

Supplementary table 1: Characteristics of patients and triage advice (9 studies that utilised routine data analysis)

First author Year Country Reference	Sample / data size	Staff conducting digital triage	Participants	Key findings relating caller/patient characteristics and triage advice
Payne 2001 England 23	56,450 calls	Nurse	General population	<p><b>Patient/symptom characteristics</b></p> <ul style="list-style-type: none"> <li>• The patient was the caller in 45% of calls; 31% of calls were made by parents calling on behalf of their child. • 24% of calls were about 0-5 year olds. 22% were for 17-29 years, and 22% for 30-39 years.</li> </ul> <p><b>Triage advice and urgency</b></p> <ul style="list-style-type: none"> <li>• Urgency increased with age: 0-5 year olds were more likely to be categorised as "no urgency", 17-39 years were more likely to be "routine", and over 70s were more likely to be categorised as urgent.</li> <li>• 56% of calls were prioritised as "no urgency", 32% were categorised as having some degree of urgency, and 11% were routine; 37% of patients were advised to self-care</li> <li>• Males were more likely to be categorised as urgent; females were more likely to be referred to community services or given information.</li> </ul>
Elliot 2015 Scotland 5	1,285,038 calls	Nurse	General population	<p><b>Patient/symptom characteristics:</b></p> <ul style="list-style-type: none"> <li>• Abdominal problems accounted for the largest proportion of calls (12.2%) followed by dental (6.8%) and rash/skin problems (6.0%).</li> <li>• Problems differed by age group. Rash/skin problems were most frequent in the under 5's, abdominal problems most frequent in 5-74, and breathing problems most frequent in over 75s.</li> <li>• Less affluent users tended to contact the service less often compared to affluent users, exceptions were for throat problems, genitourinary, eye problems and fever.</li> </ul> <p><b>Triage advice and urgency:</b></p>

• Out of hours calls most frequently resulted in: advice to visit an out-of-hours centre (34.1%), followed by a GP home visit (12.2%) or self-care advice being provided (10.2%). Whereas in-hours calls mainly resulted in: advice to contact a dentist (27.6%), a NHS 24 service clinician calling the patient (21.1%) or advice to contact a GP (19.2%).

<b>Zwaanswijk 2015 Netherlands 25</b>	895 253 patients	Nurse (within General practice cooperative)	General population	<p><b>Triage advice and urgency:</b></p> <ul style="list-style-type: none"> <li>• Urgency variation was symptom specific: For Cystitis/Urinary Infections: 93.4% of variation ascribed to differing patient characteristics. For cystitis urgency was significantly lower for females and lower for adult patients; for lacerations and cuts: urgency significantly higher for patients over 5 years old than for younger children</li> <li>• Higher variation in urgency occurred at lowest two urgency levels.</li> </ul>
<b>Njeru 2017 USA 7</b>	587 cases 587 controls	Nurse	Adult callers with and without limited English proficiency (LEP)	<p><b>Triage advice and urgency:</b></p> <ul style="list-style-type: none"> <li>• Nurse recommendations for higher urgency care, (ambulance, visit the ED, or schedule an acute appointment) were more frequent for limited English proficiency callers (LEP) callers than non-LEP callers (49.4% versus 39.0%; <math>P &lt; 0.0004</math>), differences remained significant after adjustment for co-morbidities.</li> <li>• The LEP patients were less likely to follow the recommendations given by the nurse, n (%): 339 (60.9%) versus 379 (69.4%) - even after adjusting for sex, co-morbidity, caller type (self or surrogate), duration of call, and recommended action</li> </ul>
<b>Jacome 2018 Portugal 24</b>	148,099 calls	Nurse	General population (Older age groups 65+)	<p><b>Patient/symptom characteristics:</b></p> <ul style="list-style-type: none"> <li>• Majority of users were female (63% vs. 37%), most users were younger than 80 years old (60.6% vs. 39.4%). Mean age: 77.3.</li> <li>• Most common symptoms were: pain (18.1%), respiratory tract infections (11.9%), digestive problems (8.6%), diabetes mellitus (6.4%)</li> </ul> <p><b>Triage urgency and advice</b></p> <p>Users in the “oldest old” group were more often referred to ED (51% vs. 40% of those in the “65–79 age” group) and less often advised to rely on self-care (11% vs. 15%).</p>

<p><b>Hsu</b> <b>2011</b> <b>England</b> <b>21</b></p>	<p>402,959 calls about older people (In 12- month study period)</p>	<p>Nurse</p>	<p>Older age groups (aged over 65 years)</p>	<p><b>Patient/Symptom characteristics</b></p> <ul style="list-style-type: none"> <li>• The age of the callers ranged from 65 to 109 years (mean = 76.78; median = 76; Standard Deviation =7.856; mode = 65). During the study period, the estimated proportion of people aged 65 years and over was approximately 16% of the England and Wales population, but accounted for only 7.2% of service use.</li> <li>• Amongst older adults, service use increased with age, with higher use among women than men</li> </ul> <p><b>Triage advice and urgency</b></p> <p>Overall, the largest advice category was to visit GP, primary care service (PCS) or dentist on the same day: 28%, (n = 112,778), followed by home care 25.4% (n = 102,406) and being advised to see their GP, PCS or dentist, either routinely, 15.2%(n = 61,419) or urgently 14.7% (n = 59,154), being referred to the emergency service 6.9% (n = 27,612), ED 5.4%(n = 21,650) and community services 2% (n = 7,931).</p>
<p><b>Cook</b> <b>2013</b> <b>England</b> <b>20</b></p>	<p>358 503 calls</p>	<p>Nurse</p>	<p>children aged 0–15 (&lt;1, 1–3 and 4–15 years))</p>	<p><b>Patient and symptom characteristics</b></p> <ul style="list-style-type: none"> <li>• For infants aged &lt;1, highest call rates were found for ‘crying’</li> <li>• High call rates were also found for symptoms relating to ‘skin/hair/ nails’ and ‘colds/flu/sickness’ for all age groups; self-care and health information was provided to 59.7% and 51.4% of these cases respectively.</li> </ul> <p><b>Triage advice and urgency</b></p> <ul style="list-style-type: none"> <li>• 47% calls made on behalf of children aged &lt;1, 48.7% of calls for children 1–3 and 43.9% of calls for children aged 4–15 were managed with no onward referral needed by giving health information and advice</li> <li>• For children aged &lt;1, only 7% of calls were forwarded to A&amp;E, which was markedly higher for children aged 1–3 (12.3%) and for children aged 4–15 (13.5%). However, for GP outcomes (urgent/same day/routine), this was higher for children aged &lt;1 (30%) than for children aged 1–3 (24.5%) and 4–15 (23.5%)</li> <li>• The symptoms which contributed to the highest number of high urgency calls related to ‘respiratory tract’ (n=840, 5.1%, ASR=32.7) and ‘neurological disorders’ (n=51, 8.4%,</li> </ul>

ASR=12.1)				
<b>North 2010 USA 22</b>	20,230 calls over a 2 year period	Nurse	General population (users with insurance and subscription)	<p><b>Patient characteristics (seriousness of symptoms as investigated through hospitalisation rates).</b></p> <p>This study compared hospitalisation rates in 3 groups, patients who: 1) were digitally triaged, 2) made a GP visit and 3) attended ED.</p> <ul style="list-style-type: none"> <li>•Triaged patients are more likely to result in hospitalisation as compared to those visiting a GP; but less likely than those attending ED. •3% (n=547) of callers were hospitalised.</li> <li>Hospitalisation rate varied by age: low (2%) for ages 3 – 17 to high (10%) for 65+</li> <li>•Hospitalisation following triage call occurred quickly: 77% occurred with 48 hours of the call</li> <li>•Those aged 65 years + were 5 times more likely to have problems requiring hospital admission when presenting to the ED compared to callers.</li> <li>•Symptom calls in the 65 years and older age group had hospitalization rates close to 10%,</li> <li>•Findings relating to symptoms: for adult abdominal pain, rates of hospitalisation between callers and ED attendees were similar.</li> <li>•There was a higher proportion of female callers compared to female ED attendees and GP visits (females made up 72% of callers, 61% of GP visits and 56% of ED visits)</li> </ul>
<b>North 2010 USA 19</b>	163,608 calls	Nurse	General population (users)	<p><b>Patient/symptom characteristics</b></p> <ul style="list-style-type: none"> <li>• Study compared surrogate (calls made by someone on behalf of the patient) calls to self calls, made by the patient themselves</li> <li>Adult calls accounted for 105,866 (65%) of the total calls, of these, 14,646 (14%) were made by surrogate; men and the elderly were the two most over-represented groups in surrogate calls</li> <li>• For surrogate calls, the top 5 symptoms were: abdominal pain, vomiting or nausea, other, skin problems, dizziness. In self calls the top symptoms were: abdominal pain, skin</li> </ul>

problems, chest pain, other, eye or vision problems.

- Vomiting or nausea, dizziness or light-headedness, and other were significantly more likely to be reported by surrogate callers. Abdominal pain, skin problems, chest pain, and eye or vision problems were significantly more likely to be reported by self callers
- Surrogate calls, as a percent of total calls by age group, increased with the age of the patient
- Calls concerning women patients made up 70% (n=74,069) of all adult calls, of which 9% (n=6780) were made by surrogates. Of the 31,797 calls about male patients, 25% (n=7866) were made by surrogates. Overall, males were the subject of 54% of surrogate calls and 26% of self calls.

#### **Triage advice and urgency**

- Emergency advice was recommended 28% (n=29,371) of all calls. 38% (n= 5545) of surrogate calls ended with this nurse recommendation compared to 26% (n=23,826) of self calls (OR 1.72; 95% CI 1.66 to 1.79).
- Advice urgency increased with age for both surrogates and self calls