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Research Article

Confusing brand names - algorithms to assess the confusability to dispensers and risk to patients

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ABSTRACT

Background: Brand name prescribing has been as integral part of medical practice. Confusing brand names have become a nightmare of medical profession and many are strikingly identical, similar looking (orthographic), or similar sounding (phonological). Such similarities have led to medical errors due to wrong drug being prescribed or dispensed. We have made an attempt to form algorithms to assess the confusability to dispensers or doctors and, to determine the risk to the patients by considering various parameters in the brand names.
Methods: Two separate algorithms are prepared with positive and negative markings to assess the confusability and the risk. The scoring system appropriately suggests the confusability of the brand names, as well as the risk posed to the patients if dispensed wrongly. Considering the confusion and the potential risk to the consumers, it is essential that the concerned authorities adopt this algorithm to determine the confusability vis-a-vis safety before they accept a new brand name. Similar brand names should be analysed and the score determined to approve or refuse the new name for the brands.
Results: Analysing numerous examples of confusing brand names, it is proposed that an overall combined score of more than 22 (confusability plus risk together) suggests that the two names are highly confusing and pose a high risk to the patients if wrongly prescribed or dispensed. An overall score of 8 or less suggests that the drug names together are neither confusing nor risky. A combined score in between suggests that the drugs analysed are confusing but may or may not pose any risk to the patient.
Conclusions: In conclusion, look-alike and sound-alike brand names of various drugs are here to stay. As consumer, one should find out what drug you are taking and what it's for, and whether the right brand has been dispensed. As a doctor you should write clearly and be thoroughly familiar with the similar brands before you prescribe to prevent any "written" error. As pharmacist, one should not hesitate to phone the physician to verify the brand and its contents if the name is "confusing" with another brand.

Keywords: Confusing brand names, Algorithms, Confusability, Risk

INTRODUCTION

Brand name prescribing has been as integral part of medical practice. Drug formularies like Drug Today, Indian Drug Review (IDR), Monthly Index of Medical Specialities (MIMS) - India, Dug Index and others list thousands of brand names of drugs. The recent edition of IDR alone has listed more than 10000 brand names.[1] In addition many brand names are not listed in drug formularies but are available and add to the confusion of doctors, pharmacists and patients. Confusing brand names have become a nightmare of medical profession

and many are strikingly identical, similar looking (orthographic), or similar sounding (phonological).[2]

Such similarities have led to medical errors due to wrong drug being prescribed or dispensed. This plethora of look-alike and sound-alike drugs thronging the Indian market not only creates a prescribing or dispensing confusion but also can pose a risk to patient's life. It is the need of the hour to scrutinise these similar looking or similar sounding brand names before they are accepted by authorities. Although algorithms to determine the confusability are proposed in the past, they are confusing and time-consuming. We have made an attempt to form algorithms to assess the confusability to dispensers or doctors and, to determine the risk to the patients by considering various parameters in the brand names.

METHODS

Recent issues of IDR, MIMS and Drug Today were analysed for look-alike and sound alike names, and confusing names were sorted out. Various parameters were assessed for confusability, and the possibility of risk to the patients if wrongly prescribed was also considered. Two separate algorithms are prepared with positive and negative markings to assess the confusability (Table 1) and the risk (Table 2). A scoring system is determined after applying the algorithm to different pairs of confusing brand names. An overall confusability and risk determination score is also proposed (Table 3).

Table 1: Algorithm for assessing confusability score.

Parameters	Score
Same name with additional alphabet/alphabets	5
Same look names with possibility of fusion of alphabets	5
Middle alphabet/alphabets interchanged with beginning/end alphabets same	5
Difference of one alphabet (same cage)	5
Difference of one alphabet (different cage)	4
Similar names with an additional alphabet	4
First two and/or last two alphabets/ numbers same	4
Similar/almost similar sounding names	4
Same dosage forms	3
Same dose/dosage schedule	3
Different dosage form	-3
Different dose/dosage schedule	-3
Altogether different names/sounds	-5

Scoring system

11 or more: Very highly confusing
8-10: Moderately confusing
4-7: Minimally confusing
3 or less: No confusability

Table 2: Algorithm for assessing the risk determinant score (RDS).

Parameter	Score
Different pharmacological class	5
One drug if replaced, acutely hazardous	5
Different indication, replaced drug not hazardous	3
Same dosage forms	3
Same/similar dosage schedule	3
Same indication but totally different dose	2
Similar/same indication or same/similar dose	-4
Same pharmacological drug	-5

Scoring

13 or above: Very high risk
10-12: High risk
6-9: Moderate risk
5 or less: No risk

Table 3: Overall confusability/risk determinant score.

Overall confusability/risk determinant score
More than 22: highly confusing and risky
8 or less: neither confusing nor risky

RESULTS

Tables 4/5/6 show the application of the two algorithms to various pairs of confusing brand names.

The scoring system appropriately suggests the confusability of the brand names, as well as the risk posed to the patients if dispensed wrongly.

Analysing numerous examples of confusing brand names, it is proposed that an overall combined score of more than 22 (confusability plus risk together) suggests that the two names are highly confusing and pose a high risk to the patients if wrongly prescribed or dispensed.

An overall score of 8 or less suggests that the drug names together are neither confusing nor risky.

A combined score in between suggests that the drugs analysed are confusing but may or may not pose any risk to patient.

Table 4 shows high confusability, high risk.

Table 5 shows high confusability/moderate or low risk or low or moderate confusability/high risk.

Table 6 shows Low or moderate confusability with low risk or low confusability with low or moderate risk.

Table 4: High confusability, high risk.

Brand names	Active ingredient	Confusability score	RDS	Total score
Regain Regan	Multivitamin/mineral Repaglinide	13	13	26
Acein Acem	Enalapril Clarithromycin	12	16	28
Anticof Anticog	Phenylpropanolamine Clopidogrel	12	13	25
Avirox Avizox	Roxithromycin Paracetamol	13	13	26
ARZ ARZA	Azithromycin Aripiprazole	13	13	26
Prostodin Prostulin	Carboprost Tamsulosin	13	13	26
Adcon Adcom	Fluconazole Telmisartan	13	13	26
Axetam Axetim	Piracetam Cefuroxime	12	13	25
Betadac Beataday	Amoxicillin + Dicloxacillin Bambuterol	12	13	25
Bisod Bison	Bisoprolol Sildenafil	12	13	25
Enzide N-zide	Enalapril Nimesulide	11	13	24
Vasopril Vasoprin	Enalapril isosorbide mononitrate + Aspirin	11	13	24

Table 5: High confusability/moderate or low risk or low or moderate confusability/high.

Brand names	Active ingredient	Confusability score	RDS	Total score
Zydim Zydom	Ceftazidime Domperidone	6	10	16
Normace Normax	Enalapril Norfloxacin	7	13	20
Oscal Osclav	Calcium carbonate Co-amoxyclav	7	13	20
Bioclox Biodoxi	Clarithromycin Doxycycline	7	8	15
Pyranit Pyravit	Paracetamol Paracetamol	18	-3	15
Pantorex Pantorel	Pantoprazole Pantoprazole	17	-3	14
Cilyrep Cilyred	Metformin Gliclazide	7	13	20
AIRITIS AIRTIS	Levocetirizine Cetirizine	18	-6	12
AROSI AROZY	L-Ornithine/ L-aspartate / Silymarin Azithromycin	8	11	19
Ampen Amphen	Pantoprazole Chloramphenicol Inj.	6	10	16
AB-safe AB-cef	Arte-ether Inj. Cefixime	2	10	12

Table 6: Low or moderate confusability with low risk or low confusability with low or moderate risk.

Brand name	Active ingredient	Confusability score	RDS	Total score
Ocef Oceph	Cephalexin Cefixime	8	5	13
Avcif Avcip	Cefixime Ciprofloxacin	7	5	12
Moxycarb Moxycare	Amoxycillin + Carbocisteine Amoxycillin + Clavulanate	10	1	11

DISCUSSION

Indian pharmaceutical industry is flooded with drugs. Brand names of many drugs are prone to create confusion due to similar pronunciation or similar spelling. Approximately 12.5% of the medication errors reported to the US FDA are a result of confusion between drug names[3] and this can have direct and serious health consequences to a patient.

It is urgently essential to pay utmost attention to the brand names, existing ones as well as when the new names are proposed, to rule out any phonetic or orthographic similarity between two or more brands. The two confusing brands can not only create problems in dispensing if the writing is illegible or if the packaging is similar, but can also cause tremendous risk to the patient as a replaced drug could be hazardous or ineffective.

A scientific method to label the two drugs as confusing and causing serious risk is the need of the hour. A technique that exists makes use of schemes using orthographic measure and pharmacological coding.[4] This is not only time consuming but also confusing and tedious. Secondly it only highlights the confusability and tells nothing about the risks. If two confusing trade names have the same drug and same indication the risk is minimal as compared to two confusing brands belonging to the different pharmacological groups having totally different indication.

Considering the above view, we thought it is appropriate to prepare a simple algorithm for determining the confusability and the risk making use of different parameters. Our algorithm gives the correct picture of degree of confusability and more importantly the degree of risk involved if the two brands are replaced. These algorithms can go a long way in determining the confusability and risk involvement of a new proposed brand in comparison with existing ones when a new pharmaceutical product is introduced in the market. Also the existing brands can be scrutinized and screened as has been demonstrated in our article, and if found risky and confusing can be changed appropriately.

Many of the medication errors that contribute to thousands of deaths each year in US are attributed to drug names that look or sound alike.[5] This makes it even more important to screen the two confusing brand names for its risk involved. Consider acein (enalapril) and acem (clarithromycin), if acem is dispensed in place of acein, the BP will not be under control, and if acein is used instead of acem, infection will not be controlled. Hence the risk is high and this clearly comes in the algorithm for risk determination. The same is true with reference to many other confusing and risky pairs of brands including regain/regan, normace/normax, anticof/anticog, avirox/avizox, proxim/promin and others.

Risk determination score has more significance as all confusing brand names need not be risky as seen in our article. Consider brand names pantorex/pantorel (both pantoprazole) or pyremit/pyravit (both paracetamol). In both these examples the confusability score is very high, however the risk determinant score is very low. This is because both the confusing brands in both the pairs belong to same drugs and have same dose and dosage schedule. Hence even if one brand is replaced by the other there is no risk to the patient.

Our algorithm is simple and quick. Considering the confusion and the potential risk to the consumers, it is essential that the concerned authorities adopt this algorithm to determine the confusability vis-a-vis safety before they accept a new brand name. Similar brand names should be analysed and the score determined to approve or refuse the new name for the brands.

In conclusion, look-alike and sound-alike brand names of various drugs are here to stay. As consumer, one should find out what drug you are taking and what it's for, and whether the right brand has been dispensed. As a doctor you should write clearly and be thoroughly familiar with the similar brands before you prescribe to prevent any "written" error. As pharmacist, one should not hesitate to phone the physician to verify the brand and its contents if the name is "confusing" with another brand. And verify the brand and its contents if the authorities should check the names appropriately and thoroughly before accepting a new name or continuing with the existing one and this is where an algorithm will be extremely useful. We should not forget that the patient for whom these brands are made is the ultimate sufferer due to this confusion.

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