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PATIENT DATA PROTECTION: ELECTRONIC TRANSMISSION OF RADIOGRAPHS BETWEEN RESIDENT ORTHOPAEDIC JUNIORS AND NON-RESIDENT SENIORS

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Orthopaedic registrars working in non-trauma centres participate in non-resident on-call rotas.[1] These rely on a dedicated junior resident tier to provide 'first-on' cover. This responsibility is usually shared among core surgical trainees although it is increasingly being taken on by foundation year two and general practice vocational training scheme doctors with no previous experience of orthopaedics or *Advanced Trauma Life Support*® training.

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The safe and effective management of patients out of hours therefore requires the communication of radiographs between junior residents and their non-resident seniors. Digitised radiographs sent via email can significantly improve the accuracy of diagnosis and treatment compared with a simple verbal description.[2] Electronic patient information is subject to the same confidentiality constraints as any other patient data. Existing Caldecott guidelines stipulate that all patient sensitive data must be completely anonymised and transmitted to secure accounts only.[3,4] The only email accounts that are currently acceptable for this purpose are trust email and NHSmail. Unfortunately, remote access to trust email is not always possible and accounts are only valid for the length of time that an individual is employed by that particular trust.

NHSmail is therefore the only secure email for exchanging patient data. NHSmail is based on Microsoft® Exchange 2007, which is free to acquire, remotely accessible and valid for the length of time an individual is employed with the NHS.[5] This is sometimes brought up during corporate induction in some trusts.

We conducted a questionnaire survey to investigate current trends in the transmission of patient sensitive data between resident orthopaedic juniors and their non-resident seniors out of hours.

Methods

We drafted a 12-part questionnaire that was approved by the senior author (Figure 1). Issues addressed included: method of review for patient radiographs off site, email account used for receiving data, anonymisation of data, hardware used for data analysis and awareness of NHSmail.

North London orthopaedic training is divided into three units: the Stanmore rotation, the North West Thames rotation and the Royal London Hospital. With the permission of training programme directors, the authors attended each rotational teaching programme and distributed the questionnaire prior to the teaching session. A short explanation outlining the purpose of the study was given and all distributed questionnaires were collected at the end of the teaching session.

Results

A total of 76 questionnaires were distributed and all 76 were completed and returned. Fifty-three trainees participated in non-resident on-call shifts.

All 53 trainees had received radiographs for review off site. Although every hospital in North London now stores patient radiographs on the picture and archiving communication system (PACS), no trainee had remote access to PACS when off site. All 53 trainees received radiographs for review via email and, of these, 11 also reported receiving a photo of the computer screen via Multimedia Messaging Service on their mobile phones.

Forty-eight trainees (91%) reported receiving images to their personal email

FIGURE 1

QUESTIONNAIRE DISTRIBUTED

Questionnaire for orthopaedic registrars

Dear Colleague

I am conducting a study to assess appropriateness of viewing images off site for orthopaedic trainees. Please take 5 minutes to complete this questionnaire.

1. What level of trainee are you?

   ST3 [ ] ST4 [ ] ST5 [ ] SpR4 [ ] SpR5 [ ] Other [ ]

2. Trust:

   .....

3. Do you participate in non-resident on-call rotas?

   Yes [ ] No [ ]

4. What is your on-call rota?

   .....

5. Have you been sent radiographs for review off site?

   Yes [ ] No [ ]

6. Was this via:

   PACS login [ ] Email [ ] MMS text [ ] Other: .....

7. If via email, which account were they sent to?

   Trust email [ ] NHSmail [ ] Personal email [ ]

8. Over the last 6 months how many times did you receive images for review off site?

   ≤6 [ ] 7–12 [ ] 13–18 [ ] 19–24 [ ] ≥25 [ ]

9. Was the patient demographic data anonymised?

   All [ ] Some [ ] None [ ]

10. Where did you review these images?

    Desktop [ ] Laptop [ ] Mobile [ ] iPhone [ ]

11. Have you heard of NHSmail?

    Yes [ ] No [ ]

12. Do you have NHSmail account?

    Yes [ ] No [ ]

If you wish to receive notification of the results of this study please provide your email address:

.....

Thank you for your participation.

PACS = picture and archiving communication system; MMS = Multimedia Messaging Service

account and only five (9%) received images to a secure mail account (trust or NHSmail).

Of the 48 trainees who received images to their personal mail account, 23 (48%) reported that patient sensitive data was not anonymised whereas this was the case for two of the five trainees (40%) who received images to their secure email account.

All trainees viewed electronically transmitted radiographs on their home computers (desktop or laptop) although 15 trainees reported initially viewing images on their mobile phones and then reassessing the images on their computers.

Sixty-three trainees (83%) had heard of NHSmail but only thirty-five (46%) actually had an NHSmail account.

Nineteen of forty-eight trainees (40%) who received radiographs to their personal email address reported they also had an NHSmail account.

Discussion

Remote analysis of patient radiographs by non-resident seniors allows immediate management decisions to be made. Remote PACS access is available in some trusts via a PACS login token issued at a

cost of £100 per token. This would preclude the need for unsecured communication among orthopaedic trainees. However, the high number of trainees rotating through each department at any one time means that this system would have serious cost implications and is therefore not widespread. Consequently, this tool is available to consultant radiologists only, who are expected to report emergency imaging out of hours. Until access to a secure PACS system becomes widely available, orthopaedic trainees will rely on email for communicating patient radiographs. Most seniors (91%) were receiving data directly to their personal email accounts despite 40% being in possession of a secure NHSmail account. Furthermore, 48% of images were not anonymised.

Some of these radiographs were viewed on mobile phones and were then re-viewed on home computers for more clarity. The Royal College of Radiologists recommends a minimum screen resolution of 1,280 x 1,024 pixels, a screen size of 42cm (~17"), a contrast ratio of 250:1 and 8-bit greyscale for all primary diagnostic display devices used for clinical image interpretation.[6] Most desktop PCs match these minimum requirements. However, some laptops do not and no mobile handheld devices meet these standards.

Conclusions

The majority of trainees use unsecured methods to transmit electronic data. Patient radiographs are not routinely being anonymised despite there being an easily available function on PACS. These measures contravene existing Caldecott guidelines. NHSmail fulfils all Caldecott guidelines and should be used.

NHSmail is a reliable and secure account kept by the holder throughout his or her employment with the NHS regardless of trust. It is a secure email service enabling the safe transmission of patient identifiable information. It is available from any internet connected computer and provides guaranteed service levels so staff can be confident in the availability of the service and in the delivery times for messages.

We recommend that trusts promote the awareness of NHSmail for the electronic transmission of patient sensitive data in order to avoid litigation. Furthermore, we advise trainees to anonymise patient data while transmitting images to unsecured accounts.

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