Comparison of information obtained from a Usenet newsgroup and from drug information centers

JAMES A. SEABOLDT AND RANDY KUIPER

Abstract: Responses to drug information questions posted on the Internet Usenet pharmacy newsgroup sci.med.pharmacy were compared for accuracy with responses from drug information centers (DICs).

Twenty-five questions were randomly selected from the past five years’ continuing-education sections of the Annals of Pharmacotherapy, and possible answers were determined on the basis of corresponding articles. The questions were randomly submitted to sci.med.pharmacy from various e-mail accounts over a 10-week period. The same questions were submitted by telephone to randomly selected DICs. The correctness of responses was judged by a panel of four pharmacists.

The questions received 31 responses from sci.med.pharmacy and 38 from the DICs. The responses from sci.med.pharmacy received 38 (31%) judgments of correct and the responses from the DICs, 85 (56%).

A significantly smaller proportion of drug information responses from the Usenet newsgroup sci.med.pharmacy were judged as being accurate compared with responses from DICs.

Index terms: Computers; Drug information; Drug information centers; Errors; Internet

Am J Health-Syst Pharm. 1997; 54:1732-5

The Internet has become a source of information on almost any topic, and access is available to virtually anyone with a computer, a modem, and a telephone line.

Services encompassed by the Internet include e-mail (electronic mail), electronic billboards (World Wide Web pages), and Usenet newsgroups, in which groups of users informally band together to discuss topics of common interest. One of the many newsgroups related to health care is sci.med.pharmacy, where questions on health or medication use are often posted.

Because it is not possible to verify the credentials of newsgroup participants, questions have arisen about the accuracy of information presented in this forum. A literature search (MEDLINE) failed to identify any studies (excluding abstracts from meeting presentations) that addressed the accuracy of information obtained from health-related Usenet newsgroups.

Our research hypothesis was that the proportion of accurate responses to drug information questions obtained from the Usenet newsgroup sci.med.pharmacy would differ from the proportion obtained from drug information centers (DICs).

Methods

Twenty-five questions were randomly selected from the continuing-education sections of the Annals of Pharmacotherapy (1991–95), by using a random-number generator. The answer to each question was determined from the list of possible answers and on the basis of the corresponding articles (appendix). These questions and answers were thought to represent an acceptable stan-
standard against which the accuracy of responses to drug
information requests could be judged.

The 25 questions selected for the study were submitted
to the pharmacy Usenet newsgroup sci.med.
pharmacy over a 10-week period (July 1 to September 9,
1996). The questions were submitted from different
e-mail accounts so as to appear to be originating from
different, unrelated individuals. The submissions were
composed so that the subject line addressed pharma-
cists (e.g., “pharmacist needs info”; “pharmacist ques-
tion”; “question to pharmacists”) and the text of the
message rephrased the actual continuing-education
question.

For comparison, the same questions (in random
order) were submitted by telephone to DICs within the
United States and its territories. Each question was
submitted to a different DIC that was randomly chosen
from a published list of university and community
DICs by a random-number generator. Questions that
elicited multiple responses from the Usenet newsgroup
were submitted to additional randomly selected DICs
in an attempt to equalize the number of responses
between the two sources.

Responses from both sources were analyzed for cor-
rectness by a four-pharmacist panel that compared the
responses with the predetermined answers. The panel
was composed of two community pharmacists (one
practicing in an independent pharmacy and one in a
chain pharmacy), one home infusion pharmacist, and
one hospital pharmacist. The primary investigators
were present during judging but did not participate.
The panelists evaluating the responses did not know
whether they were from sci.med.pharmacy or a DIC.
The panel was advised to make a professional judg-
ment of correct or incorrect. The members of the panel
were free to discuss the responses among themselves
before making a judgment, and consensus was not
necessary. Responses from each member of the panel
were recorded and analyzed individually (i.e., each
answer could have any combination of four votes of
correct or incorrect, and each vote was included in the
statistical analysis).

A chi-square test of independence was used to deter-
mine whether there was a difference in the proportion
of judgments of correct between the Usenet newsgroup
and the DICs. The a priori level of significance was set at
0.05.

Results

Sixty-nine responses to the 25 questions submitted
to the Usenet newsgroup and the DICs were obtained.
Thirty-one responses were from the Usenet newsgroup
and 38 were from DICs. Of the 38 DICs responding, 18
(47%) were university centers, 18 (47%) were not affil-
liated with a university, and 2 (5%) were government
institutions.

The panel returned a total of 276 judgments (four for
each of the 69 responses). The responses from the
Usenet newsgroup received 38 (31%) judgments of
correct and 86 (69%) of incorrect, whereas the respon-
ses from the DICs received 85 (56%) judgments of cor-
rect and 67 (44%) of incorrect ($\chi^2 = 17.66$, d.f. = 1, p =
0.001).

Discussion

With the increasing popularity of global computer
networks, there is a greater risk that members of the
public will receive incorrect, inaccurate, or harmful
information on health care. The very nature of the
Internet means that there is no easy way to ensure
quality control of information or to guarantee the
credentials of users. This study was an attempt to assess
the accuracy of pharmacy-related information solicited
from the Usenet newsgroup sci.med.pharmacy by com-
paring it with that obtained from DICs.

The newsgroup and the DICs differed significantly
in the proportion of responses judged to be accurate.
However, the answers obtained from DICs were judged
as being correct only 56% of the time (compared with
31% of the time for the Usenet newsgroup). In one
study of the performance of DICs, the authors assessed
the DICs' ability to identify an unknown investigational
drug and found that only 28.6% of the DICs contact-
ed were able to correctly identify it. Only 7.1% of the
surveyed DICs were able to link the investigational
product with the adverse effects described by the caller.
The findings of that study may not be comparable to
our findings, because the two studies differed in terms
of the specificity of information requested. Another
researcher investigated the accuracy of responses to
queries directed to academic health sciences and hospi-
tal libraries and found that 63.4% of queries were
answered accurately. The findings of that study com-
pare favorably with ours, although different aspects of
live medical information resources were assessed.

Because of the rapid expansion of the Internet, the
continued lack of quality control for Internet docu-
ments, and the lack of literature supporting or refuting
potential harm from advice retrieved from the Internet,
further study may be warranted.

Conclusion

A significantly smaller proportion of drug informa-
tion responses from the Usenet newsgroup sci.med.
pharmacy were judged as being accurate, compared
with responses from drug information centers.

References

2. Rosenberg JM, Martino FP, Kirschenbaum HL et al. Pharmacist-
Am J Hosp Pharm. 1987; 44:337-44.
3. Beard SL, Coley RMR, Blunt JR. Assessing the accuracy of drug
information responses from drug information centers. Ann Phar-
Subject: Pharmacists—Anabolic question (Clenbuterol)
An orthopedic physician called yesterday asking about a drug called clenbuterol. She said some of her weight-training patients are taking it because it gives them great energy bursts and (supposedly) quickly builds muscle mass. The Doc's patient thinks the drug is extracted from cow brain, is safe to take, and has no adverse effects. Does anyone have any information on this drug—clenbuterol—supporting anabolism, safety, pharmacology (if known), and the legitimate use (if any)?
(Ann Pharmacother. 1993; 27:659)

Subject: DPT vaccine (Rx question)
I have two patients, twin boys aged about 2 months, who received DPT vaccine (diphtheria, tetanus, and pertussis). One of the boys had the “normal reaction” (local pain, redness and swelling, and fever) to the vaccine. The other had apparently no reaction. Is this normal—or perhaps, what is the incidence of mild adverse reactions?
(Ann Pharmacother. 1994; 28:981)

Subject: Rx question on mesalamine side effects
What are the most frequent side effects of mesalamine enemas? What should I look for?
(DICP Ann Pharmacother. 1991; 25:218)

Subject: Question—Is Tylox addictive?
A guy got an Rx the other day for Tylox. He was concerned about possibly becoming addicted to it. Are his fears justified?
(DICP Ann Pharmacother. 1991; 25:107)

Subject: Question for pharmacists—Steroids/asthma
Does anyone know if there are any therapeutic differences between corticosteroids in the therapy of asthma? For example, is i.v. methylprednisolone more or less efficacious than i.v. hydrocortisone?

Subject: Chemo vomiting question for pharmacist
At our pharmacy we are seeing more patients being treated for chemotherapy nausea and vomiting. What is the most important factor that determines risk for chemotherapy-induced nausea and vomiting?

Subject: (Pharmacists) Vitamin C/plasma lipids
Does vitamin C have any effects on plasma lipoproteins that would reduce the risk of atherosclerosis (and if yes, what are they)?

Subject: Interactions with macrolide/benzodiazepine (Rx)
Are there any precautions when taking a macrolide with a benzodiazepine?

Subject: Pharmacists: Seizure reduction
I’m interested in knowing the average reduction in seizure frequency from the established anti-epileptic drugs used for add-on therapy in patients with refractory partial seizures.
(Ann Pharmacother. 1994; 28:1209)

Subject: Pharmacists: Cyanide from nitroprusside?
I’m a psychologist who recently had a consult to our cardiology service. While there I overheard that one of the patients apparently had cyanide intoxication from a medication, nitroprusside. Is this possible? What are the clinical manifestations of cyanide intoxication related to nitroprusside use?
(Ann Pharmacother. 1992; 26:571)

Subject: Chemo adverse effects (Rx)
My grandmother was recently diagnosed with “node negative breast cancer” and will be getting CMF (cyclophosphamide, methotrexate, fluorouracil). What are common acute adverse effects seen with this treatment?

Subject: Pharmacotherapy of GERD (pharmacists)
What therapy is available for gastroesophageal reflux disease?

Subject: (Rx?) Diabetes and hypomagnesemia
How does HYPERglycemia induce HYPOmagnesemia?
(Ann Pharmacother. 1993; 27:802)

Subject: Doxorubicin toxicities (Rx)
I would like to know what toxicities of doxorubicin have been reported in patients with liver failure.
(Ann Pharmacother. 1992; 26:436)

Subject: Adrenal suppression tests (attn pharmacists)
Could someone help me determine what is a [very] sensitive test to detect adrenal suppression resulting from high-dose inhaled glucocorticoid therapy?
(Ann Pharmacother. 1994; 28:978)

Subject: Rx question about nicotine
I’m a smoker who just can’t seem to quit. What causes the reinforcing properties of nicotine in the brain? Is there a neurotransmitter or something, or is it all just in my head?

Subject: CSF antibiotic concentrations (Rx?)
A question came up the other day among some of my colleagues: If administering an antibiotic directly into the cerebrospinal fluid, what type of CSF antibiotic concentrations are desirable in the treatment of serious CNS infections?
(Ann Pharmacother. 1993; 27:987)

Subject: (Pharmacy?) GH as an ergogenic agent
The other day, someone (an athlete) was really trying to get some growth hormone from the pharmacies in our area. I’m sure I understand the reasons against using GH. What are the purported positive reasons for growth hormone use as an ergogenic agent in athletes?
(Ann Pharmacother. 1992; 26:719)

Subject: Active form—thrombin (pharmacists)
I’m a pharmacy student in the final year of my schooling. I just attended a pharmacy CE lecture about coagulation and the speaker talked about several forms of thrombin, one of which is a mediator of thrombin activity. So my question is: Which form of thrombin is responsible for mediating the physiologic functions of thrombin?
(Ann Pharmacother. 1992; 26:1603)

Subject: Diabetes and magnesium (question for pharmacist)
Is anyone aware of a correlation between magnesium supplementation and any diabetes monitoring parameters? Put another way,
is there any evidence that magnesium supplementation benefits a diabetic patient (if so, how)?
(Ann Pharmacother. 1993; 27:802)

**Subject: Gabapentin and old age (Rx)**
Why do older patients require a lower maintenance dosage of gabapentin?
(Ann Pharmacother. 1994; 28:1209)

**Subject: Vasopressor→arrhythmia: Treatment? (Pharmacists, any ideas?)**
What is the therapy for arrhythmias associated with intravenous vasopressors?

**Subject: Corticosteroid: Alkalemia and hypoventilation (pharmacist question)**
I seem to remember that one of the intravenous corticosteroids used for acute asthma has been shown to produce alkalemia with significant compensatory alveolar hypoventilation. Does anyone know which corticosteroid this is?

**Subject: Rx?: Bioavailability of granisetron**
What's the bioavailability of oral granisetron?

**Subject: Smoking and drug interactions (pharmacists, please answer)**
I understand that cigarette smoke can cause the body to produce more enzymes (that are responsible for breaking down drugs). This is one mechanism of drug interactions. Can anyone tell me if there is primarily one chemical, or compound (and what it is), in cigarette smoke that is mainly responsible for altering drug metabolism, primarily through the enzyme-induction effect?