

# Serial killer nurses: is there an epidemic?

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# Why I'm here

- As a mathematical statistician, I became involved in the case of Lucia de Berk - a Dutch nurse convicted for serial murder on the basis of the statistics of an “impossible coincidence”
- This triggered my current interest in forensic statistics
- Also led to involvement in cases of Ben Geen (UK, application to CCRC) and Daniela Poggiali (It).

# Serial killer nurses: is there an epidemic?

- Victorino Chua (UK)
- Daniela Poggiali (Italy)
- Nils H. / Niels Högel (Germany)
- ...
- Maybe also an epidemic of false convictions of innocent nurses ??

# Academic research

- Yorker et al. (2006) *Serial murder by health care professionals*
- Katherine Ramsland (2007) *Inside the minds of health care serial killers: why they kill*
- Elizabeth Yardley and David Wilson (2014) *In Search of the 'Angels of Death': Conceptualising the Contemporary Nurse Healthcare Serial Killer*

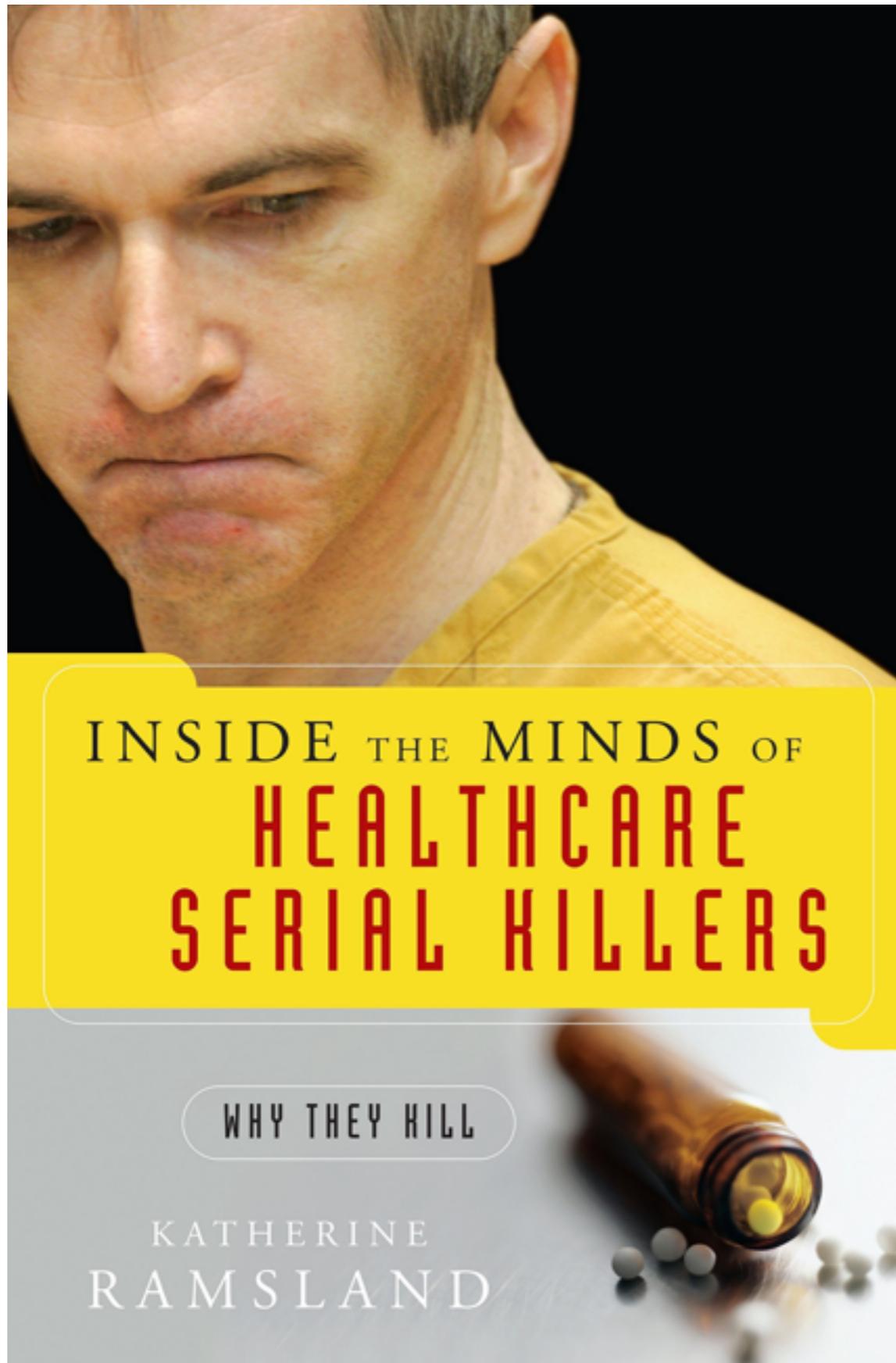
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## Serial Murder by Healthcare Professionals

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**ABSTRACT:** The prosecution of Charles Cullen, a nurse who killed at least 40 patients over a 16-year period, highlights the need to better understand the phenomenon of serial murder by healthcare professionals. The authors conducted a LexisNexis<sup>®</sup> search which yielded 90 criminal prosecutions of healthcare providers that met inclusion criteria for serial murder of patients. In addition we reviewed epidemiologic studies, toxicology evidence, and court transcripts, to provide data on healthcare professionals who have been prosecuted between 1970 and 2006. Fifty-four of the 90 have been convicted; 45 for serial murder, four for attempted murder, and five pled guilty to lesser charges. Twenty-four more have been indicted and are either awaiting trial or the outcome has not been published. The other 12 prosecutions had a variety of legal outcomes. Injection was the main method used by healthcare killers followed by suffocation, poisoning, and tampering with equipment. Prosecutions were reported from 20 countries with 40% taking place in the United States. Nursing personnel comprised 86% of the healthcare providers prosecuted; physicians 12%, and 2% were allied health professionals. The number of patient deaths that resulted in a murder conviction is 317 and the number of suspicious patient deaths attributed to the 54 convicted caregivers is 2113. These numbers are disturbing and demand that systemic changes in tracking adverse patient incidents associated with presence of a specific healthcare provider be implemented. Hiring practices must shift away from preventing wrongful discharge or denial of employment lawsuits to protecting patients from employees who kill.

**KEYWORDS:** forensic science, serial murder, homicide, assault, healthcare professionals, epidemics, nurse, murder



## In Search of the ‘Angels of Death’: Conceptualising the Contemporary Nurse Healthcare Serial Killer

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Table 15. Prevalence of items on ‘red flag’ checklist

Item	<i>N</i>	% of cases in which this item was present
1. Moves from one hospital to another	6	38
2. Secretive/difficult personal relationships	7	43
3. History of mental instability/depression	10	63
4. Predicts when someone will die	4	25
5. Makes odd comments/claims to be ‘jinxed’	3	19
6. Likes to talk about death/odd behaviours when someone dies	1	6
7. Higher incidences of death on his/her shift	15	94
8. Seems inordinately enthused about his/her skills	6	38
9. Makes inconsistent statements when challenged about deaths	3	19
10. Prefers nightshifts—fewer colleagues about	6	38
11. Associated with incidents at other hospitals	6	38
12. Been involved with other criminal activities	7	43
13. Makes colleagues anxious/suspicious	9	56
14. Craves attention	7	43
15. Tries to prevent others checking on his/her patients	0	–
16. Hangs around during investigations of deaths	0	–
17. In possession of drugs at home/in locker	8	50
18. Lied about personal information	0	–
19. In possession of books about poison/serial murder	1	6
20. Has had disciplinary problems	4	25
21. Appears to have a personality disorder	8	50
22. Has a substance abuse problem	3	19

Note: % ≠ 100 as all cases had at least one checklist item

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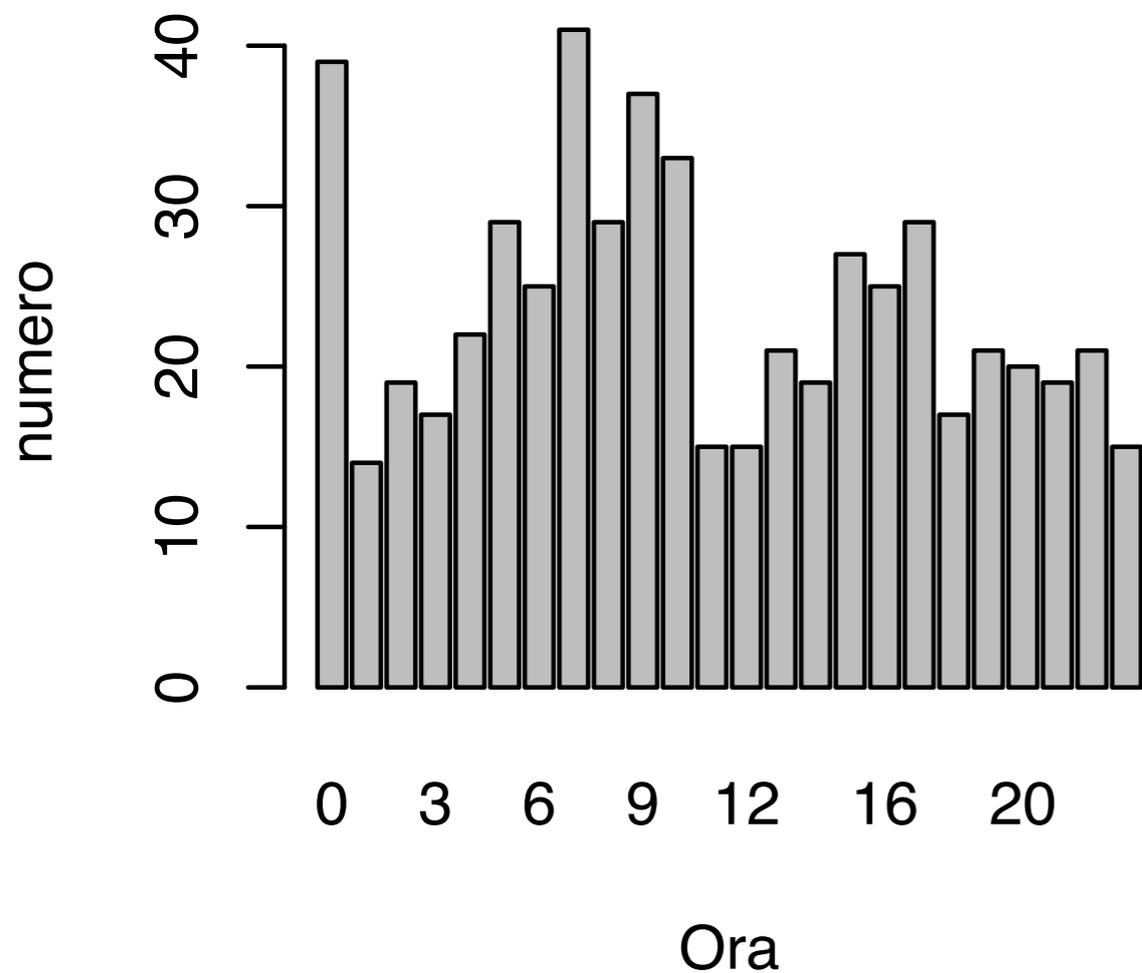
# Statistical issues

- Seeing statistical patterns
- Confirmation bias, cherry picking
- Inaccurate data, imprecise categories
- Double counting of evidence (circular reasoning)
- Shifting meanings, e.g.: unexpected - unexplained - suspicious
- Ignoring base-rate
- Correlation (association) vs. causation

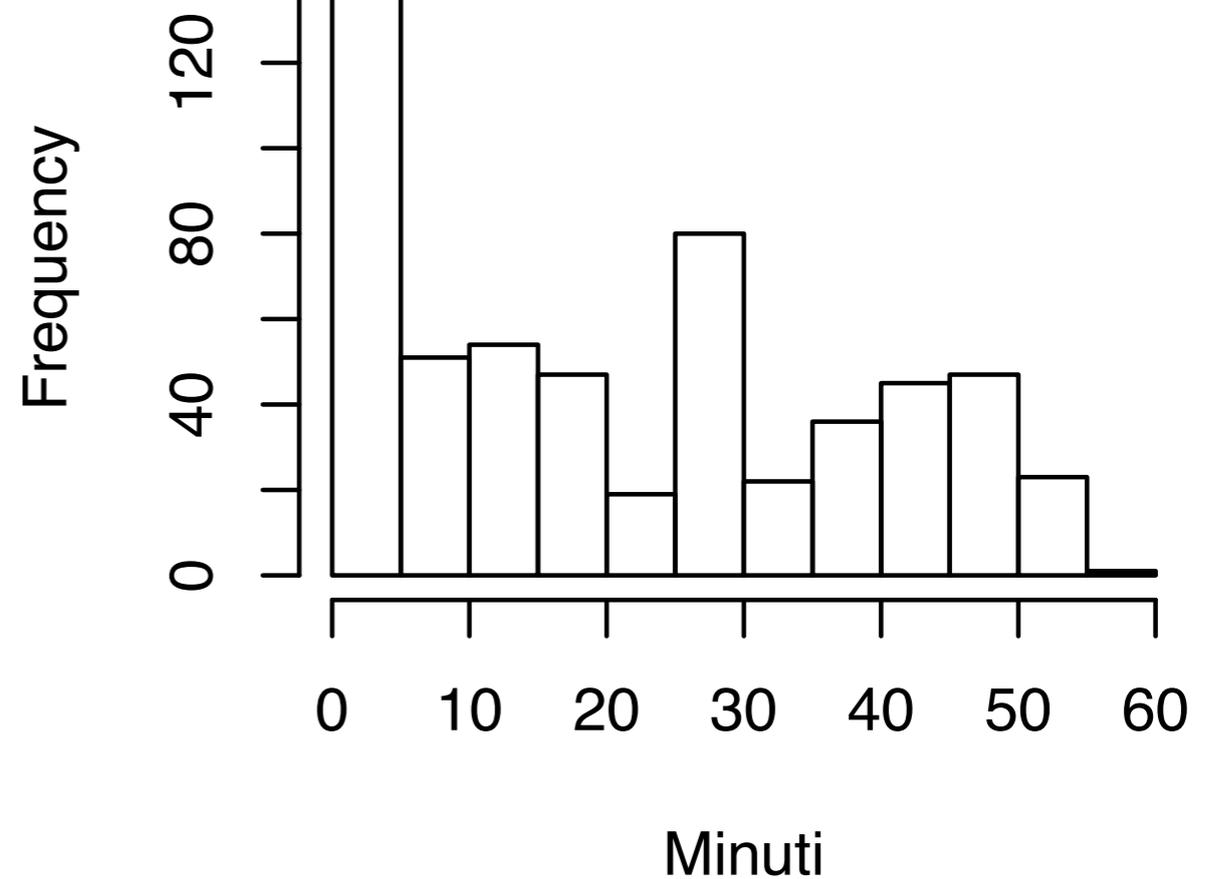
# Inaccurate data

Example: times of death (Daniela Poggiali case)

**Ora dei decessi**



**Minuti in cui il paziente è deceduto**



# Shifting meanings

Example: categories of event (Ben Geen case)

- Respiratory arrest vs. resp/cardiac/hypoglycaemic
- Any vs. unexplained only
- # respiratory arrests in winter 2003-4 same as in previous year

# Case of Lucia de Berk

- 2001: arrest
- 2003: life sentence for 4 murders and 2 attempts  
Evidence: statistics of coincidence data (“1 in 342 million”)
- 2004: life sentence for 7 murders and 3 attempts  
Evidence: medical evidence only; “chain proof”
- 2006: publication of book by Ton Derksen
- 2008: judicial inquiry, recommendation to reopen case
- 2010: retrial: not guilty

JKZ MCU-I Oct '00 – Sept '01			<u>incident</u>	
			with	without
<u>Lucia</u>	with	9	b133	
	without	0	b887	

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RKZ-42 Aug – Nov '97			b6	b52
	<u>Lucia</u>	with	b9	272
		without		

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RKZ-41 Aug – Nov '97			1	bb0
	<u>Lucia</u>	with	4	361
		without		

Original trial: statistical evidence, only

# Chain proof

- Lucia is proven to have murdered baby Amber
- She is present at many suspicious deaths
- She cannot give any explanation for her presence
- Therefore, the deaths are likely murders, and she is the murderer

Appeal: medical evidence, only

# What went wrong?

- Coincidence data was gathered by hospital doctors already convinced that Lucia de Berk was a serial killer
- No formal definition of “incident”, no formal definition of “time of incident”
- Classification of shifts as with/without incident performed by hospital doctors in the knowledge of presence/absence of Lucia

Original trial: statistical evidence, only

# Shifts

# Court data

# Corrected data

JKZ MCU-I

Oct '00 – Sept '01

incident

with without

Lucia

with  
without

9	b133
0	b887

incident

with without

b7	b135
b4	b883

RKZ-42

Aug – Nov '97

Lucia

with  
without

b6	b52
b9	272

b5	b53
10	273

RKZ-41

Aug – Nov '97

Lucia

with  
without

1	bb0
4	361

1	bb2
4	359

# What went wrong?

- Lucia cannot explain her presence at all these incidents
- During appeal court hearings (only medical evidence, no statistics) medical specialists judged various “unexplained” deaths to be “suspicious”, because Lucia was present
- “Chain proof” of Lucia’s guilt was therefore  
\*circular\*

Appeal: medical evidence, only

# What went right?

- 2010 retrial: complete medical dossiers of each of three key cases were studied by an external, independent, multidisciplinary medical/toxicological team
- This uncovered numerous errors in diagnosis and treatment (prescribed medication). Apart from this, all deaths were natural
- In particular, the “trigger case” (baby Amber) was a natural death

# Common features

- The case is triggered by a surprising incident involving a particular nurse
- The nurse has a striking personality and has been the subject of malicious gossip for some time
- The nurse has themselves already drawn attention to the many incidents occurring in their shifts
- Hospital doctors and administrators have been aware of this situation for some time
- The hospital completes a rapid intensive internal investigation before informing police or other (medical) authorities

# Common features

- Medical specialists project an aura of certainty concerning diagnosis and interpretation of symptoms which is unwarranted
- It is taken for granted that medical errors do not occur, ever, except possibly those caused by incompetent nurses

# Conclusions

- We need to learn from our mistakes
- Communication between disciplines requires both sides to listen
- Three disciplines: medical / legal / statistical increases communication problems
- Dangers of biased witnesses and double counting: role for judges and defence lawyers
- Need for awareness of medical errors and awareness of imprecision of medical data