

What's your Poison? by Craig Paardekooper

It seems obvious, but the toxicity of a poison can be determined by its lethality – the % of people who die after taking it.

In the same way, the toxicity of a lot might be measured by the % of adverse reaction reports resulting in a fatality for that lot.

Some lots appear to be more toxic than others

When I examined the Pfizer lots, I found that they grouped into alphabetic series such as EN, ER, EW, FA, FC, FF. Within each of these alphabetic groups I observed the following -

1. there was a distinct group of lots displaying very high numbers of adverse reactions – typically 100 times greater than any of the remaining lots in that same alphabetic group.
2. there was no gradual transition from lots with high adverse reactions to lots with low adverse reactions – instead there was a sudden drop by 2 orders of magnitude.
3. the lots with very high adverse reaction numbers had batch codes belonging to the same sequential mathematical series.

Between each of these alphabetic groups I observed the following -

4. there was a linear stepwise decrease in adverse reactions as the group ascended the alphabet.

This gave every appearance that the lots were varying in toxicity, not just within their own alphabetic group, but between groups also, and that this variation in toxicity had been carefully labelled with sequential mathematical batch codes.

Measuring the lethality

First, I identified the lots with high adverse reaction numbers in each alphabetic group. (see p 3, 4, 5) .

Then I counted the number of deaths for these lots, and divided that by the total number of adverse reports for these lots.

$\% \text{ Lethality} = \text{Number of Deaths} / \text{Total number of Reports} * 100$

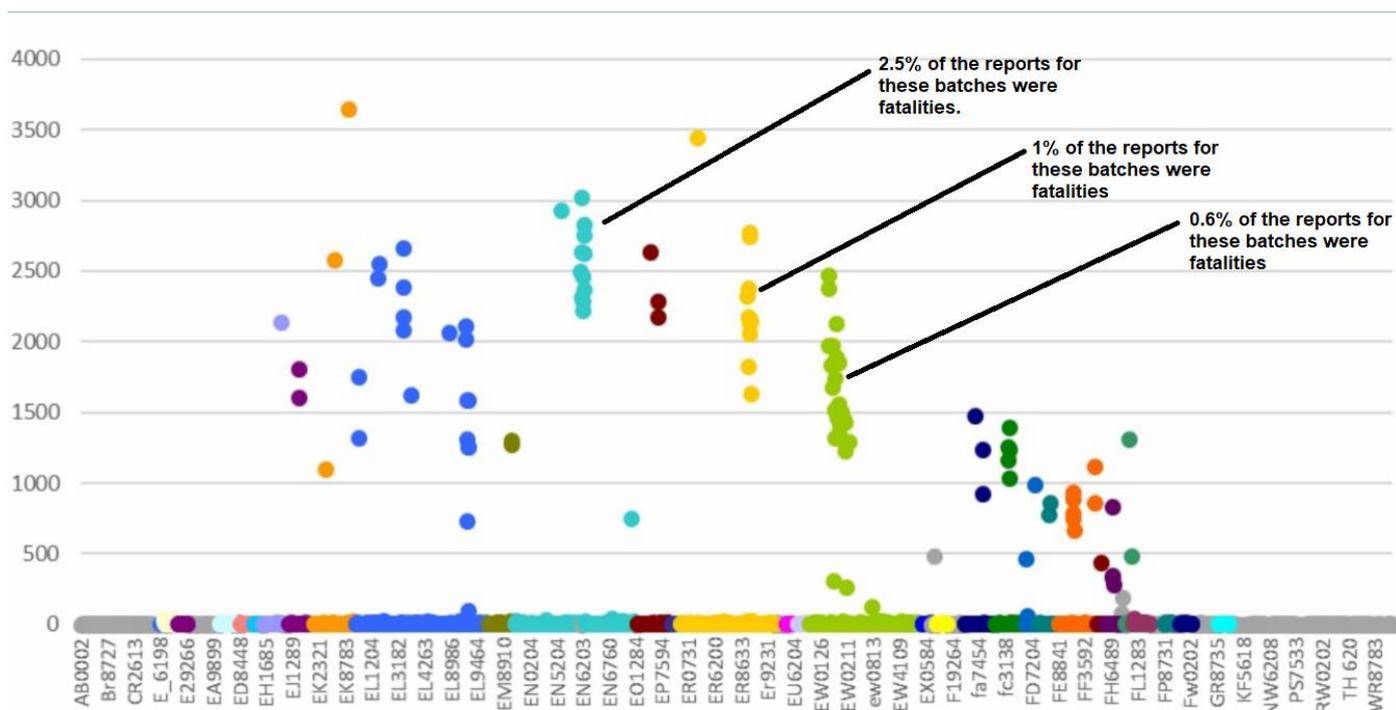
This gave me the % of the reports resulting in death.

Results

EN Series	30354 adverse reports	780 deaths	lethality = 2.5%
ER Series	24288 adverse reports	243 deaths	lethality = 1%
EW Series	49233 adverse reports	311 deaths	lethality = 0.6%

Conclusion

So the stepwise decline in adverse reactions coincides with a stepwise reduction in the % of reports resulting in death – indicating that the lots with high adverse reaction numbers really are more toxic.



This chart shows the lots arranged by batch code alphabetically along the x axis. The y axis shows the number of adverse reactions for each lot.

You can see how lots form groups with very similar batch codes, where the codes are all part of the same mathematical series. You can also see how these series identify distinct ranges of toxicity.

Here is a close up of the EN Series.

I calculated the % lethality for the lots shaded in yellow.

2.5% of adverse reaction reports ended in fatality.

BATCH	ADR	DEATH	DISABILITY	L THREAT
EN6201	2804	110	66	53
EN6205	2782	45	65	51
EN5318	2781	87	57	53
EN6208	2648	56	52	50
EN6207	2525	44	73	50
EN6200	2454	81	54	51
EN6202	2394	74	55	54
EN6198	2348	70	58	55
EN6206	2348	36	53	43
EN6199	2227	52	50	53
EN6203	2181	45	47	40
EN6204	2134	43	50	57
EN9581	728	37	19	23
EN6955	37		3	
Ens318	35	1	2	4
EN8727	25		1	
ENG206	25		1	1
En0150	24			1
EN2613	23		1	
EN8730	23		1	1
EN8733	23		1	1
ENG199	21	1	1	
ENG201	21		1	
ENG202	20			
EN7534	19		1	2
EN9809	18			
EN0151	17	1		
ENG208	17		1	1
EN6209	15			
ENG198	15			
ENG205	15		2	
ENG6201	15			
EN3518	14			
ENG6199	14		2	
EN9810	13	1		
Eng204	13			
EN6021	12			
ENG200	12			
EN0153	11		1	

Here is a close up of the ER Series

I calculated the % lethality for the lots shaded in yellow.

1% of adverse reaction reports ended in fatality.

BATCH	ADR	DEATH	DISABILITY	L THREAT
ER2613	3299	35	56	53
ER8733	2680	13	63	45
er8732	2652	39	51	55
ER8729	2288	10	46	37
ER8727	2274	33	49	47
ER8730	2103	28	45	38
ER8734	2044	18	38	43
ER8737	2032	15	56	41
ER8735	1944	22	37	28
ER8731	1708	21	40	43
ER8736	1555	7	41	36
ER7533	21	1		
ER8739	21	1		
ER8728	17		3	2
ER8738	15		1	
ER8713	11			1
ER873	11			
Er9231	11			
ER2614	9			
ER5730	9			
Er6213	9			
ER8130	9			
ER8132	9			
ER8723	9			
ER0151	8	1		
ER6955	8			
ER0734	7		2	
ER9729	7			
ER9731	7			1
ER	6			
ER4176	6			
ER6207	6			
ER8131	6			
er8724	6			1
ER8743	6			
ER8763	6			
ERZ613	6			
ER1742	5	1	1	1
ER26B	5			
ER3782	5			

Here is a close up of the EW Series

I calculated the % lethality for the lots shaded in yellow.

0.6% of adverse reaction reports ended in fatality.

BATCH	ADR	DEATH	DISABILITY	L THREAT
EW0150	2419	20	49	35
EW0151	2328	16	41	35
EW0172	2126	17	36	30
EW0162	1930	16	37	25
EW0173	1885	7	27	19
ew0153	1857	11	40	28
EW0179	1850	5	30	24
EW0164	1833	17	24	23
Ew0158	1832	13	35	32
EW0171	1775	20	34	35
EW0169	1716	19	30	23
EW0161	1652	12	23	29
EW0177	1559	9	15	21
EW0187	1510	8	12	21
EW0176	1501	10	35	16
EW0180	1483	6	14	17
EW0170	1480	8	38	19
EW0185	1473	3	24	20
ew0167	1471	12	35	33
EW0175	1455	10	24	17
ew0191	1440	9	24	17
EW0196	1440	4	24	10
EW0186	1392	11	24	16
ew0182	1384	7	35	26
EW0181	1374	6	22	14
EW0217	1335	8	29	20
EW0178	1322	4	21	19
EW0183	1313	5	16	18
EW0168	1285	11	25	20
EW0198	1250	1	19	12
EW0165	290	3	8	9
ew0202	273	3	8	7
EW0810	117			
EW0183H	22			
ew1058	22			
Ew5318	20	1	1	
Ew1050	19			
EW0185H	17			
EW0189	17		1	
EW0175H	16			
EW1053	16			
Ew017	15			1
EW1075	15			
EW0127	14		1	
EW0193	14		1	1
EW1077	14			
EW0186H	13			
EW6208	13		1	
EW0160	12		1	1
ew1067	12			
EW0107	11			
EW0157	11			
EW1076	11			