs, if any
 - * Provide School/Pre-School Use Support
 - * Relieves school personnel from arguing with providers about interpretation of state requirements
 - * Requires no further review by the school staff
 - * Shows parents a child's vaccine needs, if invalid

Development and Implementation of Immunization Certificate Validation Tool



- * Use ICVT when ICs are required for:
 - * Child care enrollment
 - * Pre-school enrollment
 - * Kindergarten enrollment
 - * First time enrollment in TN schools in grades other than kindergarten
 - * Entry into 7th grade (Tdap, 2nd varicella only)

Development and Implementation of Immunization Certificate Validation Tool



- * Legal basis: TN Department of Health (TDH) rule 1200-14-01-.29
 - * ICs must be signed by a DO, MD, APN, PA or local health department.
 - * TDH adopts the recommended immunization schedule or the “catch-up” immunization schedule (when applicable), published by the ACIP of the U.S. Centers for Disease Control and Prevention (CDC).

Development and Implementation of Immunization Certificate Validation Tool



- * Legal basis: TDH rule 1200-14-01-.29
 - * TDH shall publish an official Certificate of Immunization.
 - * The Certificate may include spaces to record vaccinations which are routinely recommended but not required by law.
 - * Certificates shall be available online to authorized users of the Tennessee Web Immunization System (TWIS) or in hard copy format.

Development and Implementation of Immunization Certificate Validation Tool



- * Legal basis: TDH rule 1200-14-01-.29
 - * A signed certificate certifies adequate immunization
 - * In lieu of vaccination, laboratory evidence of immunity or a history of disease for some diseases may be noted by a physician, advance practice nurse, physician's assistant or health department
 - * School staff (Department of Education) are required to verify that students meet the requirements

Development and Implementation of Immunization Certificate Validation Tool



- * Who can use ICVT:
 - * Primary care providers (all physicians, physician assistants and advanced practice nurses or office staff in those offices)
 - * Local health department (LHD) staff
 - * Pharmacies
 - * School Nurses and school office staff

Development and Implementation of Immunization Certificate Validation Tool



- * How it works, continued.
 - * Driven by an immunization schedule “matrix” formulated to address current ACIP recommendations and required intervals, state day care, pre-school and school requirements
 - * ICVT evaluates only data contained in TN immunization registry
 - * Records containing medical or religious exemptions cannot be validated by the ICVT

Development and Implementation of Immunization Certificate Validation Tool



- * Prepopulates the state's Official IC
 - * Patient demographics
 - * Immunization dates reported to the immunization registry
 - * History of chicken pox disease
 - * User facility name, address and phone number
 - * Validation date
 - * Randomly generated validation number

Development and Implementation of Immunization Certificate Validation Tool



PRINT

Use required on or after July 1, 2010.

Tennessee Department of Health

CERTIFICATE OF IMMUNIZATION

BFP, PHARM031C

Child's Name (Last name, first name, middle) _____

Birthdate (mm/dd/yy) **5/20/2002**

Parent/Guardian Name (Last name, first name, middle) _____

Phone (please include area code xxx-xxx-xxxx) _____

123 MAIN STREET,

Address _____

NASHVILLE , TN 12345

City _____ State _____ Zip Code _____

Section 1a. Religious Exemption ☐

☐ Check here if religious exemption to immunization selected by parent/guardian

1b. Health Examination Documentation (if required)

☐ This child has been examined: MM / DD / YY _____

Certified by (Signature/Stamp) _____

1c. Check if needed

☐ Dental Screening

☐ Vision Screening

Unless specifically exempted by law, Tennessee law requires a certificate on file for each child in attendance in any school or child care facility in Tennessee. Detailed instructions for this form and explanation of requirements are in "Instructions for Completion of Immunization Certificates" and the "Official Immunization Schedule" at the Tennessee Department of Health website (<http://health.state.tn.us/CEDS/required.htm>) and on the Tennessee Web Immunization System.

VACCINE	DATE MM / DD / YY	DATE MM / DD / YY	DATE MM / DD / YY	DATE MM / DD / YY	DATE MM / DD / YY	DATE MM / DD / YY	Diagnosed (YY)	Serology (YY)	History (YY)	Medical Exemption (X)
Section 2a. Required Vaccines for School or Child Care Attendance (Dates Required)										
Hib <small>Child Care Only (<5 years)</small>										
Pneumococcal (PCV) <small>Child Care Only (<5 years)</small>										
DTP, DTaP, DT, Td	07/20/2002	09/20/2002	11/20/2002	05/25/2006						

Development and Implementation of Immunization Certificate Validation Tool



Unless specifically exempted by law, Tennessee law requires a certificate on file for each child in attendance in any school or child care facility in Tennessee. Detailed instructions for this form and explanation of requirements are in "Instructions for Completion of Immunization Certificates" and the "Official Immunization Schedule" at the Tennessee Department of Health website (<http://health.state.tn.us/CEDS/required.htm>) and on the Tennessee Web Immunization System.

VACCINE	DATE MM / DD / YY	DATE MM / DD / YY	DATE MM / DD / YY	DATE MM / DD / YY	DATE MM / DD / YY	DATE MM / DD / YY	Diagnosed (Y)	Genital (Y)	Habit (Y)	Medical Exemption (X)
Section 2a. Required Vaccines for School or Child Care Attendance (Dates Required)										
Hib Child Care Only (<5 years)										
Pneumococcal (PCV) Child Care Only (<5 years)										
DTP, DTaP, DT, Td	06/15/2000	08/15/2000	10/15/2000	05/20/2001						
Poliomyelitis	06/15/2000	08/15/2000	10/15/2000	11/13/2012						
<input type="checkbox"/> Hepatitis B Check here if 11-15 years 2-dose schedule used	04/15/2011	08/20/2011								
<input type="checkbox"/> Hepatitis A Child Care Effective 7/2010 Kindergarten Effective 7/2011										
Measles	05/20/2001	11/13/2012								
Mumps	05/20/2001	11/13/2012								
Rubella	05/20/2001	11/13/2012								
Varicella	05/20/2001	11/13/2012								
Tdap Booster 7 th Grade Entry Only	11/13/2012									
2b. Recommended Vaccines (Documentation Optional)										
Rotavirus										
Influenza										
Meningococcal										
HPV	09/16/2012	10/15/2012								
Section 3. Provider Assessment (✓select one*, not valid if blank)										
<input type="checkbox"/> A) Temporary Certificate - Expires MM / DD / YYYY Expiration date one month after date next catch-up immunization is due.										
<input type="checkbox"/> B) Up to Date for Child Care Entry and <18 Months of Age Only if requirements incomplete, but up to date for age. Expires at 19 months of age.										
<input type="checkbox"/> C) Complete for Child Care / Pre-School* Fulfills all requirements for child care / pre-school or pre-K under 5 years of age.										
<input type="checkbox"/> D) Complete K-6 th Grade* Fulfills requirements, Kindergarten through 6 th grade.										
<input checked="" type="checkbox"/> E) Complete 7 th Grade or Higher Fulfills requirements, 7 th grade or higher.										
*If age 4 years and fulfills requirements for Pre-School and Kindergarten, check BOTH Boxes C and D.										
Section 4. (Required) Printed or Stamped Name, Address, Phone of Qualified Healthcare Provider (MD, DO, PA, Advanced Practice Nurse or Health Department): Central Office TDH Cordell Hull Building, 425 5th Avenue N., Nashville, TN 37247 (617) 417-5077							Validated by the TN State Immunization Information System 8 30 2013 Certified by (Signature/Stamp) Date of Issue Certificate ID: 000999c8oxJLBdOw-6 RDA-N/A			

PH-4103 (Rev. 4/13)

Development and Implementation of Immunization Certificate Validation Tool



* Passed ICVT Validation Report

Tennessee Web Immunization System 7:00 AM to 11:00 PM Central Time
Back Print Contact Help Logout

[Back](#)

**Tennessee Department of Health Immunization Registry
Official Immunization Certificate Automated Validation Assessment
[PASS]**

Box B: Up to Date for Child Care Entry and < 18 Months of Age					
Certificate Information				Validation Information	
Enrollee Name:		DOB:	Report Date:	Summary Result:	
CERTTEST101 JHB		1/20/2013	7/15/2013	PASS	
Vaccine Type	Required Doses	Doses Recorded in Registry	Valid Doses	Reason for Invalid Doses Min. Age Min. Int	
DTP/DTaP/DT [Passed] (101)	2	03/05/2013	1		
		07/10/2013	2		
Hep B (Hepatitis B) [Passed] (103)	2	01/20/2013	1		
		03/05/2013	2		
HIB [Passed] (104)	2	03/05/2013	1		
		07/10/2013	2		
IPV (Polio) [Passed] (111)	2	03/05/2013	1		
		07/10/2013	2		

Development and Implementation of Immunization Certificate Validation Tool



* Failed ICVT Validation Report

Tennessee Web Immunization System Back Print Contact Help Logout

[Back](#)

**Tennessee Department of Health Immunization Registry
Official Immunization Certificate Automated Validation Assessment
[FAIL]**

Box D: Complete K-6th Grade (Entering Kindergarten)					
Certificate Information			Validation Information		
Enrollee Name:		DOB:	Report Date:	Summary Result:	
CERT102 JHB		12/2/2006	7/15/2013	FAIL	
Vaccine Type	Required Doses	Doses Recorded in Registry	Valid Doses	Reason for Invalid Doses Min. Age Min. Int	
DTP/DTaP/DT [Passed] (301)	5	01/20/2007	1		
		02/15/2007	2		
		05/30/2007	3		
		12/05/2010	4		
		01/15/2012	5		
Hep A (Hepatitis A) [Failed] (304)	2	11/15/2007	Not Valid	X	
		01/15/2008	1		
Hep B (Hepatitis B) [Passed] (305)	3	12/02/2006	1		
		01/20/2007	2		
		05/30/2007	3		
IPV (Polio) [Passed] (306)	4	01/20/2007	1		
		02/15/2007	2		
		05/30/2007	3		
		01/15/2012	4		
MMR (MMR Vaccine) [Failed] (309)	2	12/15/2008	1		
		01/05/2009	Not Valid		X
VAR (Varicella Vaccine) [Failed] (309)	2	12/15/2008	1		
		01/05/2009	Not Valid		X

AgeByDays: 2417

Development and Implementation of Immunization Certificate Validation Tool



- * How often is ICVT being used in its pilot year?
- * Analysis of the ICVT Tables as of August 7, 2013:
 - * **128,973** children had ICVT run on their registry record
 - * **3,070** different users ran the ICVT on a child's record
 - * **14,917** children had a record that failed validation before receiving a validated certificate, indicating the record was updated or corrected after the failed report and the ICVT was re-run

How many records have been evaluated, and what were results?

Validation Criteria	Validation Status		
	Passed (%)	Failed (%)	Total
Up-to-Date for Age and is < 18 Months of Age	5,769 (50.8)	5,586 (49.2)	11,355
Meets Child Care/Preschool Requirements and is ≤ 5 Years of Age	21,473 (59.3)	14,748 (40.7)	36,221
Meets Kindergarten Requirements	18,047 (51.0)	17,334 (49.0)	35,381
Meets 1st through 6th Grade Requirements; Student New to Tennessee Schools	13,940 (69.0)	6,273 (31.0)	20,213
Meets 7th Grade Requirements; Student New to Tennessee Schools	2,429 (34.6)	4,585 (65.4)	7,014
Meets 7th Grade Requirements; Student Returning to Tennessee Schools	20,040 (61.6)	12,513 (38.4)	32,553
Meets 8th through 12th Grade Requirements; Student New to Tennessee Schools	7,677 (53.9)	6,568 (46.1)	14,245
Meets Child Care/Preschool Requirement and is ≤ 5 Years of Age as well as Meets Kindergarten Requirements	6,875 (100)	0 (0)	6,875

Development and Implementation of Immunization Certificate Validation Tool



- * ICVT may have been run on an individual child several times and for several different validation criteria
- * In the previous table a child ≤ 5 years of age could have their record validated more than once and would be counted twice
 - * Failed on initial run
 - * Run again after record was updated

Development and Implementation of Immunization Certificate Validation Tool



- * Lessons Learned

- * Creation of the ICVT required many trials at every level
 - * E.g., 14 major iterations of the matrix driving calculations were necessary to validate the record
- * Special consideration needed for development of validation instructions for HIB, PCV and IPV vaccines due to variations in doses necessary for immunization catch-up schedules based on age
- * Beta testing identified unknown and suspected deficiencies

Development and Implementation of Immunization Certificate Validation Tool



- * Lessons Learned: User feedback and increased use of TWIS
 - * Capacity – heavy use of the tool revealed capacity issues with the system's processing
 - * Calculation – issues regarding calculation of validity of HIB, PCV and IPV vaccines identified
 - * Help Desk Readiness – heavy use increased help desk traffic and had an impact on response time
 - * User education needed – some user reported problems identified the need for additional education about the immunization schedule and the state requirements, not just the ICVT

Development and Implementation of Immunization Certificate Validation Tool



- * ICVT Benefits for the Immunization Registry:
 - * Over 2,700 new users added from April 15th to August 30th
 - * Over 30 school districts added or re-enrolled from April 15th to August 30th
 - * Over 225 new pharmacy locations added since April 15th
 - * Registry traffic increased >20%
 - * More facilities wanting interfaces with the registry

Development and Implementation of Immunization Certificate Validation Tool



* Contributors

Kelly Moore, M.D., MPH, Director, Tennessee Immunization Program

Brian Moore, B.S., Immunization Registry Unit Manager, Tennessee Immunization Program

Becky Pearsall, RN-BC, RHIA, CPHQ Adolescent and Adult Immunization Coordinator, Tennessee Immunization Program

Rami Abuhamdeh, Principal, B.S. BCS HealthCare

Mohsen Ghandi, B.S., Senior Program Developer, BCS HealthCare

Joe Beaver, B.S., Immunization Consultant, BCS HealthCare

Development and Implementation of Immunization Certificate Validation Tool (ICVT)



Brian K. Moore

Immunization Registry Unit Manager

brian.k.moore@tn.gov

615-741-4908