

```
In [1]: ▶ import pandas as pd

data = pd.read_csv('Drug-AE.csv')
```

```
In [2]: ▶ data.head()
```

Out[2]:

	REFERENCE_NO	NO_OF_DRUG	INGREDIENT	NO_OF_ADR_TERMS	MEDDRA_PREFERRED_TERM
0	55	1	KETOROLAC	1	ANGIOEDEMA
1	56	1	SULFANILAMIDE	1	ANGIOEDEMA
2	76	1	ORPHENADRINE-PARACETAMOL	1	PERIORBITAL OEDEMA
3	89	1	GLIPIZIDE	1	PRURITUS
4	90	4	COAMOXICLAV	1	PERIORBITAL OEDEMA

```
In [3]: ▶ data.shape
```

Out[3]: (1999, 5)

```
In [4]: ▶ a_df = data[['INGREDIENT', 'MEDDRA_PREFERRED_TERM', 'REFERENCE_NO']].groupby(['INGREDIENT', 'MEDDRA_PREFERRED_TERM'], a
a_df.head()
```

Out[4]:

	INGREDIENT	MEDDRA_PREFERRED_TERM	REFERENCE_NO
0	ACARBOSE	DIARRHOEA	1
1	ACETYLCYSTEINE	FLUSHING	1
2	ACETYLCYSTEINE	RASH	2
3	ACETYLCYSTEINE	URTICARIA	1
4	ACETYLCYSTEINE	VOMITING	1

```
In [5]: ▶ aplusb_df = data[['INGREDIENT', 'REFERENCE_NO']].groupby(['INGREDIENT'], as_index=False).count()
        aplusb_df.head()
```

Out[5]:

	INGREDIENT	REFERENCE_NO
0	ACARBOSE	1
1	ACETYLCYSTEINE	5
2	ACICLOVIR	2
3	ADAPALENE	1
4	ADAPALENE-BENZOYL PEROXIDE	3

```
In [6]: ▶ aplusc_df = data[['MEDDRA_PREFERRED_TERM', 'REFERENCE_NO']].groupby(['MEDDRA_PREFERRED_TERM'], as_index=False).count()
        aplusc_df.head()
```

Out[6]:

	MEDDRA_PREFERRED_TERM	REFERENCE_NO
0	ABDOMINAL DISTENSION	1
1	ABDOMINAL PAIN	12
2	ACUTE GENERALISED EXANTHEMATOUS PUSTULOSIS	6
3	AGITATION	3
4	ALANINE AMINOTRANSFERASE INCREASED	1

```
In [7]: ▶ total = data['REFERENCE_NO'].drop_duplicates().count()
        total
```

Out[7]: 1679

```
In [8]: ROR_df = data[['INGREDIENT', 'MEDDRA_PREFERRED_TERM']].drop_duplicates()
ROR_df
```

Out[8]:

	INGREDIENT	MEDDRA_PREFERRED_TERM
0	KETOROLAC	ANGIOEDEMA
1	SULFANILAMIDE	ANGIOEDEMA
2	ORPHENADRINE-PARACETAMOL	PERIORBITAL OEDEMA
3	GLIPIZIDE	PRURITUS
4	COAMOXICLAV	PERIORBITAL OEDEMA
5	AMBROXOL	PERIORBITAL OEDEMA
6	PARACETAMOL	PERIORBITAL OEDEMA
7	DICLOFENAC	PERIORBITAL OEDEMA
8	LEVOFLOXACIN	RASH
9	CIPROFLOXACIN	CONJUNCTIVITIS
10	ASPIRIN	PERIORBITAL OEDEMA
11	IBUPROFEN	PERIORBITAL OEDEMA
12	PARACETAMOL	RASH
13	CHLORPHENIRAMINE	RASH
14	AMOXICILLIN	RASH
15	ATORVASTATIN	RASH ERYTHEMATOUS
17	COAMOXICLAV	RASH
18	VANCOMYCIN	RASH
19	SITAGLIPTIN	DIZZINESS
20	AMOXICILLIN	PRURITUS
21	COAMOXICLAV	CONJUNCTIVITIS
23	DEXLANSOPRAZOLE	HEADACHE
24	CEFALEXIN	PERIORBITAL OEDEMA

	INGREDIENT	MEDDRA_PREFERRED_TERM
26	PARACETAMOL	ERYTHEMA MULTIFORME
27	PROCHLORPERAZINE	OCULOGYRIC CRISIS
28	SALBUTAMOL	ANGIOEDEMA
29	PARACETAMOL	ANGIOEDEMA
30	CEFTAZIDIME	URTICARIA
31	VANCOMYCIN	URTICARIA
32	CHLORPHENIRAMINE	HEADACHE
...
1924	SPIRAMYCIN	RASH
1930	CHLORAMPHENICOL	RASH
1931	DAPAGLIFLOZIN	URINARY TRACT INFECTION
1932	EMPAGLIFLOZIN	PERIORBITAL OEDEMA
1933	EMPAGLIFLOZIN	RASH
1934	ETORICOXIB	PARAESTHESIA
1937	CODEINE	ANAPHYLACTIC REACTION
1938	ACETYLCYSTEINE	VOMITING
1939	BENZYL PENICILLIN OR PENICILLIN G	RASH MACULO-PAPULAR
1940	CEFTAZIDIME	RASH MACULO-PAPULAR
1944	PIPERACILLIN AND TAZOBACTAM	RASH MACULO-PAPULAR
1946	CEFALEXIN	FACE OEDEMA
1948	ATORVASTATIN	VISUAL DISTURBANCE
1949	CEFTRIAXONE	ANAPHYLACTIC REACTION
1954	OXALIPLATIN	RASH
1956	GELATIN	RASH
1957	TICAGRELOR	DYSPNOEA
1958	CONJUGATED OESTROGEN	URTICARIA

	INGREDIENT	MEDDRA_PREFERRED_TERM
1959	CARVEDILOL	SYNCOPE
1960	CARVEDILOL	BRADYCARDIA
1969	CEFUROXIME	URTICARIA
1974	BENZYL PENICILLIN OR PENICILLIN G	URTICARIA
1980	TICLOPIDINE	PRURITUS
1981	BISOPROLOL	BRADYCARDIA
1984	CODEINE	DYSAESTHESIA
1985	MONTELUKAST	RASH
1987	ATORVASTATIN	ALOPECIA
1988	HYDRALAZINE	VOMITING
1992	MOXIFLOXACIN	PERIORBITAL OEDEMA
1994	IOHEXOL	ANGIOEDEMA

966 rows × 2 columns

```
In [9]: ► overall_df = pd.merge(ROR_df, a_df, how='left', left_on=['INGREDIENT', 'MEDDRA_PREFERRED_TERM'], right_on=['INGREDIENT', 'MEDDRA_PREFERRED_TERM'])
overall_df = overall_df.rename(columns={'REFERENCE_NO' : 'a'})
overall_df.head()
```

Out[9]:

	INGREDIENT	MEDDRA_PREFERRED_TERM	a
0	KETOROLAC	ANGIOEDEMA	6
1	SULFANILAMIDE	ANGIOEDEMA	1
2	ORPHENADRINE-PARACETAMOL	PERIORBITAL OEDEMA	5
3	GLIPIZIDE	PRURITUS	2
4	COAMOXICLAV	PERIORBITAL OEDEMA	7

```
In [10]: overall_df = overall_df.merge(plusb_df,how='left', left_on=['INGREDIENT'], right_on=['INGREDIENT'])
overall_df = overall_df.rename(columns={'REFERENCE_NO' : 'a_plus_b'})
overall_df['b'] = overall_df['a_plus_b'] - overall_df['a']
overall_df.head()
```

Out[10]:

	INGREDIENT	MEDDRA_PREFERRED_TERM	a	a_plus_b	b
0	KETOROLAC	ANGIOEDEMA	6	15	9
1	SULFANILAMIDE	ANGIOEDEMA	1	1	0
2	ORPHENADRINE-PARACETAMOL	PERIORBITAL OEDEMA	5	20	15
3	GLIPIZIDE	PRURITUS	2	6	4
4	COAMOXICLAV	PERIORBITAL OEDEMA	7	163	156

```
In [11]: overall_df = overall_df.merge(plusc_df,how='left', left_on=['MEDDRA_PREFERRED_TERM'], right_on=['MEDDRA_PREFERRED_TERM'])
overall_df = overall_df.rename(columns={'REFERENCE_NO' : 'a_plus_c'})
overall_df['c'] = overall_df['a_plus_c'] - overall_df['a']
overall_df.head()
```

Out[11]:

	INGREDIENT	MEDDRA_PREFERRED_TERM	a	a_plus_b	b	a_plus_c	c
0	KETOROLAC	ANGIOEDEMA	6	15	9	147	141
1	SULFANILAMIDE	ANGIOEDEMA	1	1	0	147	146
2	ORPHENADRINE-PARACETAMOL	PERIORBITAL OEDEMA	5	20	15	255	250
3	GLIPIZIDE	PRURITUS	2	6	4	62	60
4	COAMOXICLAV	PERIORBITAL OEDEMA	7	163	156	255	248

```
In [12]: overall_df['d'] = total - overall_df['a'] - overall_df['b'] - overall_df['c']  
overall_df.head()
```

Out[12]:

	INGREDIENT	MEDDRA_PREFERRED_TERM	a	a_plus_b	b	a_plus_c	c	d
0	KETOROLAC	ANGIOEDEMA	6	15	9	147	141	1523
1	SULFANILAMIDE	ANGIOEDEMA	1	1	0	147	146	1532
2	ORPHENADRINE-PARACETAMOL	PERIORBITAL OEDEMA	5	20	15	255	250	1409
3	GLIPIZIDE	PRURITUS	2	6	4	62	60	1613
4	COAMOXICLAV	PERIORBITAL OEDEMA	7	163	156	255	248	1268

```
In [13]: overall_df['ROR'] = (overall_df['a'] + 0.5) * (overall_df['d'] + 0.5) / (overall_df['b'] + 0.5) * (overall_df['c'] + overall_df)
```

Out[13]:

	INGREDIENT	MEDDRA_PREFERRED_TERM	a	a_plus_b	b	a_plus_c	c	d	ROR
0	KETOROLAC	ANGIOEDEMA	6	15	9	147	141	1523	1.474989e+05
1	SULFANILAMIDE	ANGIOEDEMA	1	1	0	147	146	1532	6.735338e+05
2	ORPHENADRINE-PARACETAMOL	PERIORBITAL OEDEMA	5	20	15	255	250	1409	1.252864e+05
3	GLIPIZIDE	PRURITUS	2	6	4	62	60	1613	5.423153e+04
4	COAMOXICLAV	PERIORBITAL OEDEMA	7	163	156	255	248	1268	1.510650e+04
5	AMBROXOL	PERIORBITAL OEDEMA	1	2	1	255	254	1423	3.622808e+05
6	PARACETAMOL	PERIORBITAL OEDEMA	28	89	61	255	227	1363	1.437495e+05
7	DICLOFENAC	PERIORBITAL OEDEMA	28	72	44	255	227	1380	2.011420e+05
8	LEVOFLOXACIN	RASH	3	6	3	583	580	1093	6.347768e+05
9	CIPROFLOXACIN	CONJUNCTIVITIS	1	47	46	7	6	1626	3.410403e+02
10	ASPIRIN	PERIORBITAL OEDEMA	22	54	32	255	233	1392	2.251030e+05
11	IBUPROFEN	PERIORBITAL OEDEMA	35	102	67	255	220	1357	1.574248e+05
12	PARACETAMOL	RASH	21	89	68	583	562	1028	1.815828e+05
13	CHLORPHENIRAMINE	RASH	3	11	8	583	580	1088	2.601835e+05
14	AMOXICILLIN	RASH	44	74	30	583	539	1066	8.394841e+05
15	ATORVASTATIN	RASH ERYTHEMATOUS	1	31	30	48	47	1601	3.741209e+03
16	COAMOXICLAV	RASH	80	163	83	583	503	1013	4.919632e+05
17	VANCOMYCIN	RASH	4	9	5	583	579	1091	5.175198e+05
18	SITAGLIPTIN	DIZZINESS	1	4	3	43	42	1633	2.975304e+04
19	AMOXICILLIN	PRURITUS	1	74	73	62	61	1544	1.938505e+03
20	COAMOXICLAV	CONJUNCTIVITIS	1	163	162	7	6	1510	9.063000e+01
21	DEXLANSOPRAZOLE	HEADACHE	2	2	0	26	24	1653	2.025538e+05
22	CEFALEXIN	PERIORBITAL OEDEMA	3	28	25	255	252	1399	4.850228e+04

	INGREDIENT	MEDDRA_PREFERRED_TERM	a	a_plus_b	b	a_plus_c	c	d	ROR
23	PARACETAMOL	ERYTHEMA MULTIFORME	2	89	87	2	0	1590	2.272143e+01
24	PROCHLORPERAZINE	OCULOGYRIC CRISIS	3	9	6	16	13	1657	1.204875e+04
25	SALBUTAMOL	ANGIOEDEMA	1	1	0	147	146	1532	6.735338e+05
26	PARACETAMOL	ANGIOEDEMA	16	89	73	147	131	1459	4.308504e+04
27	CEFTAZIDIME	URTICARIA	1	3	2	132	131	1545	1.219399e+05
28	VANCOMYCIN	URTICARIA	2	9	7	132	130	1540	6.701175e+04
29	CHLORPHENIRAMINE	HEADACHE	1	11	10	26	25	1643	5.987036e+03
...
936	SPIRAMYCIN	RASH	1	1	0	583	582	1096	1.916134e+06
937	CHLORAMPHENICOL	RASH	1	4	3	583	582	1093	2.729845e+05
938	DAPAGLIFLOZIN	URINARY TRACT INFECTION	1	11	10	1	0	1668	1.191786e+02
939	EMPAGLIFLOZIN	PERIORBITAL OEDEMA	1	3	2	255	254	1422	2.172158e+05
940	EMPAGLIFLOZIN	RASH	1	3	2	583	582	1094	3.825278e+05
941	ETORICOXIB	PARAESTHESIA	1	43	42	2	1	1635	8.658529e+01
942	CODEINE	ANAPHYLACTIC REACTION	1	16	15	25	24	1639	3.887202e+03
943	ACETYLCYSTEINE	VOMITING	1	5	4	26	25	1649	1.402075e+04
944	BENZYL PENICILLIN OR PENICILLIN G	RASH MACULO-PAPULAR	1	26	25	56	55	1598	5.218632e+03
945	CEFTAZIDIME	RASH MACULO-PAPULAR	1	3	2	56	55	1621	5.399595e+04
946	PIPERACILLIN AND TAZOBACTAM	RASH MACULO-PAPULAR	1	6	5	56	55	1618	2.449820e+04
947	CEFALEXIN	FACE OEDEMA	1	28	27	49	48	1603	4.241986e+03
948	ATORVASTATIN	VISUAL DISTURBANCE	1	31	30	1	0	1648	4.053689e+01
949	CEFTRIAXONE	ANAPHYLACTIC REACTION	1	21	20	25	24	1634	2.930140e+03
950	OXALIPLATIN	RASH	1	5	4	583	582	1092	2.121271e+05
951	GELATIN	RASH	1	1	0	583	582	1096	1.916134e+06
952	TICAGRELOR	DYSPNOEA	1	1	0	28	27	1651	1.362488e+05
953	CONJUGATED OESTROGEN	URTICARIA	1	1	0	132	131	1547	6.104888e+05

	INGREDIENT	MEDDRA_PREFERRED_TERM	a	a_plus_b	b	a_plus_c	c	d	ROR
954	CARVEDILOL	SYNCOPE	1	2	1	3	2	1675	4.188750e+03
955	CARVEDILOL	BRADYCARDIA	1	2	1	3	2	1675	4.188750e+03
956	CEFUROXIME	URTICARIA	1	4	3	132	131	1544	8.704361e+04
957	BENZYL PENICILLIN OR PENICILLIN G	URTICARIA	1	26	25	132	131	1522	1.177699e+04
958	TICLOPIDINE	PRURITUS	1	1	0	62	61	1617	2.984288e+05
959	BISOPROLOL	BRADYCARDIA	1	3	2	3	2	1674	2.511750e+03
960	CODEINE	DYSAESTHESIA	1	16	15	2	1	1662	2.413306e+02
961	MONTELUKAST	RASH	1	2	1	583	582	1095	6.381288e+05
962	ATORVASTATIN	ALOPECIA	1	31	30	2	1	1647	1.215369e+02
963	HYDRALAZINE	VOMITING	1	3	2	26	25	1651	2.526795e+04
964	MOXIFLOXACIN	PERIORBITAL OEDEMA	1	2	1	255	254	1423	3.622808e+05
965	IOHEXOL	ANGIOEDEMA	1	46	45	147	146	1487	7.184135e+03

966 rows × 9 columns

```
In [14]: import numpy as np
overall_df['SD_ROR'] = np.sqrt(1/(overall_df['a'] + 0.5) + 1/(overall_df['d'] + 0.5) + 1/(overall_df['b'] + 0.5) + 1/overall_df)
```

Out[14]:

	INGREDIENT	MEDDRA_PREFERRED_TERM	a	a_plus_b	b	a_plus_c	c	d	ROR	SD_ROR
0	KETOROLAC	ANGIOEDEMA	6	15	9	147	141	1523	1.474989e+05	0.516559
1	SULFANILAMIDE	ANGIOEDEMA	1	1	0	147	146	1532	6.735338e+05	1.635281
2	ORPHENADRINE-PARACETAMOL	PERIORBITAL OEDEMA	5	20	15	255	250	1409	1.252864e+05	0.501035
3	GLIPIZIDE	PRURITUS	2	6	4	62	60	1613	5.423153e+04	0.799607
4	COAMOXICLAV	PERIORBITAL OEDEMA	7	163	156	255	248	1268	1.510650e+04	0.380178
5	AMBROXOL	PERIORBITAL OEDEMA	1	2	1	255	254	1423	3.622808e+05	1.156704
6	PARACETAMOL	PERIORBITAL OEDEMA	28	89	61	255	227	1363	1.437495e+05	0.237649
7	DICLOFENAC	PERIORBITAL OEDEMA	28	72	44	255	227	1380	2.011420e+05	0.250359
8	LEVOFLOXACIN	RASH	3	6	3	583	580	1093	6.347768e+05	0.757671
9	CIPROFLOXACIN	CONJUNCTIVITIS	1	47	46	7	6	1626	3.410403e+02	0.917950
10	ASPIRIN	PERIORBITAL OEDEMA	22	54	32	255	233	1392	2.251030e+05	0.283222
11	IBUPROFEN	PERIORBITAL OEDEMA	35	102	67	255	220	1357	1.574248e+05	0.219672
12	PARACETAMOL	RASH	21	89	68	583	562	1028	1.815828e+05	0.252706
13	CHLORPHENIRAMINE	RASH	3	11	8	583	580	1088	2.601835e+05	0.637183
14	AMOXICILLIN	RASH	44	74	30	583	539	1066	8.394841e+05	0.240936
15	ATORVASTATIN	RASH ERYTHEMATOUS	1	31	30	48	47	1601	3.741209e+03	0.849194
16	COAMOXICLAV	RASH	80	163	83	583	503	1013	4.919632e+05	0.165442
17	VANCOMYCIN	RASH	4	9	5	583	579	1091	5.175198e+05	0.637716
18	SITAGLIPTIN	DIZZINESS	1	4	3	43	42	1633	2.975304e+04	0.988192
19	AMOXICILLIN	PRURITUS	1	74	73	62	61	1544	1.938505e+03	0.834973
20	COAMOXICLAV	CONJUNCTIVITIS	1	163	162	7	6	1510	9.063000e+01	0.909576
21	DEXLANSOPRAZOLE	HEADACHE	2	2	0	26	24	1653	2.025538e+05	1.562505

	INGREDIENT	MEDDRA_PREFERRED_TERM	a	a_plus_b	b	a_plus_c	c	d	ROR	SD_ROR
22	CEFALEXIN	PERIORBITAL OEDEMA	3	28	25	255	252	1399	4.850228e+04	0.574112
23	PARACETAMOL	ERYTHEMA MULTIFORME	2	89	87	2	0	1590	2.272143e+01	1.553080
24	PROCHLORPERAZINE	OCULOGYRIC CRISIS	3	9	6	16	13	1657	1.204875e+04	0.717104
25	SALBUTAMOL	ANGIOEDEMA	1	1	0	147	146	1532	6.735338e+05	1.635281
26	PARACETAMOL	ANGIOEDEMA	16	89	73	147	131	1459	4.308504e+04	0.287230
27	CEFTAZIDIME	URTICARIA	1	3	2	132	131	1545	1.219399e+05	1.036783
28	VANCOMYCIN	URTICARIA	2	9	7	132	130	1540	6.701175e+04	0.735966
29	CHLORPHENIRAMINE	HEADACHE	1	11	10	26	25	1643	5.987036e+03	0.895393
...
936	SPIRAMYCIN	RASH	1	1	0	583	582	1096	1.916134e+06	1.633798
937	CHLORAMPHENICOL	RASH	1	4	3	583	582	1093	2.729845e+05	0.977247
938	DAPAGLIFLOZIN	URINARY TRACT INFECTION	1	11	10	1	0	1668	1.191786e+02	1.662078
939	EMPAGLIFLOZIN	PERIORBITAL OEDEMA	1	3	2	255	254	1422	2.172158e+05	1.035036
940	EMPAGLIFLOZIN	RASH	1	3	2	583	582	1094	3.825278e+05	1.034068
941	ETORICOXIB	PARAESTHESIA	1	43	42	2	1	1635	8.658529e+01	1.165107
942	CODEINE	ANAPHYLACTIC REACTION	1	16	15	25	24	1639	3.887202e+03	0.878982
943	ACETYLCYSTEINE	VOMITING	1	5	4	26	25	1649	1.402075e+04	0.963696
944	BENZYL PENICILLIN OR PENICILLIN G	RASH MACULO-PAPULAR	1	26	25	56	55	1598	5.218632e+03	0.851191
945	CEFTAZIDIME	RASH MACULO-PAPULAR	1	3	2	56	55	1621	5.399595e+04	1.041778
946	PIPERACILLIN AND TAZOBACTAM	RASH MACULO-PAPULAR	1	6	5	56	55	1618	2.449820e+04	0.931193
947	CEFALEXIN	FACE OEDEMA	1	28	27	49	48	1603	4.241986e+03	0.851042
948	ATORVASTATIN	VISUAL DISTURBANCE	1	31	30	1	0	1648	4.053689e+01	1.643186
949	CEFTRIAXONE	ANAPHYLACTIC REACTION	1	21	20	25	24	1634	2.930140e+03	0.869986
950	OXALIPLATIN	RASH	1	5	4	583	582	1092	2.121271e+05	0.944204
951	GELATIN	RASH	1	1	0	583	582	1096	1.916134e+06	1.633798
952	TICAGRELOR	DYSпноEA	1	1	0	28	27	1651	1.362488e+05	1.644274

	INGREDIENT	MEDDRA_PREFERRED_TERM	a	a_plus_b	b	a_plus_c	c	d	ROR	SD_ROR
953	CONJUGATED OESTROGEN	URTICARIA	1	1	0	132	131	1547	6.104888e+05	1.635517
954	CARVEDILOL	SYNCOPE	1	2	1	3	2	1675	4.188750e+03	1.316788
955	CARVEDILOL	BRADYCARDIA	1	2	1	3	2	1675	4.188750e+03	1.316788
956	CEFUROXIME	URTICARIA	1	4	3	132	131	1544	8.704361e+04	0.980119
957	BENZYL PENICILLIN OR PENICILLIN G	URTICARIA	1	26	25	132	131	1522	1.177699e+04	0.845070
958	TICLOPIDINE	PRURITUS	1	1	0	62	61	1617	2.984288e+05	1.638153
959	BISOPROLOL	BRADYCARDIA	1	3	2	3	2	1674	2.511750e+03	1.211307
960	CODEINE	DYSAESTHESIA	1	16	15	2	1	1662	2.413306e+02	1.182561
961	MONTELUKAST	RASH	1	2	1	583	582	1095	6.381288e+05	1.155839
962	ATORVASTATIN	ALOPECIA	1	31	30	2	1	1647	1.215369e+02	1.169071
963	HYDRALAZINE	VOMITING	1	3	2	26	25	1651	2.526795e+04	1.051897
964	MOXIFLOXACIN	PERIORBITAL OEDEMA	1	2	1	255	254	1423	3.622808e+05	1.156704
965	IOHEXOL	ANGIOEDEMA	1	46	45	147	146	1487	7.184135e+03	0.834352

966 rows × 10 columns

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In [15]: overall_df['ROR - 1.96*SD'] = overall_df['ROR']-(1.96*overall_df['SD_ROR'])
overall_df
```

Out[15]:

	INGREDIENT	MEDDRA_PREFERRED_TERM	a	a_plus_b	b	a_plus_c	c	d	ROR	SD_ROR	ROR - 1.96*SD
0	KETOROLAC	ANGIOEDEMA	6	15	9	147	141	1523	1.474989e+05	0.516559	1.474978e+05
1	SULFANILAMIDE	ANGIOEDEMA	1	1	0	147	146	1532	6.735338e+05	1.635281	6.735305e+05
2	ORPHENADRINE-PARACETAMOL	PERIORBITAL OEDEMA	5	20	15	255	250	1409	1.252864e+05	0.501035	1.252854e+05
3	GLIPIZIDE	PRURITUS	2	6	4	62	60	1613	5.423153e+04	0.799607	5.422996e+04
4	COAMOXICLAV	PERIORBITAL OEDEMA	7	163	156	255	248	1268	1.510650e+04	0.380178	1.510575e+04
5	AMBROXOL	PERIORBITAL OEDEMA	1	2	1	255	254	1423	3.622808e+05	1.156704	3.622785e+05
6	PARACETAMOL	PERIORBITAL OEDEMA	28	89	61	255	227	1363	1.437495e+05	0.237649	1.437490e+05
7	DICLOFENAC	PERIORBITAL OEDEMA	28	72	44	255	227	1380	2.011420e+05	0.250359	2.011415e+05
8	LEVOFLOXACIN	RASH	3	6	3	583	580	1093	6.347768e+05	0.757671	6.347753e+05
9	CIPROFLOXACIN	CONJUNCTIVITIS	1	47	46	7	6	1626	3.410403e+02	0.917950	3.392411e+02
10	ASPIRIN	PERIORBITAL OEDEMA	22	54	32	255	233	1392	2.251030e+05	0.283222	2.251024e+05
11	IBUPROFEN	PERIORBITAL OEDEMA	35	102	67	255	220	1357	1.574248e+05	0.219672	1.574243e+05
12	PARACETAMOL	RASH	21	89	68	583	562	1028	1.815828e+05	0.252706	1.815823e+05
13	CHLORPHENIRAMINE	RASH	3	11	8	583	580	1088	2.601835e+05	0.637183	2.601823e+05
14	AMOXICILLIN	RASH	44	74	30	583	539	1066	8.394841e+05	0.240936	8.394836e+05
15	ATORVASTATIN	RASH ERYTHEMATOUS	1	31	30	48	47	1601	3.741209e+03	0.849194	3.739545e+03
16	COAMOXICLAV	RASH	80	163	83	583	503	1013	4.919632e+05	0.165442	4.919629e+05
17	VANCOMYCIN	RASH	4	9	5	583	579	1091	5.175198e+05	0.637716	5.175186e+05
18	SITAGLIPTIN	DIZZINESS	1	4	3	43	42	1633	2.975304e+04	0.988192	2.975110e+04
19	AMOXICILLIN	PRURITUS	1	74	73	62	61	1544	1.938505e+03	0.834973	1.936869e+03
20	COAMOXICLAV	CONJUNCTIVITIS	1	163	162	7	6	1510	9.063000e+01	0.909576	8.884723e+01
21	DEXLANSOPRAZOLE	HEADACHE	2	2	0	26	24	1653	2.025538e+05	1.562505	2.025507e+05

	INGREDIENT	MEDDRA_PREFERRED_TERM	a	a_plus_b	b	a_plus_c	c	d	ROR	SD_ROR	ROR – 1.96*SD
22	CEFALEXIN	PERIORBITAL OEDEMA	3	28	25	255	252	1399	4.850228e+04	0.574112	4.850115e+04
23	PARACETAMOL	ERYTHEMA MULTIFORME	2	89	87	2	0	1590	2.272143e+01	1.553080	1.967739e+01
24	PROCHLORPERAZINE	OCULOGYRIC CRISIS	3	9	6	16	13	1657	1.204875e+04	0.717104	1.204734e+04
25	SALBUTAMOL	ANGIOEDEMA	1	1	0	147	146	1532	6.735338e+05	1.635281	6.735305e+05
26	PARACETAMOL	ANGIOEDEMA	16	89	73	147	131	1459	4.308504e+04	0.287230	4.308447e+04
27	CEFTAZIDIME	URTICARIA	1	3	2	132	131	1545	1.219399e+05	1.036783	1.219379e+05
28	VANCOMYCIN	URTICARIA	2	9	7	132	130	1540	6.701175e+04	0.735966	6.701031e+04
29	CHLORPHENIRAMINE	HEADACHE	1	11	10	26	25	1643	5.987036e+03	0.895393	5.985281e+03
...
936	SPIRAMYCIN	RASH	1	1	0	583	582	1096	1.916134e+06	1.633798	1.916131e+06
937	CHLORAMPHENICOL	RASH	1	4	3	583	582	1093	2.729845e+05	0.977247	2.729825e+05
938	DAPAGLIFLOZIN	URINARY TRACT INFECTION	1	11	10	1	0	1668	1.191786e+02	1.662078	1.159209e+02
939	EMPAGLIFLOZIN	PERIORBITAL OEDEMA	1	3	2	255	254	1422	2.172158e+05	1.035036	2.172137e+05
940	EMPAGLIFLOZIN	RASH	1	3	2	583	582	1094	3.825278e+05	1.034068	3.825257e+05
941	ETORICOXIB	PARAESTHESIA	1	43	42	2	1	1635	8.658529e+01	1.165107	8.430168e+01
942	CODEINE	ANAPHYLACTIC REACTION	1	16	15	25	24	1639	3.887202e+03	0.878982	3.885479e+03
943	ACETYLCYSTEINE	VOMITING	1	5	4	26	25	1649	1.402075e+04	0.963696	1.401886e+04
944	BENZYL PENICILLIN OR PENICILLIN G	RASH MACULO-PAPULAR	1	26	25	56	55	1598	5.218632e+03	0.851191	5.216964e+03
945	CEFTAZIDIME	RASH MACULO-PAPULAR	1	3	2	56	55	1621	5.399595e+04	1.041778	5.399391e+04
946	PIPERACILLIN AND TAZOBACTAM	RASH MACULO-PAPULAR	1	6	5	56	55	1618	2.449820e+04	0.931193	2.449638e+04
947	CEFALEXIN	FACE OEDEMA	1	28	27	49	48	1603	4.241986e+03	0.851042	4.240318e+03
948	ATORVASTATIN	VISUAL DISTURBANCE	1	31	30	1	0	1648	4.053689e+01	1.643186	3.731624e+01
949	CEFTRIAXONE	ANAPHYLACTIC REACTION	1	21	20	25	24	1634	2.930140e+03	0.869986	2.928435e+03
950	OXALIPLATIN	RASH	1	5	4	583	582	1092	2.121271e+05	0.944204	2.121252e+05

	INGREDIENT	MEDDRA_PREFERRED_TERM	a	a_plus_b	b	a_plus_c	c	d	ROR	SD_ROR	ROR – 1.96*SD
951	GELATIN	RASH	1	1	0	583	582	1096	1.916134e+06	1.633798	1.916131e+06
952	TICAGRELOR	DYSPNOEA	1	1	0	28	27	1651	1.362488e+05	1.644274	1.362455e+05
953	CONJUGATED OESTROGEN	URTICARIA	1	1	0	132	131	1547	6.104888e+05	1.635517	6.104855e+05
954	CARVEDILOL	SYNCOPE	1	2	1	3	2	1675	4.188750e+03	1.316788	4.186169e+03
955	CARVEDILOL	BRADYCARDIA	1	2	1	3	2	1675	4.188750e+03	1.316788	4.186169e+03
956	CEFUROXIME	URTICARIA	1	4	3	132	131	1544	8.704361e+04	0.980119	8.704169e+04
957	BENZYLPENICILLIN OR PENICILLIN G	URTICARIA	1	26	25	132	131	1522	1.177699e+04	0.845070	1.177533e+04
958	TICLOPIDINE	PRURITUS	1	1	0	62	61	1617	2.984288e+05	1.638153	2.984255e+05
959	BISOPROLOL	BRADYCARDIA	1	3	2	3	2	1674	2.511750e+03	1.211307	2.509376e+03
960	CODEINE	DYSAESTHESIA	1	16	15	2	1	1662	2.413306e+02	1.182561	2.390128e+02
961	MONTELUKAST	RASH	1	2	1	583	582	1095	6.381288e+05	1.155839	6.381265e+05
962	ATORVASTATIN	ALOPECIA	1	31	30	2	1	1647	1.215369e+02	1.169071	1.192455e+02
963	HYDRALAZINE	VOMITING	1	3	2	26	25	1651	2.526795e+04	1.051897	2.526589e+04
964	MOXIFLOXACIN	PERIORBITAL OEDEMA	1	2	1	255	254	1423	3.622808e+05	1.156704	3.622785e+05
965	IOHEXOL	ANGIOEDEMA	1	46	45	147	146	1487	7.184135e+03	0.834352	7.182499e+03

966 rows × 11 columns


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In [16]: ▶ flag1 = overall_df[overall_df['a']>3]
flag2 = overall_df[overall_df['ROR - 1.96*SD']>1]

flagged_df= pd.concat([flag1,flag2]).drop_duplicates()

flagged_df
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Out[16]:

	INGREDIENT	MEDDRA_PREFERRED_TERM	a	a_plus_b	b	a_plus_c	c	d	ROR	SD_ROR	ROR - 1.96*SD
0	KETOROLAC	ANGIOEDEMA	6	15	9	147	141	1523	1.474989e+05	0.516559	1.474978e+05
2	ORPHENADRINE-PARACETAMOL	PERIORBITAL OEDEMA	5	20	15	255	250	1409	1.252864e+05	0.501035	1.252854e+05
4	COAMOXICLAV	PERIORBITAL OEDEMA	7	163	156	255	248	1268	1.510650e+04	0.380178	1.510575e+04
6	PARACETAMOL	PERIORBITAL OEDEMA	28	89	61	255	227	1363	1.437495e+05	0.237649	1.437490e+05
7	DICLOFENAC	PERIORBITAL OEDEMA	28	72	44	255	227	1380	2.011420e+05	0.250359	2.011415e+05
10	ASPIRIN	PERIORBITAL OEDEMA	22	54	32	255	233	1392	2.251030e+05	0.283222	2.251024e+05
11	IBUPROFEN	PERIORBITAL OEDEMA	35	102	67	255	220	1357	1.574248e+05	0.219672	1.574243e+05
12	PARACETAMOL	RASH	21	89	68	583	562	1028	1.815828e+05	0.252706	1.815823e+05
14	AMOXICILLIN	RASH	44	74	30	583	539	1066	8.394841e+05	0.240936	8.394836e+05
16	COAMOXICLAV	RASH	80	163	83	583	503	1013	4.919632e+05	0.165442	4.919629e+05
17	VANCOMYCIN	RASH	4	9	5	583	579	1091	5.175198e+05	0.637716	5.175186e+05
26	PARACETAMOL	ANGIOEDEMA	16	89	73	147	131	1459	4.308504e+04	0.287230	4.308447e+04
32	NAPROXEN	PERIORBITAL OEDEMA	29	58	29	255	226	1395	3.160808e+05	0.270052	3.160802e+05
37	IBUPROFEN	ANGIOEDEMA	20	102	82	147	127	1450	4.595448e+04	0.263504	4.595396e+04
38	TETRACYCLINE	RASH	4	4	0	583	579	1096	5.718796e+06	1.491596	5.718793e+06
42	CLINDAMYCIN	RASH MACULO-PAPULAR	4	29	25	56	52	1598	1.480963e+04	0.530199	1.480859e+04
44	ATORVASTATIN	MYALGIA	7	31	24	18	11	1637	5.764668e+03	0.511583	5.763666e+03
46	LISINOPRIL	COUGH	22	32	10	46	24	1623	8.523375e+04	0.425576	8.523292e+04
49	CLARITHROMYCIN	RASH	16	43	27	583	567	1069	3.641648e+05	0.315701	3.641641e+05

	INGREDIENT	MEDDRA_PREFERRED_TERM	a	a_plus_b	b	a_plus_c	c	d	ROR	SD_ROR	ROR - 1.96*SD
50	IOHEXOL	RASH	20	46	26	583	563	1070	4.666471e+05	0.298706	4.666465e+05
51	BENZYL PENICILLIN OR PENICILLIN G	RASH	14	26	12	583	569	1084	7.164424e+05	0.389414	7.164416e+05
55	IOHEXOL	URTICARIA	13	46	33	132	119	1514	7.293335e+04	0.336085	7.293269e+04
56	COTRIMOXAZOLE	RASH	26	49	23	583	557	1073	6.748775e+05	0.288122	6.748769e+05
61	ORPHENADRINE- PARACETAMOL	RASH	5	20	15	583	578	1081	2.220040e+05	0.498987	2.220031e+05
63	COAMOXICLAV	URTICARIA	15	163	148	132	117	1399	1.716390e+04	0.283682	1.716335e+04
64	KETOROLAC	PERIORBITAL OEDEMA	5	15	10	255	250	1414	1.856026e+05	0.530806	1.856016e+05
71	DICLOFENAC	RASH	14	72	58	583	569	1038	1.465927e+05	0.297957	1.465921e+05
74	CIPROFLOXACIN	RASH	20	47	27	583	563	1069	4.492581e+05	0.296401	4.492575e+05
75	IBUPROFEN	FACE OEDEMA	6	102	96	49	43	1534	4.496165e+03	0.433416	4.495315e+03
76	CODEINE	RASH	6	16	10	583	577	1086	3.884238e+05	0.501733	3.884228e+05
...
936	SPIRAMYCIN	RASH	1	1	0	583	582	1096	1.916134e+06	1.633798	1.916131e+06
937	CHLORAMPHENICOL	RASH	1	4	3	583	582	1093	2.729845e+05	0.977247	2.729825e+05
938	DAPAGLIFLOZIN	URINARY TRACT INFECTION	1	11	10	1	0	1668	1.191786e+02	1.662078	1.159209e+02
939	EMPAGLIFLOZIN	PERIORBITAL OEDEMA	1	3	2	255	254	1422	2.172158e+05	1.035036	2.172137e+05
940	EMPAGLIFLOZIN	RASH	1	3	2	583	582	1094	3.825278e+05	1.034068	3.825257e+05
941	ETORICOXIB	PARAESTHESIA	1	43	42	2	1	1635	8.658529e+01	1.165107	8.430168e+01
942	CODEINE	ANAPHYLACTIC REACTION	1	16	15	25	24	1639	3.887202e+03	0.878982	3.885479e+03
943	ACETYLCYSTEINE	VOMITING	1	5	4	26	25	1649	1.402075e+04	0.963696	1.401886e+04
944	BENZYL PENICILLIN OR PENICILLIN G	RASH MACULO-PAPULAR	1	26	25	56	55	1598	5.218632e+03	0.851191	5.216964e+03
945	CEFTAZIDIME	RASH MACULO-PAPULAR	1	3	2	56	55	1621	5.399595e+04	1.041778	5.399391e+04
946	PIPERACILLIN AND TAZOBACTAM	RASH MACULO-PAPULAR	1	6	5	56	55	1618	2.449820e+04	0.931193	2.449638e+04

	INGREDIENT	MEDDRA_PREFERRED_TERM	a	a_plus_b	b	a_plus_c	c	d	ROR	SD_ROR	ROR – 1.96*SD
947	CEFALEXIN	FACE OEDEMA	1	28	27	49	48	1603	4.241986e+03	0.851042	4.240318e+03
948	ATORVASTATIN	VISUAL DISTURBANCE	1	31	30	1	0	1648	4.053689e+01	1.643186	3.731624e+01
949	CEFTRIAXONE	ANAPHYLACTIC REACTION	1	21	20	25	24	1634	2.930140e+03	0.869986	2.928435e+03
950	OXALIPLATIN	RASH	1	5	4	583	582	1092	2.121271e+05	0.944204	2.121252e+05
951	GELATIN	RASH	1	1	0	583	582	1096	1.916134e+06	1.633798	1.916131e+06
952	TICAGRELOR	DYSPNOEA	1	1	0	28	27	1651	1.362488e+05	1.644274	1.362455e+05
953	CONJUGATED OESTROGEN	URTICARIA	1	1	0	132	131	1547	6.104888e+05	1.635517	6.104855e+05
954	CARVEDILOL	SYNCOPE	1	2	1	3	2	1675	4.188750e+03	1.316788	4.186169e+03
955	CARVEDILOL	BRADYCARDIA	1	2	1	3	2	1675	4.188750e+03	1.316788	4.186169e+03
956	CEFUROXIME	URTICARIA	1	4	3	132	131	1544	8.704361e+04	0.980119	8.704169e+04
957	BENZYL PENICILLIN OR PENICILLIN G	URTICARIA	1	26	25	132	131	1522	1.177699e+04	0.845070	1.177533e+04
958	TICLOPIDINE	PRURITUS	1	1	0	62	61	1617	2.984288e+05	1.638153	2.984255e+05
959	BISOPROLOL	BRADYCARDIA	1	3	2	3	2	1674	2.511750e+03	1.211307	2.509376e+03
960	CODEINE	DYSAESTHESIA	1	16	15	2	1	1662	2.413306e+02	1.182561	2.390128e+02
961	MONTELUKAST	RASH	1	2	1	583	582	1095	6.381288e+05	1.155839	6.381265e+05
962	ATORVASTATIN	ALOPECIA	1	31	30	2	1	1647	1.215369e+02	1.169071	1.192455e+02
963	HYDRALAZINE	VOMITING	1	3	2	26	25	1651	2.526795e+04	1.051897	2.526589e+04
964	MOXIFLOXACIN	PERIORBITAL OEDEMA	1	2	1	255	254	1423	3.622808e+05	1.156704	3.622785e+05
965	IOHEXOL	ANGIOEDEMA	1	46	45	147	146	1487	7.184135e+03	0.834352	7.182499e+03

966 rows × 11 columns

In []: ▶

