



OSHHPD Patient-Level Data Submission Improvement Project

Final Report and Recommendations

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PROJECT BACKGROUND



- GOAL: Study how to improve the quality of patient-level data submitted to OSHPD
- PROJECT PERIOD: April - June 2000
- DELIVERABLES:
 - Prepare “flow maps” for required data elements
 - Identify where breakdowns occur
 - Recommend improvements to fix breakdowns

ACKNOWLEDGEMENTS



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- Bruce Davidson, Alein Chun, Stephen Philp, Alex Pakalniskis
Resource & Outcomes Management

PROJECT RATIONALE



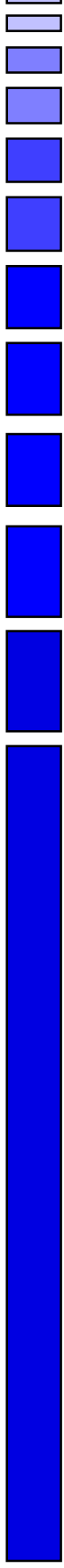
- OSHPD requires submission of 31 data elements for each patient discharge every 6 months
- State establishes specifications for quality, yet our submissions are regularly rejected due to errors
- The State has begun to levy monetary fines for non-compliance with established specifications
- Since these 31 data elements are at the heart of almost all our internal efforts to analyze patient care for management and strategic purposes, these errors compromise our decision-making as an institution

OSHPD DATA ELEMENTS



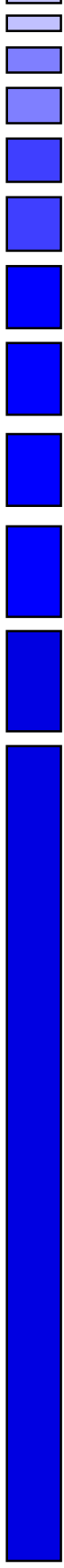
- Patient's Type of Care
- Hospital ID
- Date of Birth
- Sex
- Race/Ethnicity
- Race/Race
- Zip Code
- Admission Date
- Source of Admission/Site
- Source of Admission/Licensure
- Source of Admission/Route
- Type of Admission
- Discharge Date
- Principal Diagnosis
- Principal Diagnosis at Admission
- Other Diagnoses
- Other Diagnoses at Admission
- Principal Procedure Code
- Principal Procedure Date
- Other Procedure Codes
- Other Procedure Dates
- Principal E-Code
- Other E-Codes
- Patient's Social Security Number
- Disposition of Patient
- Total Charges
- Abstract Record Number (Optional)
- DNR Order
- Expected Source of Payment/Payer Category
- Expected Source of Payment/Type of Coverage
- Expected Source of Payment/Plan Code Number

PROJECT BENEFITS



- Eliminate wasteful re-work in correcting errors
- Avoid monetary penalties imposed by the State
- Provide a jump start on cleaning up high-priority data elements needed for CS decision-making
- Contribute to federally mandated Corporate Compliance program
- Support our achievement of required JCAHO standards related to Management of Information

COST-BENEFIT CONSIDERATIONS



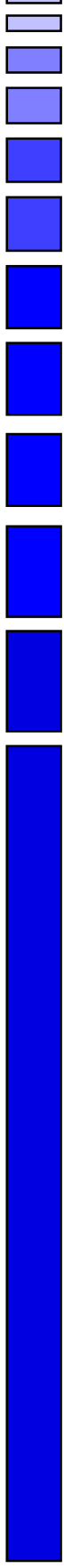
- Ongoing annual labor allocation to make needed corrections could be redirected if submissions met specifications.
 - about 1,000 to 1,200 person-hours saved
- Existing annual labor allocation to OSHPD Working Group for actively managing submissions should be maintained.
 - about 200 person-hours continues to be needed

PROJECT APPROACH

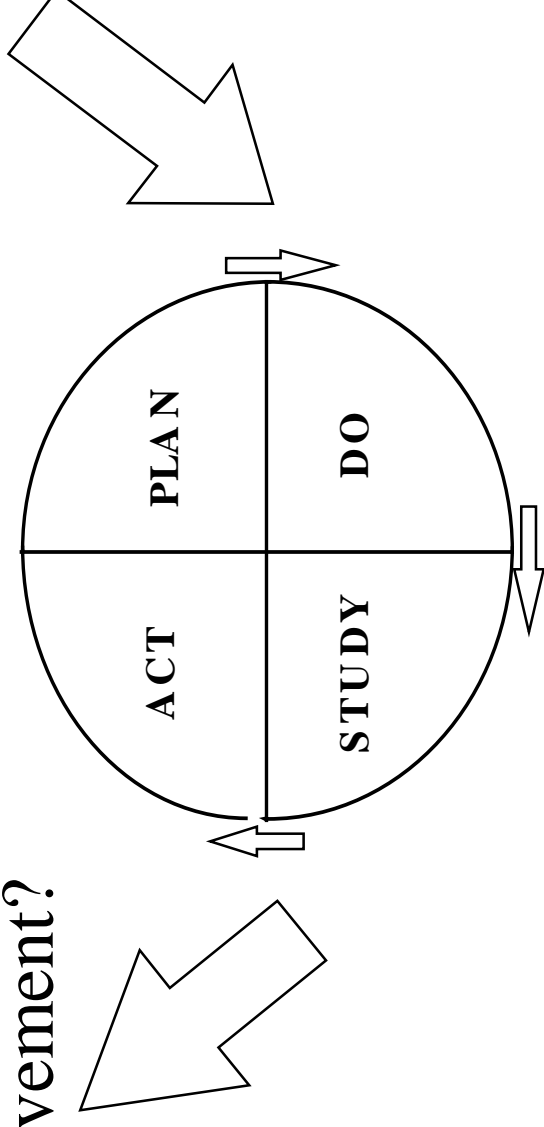


- Manage information as a product
 - Understand the customer's information needs
 - Manage information as the product of a well-defined production process
- Adopt and adapt classical PI principles
- Deliver quality information products to customers

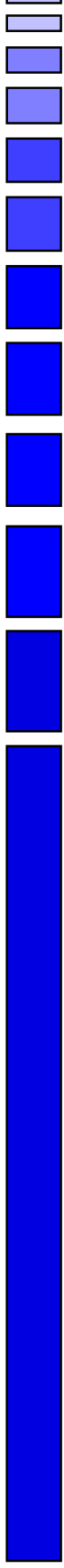
Approach: The Model for Improvement



- What are we trying to accomplish? (Aims)
- How do we know that change is an improvement?
- What changes can we make that will result in an improvement?

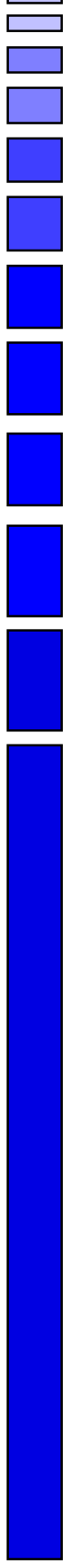


Approach: Background Interviews



- Include all areas involved: information producers, custodians, and users
- Record descriptions of data flow and issues from each participant's point of view
- Collect as much official background documentation to evaluate as possible

Approach: Documents Evaluated



- OSHPD Patient Discharge Reporting form
- SMS Manual for OSHPD tape layout
- OSHPD Edit Criteria Handbook
- OSHPD Rejection Reports
- PMOC, CASCADE, and SMS data entry protocols
- Patients' Medical Records

KEY RESULTS



- 1 Developed “flow maps” for all 31 required patient-level discharge data elements
- 2 Analyzed error history of previous five OSHPD data submissions
- 3 Improved current submission process through development of in-house audit
- 4 Identified additional process improvements needed to fully meet State requirements

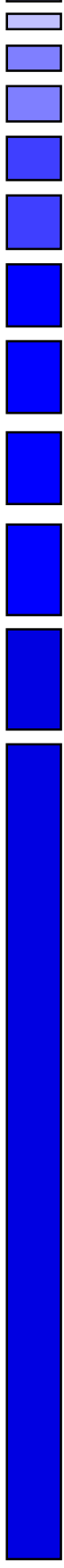
RECOMMENDATIONS



- 1 Actively manage OSHPD submission cycles to implement improvement mechanisms needed to achieve State requirements for each data element
- 2 Initiate pilot to develop capability for in-house data submission
- 3 Store all OSHPD-required data elements in a single repository (DW?)

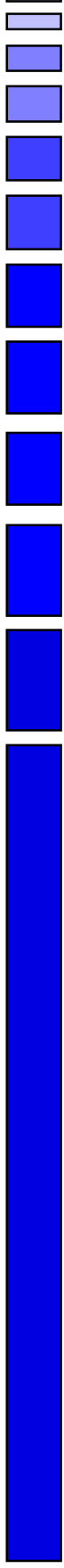
Key Result #1:

Data Flow Maps (1)



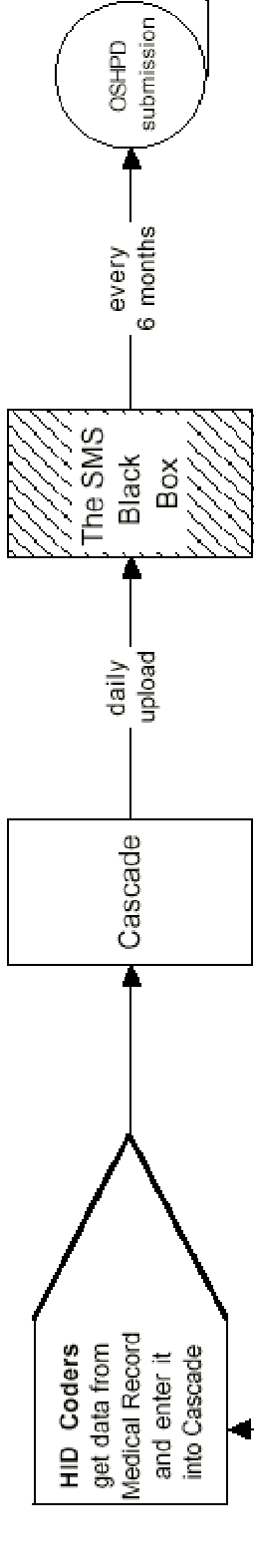
- Cross-functional approach
- Each data element as unit of analysis
- Data flow from source to final destination
- Multi-level analysis of data flow
 - department
 - physical location
 - information system
 - business process

Key Result #1: Data Flow Maps (2)



- CASCADE Data Elements
- PMOC Data Elements
- SMS Data Elements

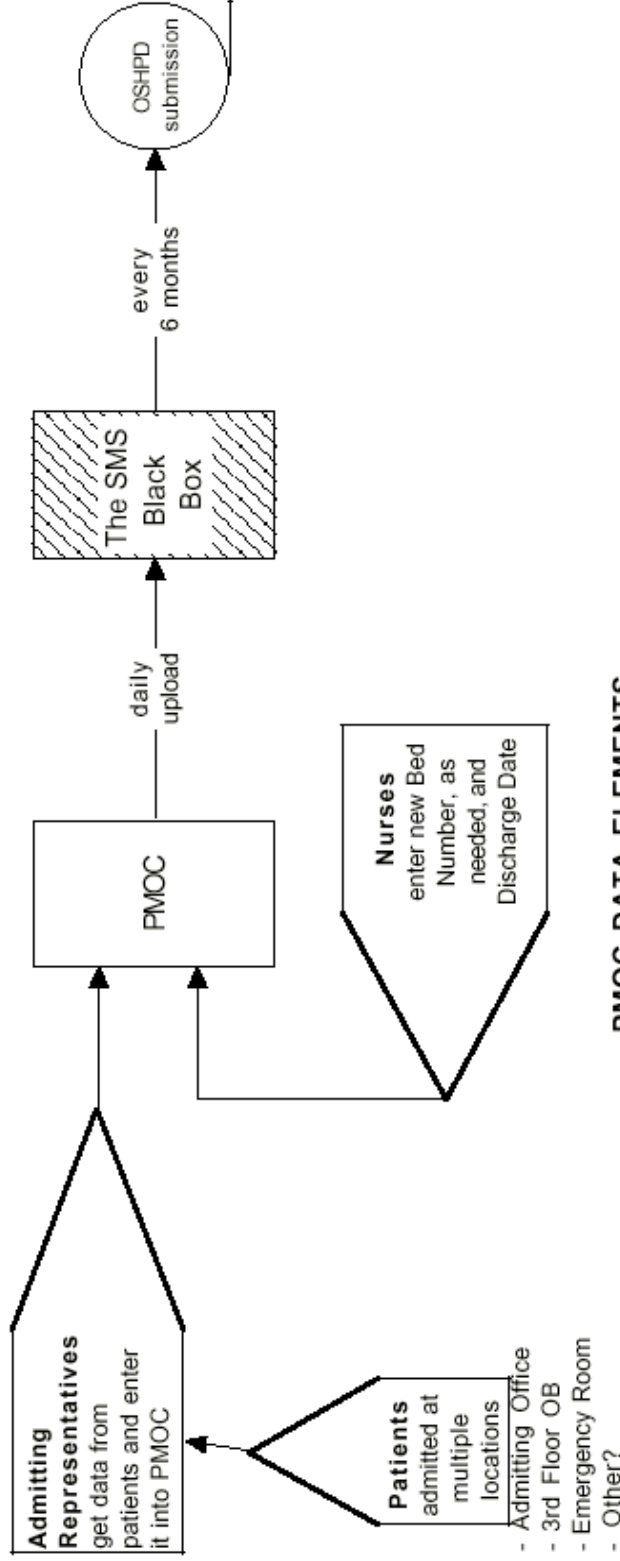
OSHPPD DATA PRODUCTION FLOW DETAIL: Cascade Data Elements



CASCADE DATA ELEMENTS

- Principal Diagnosis
- Principal Diagnosis at Admission
- Other Diagnoses
- Other Diagnoses at Admission
- Principal Procedure Code
- Principal Procedure Date
- Other Procedure Codes
- Other Procedure Dates
- Principal E-codes
- Other E-codes
- Disposition
- DNR

OSHPD DATA PRODUCTION FLOW DETAIL: PMOC Data Elements



PMOC DATA ELEMENTS

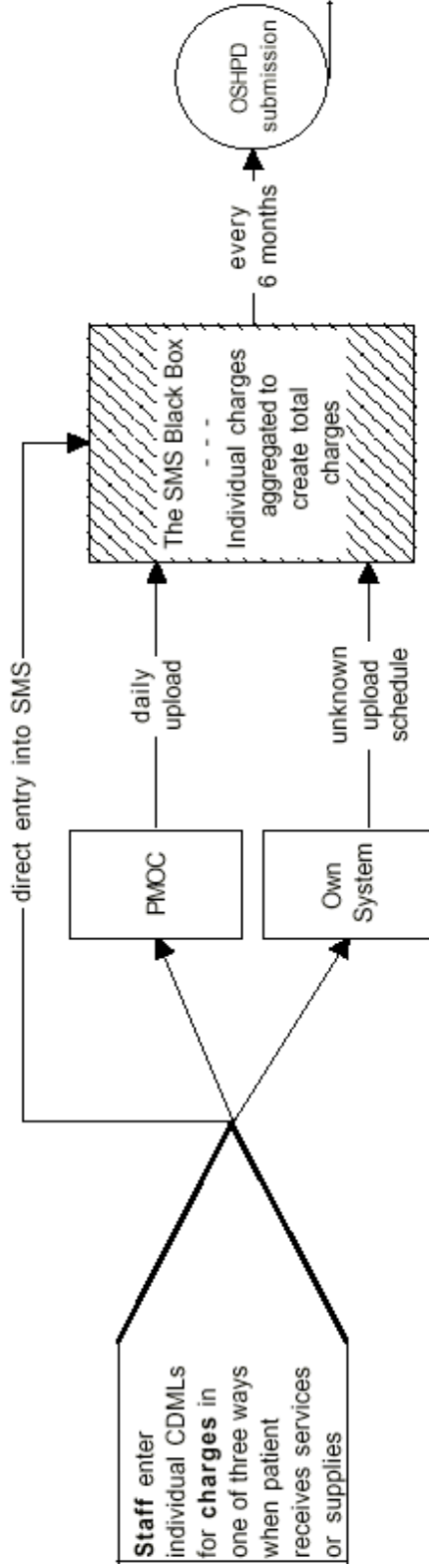
ENTERED BY ADMITTING REPRESENTATIVES

- Bed Number at admission (transformed to Type of Care)
- Social Security Number
- Abstract Number
- Date of Birth
- Sex
- Race/Ethnicity
- Race/Race
- Zip Code
- Admission Date
- Admission Source/Site (also transformed to Type of Admission)
- Admission Source/Licensure
- Admission Source/Route
- Third Party & Plan Number (transformed to Expected Source of Payment (Payor Category; and Plan Code #))

ENTERED BY NURSES

- Bed Number if it changes (transformed to Type of Care)
- Discharge Date

OSHDP DATA PRODUCTION FLOW DETAIL: SMS Data Elements



SMS DATA ELEMENTS

- Hospital ID (hard coded)
- Total Charges (aggregated from individual charges)

Key Result #2:

Analyzed Error History (1)



- OSHPD submissions evaluated two ways
 - On the basis of individual data elements
 - On the basis of logical relationships
- Submission is rejected if any individual data element does not meet State error tolerance
- Submission is rejected if specific logical relationships between elements are violated

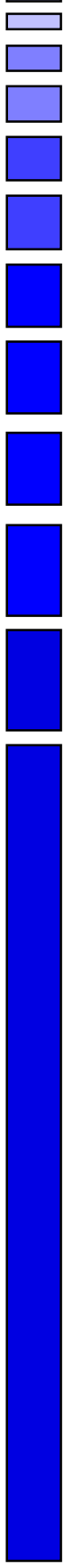
Key Result #2: Analyzed Error History (2)



Discharge Data Error Tolerance Levels (May 1998)

Data Element	Error Tolerance Level
Date of Birth	0.1%
Sex	0.1%
Race	5.0%
ZIP Code	5.0%
Social Security Number	0.1%
Admission Date	0.1%
Source of Admission	5.0%
Type of Admission	5.0%
Discharge Date	0.1%
Principle Diagnosis	0.1%
Principal Diagnosis – Present at Admission	0.1%
Other Diagnoses	0.1%
Other Diagnoses – Present at Admission	0.1%
External Cause of Injury	0.1%
Principal Procedure Code	0.1%
Principal Procedure Date	1.0%
Other Procedures Codes	0.1%
Other Procedures Dates	1.0%
Total Charges	0.1%
Disposition of Patient	1.0%
Expected Principal Source of Payment	0.1%

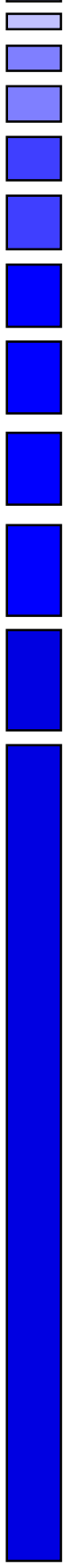
Key Result #2: Analyzed Error History (3)



Data Elements Exceeding State Tolerance Levels

Reporting Period	Data Element	State Tolerance	CS Error Level	Records Affected
1/95 – 12/96	Race/Ethnicity	5.0%	>5.0%	>1000
7/96 - 12/96	Source of Admission	5.0%	>25%	>6000
1/97 - 6/97	Race/Ethnicity	5.0%	6.26%	1432
	Social Security Number	0.1%	0.18%	41
7/97 – 12/97	Social Security Number	0.1%	0.17%	41
1/98 – 6/98	Source of Admission	5.0%	26.7%	6404
	Social Security Number	0.1%	0.19%	45
7/98 – 12/98	Other Procedures	0.1%	14.1%	3318
	Social Security Number	0.1%	0.18%	44
1/99 – 6/99	Expected Source of Payment (type of coverage)	TBD	1.4%	335
	Expected Source of Payment (plan number)	TBD	0.46%	112

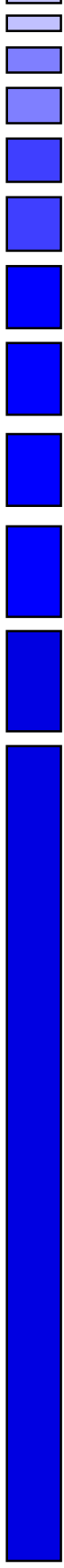
Key Result #2: Analyzed Error History (4)



Reviewed Past Ad-Hoc Improvement Efforts

Data Element	Reporting Period	Improvement made
SSN	1/97-12/98	SMS audit report (PFS, 1998 initiated, used by Admitting in 1999)
Race	1/95-12/97	Re-code "Unknown" to "Non-Hispanic"
Source of Admission	7/96-12/96 - "11#" 1/98-6/98 - "0##"	Ad hoc training to correct data entry habits, e.g., "0##" and "11#" data combination. However, "11#" reappeared in 7/98-12/98
Other Procedures	7/98-12/98	Block CPT4 codes from entering into SMS/OHSPD file
Expected Source of Payment	1/99-6/99	New category, ROM audit report initiated in 2000
DNR	1/99-6/99	Work with OSPHD prior to submission

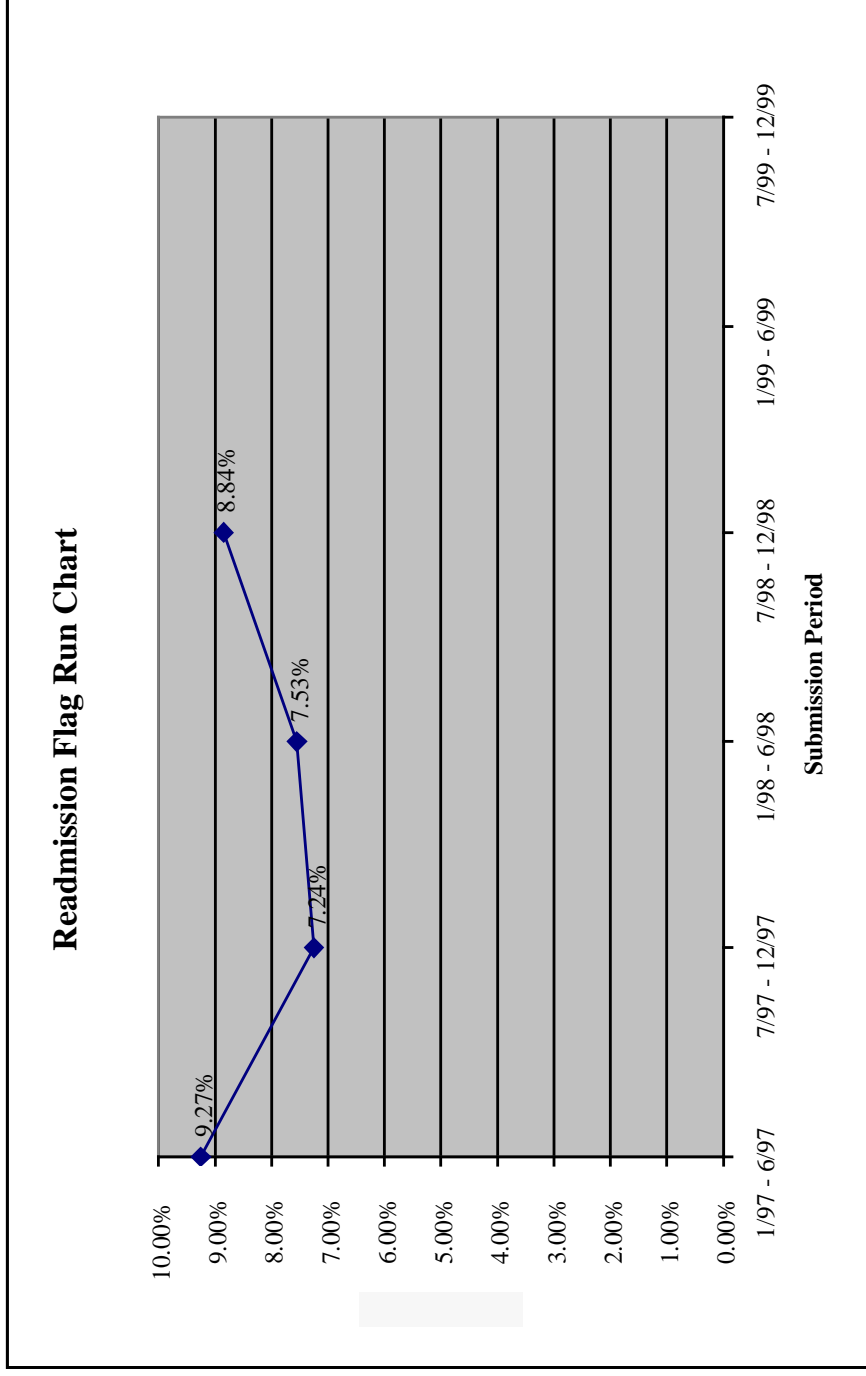
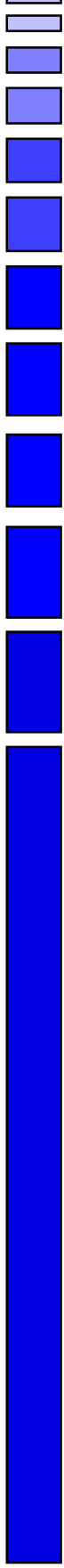
Key Result #2: Analyzed Error History (5)



Logical Inconsistency Flags

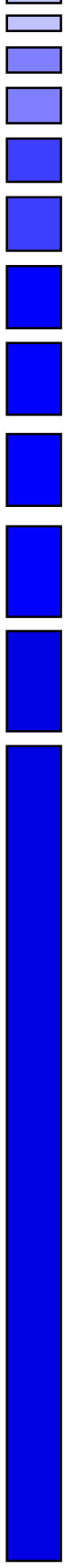
- K-Flags indicate inconsistencies between multiple records for individual patients' re-admissions, and can result in rejection
 - “Must be corrected to the error tolerance levels established for each data element”
- V-Flags indicate inconsistencies in medical records coding, but do NOT result in rejection

Key Result #2: Analyzed Error History (6)



Key Result #3:

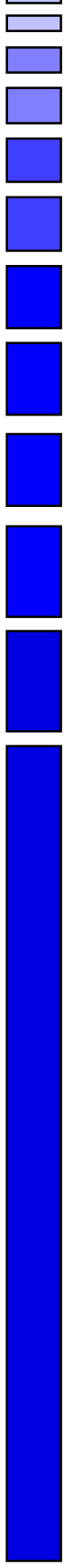
Improved Current Process (1)



- Obtained audit criteria handbook and source codes in COBOL from State
- Developed three audit programs in SAS
 - Admissions/readmissions
 - Expected Source of Payment
 - Problem DRGs
- Ordered test OSHPD tape from SMS

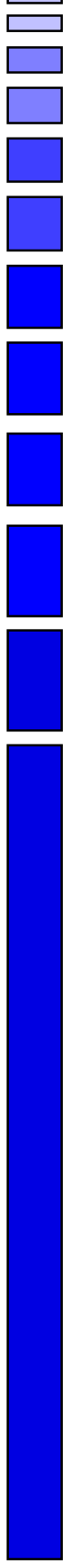
Key Result #3:

Improved Current Process (2)



- Produced and distributed reports of possible errors to Admitting, PFS & HID
- Possible errors reviewed and actual errors corrected by above departments
- Corrections submitted to SMS by PFS
- Ordered second OSHPD tape from SMS to verify that correction process worked
- Submitted tape to State directly from CS

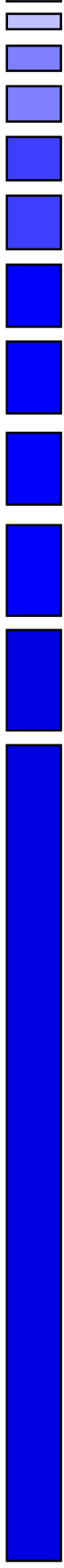
Key Result #4: Further Improvements Needed (1)



Focus on Data Flow Issues

- **Modify data flow**
 - Hospital Service Code for Patient Type instead of Bed #
- **Repair data flow**
 - Payor Group for Expected Source of Payment instead of Financial Class
- **Rebuild data flow**
 - Incorporate all OSHPD requirements into new PCX system, both for data entry standards and routine audit procedures

Key Result #4: Further Improvements Needed (2)

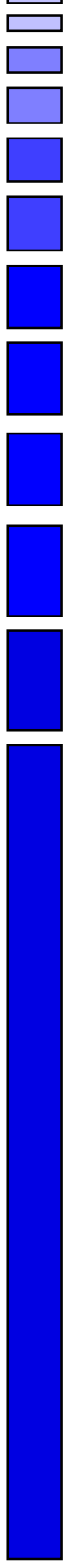


Follow Established PI Principles

- **Synchronize and minimize handoffs**
 - Can HID and Admitting make corrections directly?
- **Avoid potential ambiguities**
 - Try not to recycle dormant fields for new need
 - SMS Smoking Indicator field recycled for DNR
 - Try not to feed one field from multiple sources
 - PMOC Smoking Indicator field and Cascade DNR field both pointed towards recycled SMS Smoking Indicator field

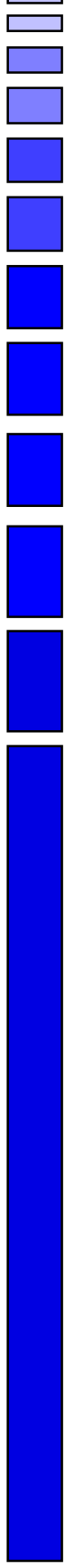
Recommendation #1: Manage

OSHDP Submission Cycles



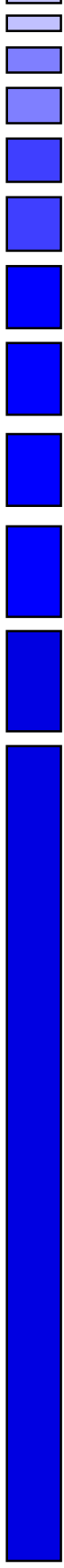
- Share knowledge gained to actively manage ongoing data submission improvement by linking error reports to improvement goals
- Prepare for changes likely due to State regulations and CS systems upgrades
- Establish monthly in-house data production and audit schedule for timely corrections and to monitor improvement progress

Recommendation #2: Pilot In-House Submission Capability



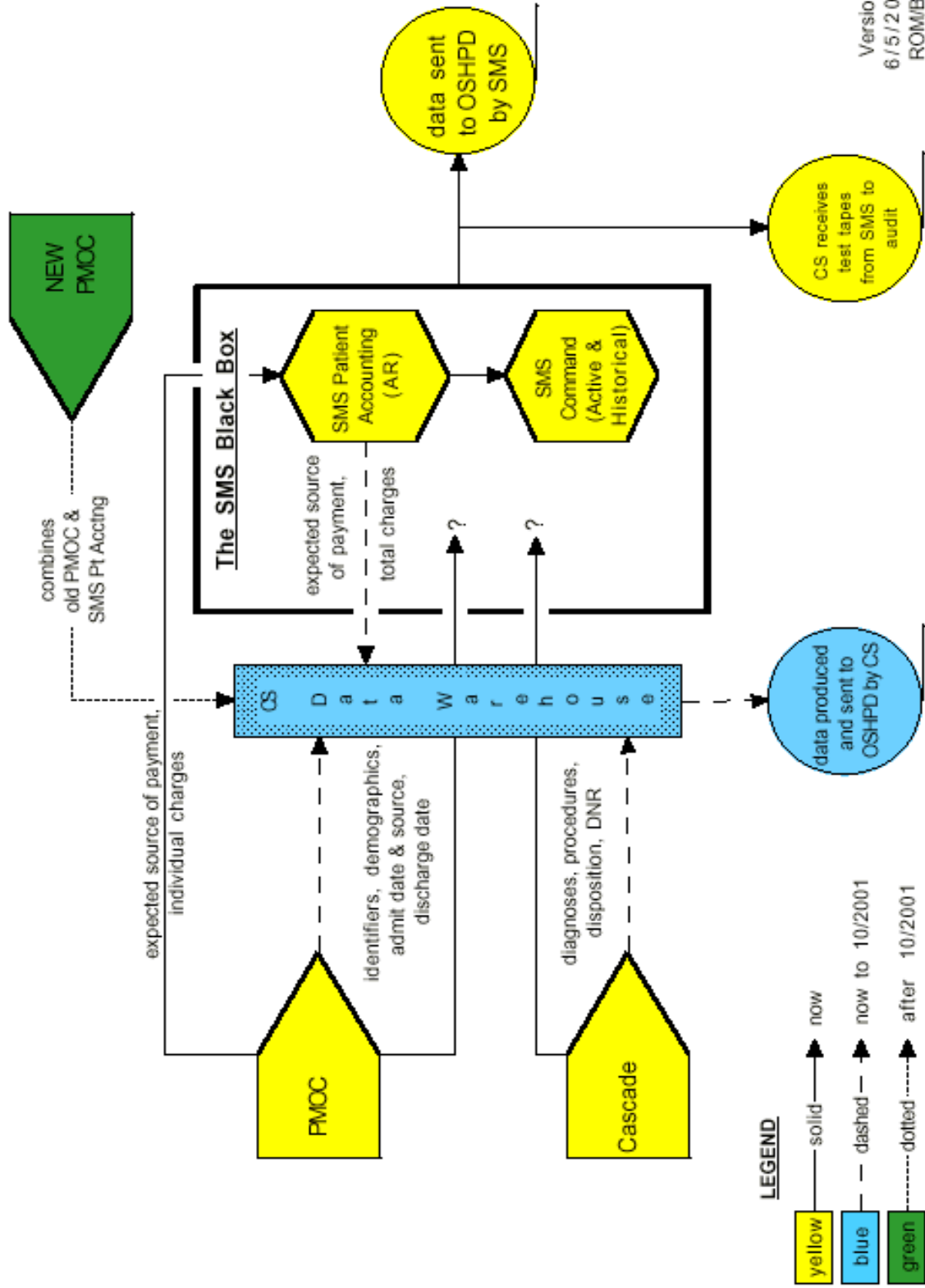
- Work with CS source system experts to create crosswalks for OSHPD data elements
- Extract data elements from CS data warehouse, Cascade, and PMOC
- Construct data submission file in-house
- Audit in-house data submission file using previously developed programs

Recommendation #3: Store all OSHPD elements in single place



- Reduces need to integrate data from multiple sources for in-house production
 - Increases efficiency and timeliness
 - Eliminates one potential source of errors
- Makes logical sense to store all OSHPD-required data elements in CS data warehouse as central institutional repository
- Example migration plan on following slide

DATA PRODUCTION FLOW OVERVIEW: OSHPD Patient-Level Data Submission

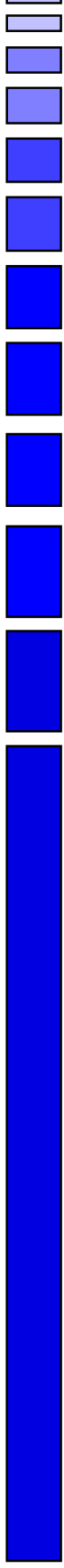


OSPHD Submission Schedule



OSHPD Patient-level Discharge Data for Period	Due by (Mode of Transmission)
Jul – Dec, 1999	Jun 30, 2000 (Tape)
Jan – Jun, 2000	Sep 30, 2000 (Tape)
Jul – Dec, 2000	Mar 31, 2001 (Tape)
Jan – Jun, 2001	Sep 30, 2001 (On-line)
PCX anticipated to go live on Oct 1, 2001	
Jul – Dec, 2001	Mar 31, 2002 (On-line)

Specific Action Items



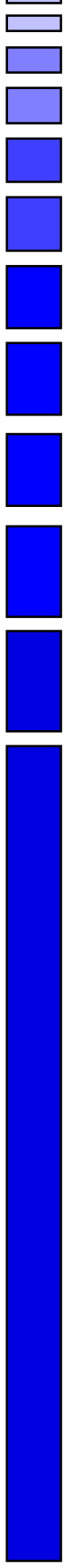
- Write all remaining auditing programs, based on State's Editing Criteria Handbook, so all potential errors are flagged
- Build monthly OSHPD file for Admitting Office, HID, and PFS to audit and correct errors
- Develop in-house pilot OSHPD file, send to State for approval
- Work with EIS to store all OSHPD data elements in DW
- Continue work with OSHPD Working Group to implement all procedures, methods, and measures needed to manage OSHPD data to meet State's requirements
- Develop incentives and accountability for OSHPD stakeholders
- Store all information on OSHPD reporting on Data Quality website for easy reference

Proposed Timeline



Task	Exceeds Expectation	Meets Expectation
Pilot in-house production of OSHPD data submission	Sep 30, 2000	Oct 31, 2000
Implement improved management process for OSHPD submissions	Dec 31, 2000	Jan 31, 2001
All OSHPD data elements in DW	Feb 27, 2001	Mar 31, 2001
All OSHPD mapping tables, manuals, and related materials on Data Quality Website	May 31, 2001	June 30, 2001

Looking Forward



- This cumulated knowledge and experience can be examined, studied, disseminated, and applied as a model for other Cedars-Sinai data quality improvement efforts