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Reliability of an 'online' geriatric assessment procedure, using the interRAI Acute Care Assessment System

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Abbreviated Title

Reliability of an 'online' geriatric assessment procedure

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Abstract:

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Conflict of Interest

The authors declare that they have no competing interests. Authors Gray and Martin-Khan are Fellows of the interRAI research consortium, which is a not-for-profit organization registered in the United States. Fellows contribute to the interRAI effort on a voluntary basis.

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Abstract

OBJECTIVES: To determine whether geriatric triage decisions made using CGA performed "online" are less reliable than face-to-face decisions.

DESIGN: Multi-site non-inferiority prospective cohort study. Patients referred for an acute care geriatric consultation were assessed sequentially by two specialist geriatricians. Patients allocated one face-to-face (FTF) assessment and an additional assessment (either FTF or online (OL)), creating two groups – paired FTF (FTF-FTF) or paired online face-to-face (OL-FTF).

SETTING: Three acute care public hospitals, in two different Australian States.

PARTICIPANTS: Admitted patients who were referred for comprehensive geriatric assessment (CGA).

INTERVENTION: A nurse administered CGA, based on the interRAI Acute Care assessment system, accessed online; and other online clinical data such as pathology results and imaging. Enabling the geriatrician to review patient information and provide input into their care at a distance.

MEASUREMENTS: The primary decision subjected to this analysis was referral for permanent residential care (YES/NO). Geriatricians also recorded recommendations for referrals and variations for medication management; and judgement regarding prognosis at discharge and 3 months.

RESULTS: Overall percentage agreement (P_0) for the FTF-FTF group ($n=81$) was 88% ($n=71/81$) and for the OL – FTF group ($n=85$) was 91% ($n=77/85$). The difference in agreement between the FTF-FTF ($P_0= 88\%$) and the OL-FTF group ($P_0 =91\%$) was -3% indicating that was no difference between the methods of assessment. Judgements made around diagnoses of geriatric syndromes, medication management and prognosis (in regard to hospital outcome and location at 3 months) and were found to be equally reliable in each mode of consultation.

CONCLUSION: Geriatric assessment performed online using a nurse administered structured CGA system was no less reliable than conventional assessment in making key clinical triage decisions.

30

31 **Keywords**

32 Comprehensive geriatric assessment, triage, video conferencing, reliability study, geriatric
33 medicine

34

35 **Full Text**

36 INTRODUCTION

37 Telemedicine can overcome the barriers of distance and diseconomies of scale that are
38 associated with rural hospitals. Tele-consultation is offered in real time (telephone or video-
39 consultation) or asynchronously (using email or other "online" approaches facilitated
40 through the internet). The asynchronous approach has the advantage that complex
41 scheduling is not required, and interaction time with patients is reduced, thus decreasing
42 the cost and potentially making it available for more patients. A gradual move away from
43 traditional consultation, to consultations supported online or by video-conference, or even
44 to entirely patient controlled actions supported by mobile devices and apps, holds the
45 promise of reduced health care costs and improved patient outcomes, without
46 commensurate cost increases (1) (2) (3).

47 Specialist geriatric advice for the care of older adults in rural or regional hospitals is often
48 not available due to the limited availability of specialists and their concentration in large
49 cities. Yet such hospitals are very likely to admit older persons with similar clinical issues to
50 those in larger centres. Geriatrician-supported comprehensive geriatric assessment (CGA) is
51 associated with improved clinical and administrative outcomes(4) (5).

52 If assessments are to be made using a telemedicine modality, it is important to understand
53 the advantages and limitations of the approach. If the reliability of clinical decision making
54 is compromised, then the process should be used cautiously (with the clinician aware of the
55 constraints). In geriatric medicine, several studies have examined the reliability of cognitive
56 assessment using video-consultation (6) (7) with positive results, but no studies have
57 examined other clinical parameters. Several publications describe methods to consult
58 realtime into acute care settings, using a blend of online resources and video-

consultation(8) (9). There are no studies that examine the reliability of CGA conducted in an asynchronous mode, without direct patient contact by the specialist. Reliability is an important part of a multi-step process in ensuring that any new approach to health service delivery is suitable for adoption(10).

Geriatricians play an important role in triage of older acute care patients, including recommendations for rehabilitation or other forms of post-acute care, and for permanent long term care. In Australia, the majority of post-acute care is offered in a hospital setting. Hospital decisions to transfer to long term care are usually permanent. These decisions are life-changing for older people, and, because long term care is heavily subsidised by the national government, have important fiscal implications. Risk assessment for admission to residential care is often made early in an acute care episode in an attempt to intervene (if appropriate) to avoid an admission. One intervention would be referral for CGA. The first CGA can occur within 72 hours of admission to acute care, and result in review consultations until discharge if required.

This study was designed to determine whether clinical decisions made online are less reliable than those made using conventional inperson consultation. The methodology was partially tested in a pilot study (11) and described fully by publication (12).

Several decisions were selected for scrutiny: The primary hypothesis focussed on agreement in regard to discharge decisions (i.e., the need for post-acute short term institutional care (rehabilitation) or permanent long term care). Other parameters were the determination of "difficult to diagnose" geriatric syndromes (delirium, dementia), and prognosis (likely discharge destination, and likely location at 3 months post-discharge).

METHODS

The service model

Our group developed a method for conducting CGA asynchronously (hereafter described as "online") (13) (12). A nurse at the remote site is trained to perform CGA using the interRAI Acute Care (AC) assessment system(14) (15) (16). The clinimetric properties of the interRAI AC have been extensively evaluated(14) (17) (18) (19) (20) (21). In our case, this "clinical decision support system" based on the interRAI AC is configured in a web-based software platform that enables review and reporting at a distance. It provides a facility to enable the

nurse assessor to write a short clinical summary (typically between 100-300 words). It includes specific screens to enable efficient review and preparation of reports by a geriatrician (See supplementary Material S1 for additional information regarding the interRAI AC).

This system is in regular use as an online assessment followed by a video-consultation. However, the latter is expensive and potentially difficult to organise so could be reserved for more complex clinical cases. Further, online assessments can be conducted within hours of referral, reducing waiting time for key clinical decisions.

Study Design

The study was designed to compare the level of agreement between consulting clinicians one of whom consulted the patient face to face (FTF) and one online (OL), and the level of agreement achieved when two clinicians both consulted the patient in person. This approach enables a distinction between inter-clinician variation in decision-making and variation associated with the online mode of consultation. Primary and secondary hypotheses were tested using a non-inferiority approach(22) (23). The primary hypothesis was that the level of OL-FTF agreement was non-inferior to the FTF-FTF level of agreement.

The protocol was previously reported (12): In brief, participants were randomly allocated to receive either paired FTF assessments (hereafter labelled the FTF-FTF group) in the standard clinical practice group or paired OL and FTF assessments (OL-FTF group) (Figure 1). Where the patient was allocated to receive two FTF consultations, the order of geriatrician assessment was randomly allocated. Levels of agreement between study groups (FTF-FTF, OL-FTF) were then compared.

Study Participants

Eligible subjects were community dwelling admitted patients who were referred for comprehensive geriatric assessment at one of three participating hospitals. Following ethics approval, written consent was sought for each patient to participate in the study (See Supplementary Material S1 for additional information on consenting patients). The study was registered with the Australian New Zealand Clinical Trials Registry (ACTRN12611000936921). *Pre-Consultation Preparation*

The registered nurse completed the interRAI AC by speaking with the patient, and ward staff, and the family or carer, and reviewing the patient chart. The completed assessment was entered into an online web-based system (CeGA Online) by the nurse, using a personal computer.

Consultation procedure

Each geriatrician had access to the results of the standardised assessment which was viewed online. The raw data is available along with a series of risk scores and geriatric syndrome alerts compiled automatically into a short report. In addition to the CeGA online data and report, the geriatrician could access any other online available data (i.e. laboratory results).

Geriatricians allocated to perform a FTF consult could speak to and examine the patient after reviewing the online information. They could read the patient chart but were not permitted to speak with the ward nurse to avoid bias **(See Supplementary Material S1 for additional information regarding bias).**

Triage Decision Criteria

Geriatricians were required to recommend a triage decision following the completion of their patient assessment. Options included: direct discharge to the community; transfer to inpatient rehabilitation or a geriatric unit; or transfer to permanent residential care, including a distinction between the need for high or low level care (equivalent approximately to Skilled Nursing Facilities or Assisted Living in the North American context). A decision was forced for the purposes of the study.

Additional questions related to the prediction of location at three months; the presence of geriatric syndromes (including delirium, dementia and depression); changes in medication and any additional diagnoses identified during the patient assessment.

Randomisation Procedure

Randomisation was carried out using a balanced block randomisation code which was generated by a qualified statistician using an electronic random number generator. Consequent allocations determined the pair of consultations (FTF-FTF or OL-FTF), and the geriatrician allocation and order of assessment, resulting in eight possible combinations. Assignments were concealed in opaque, sealed envelopes that were numbered

consecutively within each stratum. Randomisation protocols were defined *a priori*, and geriatricians and patients were blinded to format and order of consult prior to consent of patient

Sample Size Calculation and Statistical Analysis

This non-inferiority study tested whether the percentage agreement between clinicians in the intervention group (OL-FTF) did not lie beyond the lower limit of an acceptable range (a one-tailed area of clinical indifference) when compared with the standard clinical practice group (FTF-FTF)(24-26). The sample size calculation and the analytical methods are those used in equivalence studies, in that the absolute value of the difference that could be found between two study groups while still concluding that the two interventions are equivalent is determined *a priori*. In this study, the question of interest only related to whether Online is not inferior to a FTF assessment, as this was a 'non-inferiority study'.

The outcome of interest was the difference in percentage agreement (P_o) between paired assessments of the OL-FTF group and the FTF-FTF group for the question: "Is residential care recommended?" scored as 'Yes'(1); 'No'(0). A referral to either high care or low care was grouped into a single category "Yes, residential care is recommended". The sample size of 114 subjects per study arm was identified to provide the study with power exceeding 80% to detect a non-inferiority margin of 15% for agreement between FTF-FTF and OL-FTF groups for the decision "yes, residential care is recommended". This was based on an assumption of inter-geriatrician agreement of 60% for geriatric triage decisions, allowing a two-sided type 1 error rate of 5%.

Characteristics of enrolled versus non-enrolled subjects were compared. Balance between randomized arms was examined using demographic data and two scalar measures derived from the interRAI AC (cognition [sCPS2] and activities of daily living [sADLSF]) (27) (16). Data was checked for normal distributions and statistically significant differences of the means for demographic data was tested using Wilcoxon Signed Rank Test (for age) and Pearson's Chi Squared Test (for the other data elements).

Percentage agreement (P_o) and the kappa statistic (K) were used to assess inter-rater reliability across the two study arms. In the standard clinical practice arm, triage decisions made at the first consultation were checked against those made at the second consultation.

In the OL-FTF arm, triage decisions made in the FTF consultation were compared with decisions made online. Online assessment was taken to be non-inferior to a live assessment if percentage agreement in the OL-FTF group was not more than 15% less than the percentage agreement in the FTF-FTF group.

Agreement between the OL-FTF group and FTF-FTF group detection of common geriatric syndromes (including dementia, delirium and depression) was also assessed using percentage agreement and kappa statistics with a p -value of 0.05 indicating significance.

Analysis was completed by MMK and KK using SPSS 18.0 (SPSS Inc. Released 2009. PASW Statistics for Windows, Version 18.0. Chicago: SPSS Inc.) and SAS Enterprise Guide 4.2 (SAS Institute Inc. 2009. Administering SAS Enterprise Guide 4.2. Cary, NC: SAS Institute Inc.)

RESULTS

Study Population

Three sites contributed cases to the study (as a result of the dual assessments, 332 assessments were carried out for the study), with site 1 contributing the majority of cases (107 cases).

A total of 166 patients were included in the final analysis (**Figure 1; see Supplementary Appendix S1 for subject information**). The patient characteristics of the two groups were similar (**Table 1**), other than age.

Agreement between the two groups (FTF-FTF, OL-FTF)

Overall agreement on the question of triage for residential care for the FTF-FTF group ($n=81$) was 88% ($n=71/81$) (95% CI: 0.7847, 0.9392), with a Cohen's kappa of 0.6432 (95% CI: 0.4411, 0.8452). Overall agreement for the OL-FTF group ($n=85$) was 91% ($n=77/85$) (95% CI: 0.8229, 0.9585), with a Cohen's kappa of 0.7291 (95% CI: 0.5529, 0.9053) (**Table 2**). The difference in agreement between the FTF-FTF group ($P_0=88\%$) and the OL-FTF group ($P_0=91\%$) was -3% (95% CI: -13%, 7%) which is within the stated boundary of 15% indicating that the intervention was very unlikely to be inferior to usual practice.

Each geriatrician was asked to determine if the patient had delirium, dementia or depression. For the purpose of this analysis, 'diagnosis present' and 'diagnosis borderline' were collapsed into one category to enable a dichotomous outcome of 'diagnosis present' or 'not present'.

- The level of agreement in the FTF-FTF group for delirium was 77% (n=62/81; Number of patients for whom there was a diagnosis of delirium, Consultation FTF 1 n= 27/81; Consultation FTF 2 n=24/81). For the OL-FTF group, agreement was 74% (n=63/85; Number of patients for whom there was a diagnosis of delirium, OL n=32/85; FTF n=28/85). The OL-FTF level of agreement was 3% less than the FTF-FTF group.
- The level of agreement in the FTF-FTF group for dementia was 89% (n=72/81; Number of patients for whom there was a diagnosis of dementia, Consultation FTF 1 n= 29/81; Consultation FTF 2 n= 30/81). For the OL-FTF group, agreement was 81% (n=69/85; Number of patients for whom there was a diagnosis of dementia, OL n=35/85; FTF n= 27/85). The OL-FTF level of agreement was 8% lower than the FTF-FTF group.
- The level of agreement in the FTF-FTF group for depression was 70% (n=57/85; Number of patients for whom there was a diagnosis of depression, Consultation FTF 1 n= 25/85; Consultation FTF 2 n=15/85). For the OL-FTF group, agreement was 69% (n=59/85; Number of patients for whom there was a diagnosis of depression, OL n=34/85; FTF n=32/85). The OL-FTF level of agreement was 1% less than the FTF-FTF group for the diagnosis of depression.

Prior to the consultation, the assessment nurse had prepared the case by recording relevant information, this included a list of known diagnoses, and current medications. The geriatrician was asked to record any new diagnoses identified (i.e. in addition to those already noted)). In the FTF-FTF group, there was agreement regarding the diagnostic list (dichotomous outcome: new diagnosis identified yes/no) of 74% (n=60/81; K=0.298).

Consultation 1 identified a new diagnosis for 23(28%) patients, and Consultation 2 identified 16 (20%) new diagnoses. For the OL-FTF group, there was agreement regarding diagnosis of 78% (n=66/85; K=0.311). Online consultation identified a new diagnosis for 10 (12%) of patients, and FTF consultations identified 23 (27%) new diagnoses. The difference in percentage agreement between FTF-FTF (74%) and OL-FTF (78%) was +4%, but the number

of new diagnoses identified was relatively small. In the same way, geriatricians were asked to record 'suspected a new diagnosis' where they felt there was a potential issue that required further investigation before a definitive diagnosis could be made. The agreement in the FTF-FTF group ($n=64/81$, 79%; $K=0.246$) was 6% higher than the agreement in the OL-FTF group ($n=62/85$, 73%; $K=0.094$), but agreement on the patients with the suspected new diagnoses was low in both groups ($n=5$, 4).

Each geriatrician was asked to predict where the patient was likely to be located, following the end of the acute care episode, dichotomised for residential care (Yes/No). Agreement between geriatricians, including OL was very similar, but quite different to where the patient actually was discharged at the end of the acute care episode. Geriatricians predicted that 22% of patients would move from the acute care ward to residential care, but in fact, only 4% made this transition in the FTF-FTF group and 8% in the OL-FTF group (**Table 3**). Agreement between consultations and the actual patient outcome was similar (FTF-FTF group: Consultation 1 $n=63/81$, 78%; FTF Consultation 2 $n=61/81$, 75%; OL-FTF GROUP: OL $n=64/85$, 75%; FTF $n=62/85$, 73%).

Data was collected in relation to time taken to complete online assessments, compared with face to face assessments. Nursing time was not recorded as an identical process was undertaken for both forms of consultation. Given that online consultation is non-inferior to FTF consultation, it is important to consider whether it is more time-consuming. Times are reported in **Table 4**. In FTF consultations, less time is spent using the online material when the geriatrician is aware that they will have access to the patient chart and need time to speak with the patient. The less time taken using the online approach, due to lack of access to the patient chart and the patient, did not significantly alter the triage decisions made by the geriatricians.

DISCUSSION

The results indicate that decisions made by geriatricians in regard to permanent long term care placement are equally as reliable when made online compared with conventional in person consultations.

While the primary aim of this study focused on triage decisions to residential care, it is recognised that a patient's complex health circumstances contribute to the situation

resulting in a residential care admission. Therefore, it is important to understand the reliability of the elements within a CGA which contribute to that final Geriatrician decision. Judgements made around diagnoses of geriatric syndromes, new diagnoses, medication management and prognosis (in regard to hospital outcome and location at 3 months) are equally reliable in each mode of consultation.

The time taken to complete the consultation, excluding write up of a report, is markedly shorter: less than 10 minutes compared with approximately 27 minutes.

Decisions made by geriatricians depend heavily on experience and judgement. This study demonstrates that, even in conventional consultations, there is considerable disagreement around critical diagnostic, triage and prognostic decisions. A strength of this study is that it quantifies this "usual" level of disagreement, and permits precise comparison with the online approach. In a previous study, examining the ability of specialists to diagnose dementia by video-consultation in a memory disorders clinic, we also found considerable disagreement among specialists in the conventional consultation format (6). These findings emphasise the importance of understanding inter-clinician variation in opinion, before determining the accuracy or reliability of a new consultation approach. The conventional face to face consultation cannot necessarily be assumed to be the "gold standard".

The model under examination requires extensive case preparation by a trained nurse assessor. This process, in routine use, requires 1 to 4 hours depending on factors such as case complexity and availability of collateral history from family members. This requirement raises two issues: Would the level of agreement deteriorate without such case preparation? Secondly, will hospitals choose to fund the case preparation component? In our extensive experience, we find that hospitals without direct access to geriatricians are more likely to make this investment (to support a telehealth model), whereas city hospitals are more likely to limit access to nursing support for inpatient geriatric consultation services.

This study did not examine a process of solo geriatrician decision-making without assessor support. This (unsupported) approach is not uncommon, in our experience. It is conceivable that the case preparation process undertaken by nurse assessors – in both FTP-FTP and OL-FTP arms of this study – may have served to close any potential gap in decision making that might exist in unsupported models. However, in our experience, it is highly impractical to

operate distance assessment models without some form of structured support at the distal site. This appears to be the experience of Malone *et al* who utilised a combination of electronic medical record extraction, and case conferencing participation by geriatricians by teleconference, to support remote decision making (8). Since we aimed to test reliability of an online approach, we chose not to examine an unsupported model in this study. We further acknowledge that there are limitations if one were to use inter-rater reliability as the only valid measure of reliability when considering implementing a new health innovation (this paper is only one of several which contribute to the developing literature on online CGA). It is also important to ensure, when using inter-rater reliability, that there is sufficient variation in the event types to allow for suitable data for interpretation(25, 28). Fortunately, this is the case with this study. A limitation of this study is that disagreement may have been inflated in relation to the comparison between Geriatrician triage decisions and actual discharge as the study protocol required Geriatricians to make triage decisions (very early in a hospital episode) where in many clinical situations they would (and did) delay that decision. What are the implications of this study for clinical practice? Most important, an online approach to consultation, provided that cases are prepared by trained nurses using a structured approach, appears equally as reliable as the conventional method. In rural settings, where there is no feasible alternative, this is probably the method of choice. In our own practice, we use a combination of online and video-conference enhanced consultation to support small rural hospitals.

However, there may be implications for city practice. This consultation method has the advantages of significant time demands on geriatricians – less than 10 minutes. Where geriatricians are in short supply, and nurse assessors are available, this approach has the potential to substantially increase the output of geriatricians. While this study examined decision-making in the hospital setting, a similar approach might be feasible for community consultations – a nurse assessor makes a home visit and performs a consultation, and the geriatrician reviews and reports the case online.

Many protagonists of "digital medicine" foresee a progression from traditional medical consultation to online approaches to self-diagnosis and management (1) (2). Such a progression should only be countenanced if there is preservation of the integrity of the process and similar or improved clinical outcomes at the same or lower cost. This study

326 demonstrates that even a complex process such as a CGA may be able to be conducted, at
327 least in part, online. Ideally, this might lead to greater access to specialist geriatric
328 consultations for many older people, who currently are denied access.

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AUTHOR CONTRIBUTIONS

Len Gray and Melinda Marin-Khan conceptualised the research design and drafted the initial concept and project grant. Helen Edwards, Richard Wootton, Stephen Counsel and Peteris Darzins made significant contributions to the research design for the submission of a successful research grant.

Melinda Martin-Khan managed the project implementation, wrote the protocols and submitted the ethics applications. Len Gray oversaw recruitment of site coordinators for participation into the study and provided project oversight. Helen Edwards supported training of staff in implementation and adherence to protocol integrity. Paul Varghese, Kwang Lim and Peteris Darzins were site coordinators and implemented the study protocol at their site and delivered the data as per requirements (there were three sites). Lucy Dakin assisted in protocol development. Richard Wootton and Stephen Counsell provided advice on protocol and technology throughout the implementation.

Melinda Martin-Khan oversaw data entry and data cleaning and wrote the analysis plan. Kerenaftali Klein completed preliminary statistical analysis and Melinda Martin-Khan completed extensive additional analysis to finalise the paper. Melinda Martin-Khan wrote the first draft and completed all the tables. Len Gray extensively revised the draft and

interacted with the other authors to integrate their extensive revisions into the final drafts. All authors extensively reviewed and participated in the final revisions. Melinda Martin-Khan submitted the paper.

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FIGURE LEGEND

Figure 1 STARD flow diagram - Recruitment and allocation to assessment group shown with the result that from 273 eligible patients, 81 standard clinical practice patients (FTF-FTF) and 85 patients in the telehealth (Online-FTF) group, were included in the analysis.

Disagreement is grouped, and agreement on discharge to residential care, or not, is itemised.

SUPPLEMENTARY APPENDIX S1

1. Protocol for consenting participants
2. Protocol for avoiding bias
3. Further information on the interRAI Acute Care (AC) Assessment instrument
4. Descriptive information relating to the study population

GRAPHICS

Table 1 Demographic information for each assessment group (FTF-FTF, OL-FTF)

		Paired FTF (FTF-FTF)	Online/FTF (OL-FTF)	<i>p</i>
		(n=81)	(n=85)	
Age	n(Range; SD)	78.4 (62-95; SD 7.9)	79.4 (64-96; SD 7.74)	<0.001*
Gender	Male	35 (43%)	46 (54%)	0.213
Prior Residential Status	Private Home	68 (84%)	65 (76%)	0.576
Living Arrangements	Alone	37 (44%)	30 (35%)	0.422
Previous Hospital Stay	Hospitalised in the last 90 days	32 (40%)	26 (30%)	0.629
Precipitating event prior to admission	Within the last 7 days	46 (57%)	54 (63%)	0.840
Cognition prior to Admission	No Cognitive Impairment	64 (79%)	64 (75%)	0.247
Activities of Daily Living at assessment	Independent	69 (85%)	72 (85%)	0.672

*Statistically significant difference at a *p*-value of less than .05

Table 2 Responses of pairs of geriatricians with respect to the discharge to higher level of care Grouped (Residential care Yes/No) (shaded: boxes indicate cases of complete agreement between doctors)

Paired FTF (FTF-FTF)		Consultation 2 (FTF2)			Overall Percentage Agreement
		Other	Residential Care	TOTAL	
Consultation 1 (FTF1)	Other	58	6	64	58 (72%)
	Residential Care	4	13	17	13 (16%)
	TOTAL	62	19	81	71 (88%)
Online-FTF (OL-FTF)		Face to Face(FTF)			Overall Percentage Agreement
		Other	Residential Care	TOTAL	

Reliability of an 'online' geriatric assessment procedure

Online (OL)	Other	62	5	67	62 (73%)
	Residential Care	3	15	18	15 (18%)
	TOTAL	65	20	85	77 (91%)

Table 3 Comparison of patient location following end of acute episode compared with geriatrician prediction (by group)

Patient Destination Immediately following Acute Care Episode		FTF-FTF Prediction				FTF-FTF	OL-FTF Prediction				OL-FTF
		FTF 1		FTF 2		ACTUAL	OL		FTF		ACTUAL
	Residential I Care	17(21%)	Sensitivity = 0.9688 (95% CI: 0.8916-0.9962)	19(23%)	Sensitivity = 0.9677 (95% CI: 0.8883-0.9961)	3(4%)	18(21%)	Sensitivity = 0.9254 (95% CI: 0.8344- 0.9753)	20(24%)	Sensitivity = 0.9231 (95% CI: 0.8295-0.9746)	7(8%)
Other	64(79%)	Specificity = 0.0588 (95% CI: 0.0015-0.2869)	62(77%)	Specificity = 0.0526 (95% CI: 0.0013-0.2603)	78(96%)	67(79%)	Specificity = 0.1111 (95% CI: 0.0138- 0.3471)	65(76%)	Specificity = 0.1000 (95% CI: 0.0123-0.3170)	78 (92%)	
Patient Location Three Months Post Hospital Episode		FTF-FTF				ACTUAL	OL-FTF				ACTUAL
		FTF 1		FTF 2			OL		FTF		
	Residential I Care	31(38%)	Sensitivity = 0.9800 (95% CI: 0.8935-0.9995)	29(36%)	Sensitivity = 0.9615 (95% CI: 0.8679-0.9953)	6(7%)	27(32%)	Sensitivity = 0.9828 (95% CI: 0.9076- 0.9996)	27(32%)	Sensitivity = 0.9655 (95% CI: 0.8809-0.9958)	4(5%)
	Other	50(62%)	Specificity = 0.1613 (05% CI: 0.0545-0.3373)	52(64%)	Specificity = 0.1379 (95% CI: 0.0389-0.3166)	75(93%)	58(68%)	Specificity = 0.1111(95% CI: 0.0235-0.2916)	58(68%)	Specificity = 0.0741 (95% CI: 0.0091-0.2429)	81(95%)

Table 4 Timing information for FTF consultations and OL consultations

Consultation element	Online FTF (OL-FTF)		Paired FTF (FTF-FTF)	
	OL	FTF	Consultation 1 (FTF)	Consultation 2 (FTF)
Read Online CGA, laboratory results, etc.	9.89 min (4-35 min; 5.83 SD)	6.5 min (1-27 min; 3.47 SD)	6.7 min (2-22 min; 3.55 SD)	7.09 min (2-22 min; 3.68 SD)
Read Patient Chart		8.23 min (1-30 min; 5.57 SD)	7.78 min (1-23 min; 4.46 SD)	7.37 min (2-22 min; 3.81 SD)
Consultation with Patient		13.19 min (1-30 min; 5.30 SD)	11.66 min (1-30 min; 6.05 SD)	11.86 min (3-71 min; 9.02 SD)
Total	9.89 min (4-35 min; 5.83 SD)	27.73 min (4-77 min; 10.56 SD)	26.05 min (9-52 min; 8.96 SD)	26.14 min (9-89 min; 11.68 SD)

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