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How confident are general practitioners in interpreting neuroradiology reports?

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AIM: To determine the level of confidence general practitioners (GPs) have in radiology reports provided by neuroradiologists and to elicit the preferences of GPs regarding report format and level of detail.

MATERIALS AND METHODS: Electronic surveys comprising anonymised neuroradiology reports were sent to GP practices served by a tertiary neuroscience centre. After reviewing the reports, GPs were asked to complete a two-part questionnaire. Firstly, GPs indicated their level of confidence, using a five-tiered Likert scale, in their understanding of: (a) the body of text; (b) the meaning of the report; and (c) the significance of the report. Secondly, GPs provided free-text suggestions for improving the report and highlighted any phrases that they did not understand.

RESULTS: One hundred GPs responded from a group of 439 that received a survey (response rate 23%). Although the majority of GPs were fairly confident in their understanding of reports, fewer than one-third of GPs were entirely confident. Approximately 10% of GPs were not confident at all in their understanding of the reports. Causes of confusion included the use of detailed anatomy, acronyms, radiological terminology, and a lack of a conclusion and an action plan.

CONCLUSION: General practice is a time-sensitive discipline that demands clear communication. In neuroradiology reports, GPs do not find detailed anatomy, acronyms, or radiological terminology helpful. Rather, GPs want a clear conclusion and action plan.

Introduction

Due to a drive to improve cancer diagnosis and outcomes, the UK Department of Health and National Institute for Health and Care Excellence (NICE) have supported general practitioners (GPs) having direct access to magnetic resonance imaging (MRI).[1,2] This practice means that GPs, rather than hospital physicians, are now often the first to read, interpret, and action radiology reports provided by neuroradiologists. Unlike hospital-based specialists who can address any uncertainty in imaging reports by visiting the radiology department or attending multidisciplinary team meetings,[3] GPs rely on e-mail or telephone communication with the radiologist.[4] This may be time-consuming and ineffective for all parties and can have a negative impact, not just for the individual patient, but for the wider

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community served by the GP and by the radiologist. It is therefore of paramount importance that the written communication between the neuroradiologist and GP, in the form of the radiology report, is effective, and that GPs feel confident that they can interpret the text and action any management necessary. The aims of this study were twofold: firstly, to determine the level of confidence GPs have in radiology reports provided by neuroradiologists, and secondly, to elicit the preferences of GPs regarding report format and level of detail.

Materials and methods

This study was reviewed and approved by the local research and development department. Formal ethics approval was waived as the project was deemed to fall under the category of "service evaluation". No external funding was provided for this project.

Sample

Initially a pilot study was conducted. Reports of MRI examinations of the head (n=149) from a tertiary neuroscience centre requested by GPs over a 3-month period were identified by searching the local computerised radiology information system (CRIS). Studies reported as entirely normal were excluded (n=78). The remaining 71 reports were anonymised, and 10 were chosen at random using random.org (www.random.org, Dublin, Ireland). The 10 reports were embedded into an online survey, which was sent to 10 local GPs. The principle feedback from the pilot study was that 10 radiology reports were too many for the GPs to review efficiently. As a result, the number of radiology reports was reduced to five; however, to maximise the number of reports that would be commented upon, five surveys comprising five different radiology reports were created, giving a total of 25 different reports. The 25 reports were taken at random from the 61 anonymised radiology reports (71 minus the 10 reports used in the pilot study). Groups of five reports were also allocated at random into the five surveys. Links to the surveys were sent via email to the regional care commissioning group (CCG) who forwarded one of each of the five surveys at random to 20 different local GP practices. An email reminder was sent 2 weeks later in an attempt to maximise response. After an additional 2 weeks, the survey was closed. SurveyMonkey (SurveyMonkey, Portland, OR, USA), a web-based survey tool, was used for data dispersal and collection in both the pilot and formal study. The results from the pilot study were not incorporated into the final results. A summary of the 25 radiology reports sent to the GPs is shown in Table 1. The majority of reports (9/25, 36%) were of chronic small vessel disease characterised by T2-weighted white matter hyperintensities (WMH) in the cerebral hemispheres. Ten of the 25 reports (40%) contained the MRI protocol, which specified the specific MRI sequences used. Fifteen reports (60%) contained a summary/conclusion. Four reports (16%) included management recommendations. Only six (24%) of the reports had prior MRI to compare. All six neuroradiologists (four diagnostic; two interventionists) working in the Trust at the time of the study had reports included in the survey.

After reviewing the radiology reports, respondents were asked to complete a two-part questionnaire. The first section consisted of three statements concerning the radiology reports and the respondents were asked to indicate their level of confidence using a five-tiered Likert scale in their understanding of: (a) the body of text; (b) the meaning of the report; and (c) the significance of the report (Fig 1). In the second section, respondents could give free-text suggestions for improving the radiology report. They were also asked to highlight any words or phrases that they did not understand.

Analysis

Quantitative data analysis

Data from all respondents were downloaded into Excel (Microsoft, Redmond, WA, USA). The percentage of GPs for each Likert score was calculated along with a weighted average response for all GP respondents.

Qualitative data analysis

Free text transcripts were analysed using Giorgi's method as modified by Malterud.[5,6] This entailed (1) gaining an overview of the data; (2) identifying and coding the text (codes based on data concerning aspects of the radiology reports, not decided *a priori*); (3) interpreting similarly coded elements for a common meaning, which was summarised using expressions close to GPs' own words; and (4) describing the GPs' views in more general terms, labelling each description, and validating it, that is comparing it with the data it was based on and searching the transcripts for disapproving data.[5–7]

Two consultant neuroradiologists, both with experience in qualitative research, first analysed the data individually, then contested each other's analysis[8] before reaching a mutual agreement.

Results

One hundred responses were received from a group of 439 GPs that received a survey, giving a response rate of 23%.

Quantitative data

In reference to the five-point Likert scale, GPs were on average, reasonably confident that they: (a) fully understood the text of the radiology reports (3.5/5); (b) could interpret and explain the overall meaning of the reports (3.6/5); and (c) could explain the significance of the report and action a management plan (3.5/5). The percentage respondents for each section of the questionnaire from the combined 25 radiology reports are graphically depicted in Fig 2.

Fewer than one-third of GP respondents (28.8–31.2%) were entirely confident with the radiology reports

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