University of Huddersfield Repository

Fuller, Richard, Dudley, Nigel and Blacktop, Jon

How informed is consent? understanding of pictorial and verbal probability information by medical inpatients

Original Citation


This version is available at http://eprints.hud.ac.uk/1793/

The University Repository is a digital collection of the research output of the University, available on Open Access. Copyright and Moral Rights for the items on this site are retained by the individual author and/or other copyright owners. Users may access full items free of charge; copies of full text items generally can be reproduced, displayed or performed and given to third parties in any format or medium for personal research or study, educational or not-for-profit purposes without prior permission or charge, provided:

- The authors, title and full bibliographic details is credited in any copy;
- A hyperlink and/or URL is included for the original metadata page; and
- The content is not changed in any way.

For more information, including our policy and submission procedure, please contact the Repository Team at: E.mailbox@hud.ac.uk.

http://eprints.hud.ac.uk/
How informed is consent? Understanding of pictorial and verbal probability information by medical inpatients

R Fuller, N Dudley and J Blacktop

Postgrad Med J 2002 78: 543-544
doi: 10.1136/pmj.78.923.543

Updated information and services can be found at:
http://pmj.bmj.com/content/78/923/543.full.html

These include:

References
This article cites 2 articles, 2 of which can be accessed free at:
http://pmj.bmj.com/content/78/923/543.full.html#ref-list-1

Article cited in:
http://pmj.bmj.com/content/78/923/543.full.html#related-urls

Email alerting service
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Topic collections
Articles on similar topics can be found in the following collections

Ethics (519 articles)
Legal and forensic medicine (4042 articles)

Notes

To order reprints of this article go to:
http://pmj.bmj.com/cgi/reprintform

To subscribe to Postgraduate Medical Journal go to:
http://pmj.bmj.com/subscriptions
How informed is consent? Understanding of pictorial and verbal probability information by medical inpatients

R Fuller, N Dudley, J Blacktop


Understanding probability information about treatment risks and benefits is a vital component of patients’ decision making capacity. This study demonstrates extensive misunderstanding of verbal descriptions of probability by medical inpatients of all ages, questioning the extent of their capacity for giving informed consent. Pictorial descriptions of probability were well understood, suggesting their adoption into clinical practice.

In the modern National Health Service, doctors and patients are increasingly encouraged to work together in a partnership role, whereby patients make informed choices about their medical care, and give informed consent to proposed treatments. The current Secretary of State for Health, Alan Milburn, indicated this in a recent speech to the New Health Network, stating that patients “have a right to be involved in decisions about their own care”. The Department of Health has recently published a comprehensive guide to the consent process. In order to give valid informed consent, it is necessary to possess the capacity to consent—an individual must be able to understand and retain information regarding the proposed treatment, its risks and benefits, and the likely consequences of declining treatment.

Consent may only be considered to be truly valid once a person has weighed the risks and benefits of accepting or declining treatment and reached an informed choice. It follows that understanding probability information in relation to treatment risks and benefits is a fundamental component of this process. We have previously found that medical inpatients aged ≥75 years are confused by different expressions of probability, and both overestimate and underestimate verbal descriptions of probability. Such misunderstanding could impact significantly on the capacity to make an informed decision and give valid consent. This study aimed to complement these findings, and to assess whether age itself was a factor in understanding probability information by inpatients.

Key points

- Developing doctor-patient partnerships and patient centered decision making are key themes within the NHS.
- Capacity to consent and make treatment decisions implies informed choice through an understanding of the probabilities of good and adverse outcomes of treatments.
- Patients often misunderstand probability information, and this can have serious impact on decision making, with patients incorrectly accepting or declining treatment risks due to misunderstanding.
- Pictorial data is of benefit in helping explain probability to patients, and merits introduction into clinical practice.

PATIENTS AND METHODS

Over a four month period, 103 medical inpatients were assessed by one of the researchers (RF) at Huddersfield Royal Infirmary. Of these, 19 were discharged before being seen, and 28 were excluded due to serious or terminal illness, cognitive impairment, or significant audiovisual impairment. Of the remaining 56, 42 (75%) consented to participate in the study—a researcher administered questionnaire examining probability understanding. This used a crowd figure pictogram (fig 1) to visually represent probabilities, in addition to allowing participants to demonstrate their understanding of verbal descriptions of fractional and percentage probability. The range of correct responses for this group (median age 52 years) is compared against those of 50 older inpatients recruited previously (median age 82 years); see table 1.

Although younger subjects generally outperformed their older counterparts, pictorial representation of probability was well understood by both groups. In contrast, understanding of verbal percentage probability was generally less well understood, and other than understanding the concept of one in 100, both groups made a large number of errors when

![Figure 1: Crowd figure pictogram.](http://www.postgradmedj.com)
interpreting verbal descriptions of fractional probabilities (for example, one in five). Analysis of incorrect answers showed wide variations in overestimation and underestimation of probabilities irrespective of age. Many patients were confused by different expressions of probability: 15 (16%) of the 92 patients thought one in five and 5% were identical, while 25 (27%) confused one in 20 and 20%. A 75% probability was misrepresented by answers ranging between 6% and 90%.

**DISCUSSION**

Many previous studies and reviews have examined the methods clinicians use to communicate information to patient, with some demonstrating complex usage of multiple expressions of probability information. We have shown that irrespective of age, all patients have the potential to misinterpret numerical probability information, and this may have a serious impact upon decision making and informed consent. For example, quoting a risk of death of one in five (that is 20%) might be interpreted by a patient as 5%, altering their decision to undergo treatment with potentially fatal consequences. Similarly, a one in 20 risk interpreted as 20% might dissuade a patient from choosing a potentially beneficial intervention.

Given that one of the key elements of capacity for consent involves understanding probability information, the extent of misunderstanding seen in this study casts doubt on the capacity of patients of all ages. The implications for informed consent are widespread, both in seeking formal consent for interventions, as well as discussions about treatment or resuscitation. We suggest that the apparent benefits of pictorial representation of probability merit introduction into clinical practice, in order to optimise capacity and to attempt to enable patients to exercise their right to be involved in decisions about their own care.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Comparison of understanding pictorial and verbal representations of probability by medical inpatients (% correct responses)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pictorial</td>
</tr>
<tr>
<td></td>
<td>24–65</td>
</tr>
<tr>
<td>1 in 5</td>
<td>90</td>
</tr>
<tr>
<td>1 in 2</td>
<td>98</td>
</tr>
<tr>
<td>3 in 4</td>
<td>93</td>
</tr>
<tr>
<td>1 in 10</td>
<td>95</td>
</tr>
<tr>
<td>1 in 100</td>
<td>100</td>
</tr>
<tr>
<td>1 in 20</td>
<td>90</td>
</tr>
</tbody>
</table>

**REFERENCES**