Analysis of Year 2008 Death Reviews

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California Prison Receivership

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I. INTRODUCTION

During the past three years, the mortality rate for California prison inmates has decreased significantly – from 248.6/100000 in 2006 to 230.3/100000 in 2007 to 215.5/100000 in 2008, a cumulative decrease of 13.3%. When taking normal seasonal variations into account, the decrease is more impressive. January-March rates were 291 in 2006, 260 in 2007, 244 in 2008, and 220 in 2009, a cumulative decrease of 24.3%.

Major clinical improvements since the beginning of the Receivership include a significant improvement in the number and quality of non registry healthcare professional staff. Half of the primary care physicians and over a third of the nurses have been recruited in the past three years. Other significant systemic improvements beginning in mid 2008 include introduction of a Primary Care model into all California prisons, the introduction of a standardized team based, guideline driven approach to caring for chronic illnesses, and the introduction of standardized guidelines for specialty referral and hospital based care.

In 2008, the death review process further refined a taxonomy for classifying extreme departures from the standard of care. This taxonomy identifies 14 types of lapses in care and death reviews identify instances of these lapses in the care of patients. The number of lapses correlates with possible preventability of death – the more lapses in a case, the more likely a death might have been preventable. By concentrating on mitigating lapses in care, the Receivership and the California Prison Healthcare System (CPHCS) might be able to reduce unnecessary deaths.

II. DEATH REVIEW PROCESS

Death review summaries are prepared by members of the Clinical Support Unit (CSU). There were 35 reviewers in 2008; 32 physicians, 2 physician assistants and 1 nurse practitioner. The physician reviewers are all certified by the American Boards of Internal Medicine or Family Medicine. Each reviewer was trained in the process of death review and used a standardized death review template. Mid level practitioner reviews are closely vetted and approved by one of the physician members of the CSU.

A death review summary is based on a reading of the patient's available medical record of clinical encounters occurring during the year preceding the patient's death. Using the standardized template, the reviewer assesses the patient's last 12 months of medical care during the period of incarceration. All patient encounters are reviewed in detail. Reviewers are asked to:

- determine the cause of death, using autopsy findings when available
- determine whether, in the opinion of the reviewer, the death was non preventable, possibly preventable or likely preventable
- identify all significant departures from the community standard of care attributed to an individual provider
- identify significant health care system lapses in care; and
- refer all significant lapses and departures for appropriate action

Beginning in late 2006, each death was assessed by a CSU reviewer for three levels of preventability: non-preventable, possibly preventable, or likely (definitely) preventable.

The death review process is also intended to identify significant lapses (departures from the standard of care in the opinion of the reviewer) in the processes of care occurring in each death. Significant lapses in care have been identified in all types of death regardless of the attributed degree of preventability.

In late 2007, a taxonomy for lapses in care was developed so that reviewers might be able to use a common language when reviewing deaths. Such a taxonomy grouped lapses in care into fourteen general categories and allowed for more focused plans of action to mitigate them.

In early 2008, this taxonomy of fourteen lapses was incorporated into the death review template.

Every completed death review summary was presented by the reviewing clinician to the Death Review Committee (DRC), a multidisciplinary group chaired by one of the

Regional Medical directors. Members of the DRC include Statewide and Regional medical, nursing, and administrative leaders, leaders of the CSU, and representatives from corrections.

The DRC may make referrals to several areas. Facility systemic lapses are usually referred to the local healthcare manager. Nursing lapses are referred to the Department of Nursing. Individual provider lapses may be referred to the Professional Practice Executive Committee (PPEC), which is the peer review committee for the California Prison Healthcare System (CPHCS). Non-CPHCS specialists are also notified of adverse peer review findings. For lapses in care occurring in community or university hospital settings, cases are usually referred to the Chief of Staff of the hospital in question for consideration by their internal peer review process.

Since the Receivership was created in 2005, the death review process has also focused on identifying unsafe individual practitioners. Through July 2008, the PPEC has taken adverse action on 85 practitioners. And the majority of these actions were initiated by a death review.

Through 2008, the Receivership has vigorously recruited new healthcare professionals. Between August 1, 2007 and July 31, 2008 a total of 172 new primary care physicians, representing 47% of the 366 positions in the CPHCS. In addition 488 new registered nurses and 533 new licensed vocational nurses were hired. All of the new physicians are board certified in internal medicine or family medicine, as required by new credentialing criteria.

A. Definitions

Natural expected death – In the judgment of the reviewer, the death is a natural consequence of a known disease.

Natural unexpected death – In the judgment of the reviewer, the death is unexpected but is not the consequence of a homicide, suicide or drug overdose.

Non-preventable death – In the judgment of the reviewer, the medical health care system and individual practitioners probably would not have been able to prevent the patient's death. (The majority of natural expected deaths fall into this category. Homicides, suicides and drug overdoses, although all theoretically preventable, are, for purposes of this analysis, placed in the non preventable death category.)

Possibly preventable death – In the judgment of the reviewer, better medical management or an improved system of care may have prevented the patient's death.

Likely preventable death – In the judgment of the reviewer, better medical management or an improved system of care would likely have prevented the patient's death.

Extreme departure from the standard of care - In the judgment of the reviewer, a lapse in care that a reasonable and competent clinician would not render under the same or similar circumstances.

Simple departure from the standard of care – In the judgment of the reviewer, a lapse in care that a reasonable and competent clinician might render under the same or similar circumstances.

B. Taxonomy For Lapses In Care

The death review process assigned departures from the standard of care into one of the following 14 categories:

1. Failure on the part of an individual physician, midlevel provider or nurse to recognize, evaluate and treat important symptoms or signs. Examples of these clinical "red flags" include acute chest pain in patients at high risk for coronary events, shortness of breath, abdominal pain, severe or bloody diarrhea, recurrent dizziness, abnormalities of vital signs, including temperature, pulse, blood pressure, and respiratory rate, low blood oxygen saturation, acute confusion, weight loss, and increased frequency of rescue medication use in asthmatics.

2. Failure to follow clinical guidelines. Failure to follow established guidelines for the screening, evaluation, monitoring and/or management of specific conditions such as asthma, hepatitis C, diabetes mellitus, and chronic pain.

3. Delay in access to the appropriate level of care. Delays in access to care of sufficient duration as to result in harm to the patient. These may be generated in any of the following clinical areas: triage, same day care, primary care, chronic care, specialty care/procedure, treatment in the TTA.

4. Failure to identify or follow up abnormal test results.

5. Failure of appropriate provider to provider communication. Examples include inadequate communication between specialist and primary provider, inadequate communication during patient transfers between different levels or sites of care and other handoffs, including shift changes and intra or interinstitutional transfers.

6. Fragmentation of care. This refers to episodic care provided in the absence of a primary care system; important elements of the patient's clinical picture are

missed and the individual provider does not take responsibility for the patient's outcome.

7. Surgical or procedural complications resulting in iatrogenic injury.

8. Medication prescribing error. Examples include failure to prescribe the indicated medication for a clinical condition, failure to do appropriate monitoring, and failure to recognize well known drug interactions.

9. Medication delivery error. Examples include delays in patients receiving critical medication, or patients receiving medication intended for another patient.

10. Practicing outside the scope of one's professional competence.

11. Failure to supervise a mid level provider (nurse practitioner or physician's assistant). This includes failure of an assigned supervisor to be readily available, as well as managerial failure to arrange appropriate supervision.

12. Failure to communicate effectively with the patient.

13. Patient non-adherence with suggestions for optimal care.

14. Delay/failure in emergency response. Examples may include delays in activation or failure to follow the emergency response protocol .

C. Limitations to the CPHCS Death Review Process

There are significant limitations to the death review process as currently conducted in the CPHCS.

Medical records. The CPHCS does not have an electronic medical record. A typical patient health record suffers the limitations inherent in all paper systems – difficulties in legibility, misfiling or delayed filing of reports. The physician portions of the record include handwritten progress notes that may suffer from brevity and poorly documented reasoning. The health care record is often incomplete, missing critical recommendations from consultants or records of off site procedures and consultations, or missing documentation of critical medications prescribed during emergency room visits and hospitalizations.

Autopsies. In 2008, there were 103 autopsies in the 369 deaths for a rate of 28%. As in the non –CPHCS world, the majority of deaths do not trigger autopsies. As a result the actual proximate cause of death can remain uncertain. Nevertheless, knowledge of the cause of death should not alter the recognition of serious lapses in care. The autopsy might only help to confirm whether lapses led to an adverse outcome.

Off-site peer review. All 2008 death reviews were conducted by a selected group of clinicians, the Clinical Support Unit (CSU), who did not regularly practice medicine in the institutions. Their primary functions related to monitoring and evaluation of clinical practice, rather than the actual provision of patient care. In the non-CPHCS world, death reviews and other peer review activities are usually conducted by true peers – individuals who practice in the same institutions "shoulder to shoulder" with their peers and who arguably have more experience with the local environment of practice, allowing for more accurate reporting. Conversely, local peer review might produce less objective reviews, with underestimation of lapses and preventability.

Time required. A high quality death review as currently conducted in the CPHCS may take 4 to 8 hours or even longer to complete, not including staff support. This requires a significant commitment of physician time.

Attribution of preventability. There are significant limitations in attributing preventability. In one study, 14 board certified internal medicine physicians were trained in chart review and analyzed 383 hospital deaths. Initial reviewers found 88 or 23% of the deaths to be possibly preventable by optimal care and another 23 or 6% to be definitely preventable. When these deaths were subjected to re- review, however, the inter-rater reliability was quite low at 0.34 (there was total agreement only about 1/3 of the time). The study authors concluded that "preventability was in the eye of the reviewer". (Hayward RA, Hofer TP. Estimating Hospital Deaths Due to Medical Errors: Preventability is in the Eye of the Reviewer. JAMA 2001, 286; 4, 415.).

For purposes of this analysis, if a CSU reviewer found any death to be likely or possibly preventable, but cited no systemic or individual lapses in care, then the finding was changed to "non preventable". Furthermore, individual reviewers were inconsistent in assigning preventability to cases of suicide, homicide or drug overdose. Some reviewers found all suicides or homicides to be possibly preventable while others did not assign preventability to any cases of suicide or homicide. Therefore, if no lapse in care was cited which could explain preventability, all suicides and homicides in this analysis were deemed non preventable.

Attribution of lapses in care. There are also limitations in attributing severity of lapses in care. Reviewers differ significantly in their ages, past experiences, and time spent practicing in the California Department of Corrections (some, in fact have come straight from a private practice or a highly integrated system of care such as Kaiser, to a job as a CSU reviewer without spending more than a month as a provider in the prison system). As a result, some reviewers are "hard graders", others not so. There are often discussions in death review committee as to whether a particular lapse should be noted as an extreme or simple departure from a community standard of care. For this analysis, only extreme departures attributed by the initial reviewer are analyzed as lapses in care.

III. FINDINGS

A. California Prison Deaths in 2008 – Underlying Causes

In 2008, there were 369 California inmate deaths. The underlying causes of death are noted in Table 1.

Table 1. Causes of death among All California inmates, 2008

NUMBER OF CASES	CAUSE OF DEATH
122	Cancer
38	Suicide
35	End stage liver disease
19	Drug overdose
19	Sudden cardiac arrest
14	Pneumonia
12	HIV/AIDS
12	Acute myocardial infarction
10	Congestive heart failure
9	Sepsis
8	Chronic obstructive pulmonary disease
7	Homicide
6	Upper gastrointestinal bleeding
5	Disseminated coccidioidomycosis
4	Stroke
3 each	Seizure disorder, pulmonary embolism, end stage renal disease, ischemic colitis
2 each	Aspiration pneumonia, endocarditis, respiratory arrest
1 each	Aortic aneurysm rupture, bowel infarction, coccidioidomycosis pneumonia, dementia, dermatomyositis, diabetic ketoacidosis, meningitis – pneumococcal, pancreatitis, post-op cardiac surgery - aortic valve replacement, pulmonary fibrosis, septicemia, spontaneous bacterial peritonitis, strangulation, accidental foreign body (drug bindle), subarachnoid, hemorrhage, subdural hematoma, thoracic aortic aneurysm, acute pancreatitis, acute respiratory distress syndrome, arrhythmia, asthma, coronary artery disease, iatrogenic hemorrhage post liver biopsy, intracranial hemorrhage , intrathoracic hemorrhage, methicillin-resistant Staphylococcus aureus septicemia, pepper spray toxicity, pneumonia secondary to immunosuppression, urosepsis, Crohn Disease, iatrogenic hemorrhage.
369	TOTAL

For purposes of this analysis, the cause of death is the underlying condition that led to the patient's demise. For example, if a patient died of sepsis because of a compromised immune system weakened by chemotherapy for a cancer, this analysis will count the cause of death as cancer. In 2008, the most frequent cause of death was in fact cancer, accounting for 1/3 (33%) of all inmate deaths. Of these, cancer of the lung was most frequent (36 cases)), followed by liver (30 cases)) and pancreas (10 cases)). Suicide was the second most frequent cause of death (10.3%), followed by end stage liver disease (9.5%). Sudden cardiac arrest, acute myocardial infarction, and

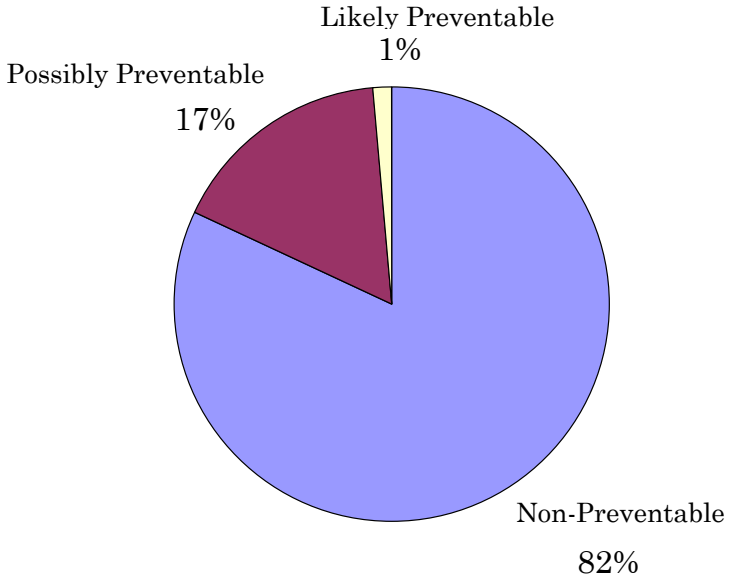
congestive heart failure grouped together as probable consequences of chronic heart disease totaled 41 cases (11.1%).

By contrast, in the non-incarcerated American adult population, the leading cause of death in 2008 was chronic heart disease (28%), followed by cancer (23%) and stroke (7%) Suicides are 11th (1.3%). Chronic liver disease ranks 12th (1.1%).

The causes of death in the inmate population reflect the inmate demographic - they are relatively younger than the general American population and have a heavy burden of tobacco, alcohol and drug addiction and chronic hepatitis C infection . Depression is endemic in prison.

The vast majority of these inmate deaths, 82%, were judged to be non preventable. (Figure 1.)

Figure 1. California Inmate Deaths, 2008



B. Types Of Death And Attributed Preventability

Of the 369 deaths in 2008, 233 were natural and expected, 67 natural and unexpected. There were 38 suicides and 7 homicides. 9 cases fell into none of these categories. A total of 303 deaths were judged to be non preventable. There were 61 possibly preventable deaths and 5 likely preventable deaths. (Table 1) For purposes of this analysis, if a death review found no extreme lapses in care, that case was placed in the non preventable category.

Not surprisingly, a death was more likely to be judged preventable if it was unexpected. Of the 233 expected deaths, only 32 (13.7%) were judged to be possibly preventable (29) or likely preventable (3).

Of the 67 unexpected deaths, a much higher percentage, 29 (43%), were judged to be possibly preventable (27) or likely preventable (2).

Table 1. Type of death and preventability among California inmates, 2008

TYPE OF DEATH	NON-PREVENTABLE	POSSIBLY PREVENTABLE	LIKELY PREVENTABLE
Accidental Injury by Other	0	1	0
Accidental Injury to Self	14	0	0
Homicide by Inmate(s)	6	0	0
Homicide by Other(s)	1	0	0
Natural-Expected	201	29	3
Natural-Unexpected	38	27	2
Suicide	35	3	0
Unknown	8	1	0
TOTAL	303	61	5

C. Non-preventable Deaths

Causes

Table 2 shows the causes of the 303 non-preventable deaths among California inmates in 2008. As in prior years cancer (113), suicide (35) and end stage liver disease (31), were the top three causes, accounting for 179 or 59% of the 303 cases. Of the cancers, lung cancer predominated. Chronic hepatitis C secondary to intravenous drug use accounted for well over 90% of the cases of end stage liver disease. These causes are not unexpected given the high incidence of smoking, drug abuse, and depression in the incarcerated population.

Drug overdose, sudden cardiac arrest, HIV/AIDS, congestive heart failure, chronic obstructive pulmonary disease, pneumonia, acute myocardial infarction and homicide rounded out the top 11 causes, which caused 257 or 85% of the non-preventable deaths.

Table 2: Causes of Non-preventable death among California inmates, 2008.

CAUSE OF DEATH	NUMBER OF CASES
cancer	113
suicide	35
end stage liver disease	31
drug overdose	18
sudden cardiac arrest	11
HIV/AIDS	10
congestive heart failure	9
chronic obstructive pulmonary disease	8
pneumonia	8
acute myocardial infarction	7
homicide	7
sepsis	6
upper gastrointestinal bleeding	6
seizure disorder	3
stroke	3
pulmonary embolism	3
aspiration pneumonia	2
disseminated coccidioidomycosis	2
end stage renal disease	2
aortic aneurysm rupture	1
bowel infarction	1
coccidioidomycosis pneumonia	1
dementia	1
dermatomyositis	1
diabetic ketoacidosis	1
endocarditis	1
ischemic colitis	1
meningitis - pneumococcal	1
pancreatitis	1
post-op cardiac surgery - aortic valve replacement	1
pulmonary fibrosis	1
respiratory arrest	1
septicemia	1
spontaneous bacterial peritonitis	1
strangulation accidental foreign body (drug bindle)	1
subarachnoid hemorrhage	1
subdural hematoma	1
thoracic aortic aneurysm	1
TOTAL	303

Lapses

Table 3 shows the number and types of severe lapses in care identified in the 303 non-preventable deaths in 2008. In 192 cases, no extreme lapses whatsoever were noted. Many of these cases were also cited for exemplary and compassionate care. In the remaining 111 cases, a total of 193 serious lapses in care were noted. Of these, 87 (45%) were in category # 1 – failure to recognize, identify or adequately evaluate important symptoms or signs. Category #3 – delays in access to care - accounted for 25 lapses (13%). Category #2 – failure to follow established guidelines – accounted for 16 (8%). So these three categories together were responsible for two thirds (66%) of all of the severe lapses in care identified in the non-preventable deaths.

Table 3. Types of lapses in care (extreme departures) for non-preventable deaths among California inmates, 2008 .

# LAPSES	TYPES OF LAPSES IN CARE (EXTREME DEPARTURES)
87	#1 – Failure to recognize, identify or adequately evaluate important symptoms or signs
16	#2 – Failure to follow established guidelines for evaluation and/or management of specific condition
25	#3 – Delay in access to care sufficient to result in harm to the patient
12	#4 – Failure to adequately pursue abnormal test results
6	#5 – Failure of provider-to-provider communications including botched handoffs
9	#6 – Fragmentation of care such that individual responsibility for patient outcomes is waived
3	#7 – Surgical/procedural complication resulting in iatrogenic injury
13	#8- Medication prescribing error
4	#9- Medication delivery error
1	#10- Practicing outside the scope of one's capabilities
4	#11- Unsupervised mid-level (nurse practitioner or physician assistant) care
3	#12 – Failure of communication with patient
4	#13 – Patient non-adherence with recommendation for care
3	#14 – Delay in emergency response or failure to follow emergency response protocol
3	Other (including unavailability of medical record)
193	Total number of extreme departure lapses

D. Possibly Preventable Deaths

Causes.

Table 4 lists the causes of death in the 61 deaths thought to be possibly preventable in 2008. Although no one or two causes stand out, cancer (9 deaths), sudden cardiac arrest and acute myocardial infarction (8 and 5 respectively) and pneumonia (6) together account for 28 (46%) of the 61 deaths in this category.

Table 4. Causes of possibly preventable death among California inmates, 2008.

CAUSE OF DEATH	NUMBER OF CASES
cancer	9
sudden cardiac arrest	8
pneumonia	6
acute myocardial infarction	5
end stage liver disease	4
suicide	3
sepsis	3
disseminated coccidioidomycosis	2
ischemic colitis	2
drug overdose	1
HIV/AIDS	1
congestive heart failure	1
stroke	1
end stage renal disease	1
endocarditis	1
respiratory arrest	1
acute pancreatitis	1
acute respiratory distress syndrome	1
arrhythmia	1
asthma	1
coronary artery disease	1
iatrogenic hemorrhage post liver biopsy	1
intracranial hemorrhage	1
Intrathoracic hemorrhage	1
methicillin-resistant Staphylococcus aureus septicemia	1
pepper spray toxicity	1
pneumonia secondary to immunosuppression	1
urosepsis	1
TOTAL	61

Lapses

Table 5 shows the number and types of severe lapses in the 61 possibly preventable deaths. Once again, three types of lapse - #1 -failure to recognize or evaluate clinical red flag symptoms and signs (64 lapses or 45%) , #2 – failure to follow established guidelines (25 lapses or 17%) , and #3 – significant delays in access to care (15 lapses or 10%) – accounted for over 2/3 of the total (104/143 or 73%).

Table 5. Types of lapses in care (extreme departures) for possibly preventable deaths among California inmates, 2008.

LAPSES	TYPES OF LAPSES IN CARE (EXTREME DEPARTURES)
64	#1 – Failure to recognize, identify or adequately evaluate important symptoms or signs

25	#2 – Failure to follow established guidelines for evaluation and/or management of specific condition
15	#3 – Delay in access to care sufficient to result in harm to the patient
6	#4 – Failure to adequately pursue abnormal test results
5	#5 – Failure of provider-to-provider communications including botched handoffs
9	#6 – Fragmentation of care such that individual responsibility for patient outcomes is waived
5	#7 – Surgical/procedural complication resulting in iatrogenic injury
5	#8- Medication prescribing error
1	#9- Medication delivery error
2	#10- Practicing outside the scope of one's capabilities
3	#11- Unsupervised mid-level (nurse practitioner or physician assistant) care
1	#12 – Failure of communication with patient
3	#13 – Patient non-adherence with recommendation for care
1	#14 – Delay in emergency response or failed to follow emergency response protocol
2	Other(including unavailability of medical record)
147	Total number of extreme departure lapses

E. Likely Preventable Deaths

Causes

In 2008, 5 deaths were thought to have been likely preventable. Table 6 shows the causes of death in these cases.

Table 6. Causes of likely preventable death among California inmates, 2008.

CASES	CAUSE OF DEATH
1	HIV/AIDS
1	disseminated coccidioidomycosis
1	Crohn Disease
1	iatrogenic hemorrhage
1	asthma
5	Total

Lapses

Table 7 shows the number and types of severe lapses in care observed in these cases. The most frequent lapse in care is once again the failure to recognize or adequately evaluate important clinical symptoms or signs – 13 lapses or 59% of the total.

Table 7. Types of lapses in care (extreme departures) for likely preventable deaths among California inmates, 2008.

LAPSES	TYPES OF LAPSES IN CARE (EXTREME DEPARTURES)
13	#1 – Failure to recognize, identify or adequately evaluate important symptoms or signs
1	#2 – Failure to follow established guidelines for evaluation and/or management of specific

	condition
2	#3 – Delay in access to care sufficient to result in harm to the patient
0	#4 – Failure to adequately pursue abnormal test results
2	#5 – Failure of provider-to-provider communications including botched handoffs
1	#6 – Fragmentation of care such that individual responsibility for patient is waived
1	#7 – Surgical/procedural complication resulting in iatrogenic injury
1	#8 - Medication prescribing error
1	#9 - Medication delivery error
0	#10 - Practicing outside the scope of one's capabilities
0	#11 - Unsupervised mid-level (nurse practitioner or physician assistant) care
0	#12 – Failure of communication with patient
0	#13 – Patient non-adherence with recommendation for care
0	#14 – Delay in emergency response or failed to follow emergency response protocol
0	Other(including unavailability of medical record)
22	Total number of extreme departure lapses

As seen in the following case summaries, a single lapse in care is rarely sufficient to result in a patient's death, whereas multiple lapses can line up to produce an adverse outcome…a likely preventable death.

Case 1 - Asthma exacerbation

A 21-year-old man died of severe asthma exacerbation 7 weeks after entry into the California prison system and ten days after transfer from the reception center to another prison. Initial healthcare screening noted his chronic asthma. No clinical staging of asthma was done and no peak flows or pulmonary function tests were ordered. (failure to follow established guidelines for management of asthma) He was prescribed an albuterol inhaler. Over the next three weeks he was seen three times in the TTA and two additional times in clinic for symptomatic asthma. On three of these visits he received another albuterol inhaler. None of the visits documented his frequency of albuterol inhaler use and no peak flows were ever obtained. (failure to adequately assess and treat a red flag symptom) During his last clinic visit he was noted by the physician to have "baseline asthma" with a history of nocturnal awakening twice a week and persistent cough. A steroid inhaler and a nasal steroid were prescribed in addition to albuterol and he was given a followup appointment for one month. (failure to follow existing guidelines for treatment of acute asthma, which should have included oral steroids, a measurement of peak expiratory flow rate and a followup appointment no later than one week.)Two days later he was seen again in the TTA. At this visit he was given an intramuscular injection of corticosteroid, albuterol/atrovent by nebulizer, and a sixth albuterol inhaler prescription. Two days later he was transferred to another prison. The medical record accompanying his transfer did not include the record of his last visit to the TTA and he did not receive any additional steroid medication. (failure of provider to provider communication during a handoff, failure to follow established guidelines for asthma) On arrival at the new prison his record was screened by nursing and he was given an appointment for "within two weeks", but he was not actually seen face to face and did not receive

medication. On the day of his scheduled appointment he was found unresponsive in his cell. Resuscitative efforts were prompt but unsuccessful. Autopsy showed pulmonary findings compatible with an "asthma death".

Case 2 – Crohn Disease with bowel perforation and sepsis

A 64 year old man with known Crohn Disease died with complications of his disease as a consequence of not receiving disease controlling medication. He had been stable prior to incarceration on a regimen including intravenous remicade infusion every two months. He brought a typewritten copy of his medical history and ongoing problems along with a medication list and names of his treating physicians. His last remicade infusion had been two months and seventeen days prior to his reception into CDCR. At initial intake he was prescribed lomotil and vicodin but not remicade. One week later he was c/o back pain and diarrhea. He was seen by a physician. A routine referral for gastroenterology was requested, but no changes in medication were ordered. (failure to adequately evaluate red flag symptom of diarrhea in a patient with known inflammatory bowel disease). Two weeks later another physician noted 10 loose stools a day, some containing blood. The medical record was unavailable to this provider, so important details of the patients history might have gone unrecognized Nevertheless, the history and abdominal exam were inadequate. He was treated with asacol and given a one month followup .(failure to aggressively assess and manage bloody diarrhea) Three weeks later he was admitted to a local hospital, where a bowel perforation was diagnosed. He was treated conservatively with bowel rest and antibiotics for 8 days, received one dose of remicade (four months after his last dose) and when his condition worsened he was transferred to a tertiary medical center. (failure to aggressively manage bowel perforation and sepsis). At time of transfer he was septic and hypotensive and required intubation for respiratory failure. He died in the intensive care unit two days later, seven weeks after incarceration and six weeks after initial complaints of diarrhea.

Case 3 – HIV/AIDS

A 58 year old woman with known HIV/AIDS died of potentially treatable meningoencephalitis. She had the diagnosis of HIV/AIDS nine months prior to her death. She had been receiving appropriate therapy and consultation with university specialists. 25 days before her death she complained of headache, chills and vomiting. 4 days after triage she was seen by a physician (Delay in access to appropriate care). The physician did an inadequate history and physical examination, although a routne head CT was ordered (failure to evaluate and manage a serious symptom of headache in a known AIDS patient). A day later she complained of "the worst headache I've had." She was instructed to increase fluid intake, but was not seen. (Failure to evaluate red flag symptom). Over the next five days she was seen by a nurse twice more for headache and vomiting and poor visual acuity with an elevated blood pressure. An antihypertensive was ordered by phone. Neurologic and funduscopic exams were not done. (failure to properly evaluate important symptoms) 13 days prior to death she was "unable to stand or get out of bed" and an urgent head CT was obtained. 10 days before death she was sent to a local emergency room for severe

headache and to "rule out meningitis." There, after a limited exam she was given intramuscular morphine and sent back to the prison.(failure to properly evaluate important symptoms, poor provider to provider communication). 7 days before death and 6 days after the emergent head CT, the radiologist read the study as "abnormal, suggesting hydrocephalus and possible encephalitis." (delay in interpreting an emergency procedure). She was admitted that day to another regional hospital where she had cardiac arrest and was intubated and admitted to the intensive care unit. Seven days after admission, a nuclear brain study showed no cerebral activity and life support was withdrawn after consultation with the patient's family.

Case 4 – Disseminated coccidioidomycosis

A 26 year old man died of complications from acute disseminated coccidioidomycosis. He presented to nurse triage 5 weeks prior to his death with a documented weight loss of 10 pounds in one month, chest pain, and cough. He received a routine referral to the physician line, but no specific appointment was given. (failure to recognize, identify or appropriately manage symptoms and signs). 20 days before his death, the patient submitted a request for care …"emergency. I would like to see the doctor ASAP." There is no record of a response to this request. 10 days before death, he was seen in response to another request for care.. "I can not breathe well…I get dizzy". Physician evaluation documented another 20 pounds of weight loss and fever, with a respiratory rate of 60/minute, a heart rate of 138/minute and a low oxygen saturation of 94%. He was admitted to the local hospital where bilateral pneumonia was seen and bronchoscopy confirmed coccidioidomycosis. Despite ten days of appropriate antifungal therapy, he died of renal and respiratory failure.

Case 5 – Iatrogenic intraoperative hemorrhage

A 56 year old man with known cirrhosis of the liver secondary to chronic hepatitis C died after a wedge biopsy of the liver resulted in massive hemorrhage. In the three years preceding his death he had been evaluated on multiple occasions by multiple providers (fragmentation of care) for serious complaints which included chest pain, abdominal pain, hemoptysis (coughing of blood), recurrent abdominal pain with vomiting, abdominal pain with bloody stool (six citations for failure to adequately evaluate important symptoms/signs) . Once he was prescribed a muscle relaxant for abdominal pain (inappropriate prescribing of medication). None of these failures led to significant adverse outcomes. However, one month prior to his death he was admitted to a local hospital for evaluation of recurrent abdominal pan due to probable gallstone cholecystitis. He was taken to surgery for cholecystectomy. Despite known cirrhosis with abnormal coagulation studies and a history of recurrent upper gastrointestinal (variceal) bleeding, a wedge biopsy of the liver was done. He sustained massive hemorrhage from the biopsy site (iatrogenic injury from a surgical procedure), required fluid and blood resuscitation, developed severe metabolic acidosis, renal failure and sepsis and died on the sixteenth postoperative day.

In all of these cases the patients complained of increasingly severe or recurrent symptoms, which had been inadequately managed in previous encounters. Escalating

and recurrent symptoms should be a particularly worrisome "red flag" for providers and should prompt a change in the pace or intensity of the evaluation, a referral to a higher level of care or an otherwise clear change in clinical management with closer follow-up.

IV. DISCUSSION

A. Relationship between lapses in care and preventable death -

It is difficult for even well trained and qualified physicians to determine that a death is preventable using retrospective death review. To a large extent, "preventability is in the eye of the beholder." It is easier to identify predictable deaths, based on causes (patients with certain types of conditions such as metastatic cancer, congestive heart failure, multiple chronic diseases, or advanced age – all are associated with shortened life expectancies.)

The CPHCS retrospective death review process asks reviewers to identify all lapses in care, and to grade each lapse as either a 'simple departure" or a "serious (extreme) departure " from the standard of care. Simple departures are much more common than serious departures, and committee disagreements over each designation are common. For this review, only the serious (extreme) departures have been collected, tabulated and analyzed.

There has been strong support for the 14-category taxonomy of lapses cited here. The list has been reviewed and accepted by all members of the Clinical Support Unit who conduct the death reviews. Although other institutions or systems of health care might identify different categories, the members of the CSU come from a variety of backgrounds including managed care, well integrated systems such as Kaiser or the VA, and a variety of other practices including small group practices, community clinics, private and public hospitals.

Lapses in care occur frequently in the practice of medicine. A recent study was done in a large VA hospital system which had an electronic medical record. Investigators noted that 58% of significantly abnormal abdominal ultrasounds (ordered to screen for abdominal aortic aneurysms) were not documented in the medical record for over three months. In 16% of cases, the abnormal study was never noted in the record. The median time to recognition was 237 days! Interestingly, none of these cases resulted in an adverse outcome, despite these significant delays. (Gordon, JR, Wahls T et al , "Failure to recognize newly identified aortic dilatations in a health care system with an advanced electronic record", Annals of Internal Medicine 151, 21-27, 2009) Although physicians tend to remember the lapses that have led to adverse consequences, the vast majority of lapses that occur in every clinical practice probably do not lead to serious suffering or death. But when patients have underlying serious medical conditions such as cancer, chronic liver or renal disease, HIV/AIDS, or conditions like diabetes mellitus that put them at risk for heart attack or stroke, lapses in care may result in unnecessary suffering and death. Table 8 and Figure 2 indicate the relationship between the number of lapses in a given case and the likelihood of that case resulting in a preventable death.

Table 8. Number of lapses by preventability among California inmates, 2008

PREVENTABILITY	LAPSES	DEATHS	LAPSES PER DEATH
Likely Preventable	22	5	4.4
Possibly Preventable	147	61	2.4
Non-Preventable	193	302	0.6

Figure 2. Average number of lapses per death by preventability among California inmates, 2008.

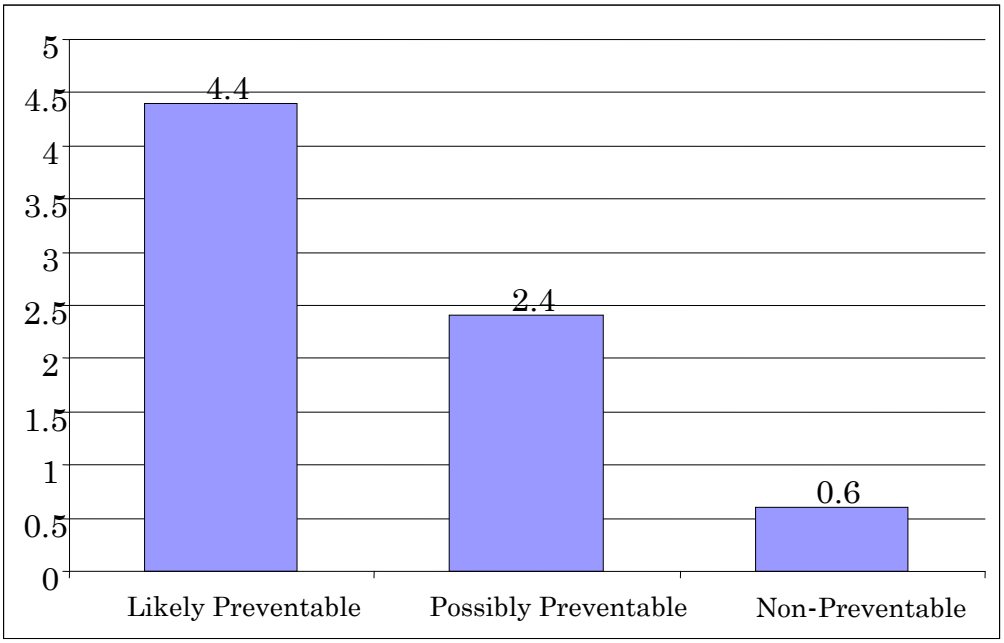


Table 8 and figure 2 show that lapses in care occurred in all three types of death – non preventable, possibly preventable and likely preventable, but occurred more frequently in the preventable cases. Likely preventable deaths had an average of 4.4 lapses per case, possibly preventable deaths an average of 2.4 lapses per case and non-preventable deaths an average of 0.6 lapses per case.

These findings support the "Swiss cheese model" of adverse events, in which serious adverse outcomes are a consequence of multiple "holes" in the system (lapses) lining up. Theoretically, it should be possible to reduce adverse outcomes by reducing the number of lapses.

B. Trends in overall CDCR death rate

Tables 9 and 10 show significant reductions in the CDCR death rate from the first quarter of 2006 through the second quarter of 2009, with some leveling off in 2009.

Table 9. Death Rates per quarter and annualized among California inmates, January 2006- June 2009

QUARTER	NUMBER OF DEATHS	NUMBER OF INMATES	QUARTERLY RATE PER 100,000 INMATES	ANNUALIZED RATE PER 100,000 INMATES
Q1 2006	124	170,475	72.7	290.9
Q2 2006	108	172,561	62.6	250.3
Q3 2006	103	173,101	59.5	238.0
Q4 2006	93	172,528	53.9	215.6
Q1 2007	112	172,284	65.0	260.0
Q2 2007	100	173,312	57.7	230.8
Q3 2007	91	172,645	52.7	210.8
Q4 2007	94	171,444	54.8	219.3
Q1 2008	104	169,949	61.2	244.8
Q2 2008	88	170,983	51.5	206
Q3 2008	83	172,008	48.3	193.2
Q4 2008	94	171,085	54.9	219.6
Q1 2009	93	168,671	55.1	220.4
Q2 2009	92	167,832	54.8	219.2

Table 10. Change in the death rate among California inmates, 2006-2008

YEAR	NUMBER OF DEATHS	NUMBER OF INMATES	ANNUALIZED RATE PER 100,000 INMATES	CHANGE	CUMULATIVE
2006	428	172,166	248.6	-	-
2007	397	172,421	230.3	-7.4%	-7.4%
2008	369	171,264	215.5	-6.4%	-13.3%

The annual death rate has declined from 248.6/100000 in 2006, to 230.3 in 2007, (a reduction of 7.4%), to 215.5/100000 in 2008 (a further reduction of 6.4%) for a cumulative reduction of 13.3%.

Table 11 looks at the first quarters alone, in which death rates are seasonally highest. Comparing first quarters year by year the annualized death rate has dropped steadily from 291 in 2006 to 220 in 2009, an overall reduction of 24.4% in three years.

Table 11 Change in the death rate among California inmates by prior year quarter 1, 2006-2009.

QUARTER	ANNUALIZED RATE PER 100,000 INMATES	CHANGE	CUMULATIVE

Q1 2006	291	-	-
Q1 2007	260	-10.7%	-10.7%
Q1 2008	244	-6.2%	-16.2%
Q1 2009	220	-9.8%	-24.4%

Figure 3 displays the decreasing trend in overall mortality from January 2006 through June of 2009 as well as the calculated linear regression line.

Figure 3. Trend in annualized mortality rate per 100,000 California inmates, 2006-2008

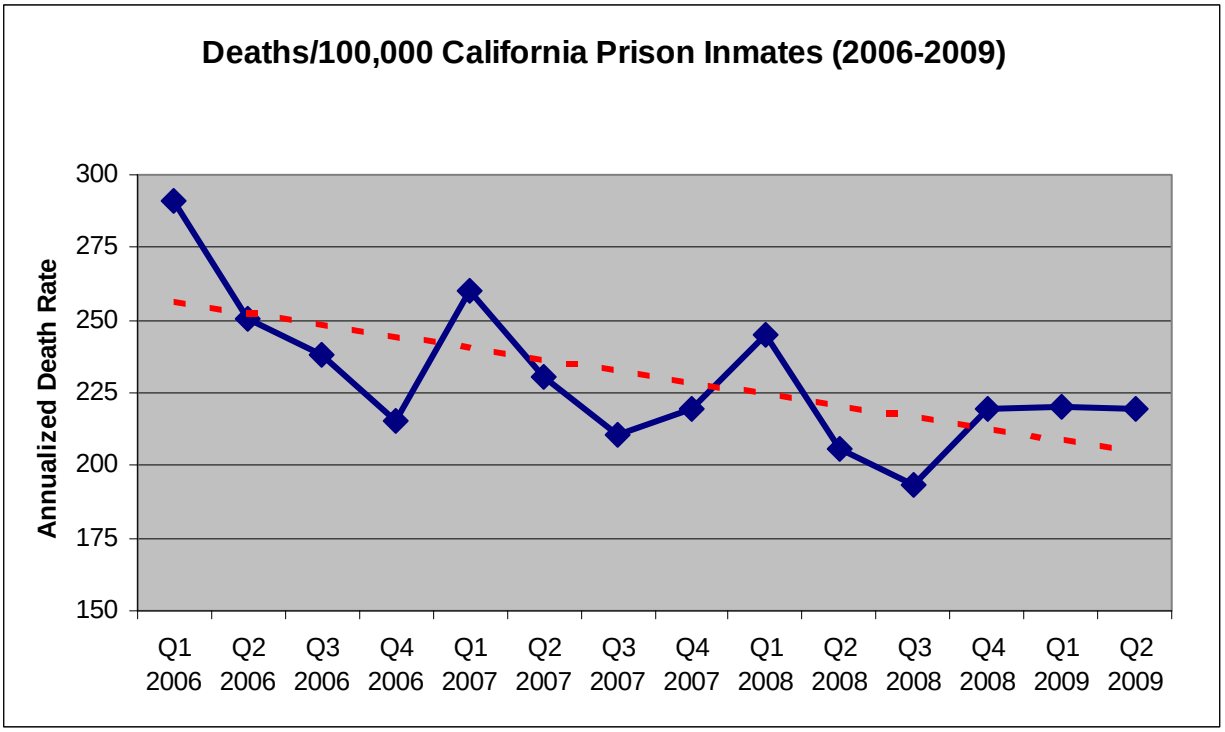
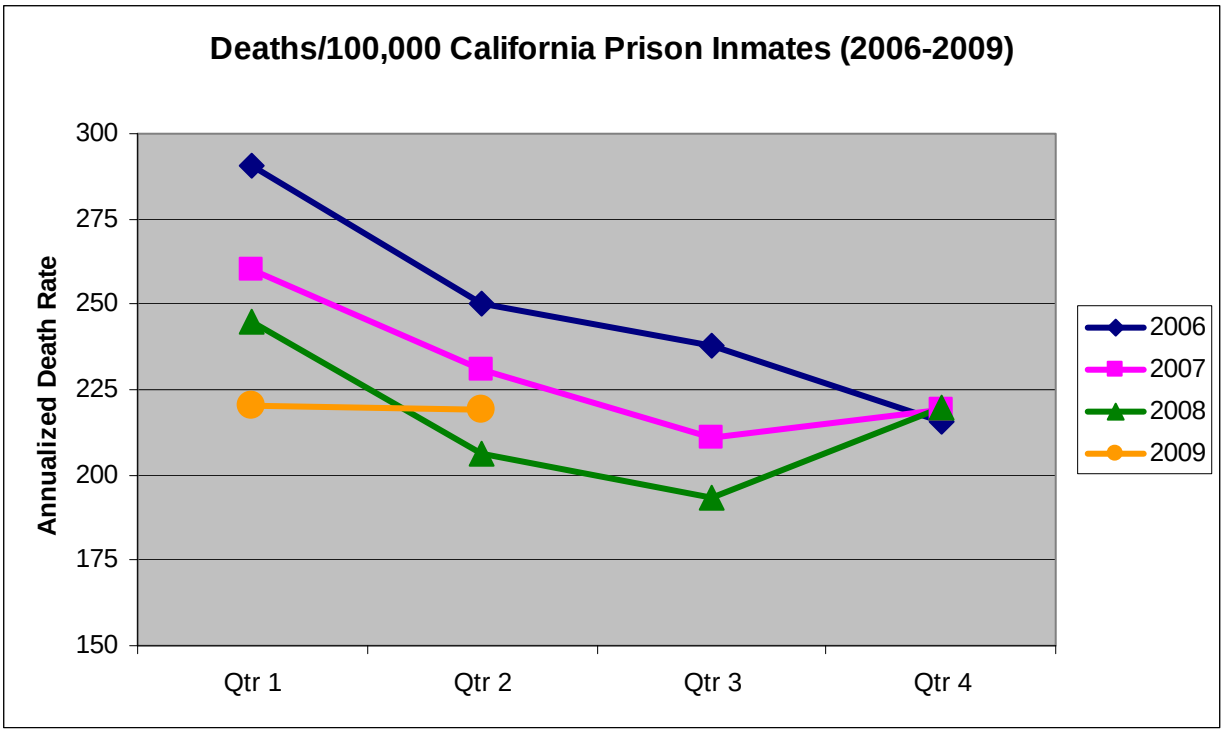


Figure 4 displays the same data in lines one year long, demonstrating the seasonal variation patterns usually seen in population based mortality studies. The first quarter bump in mortality rate is generally attributed to circulating winter viruses and cold rainy weather.

Figure 4. Trends in quarterly annualized mortality rate per 100,000 California inmates, 2006-2009, by year.



C. *Trends in the Attribution of Preventability*

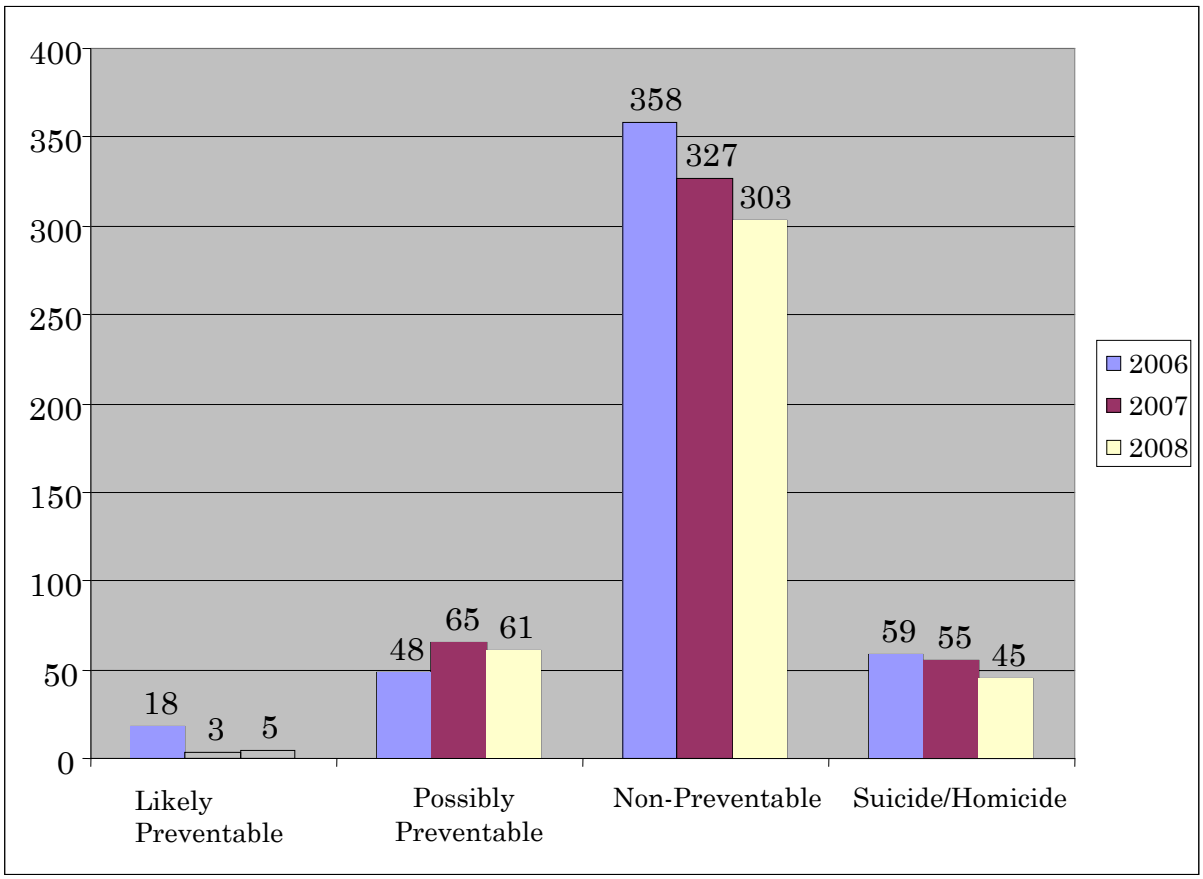
In 2008 compared to 2007, there were two more cases judged to be likely preventable and four fewer cases judged to be possibly preventable. In both years, there were far fewer "likely preventable" deaths than in 2006, but many more deaths thought to be "possibly preventable". The death review process was less standardized in 2006. Many of the 2006 death reports were brief and more superficial. Beginning in 2007, preventable deaths were systematically looked for and by 2008 the process had become much more standardized, the training of the Clinical Support Unit reviewers and the death review template was more prescriptive, and the typical death report more detailed. It is for these reasons that both types of preventable death may have been under – estimated in 2006.

Table 12 and Figure 5 depict these trends.

Table 12. Types of preventability of deaths among California inmates, 2006, 2007, and 2008

YEAR	LIKELY PREVENTABLE	POSSIBLY PREVENTABLE	NON-PREVENTABLE	SUICIDES / HOMICIDES
2006	18	48	358	43 / 16 (total 59)
2007	3	65	327	33 / 22 (total 55)
2008	5	61	303	38 / 7(total 45)

Figure 5. Number of deaths by preventability, 2006, 2007, and 2008. The suicides and homicides are included as non-preventable deaths and shown separately as well.



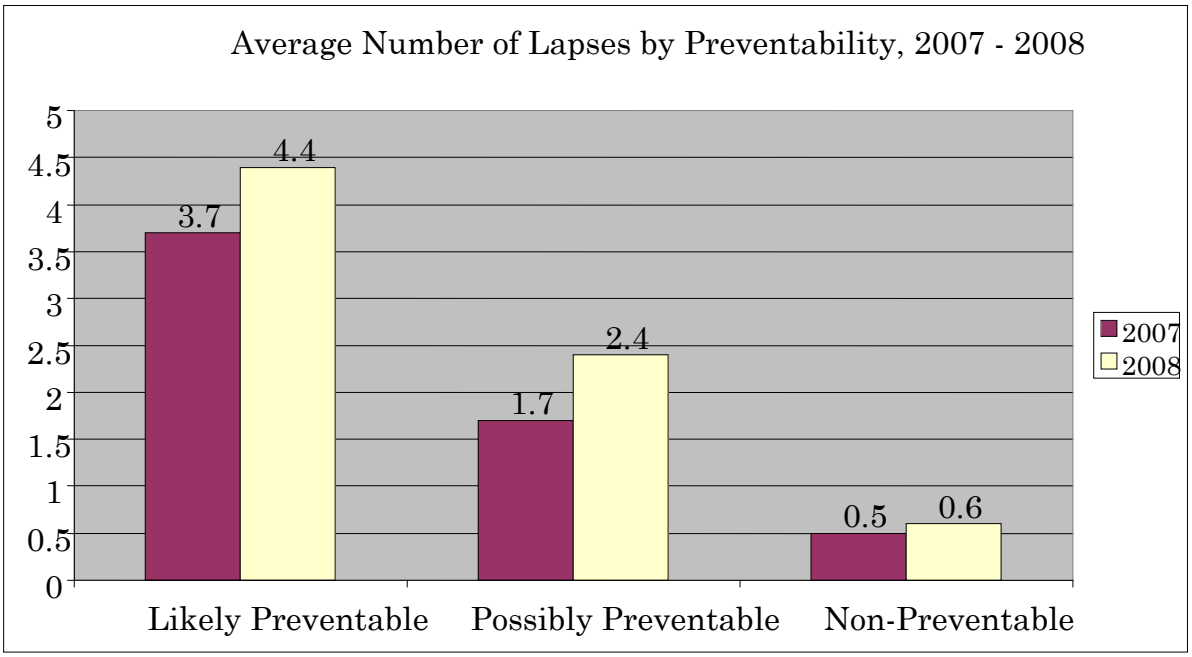
Note also that the number of non-preventable deaths significantly decreased in each of the past two years. The reasons for this decrease are purely speculative. It was previously noted that the professional staff of physicians and nurses has undergone wholesale transformation, especially between July of 2007 and August of 2008. As more competent staff settle into practice, and as the culture of care in the CDCR transforms into an accountable less fragmented system, general improvements in care of all conditions should result in a longer life for patients, even those with conditions that might eventually result in a "non preventable" death. A cancer patient might have a longer period of palliation, or a chronic diabetic or cardiac patient might enjoy a longer period before succumbing to an inevitable death. It would be difficult to sort out these factors, but a reduction in the overall death rate would reflect this improved care.

Note also that there has been a slight decrease in homicides and suicides during the past two years, perhaps reflecting improved mental health care and improved security.

D. Interventions To Decrease Lapses And Preventable Deaths

As discussed previously, the vast majority of lapses do not lead to death. But in cases of likely and possibly preventable death, there were a higher number of lapses per case in both 2007 and 2008. Figure 6 shows this.

Figure 6. Average Number of Lapses by Preventability 2007-2008



Strategies designed to mitigate lapses in care should decrease the number of unnecessary deaths. Table 13 shows the total number of lapses in care for all 369 death review cases in 2008.

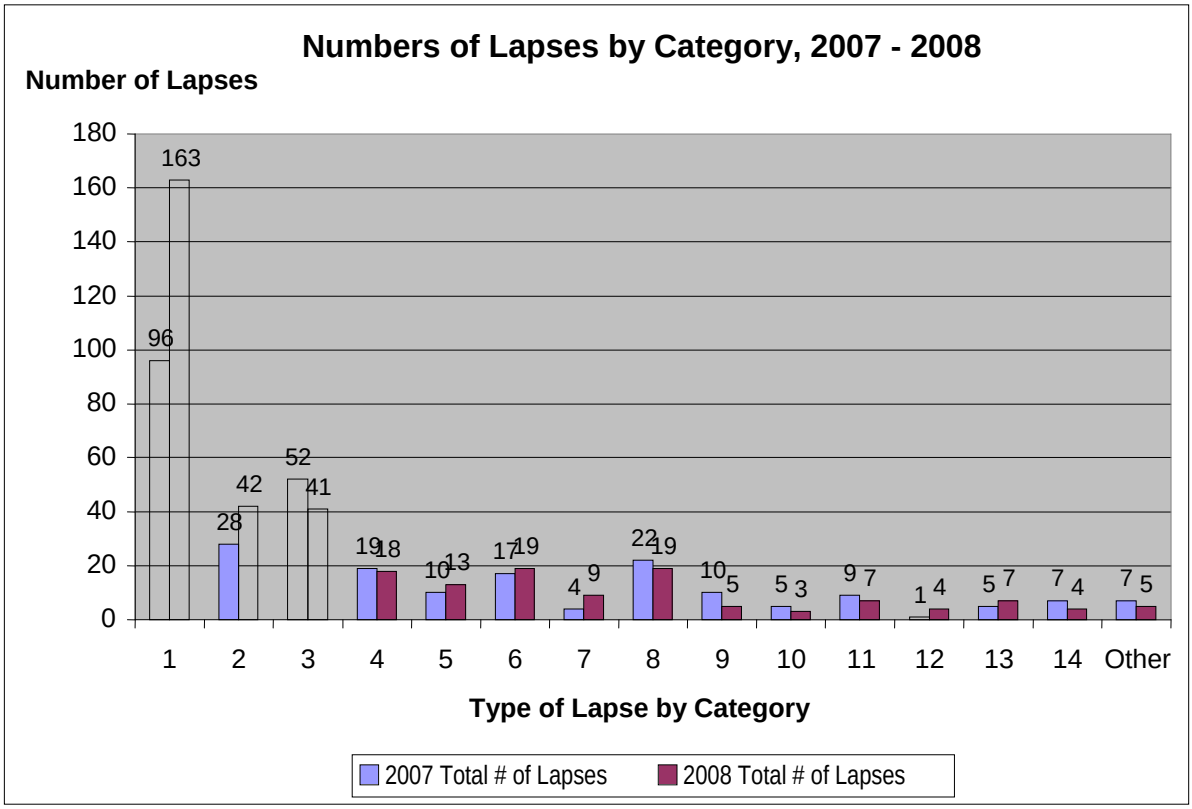
Table 13. Summary of lapses of care (extreme departures), 2008

Lapses of Care Types (Extreme Departures)	# of Lapses in the 302 Non Preventable Deaths	# of Lapses in the 61 Possibly Preventable Deaths	# of Lapses in the 5 Preventable Deaths	Total # of Lapses	Cumulative Percent
#1 – Failure to recognize, identify or adequately evaluate important symptoms or signs	86	64	13	163	45%
#2 – Failure to follow established guidelines for evaluation and/or management of specific condition	16	25	1	42	57%
#3 – Delay in access to care sufficient to result in harm to the patient	24	15	2	41	69%
#4 – Failure to adequately pursue abnormal test results	12	6	0	18	74%
#5 – Failure of provider-to-provider communications including botched handoffs	6	5	2	13	77%
#6 – Fragmentation of care such that individual responsibility for patient is waived	9	9	1	19	82%
#7 – Surgical/procedural complication resulting in iatrogenic injury	3	5	1	9	85%
#8- Medication prescribing error	13	5	1	19	90%
#9- Medication delivery error	3	1	1	5	92%
#10- Practicing outside the scope of one's capabilities	1	2	0	3	92%
#11- Unsupervised mid-level (nurse practitioner or physician assistant) care	4	3	0	7	94%
#12 – Failure of communication with patient	3	1	0	4	95%
#13 – Patient non-adherence with recommendation for care	4	3	0	7	97%
#14 – Delay in emergency response or failed to follow emergency response protocol	3	1	0	4	99%
#`5 - Other (including unavailability of medical record)	3	2	0	5	100%
Total	190	147	22	359	100%

Figure 7 graphs the numbers of lapses by type in both 2007 and 2008. The total number of lapses identified was much greater in 2008 than in 2007. This is largely because of a difference in counting methodology between the two years. In 2007, if a particular type of lapse occurred more than once in a single case all such lapses were

counted as one. (ie; if three providers separately failed to adequately evaluate a red flag symptom, it counted as one lapse.) In 2008, if more than one occurrence of a particular type of lapse was noted, all such occurrences were counted (ie: if three providers separately failed to evaluate a red flag symptom, it counted as three lapses). It is also likely that the more highly trained review staff and the more structured review process in 2008 led to the recognition of more lapses..

Figure 7. Numbers of Lapses by Category, 2007-2008



In both years, the most frequent lapse was the "failure to recognize, evaluate and appropriately manage important signs and symptoms". This single type of lapse accounted for 45% of all lapses in 2008 and 33% of all lapses in 2007. Moreover, as noted previously, the occurrence of recurrent symptoms that are escalating in intensity or not responding to treatment, should be considered a major red flag by providers.

Lapses 1,2, and 3 together accounted for 69% of the total in 2008 and 60% in 2007.

System-wide Strategies

The Receiver and CPHCS have initiated a number of strategies intended to improve the overall quality of care in the system. The initiatives described below are the most important of these.

1. Redesigning and installing a new primary care model of care into all prisons.

The CPHCS system of care has been largely episodic and characterized by patient – physician relationships that may be adversarial and symptom-driven. By changing to a primary care model that is characterized by a continuous patient-provider relationship with built-in advocacy for patients and accountability for outcomes, it should be possible to decrease serious lapses in care of all types. Poorly trained and poorly motivated providers will continue to be replaced with providers who are competent to deliver primary care. Primary care physicians will lead interdisciplinary patient management teams designed to manage panels or populations of patients. This new primary care model was piloted successfully in 2008 and is now being introduced into all 33 prisons.

2 . Installing a chronic disease management model of care.

It should be possible to identify patients at risk for preventable death based on age, functional status and/or diagnoses. These patient groups with more chronic diseases take more medication and are subject to more testing, more hospitalization, more specialist visits and more medical handoffs. The chronic disease management model has proven effective in preventing unnecessary morbidity and mortality, producing measurable improvements in overall care, and reducing waste through implementation of care management, specific disease management guidelines, patient education and decision support. The CPHCS has piloted this model in he management of asthma and diabetes and is planning to install it into all 33 prisons it in 2009 and early 2010. Once in place, the model can accommodate any chronic disease, using the same principles of care. The chronic disease management model works best when a primary care model is already in place.

3. Strengthening the local peer review process.

A strong local peer review process should be able to involve all professional staff in the recognition and improvement of care at that facility. The review of all deaths, case conferences focused on problem cases, discussion of lapses in care and strategies to counter those lapses, education on evolving guidelines for care of specific diseases and conditions, discussion of local problems relating to access, relationships with local specialists, emergency rooms and hospitals – all of these activities can be part of a renewed local peer review process. The CPHCS has already begun planning to move the death review process to the local level as part of an overall strategy to strengthen local peer review.

4. Improving the physical environment of care.

For years, CPHCS staff has been working in clinical areas that are dirty, cramped, crowded, noisy, and poorly equipped. Efficient team care, as called for in the primary care/chronic disease management model, is physically difficult to sustain in these

settings. The volume of care often far exceeds capacity, as at Avenal State Prison, where 7500 inmates get care in space designed for 2300. Crowded patient areas promote errors and limit confidentiality. Recruitment and retention of professional staff will be problematic so long as clinic environments are isolating and unprofessional. There have been plans to improve and enlarge the clinical areas in existing prisons, but to date these clinic remodels have been completed in just a few of the 33 prisons.

5. Redesigning the ways in which patient information is handled at care transitions.

The inmate patient population is challenging. There is a high prevalence of dual diagnosis (serious mental illness coexisting with physical illness), chronic hepatitis, HIV infection, drug and alcohol and tobacco addiction. Depression is endemic. The extraordinary rate of intra and interfacility transfers in the California prison system creates opportunities for botched handoffs because of the loss of critical bits of clinical information at the point of transfer. Both the development of health information technology and the creation of new healthcare facilities will decrease clinical lapses during transitions in care.

6 .Collaboration with custody.

Security issues complicate access to care and the provision of care. Taking patients for care outside the prison is a complex process. Cell searches can result in confiscation of regular medication. A strong relationship between custody and the medical department is essential when redesigning any aspect of care. The Receivership and CPHCS has ensured that custody has been closely involved in the design process and installation of the primary care and chronic disease management models. Custody is integrated into the new multidisciplinary care teams.

All of these system changes should help to reduce lapses in all of the 14 categories. In addition, specific measures are needed to address and reduce the frequency of each particular type of lapse in care.

Category-specific interventions

The following interventions are tied to improvement in each of the fourteen categories of lapse:

#1. Failure to recognize or evaluate important symptoms and signs.

Strengthening of hiring criteria for physicians and nurses, redesign of on call policy and system to address the issue of afterhours evaluation of red flag symptoms, comprehensive redesign of the "sick call" process, case based educational meetings and focused continuing medical and nursing education all play a role in reducing lapses in this area.

#2 – Failure to follow established clinical guidelines.

Decision support at the time of care has been provided to all staff who can access the internet. UptoDate, the leading medical online reference resource, has been made available to any clinician in CPHCS who desires it. Disease management guidelines in the areas of asthma, diabetes, and hepatitis C have been adopted and disseminated, and the Pharmacy and Therapeutics Committee regularly publishes medication guidelines for common conditions. Pain management guidelines are in development.

#3 – Delays in access to appropriate care
Redesign of "sick call' and the medical triage process, health care custody access teams to ensure availability of custody escorts, and the utlization management initiative with evidence based criteria (Interqual guidelines) for access to specialists all address the problem of delays in access to appropriate care.

#4 – Failure to identify and pursue abnormal test results
The primary care model establishes a culture of accountability in every prison clinic, requires team based 'daily huddles" in each clinic to dicuss aspects of population and panel management including abnormal tests. A clinical data repository should be available in 2010 to further assist primary care teams in identifying abnormal test results.

#5 - Provider to provider communication
All individual patients are assigned to specific providers in the primary care model. The primary care teams are expected to follow their patients throughout the system, including patient transfers, referrals to emergency room or hospital, and referral to specialists. Contracts with specialists and hospitals will require timely written and verbal communication.

#6 – Failure of providers to assume responsibility for the patient.
The new Primary Care model is constructed specifically to address this lapse .

#7 – Surgical/procedural complications
The performance of all contracted specialists and hospitals will be monitored and contracts can be terminated for continued poor performance.

#8 – Medication prescribing errors and

#9 – Medication delivery errors
The pharmacy system has been redesigned. Maxor Guardian is an electronic pharmacy system with embedded reminders and clinical guides for prescribing. It has been introduced at more than half of the 33 prisons and the timetable targets early 2010 for completion .

#10 – Practicing outside the scope of one's clinical capabilities
Privileging policies should be redesigned to ensure that providers are only allowed to work in settings where they have demonstrated competence. The CPHCS Nursing

Department is improving the training of nurses in the triage function. The triage nurses themselves are members of the new primary care teams.

#11 – Failure to properly supervise midlevel providers (physician's assistants and nurse practitioners)
All midlevel practitioners were assigned a regular physician mentor/supervisor in late 2007. The primary care and chronic care models require midlevel providers to become completely integrated members of the primary care teams, where close working relationships, continual review of performance, shared goals, and open conduits of communication with their physician supervisors can take place.

#12 – Failure to communicate effectively with patients
The primary care and chronic disease management models will support trust in physicians by patients (and vice-versa) and will enhance the roles of RNs and other members of the team in facilitating communication. A number of peer educators are being trained at each prison. Primary care teams are working with the Men's and Women's Advisory Councils.

#13 - Patient nonadherence to recommendations for optimal care
The primary care and chronic disease management models focus on problem patients and the trial of creative strategies to more effectively manage these situations., including consultation with mental health., and the use of peer educators and the Men's and Women's Advisory Councils.

#14 – Delay in emergency response or failure to follow emergency response protocols.
The Emergency Response Initiative will be introduced into every prison in 2009.

V. Conclusion

Death rates in the CDCR have enjoyed a significant and continuous decline since 2006. In large part this is because the vigorous death review process has resulted in the identification of more than 85 potentially dangerous providers who have been replaced with new well qualified providers in primary care.

The death review process affords but a narrow albeit significant view of the overall quality of healthcare. But there are limitations on the information provided by this process. It focuses mainly on physician practice as documented in the medical record. It fails to adequately capture the many systemic problems with the environment of care, the adequacy of staffing, the provision of support systems for the providers of healthcare, how well the members of the healthcare team relate to one another, whether there is information available to support planned interventions of care rather than responses to episodic illness, the quality of the managerial infrastructure, organizational commitment to continuing training and education, adequacy of space and equipment, and the availability of decision support at the point of care.

The Receivership has committed to providing for patient care that is efficient, safe and effective. Simply recruiting new more qualified providers and nurses will not be enough if they do not stay. They should be proud to work in an environment in which there is a culture of shared responsibility for optimal patient outcome, where the culture allows for and encourages clinicians and nurses to identify and work together to correct cognitive lapses and systemic deficiencies, and where there are meaningful and constructive partnerships between physicians, mid levels, nurses, administrators and custody staff .

The CPHCS has begun this significant cultural transformation. With continued progress, improvements in reducing serious lapses in care should result in even more decreases in unnecessary suffering and death.