Impact of Patient Safety Senate Bill 1254 on Preventing Harm

Multicenter Quality Improvement Study Results

December 2021

SB1254

California Business and Professions Code, 107.1 establishes pharmacist's responsibility in acute care hospitals for obtaining an accurate list of the patient's current medications on admission, or promptly thereafter.

In hospitals, the pharmacist is responsible for obtaining an accurate medication profile for high-risk patients upon admission.

- This function can be completed by **technicians and interns** who have successfully completed training and proctoring by pharmacists and where a quality assurance program is used to monitor competency
- Passed into law September 22, 2018
- Enforced January 1, 2019

https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB1254 (accessed 11/10/20)

STUDY OBJECTIVES

Determine the number of errors identified and the associated potential harm prevented as a result of SB 1254

Determine the cost savings associated with preventing harm

METHODOLOGY

- Open invitation to California Hospitals
- Toolkit provided to participating sites:
  - Standardized error type categories
  - Standardized methodology to rate severity of potential harm (NCC MERP*)
  - Standardized medication therapeutic classifications
  - Bi-weekly office hours & severity rating training sessions
- Participating institutions captured errors found on medication lists of **high-risk patients** for 6 consecutive weeks between January – March 2020

National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP)

INTER-RATER METHODOLOGY

- Two pharmacists independently categorized severity rating
- Followed by independent physician validation
  All life-threatening errors and a sample of the serious errors

Study Results
11 Participating Hospitals

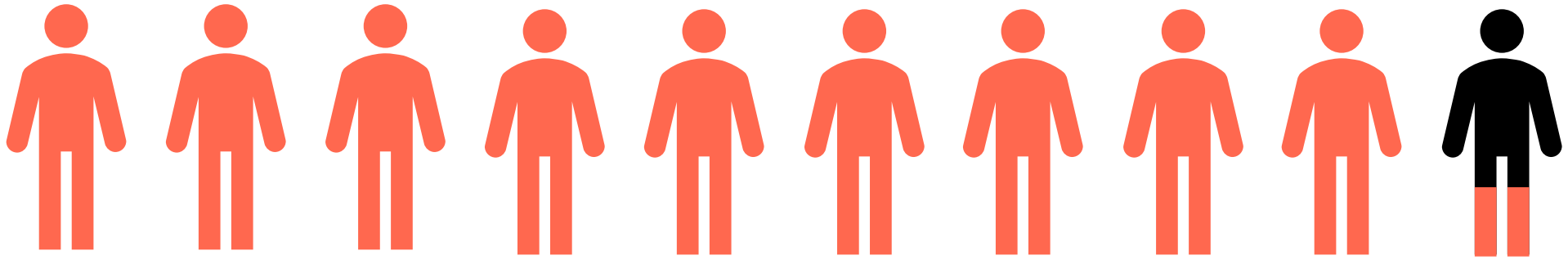
RESULTS

- Total of **2,273** medication histories were documented
- Total of **15,850** errors were prevented
- Average of **6** errors prevented per patient's medication history

RESULTS

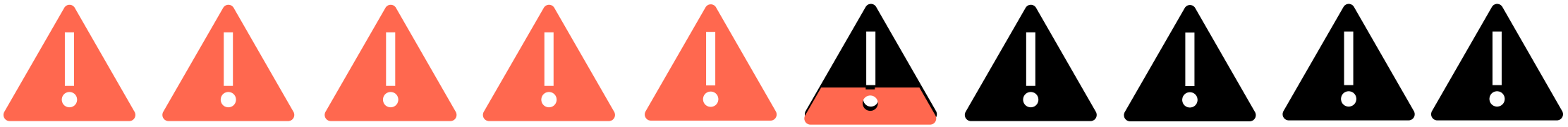
94% of medication histories had at least 1 error

No hospital recorded less than 87%



RESULTS

1480/2723 **(54%)** patients who had medication histories completed had a serious or life-threatening error*



*Potentially serious and life-threatening errors have higher likelihood of an adverse drug event if they reach the patient

RESULTS: POTENTIAL SEVERITY RANKING

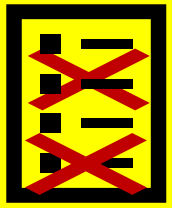
Potential Severity	Total
Low capacity for harm	**11874**
Serious harm	**3817**
Life-threatening harm	**145**

25% (3962/15,850) of errors have potential for serious or life-threatening harm*

*Potentially serious and life-threatening errors have higher likelihood of an adverse drug event if they reach the patient

RECAP: SB1254 MULTI-CENTER QI STUDY RESULTS

2,273 medication histories
Number of medications/patient after history completed = 13 (median; IQR 9-19)
94% of med histories have at least 1 error (range 87%-94%)
54% of patients had a potentially **serious or life-threatening error**



15,850 errors captured
25% of errors have potential for **serious/life threatening harm**

6 errors per history

40 mins/ history (average)

54% of hospitals expanded medication history programs
(**3-10-fold increase** in medication histories completed)

EXAMPLES OF ERRORS

Patient Information	Error Identified and Resolved	Error Type & Severity	Harm Avoided
60 yo w/ PMH of Afib, CKD III, CAD, and HFrEF	Amiodarone 200mg listed on PTA med list and patient takes 400mg once daily	Wrong Dose/Rate/ Frequency-Serious	Ineffective therapy
50 yo w/ stage III melanoma s/p resection, and h/o pulmonary embolism	Patient was taking aspirin 325mg daily for 2.5 months instead of Eliquis 5mg q12h due to lack of coverage	Adherence- Life Threatening	VTE recurrence
50 yo w/ ESRD s/p DDRT	Tacrolimus 4 mg BID listed on PTA med list. Patient has been taking of 2mg qAM/1mg qPM due to high sensitivity to tacrolimus	Wrong Dose/Rate/ Frequency- Life Threatening	Drug Toxicity
40 yo w/ no significant PMH	Flecainide 100mg q12hr on PTA med list. Patient on no meds PTA. Flecainide entered on wrong patient	Wrong Patient- Life Threatening	Risk of arrhythmias

PTA: Prior to Admission
PMH: Past Medical History
DDRT: deceased donor renal transplant

PROJECTED CALIFORNIA ANNUAL FINANCIAL IMPACT BASED ON MEDICATION HISTORY ERRORS PREVENTED

- **SB 1254 study results**
  - 6 errors per patient → 1.4 (25%) potentially life-threatening (LT) or serious errors per patient
- **Financial results**
  - Annualized cost of harm prevented due to adverse drug events in hospitalized, high-risk patients: approx. **$788 million to $4.4 billion**
    - Sources: SB 1254 study results (rate of potentially LT/serious errors), 2017 OSHPD data, National Action Plan (excess LOS range due to ADE)
  - Annualized cost of harm prevented due to medication-related readmissions: approx. **$476 million/year**
    - Sources: SB 1254 study results (rate of potentially LT/serious errors), Pellegrin et al 2017 (rate of drug-related readmission), 2017 CHHS readmission data, 2017 OSHPD data

*Detailed calculation is available upon request. See Appendix Slide 18 for more details.

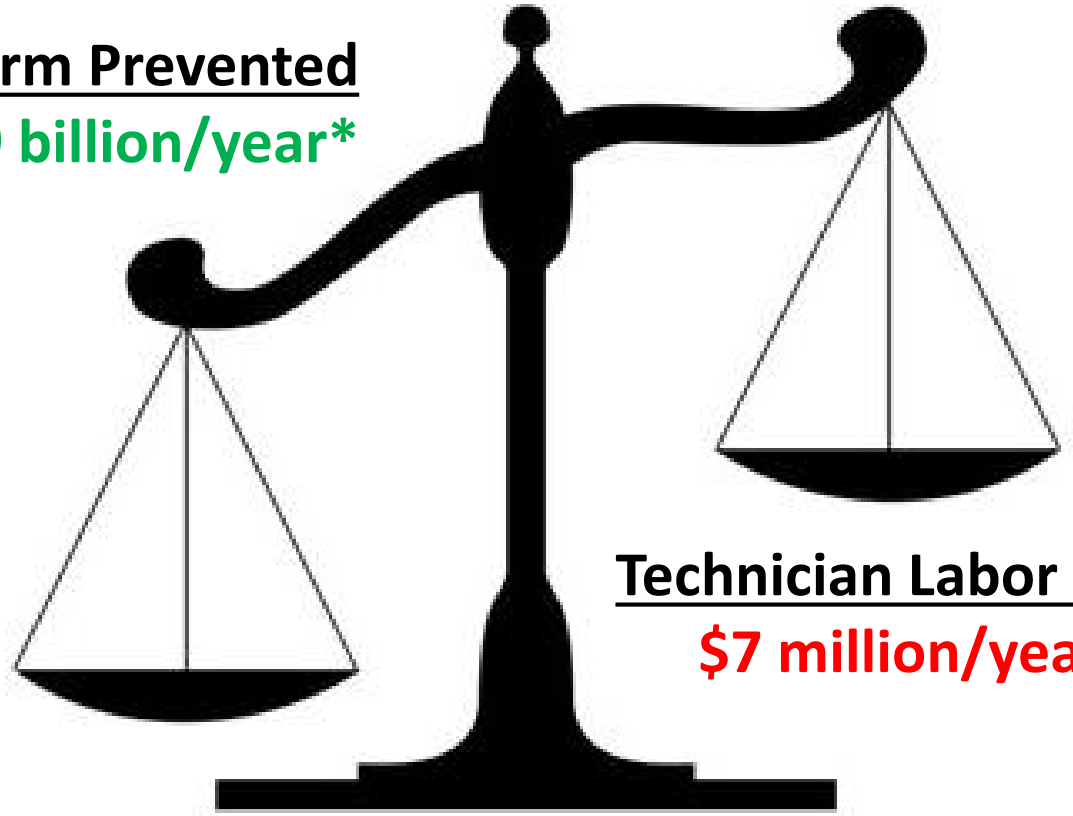
Cost analysis sources:

- 2017 OSHPD hospital data: https://oshpd.ca.gov/data-and-reports/cost-transparency/hospital-financials/#hadr, Accessed 10/1/20
- 2017 CHHS Unplanned 30-day readmission rate data: https://data.chhs.ca.gov/dataset/all-cause-unplanned-30-day-hospital-readmission-rate-California, Accessed 10/1/20
- Inflation rate: https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/MedicareProgramRatesStats/MarketBasketData, Accessed 11/2021
- Estimated excess length of stay due to ADE range based on The National Action Plan for Adverse Drug Event Prevention: https://health.gov/sites/default/files/2019-09/ADE-Action-Plan-Introduction.pdf, Accessed 11/2021

Cost Reduction by Preventing Harm

Cost of Harm Prevented

$1.3 - $4.9 billion/year*



Technician Labor Cost

$7 million/year

* Conservative estimate based on variable vs total cost

Thank you for your support

Appendix

Based on the NCC MERP*

Low Capacity for Harm

- **Category A**: Circumstances or events that have the capacity to cause error
- **Category B**: An error could have occurred but the error would not reach the patient (An "error of omission" does reach the patient)
- **Category C**: An error could have reached the patient but would not cause patient harm

Serious

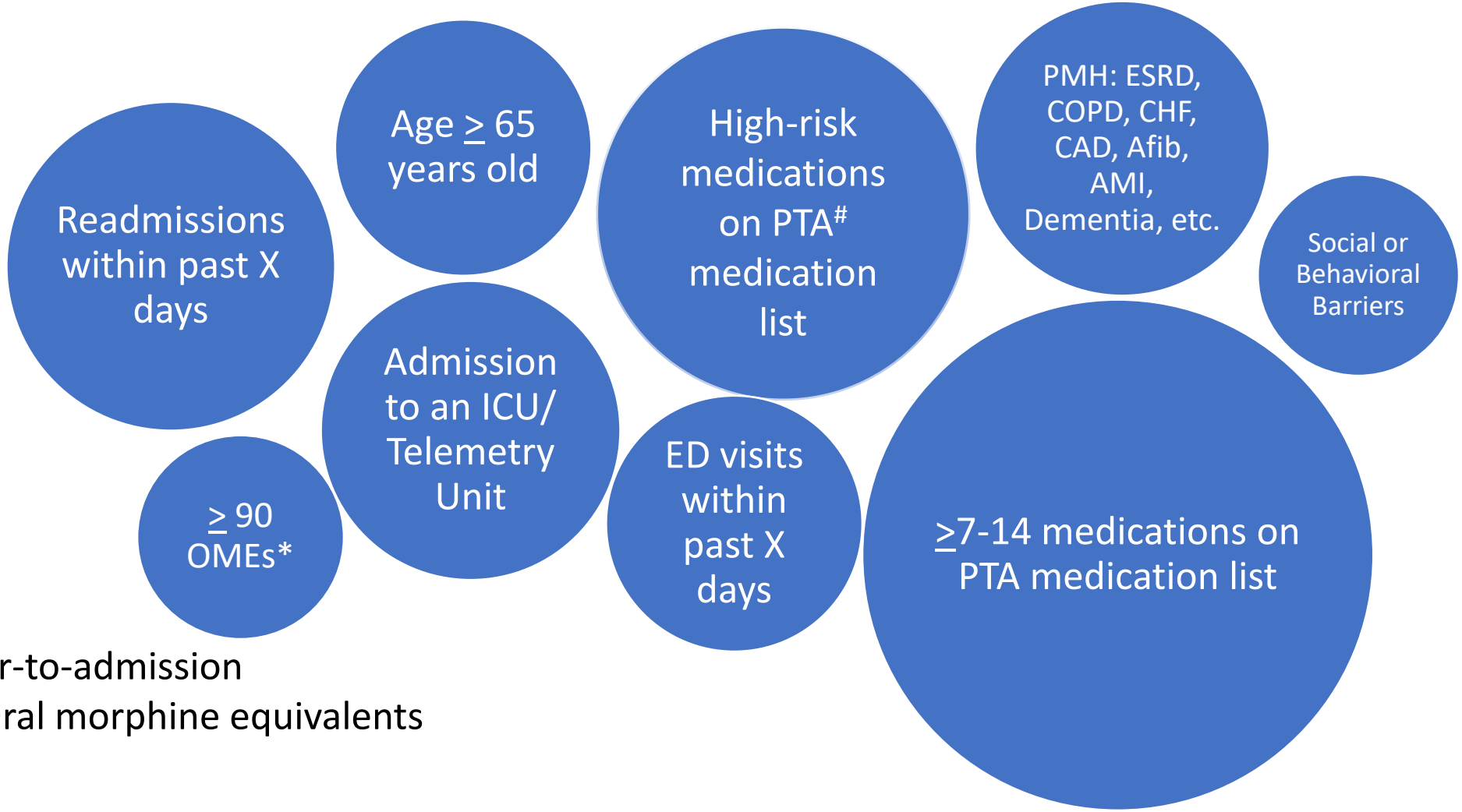
- **Category D**: The identified and intercepted error could have reached the patient and would have required monitoring to confirm that it resulted in no harm to the patient and/or required intervention to preclude harm
- **Category E:** The identified and intercepted error may have contributed to or resulted in temporary harm to the patient and required intervention
- **Category F:** The identified and intercepted error may have contributed to or resulted in temporary harm to the patient and required initial or prolonged hospitalization

Life Threatening

- **Category G:** The identified and intercepted error may have contributed to or resulted in permanent patient harm
- **Category H**: The identified and intercepted error may have required intervention necessary to sustain life
- **Category I**: The identified and intercepted error may have contributed to or resulted in the patient's death

***Pharmacists describe the severity of the potential outcome had the error not been intercepted**

HIGH-RISK CRITERIA ACROSS STUDY SITES



#PTA: Prior-to-admission

*OMEs: Oral morphine equivalents

ERROR TYPES

- Allergy
- Drug-Disease Interaction
- Drug-Drug Interaction
- Drug-Lab Interaction
- Duplicate Therapy
- Incomplete Order
- Therapy Omission
- Wrong Concentration
- Wrong Dose/Rate/Frequency
- Wrong Duration
- Wrong Medication
- Wrong Route/Dosage Form
- Wrong Timing
- Wrong Patient
- Not Indicated
- Other
- Adherence - Literacy
- Adherence - Cost
- Adherence - Transportation
- Adherence/Patient - Other

Schnipper JL et al. BMJ Qual Saf. 2018; https://qualitysafety.bmj.com/content/qhc/27/12/954.full.pdf (accessed 11/10/20)

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