

Portugal eHealth summit



24th ISfTeH
International
Conference

ISfTeH | International Society for
Telemedicine & eHealth

Telehealth and the management of acute illness

Upcoming role for **SNS 24**
in Portugal's national health
strategy for acute illness

Miguel Santos, MD

Centro Nacional de TeleSaúde, SPMS

Background



Western Europe, 92 090 km²



10.3 million citizens



National Health Service (tax funded)



23,022.9 *per capita* (2017; EU 29,960.8)

Background



Western Europe, 92 090 km²



10.3 million citizens

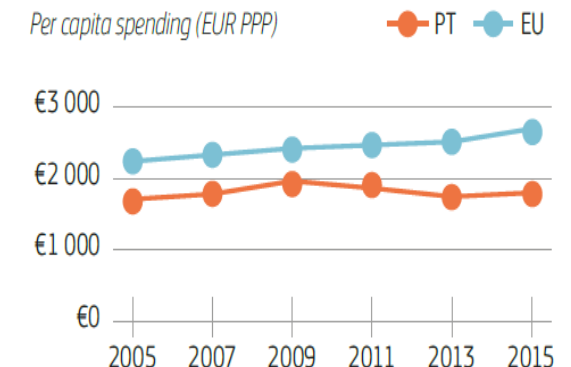
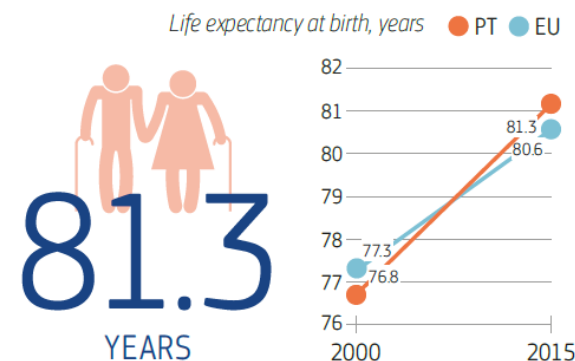
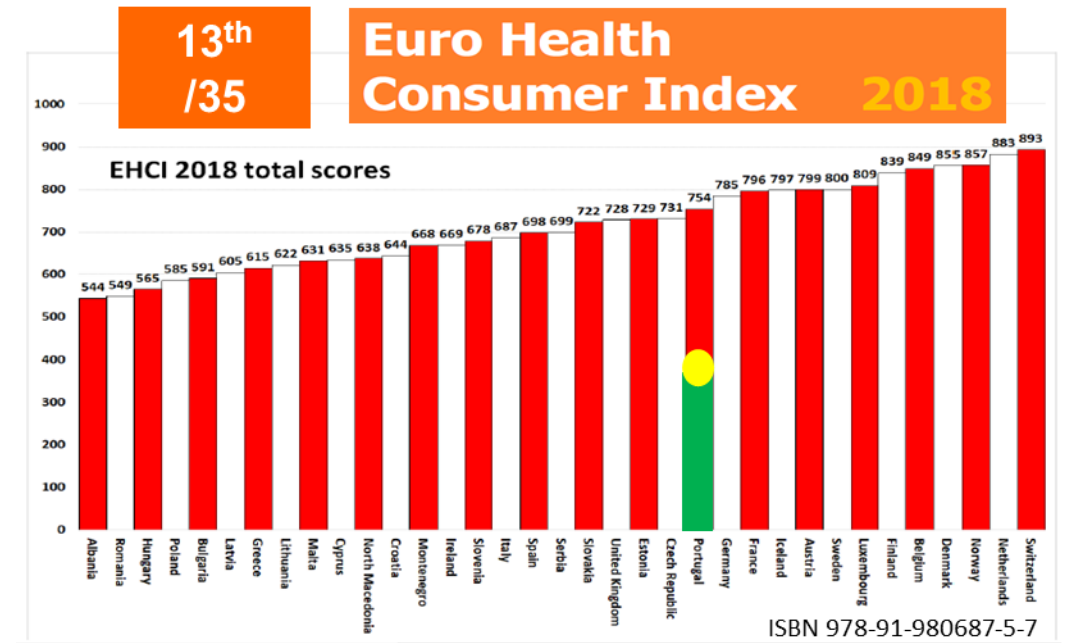


National Health Service (tax funded)



23,022.9 *per capita* (2017; EU 29,960.8)

PORDATA



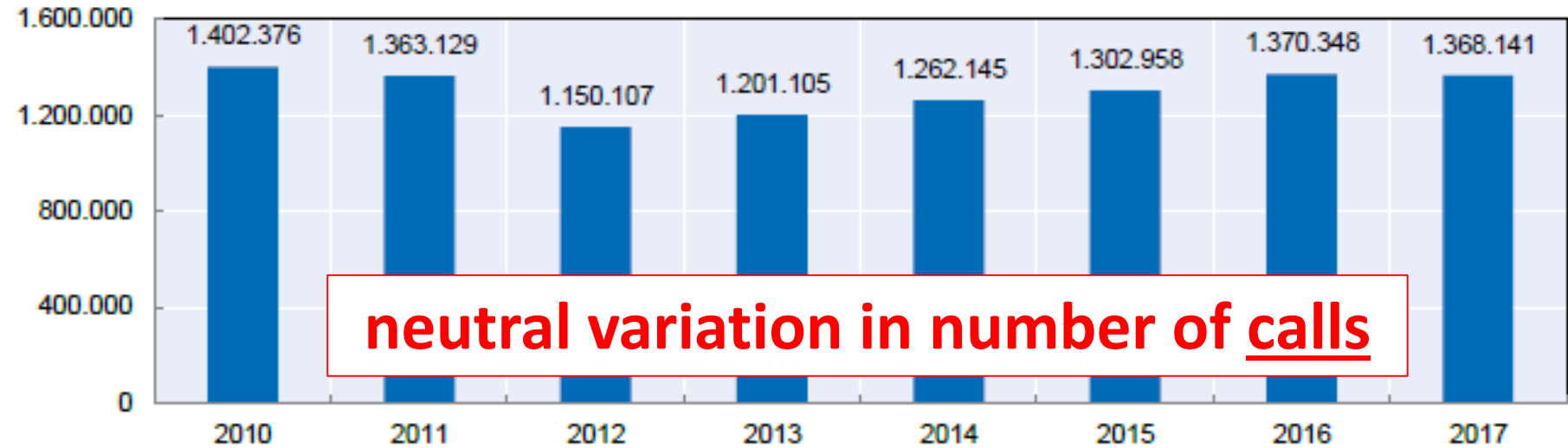
OCDE 2017, ISBN 9789264283527

Acute illness management options in Portugal

Call 112 emergency line



Call 112 emergency line



neutral variation in number of calls

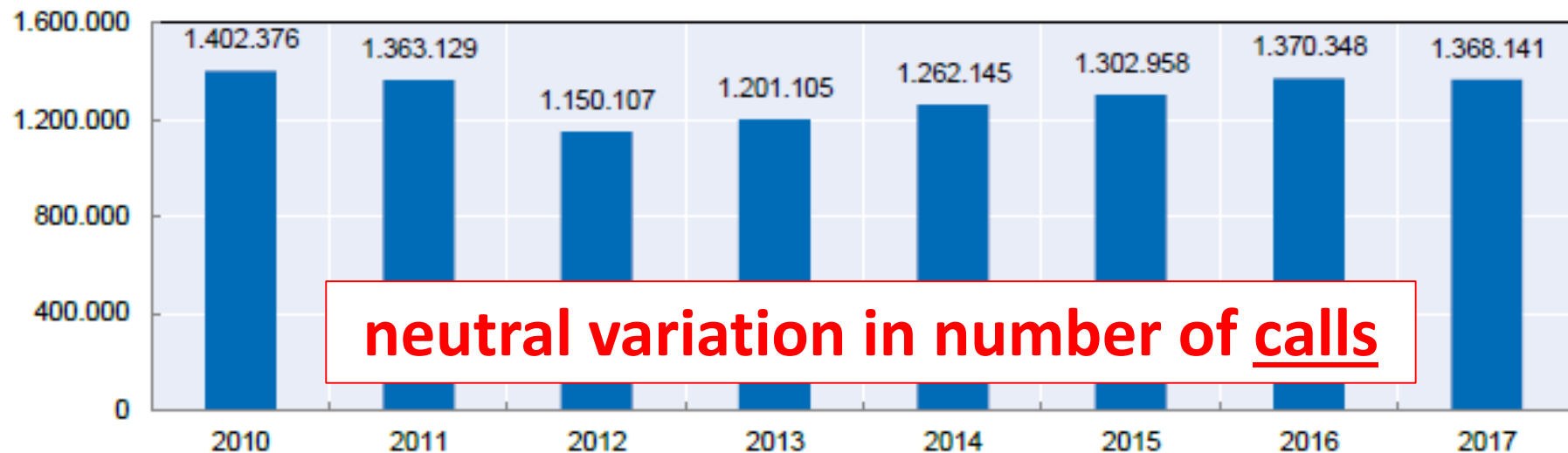
Fonte: INEM

StatLink: <https://transparencia.sns.gov.pt/explore/dataset/chamadas-de-emergencia-atendidas-pelo-codu-inem/information/?sort=tempo>

112

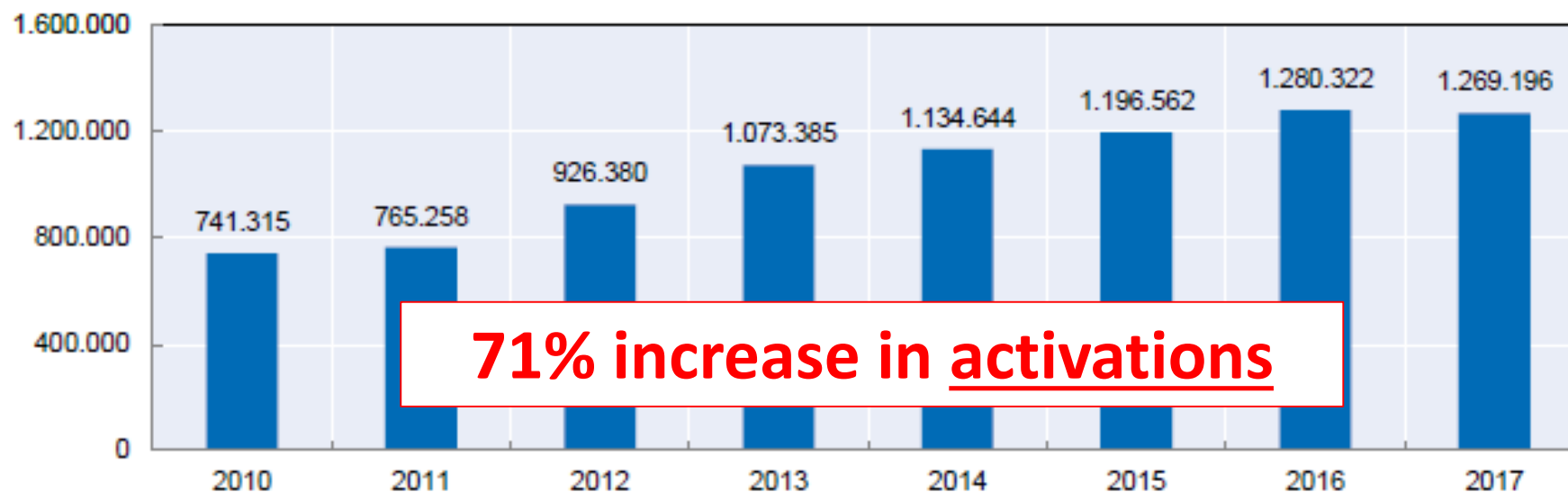


Call 112 emergency line



Fonte: INEM

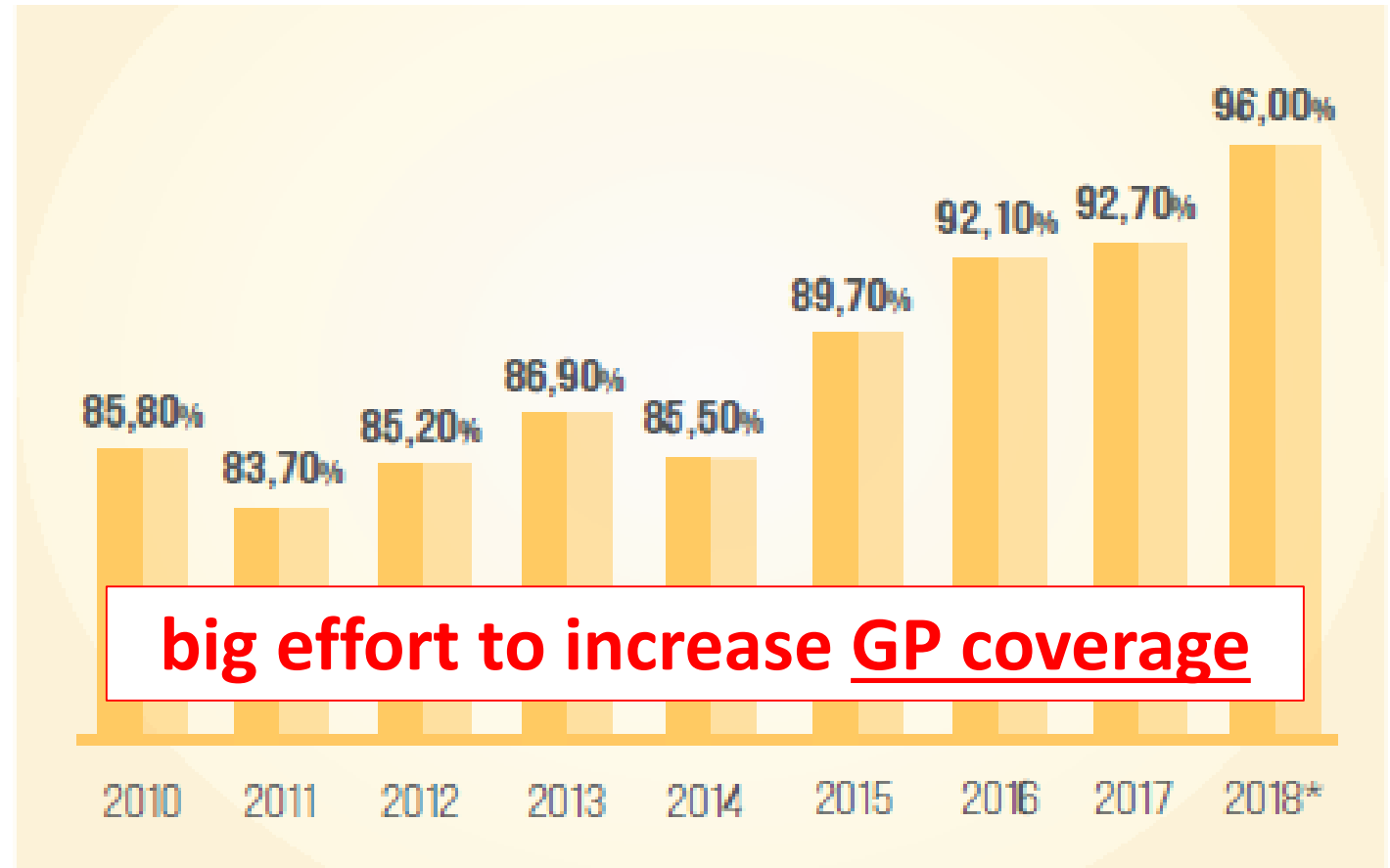
StatLink: <https://transparencia.sns.gov.pt/explore/dataset/chamadas->



Go to the local GP practice



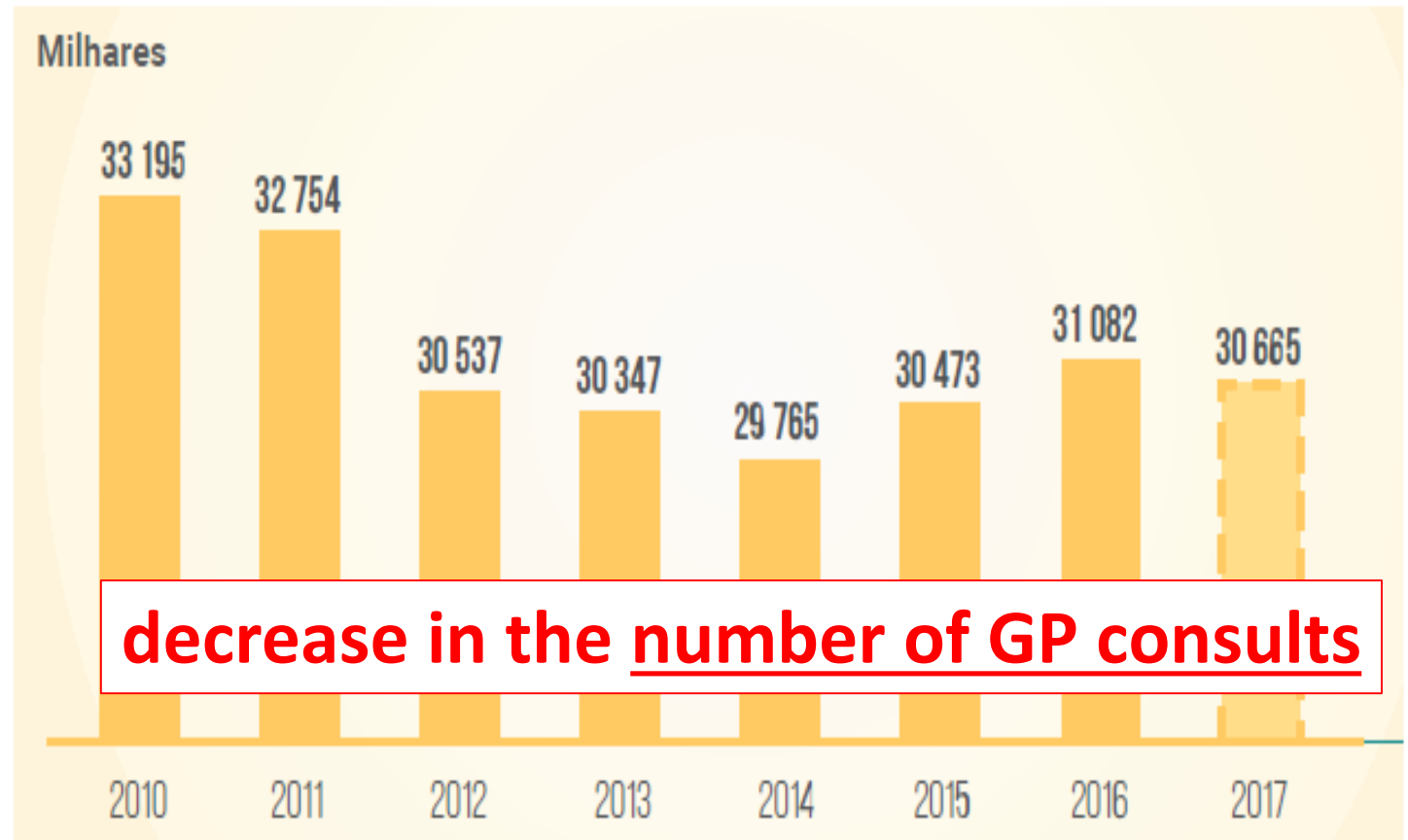
Go to the local GP practice



big effort to increase GP coverage

Fonte: ACSS, 2018

Go to the local GP practice



decrease in the number of GP consultations

Fonte: ACSS, 2018

same-day access to GP consult in Portugal is possible (and desirable) but constrained

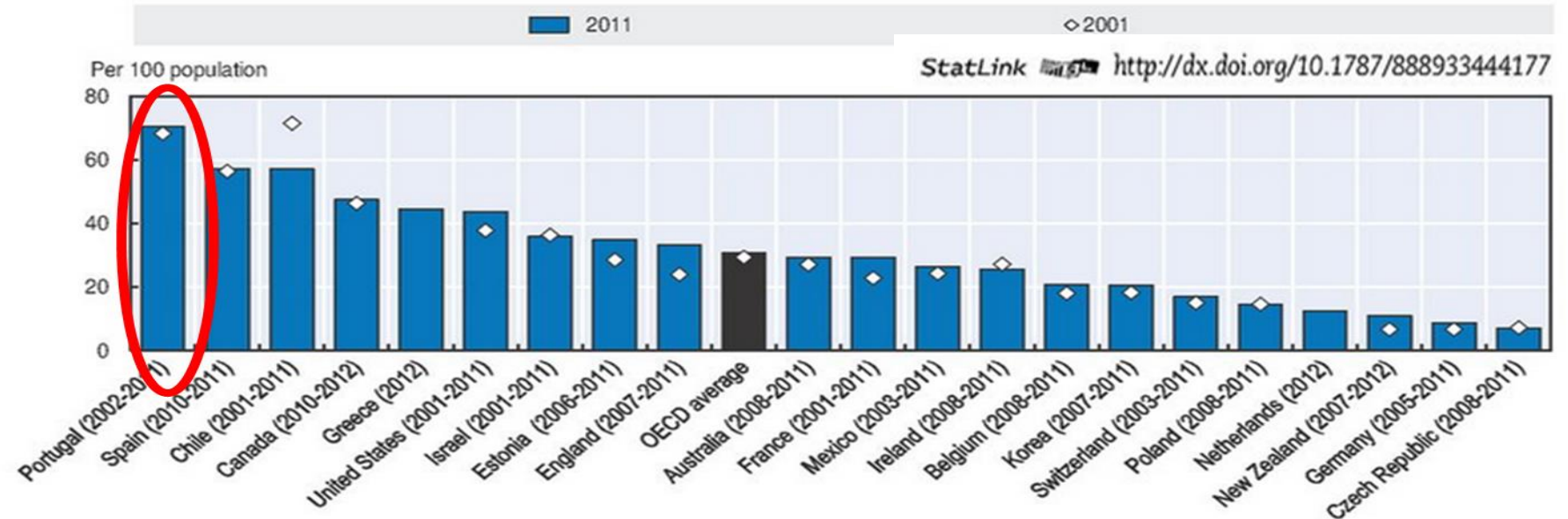
Go to an emergency department without referral



Go to an emergency department without referral



Figure 5.2. Number of visits to emergency departments per 100 population, 2001 and 2011 (or nearest year)



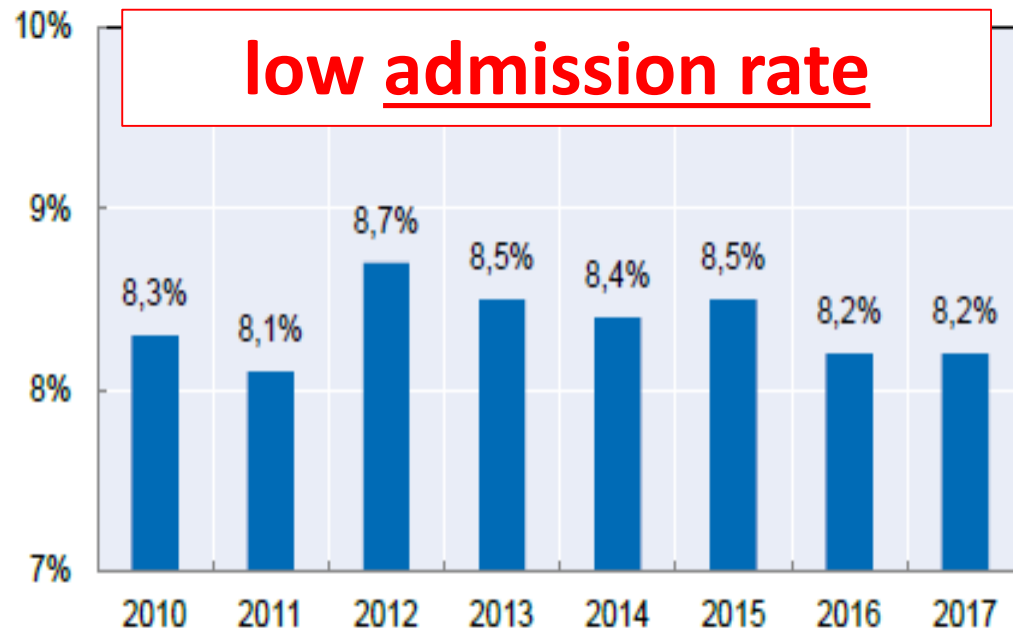
HOSPITAL CONSULTS

Non-urgent

ED consults

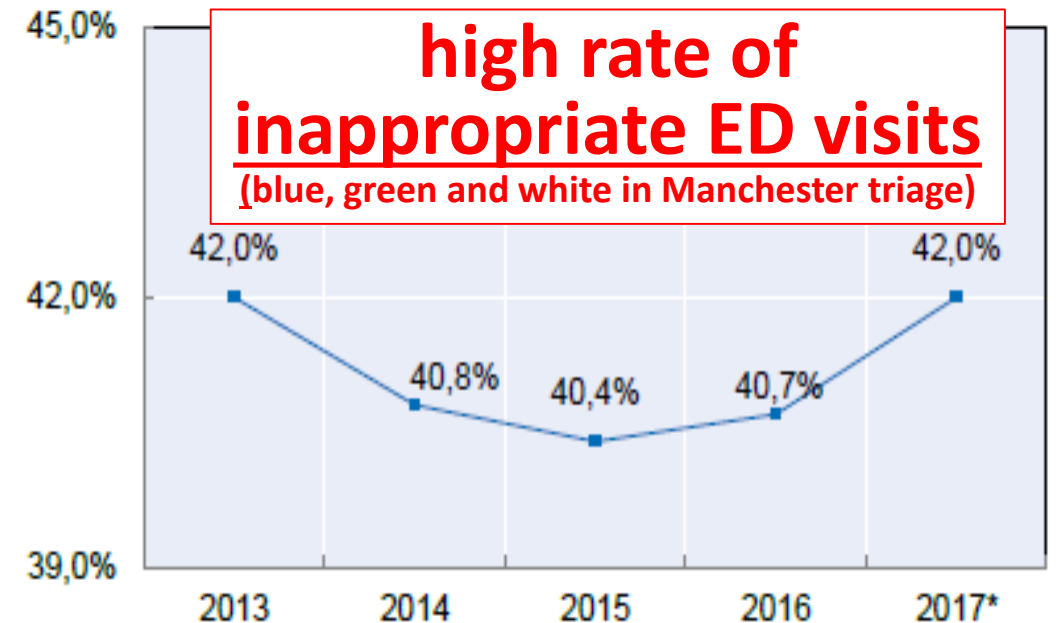
	2010	2011	2012	2013	2014	2015	2016	2017
Non-urgent	10.936.620	11.209.881	11.271.127	11.694.040	11.883.898	12.089.277	12.139.842	12.175.324
ED consults	6.410.852	6.416.281	5.939.867	6.107.929	6.168.324	6.118.365	6.405.707	6.318.221

Go to an emergency department without referral



Fonte: ACSS

StatLink: <https://www.sns.gov.pt/monitorizacao-do-sns/servicos-de-urgencia/>



*Dados provisórios

Fonte: ACSS

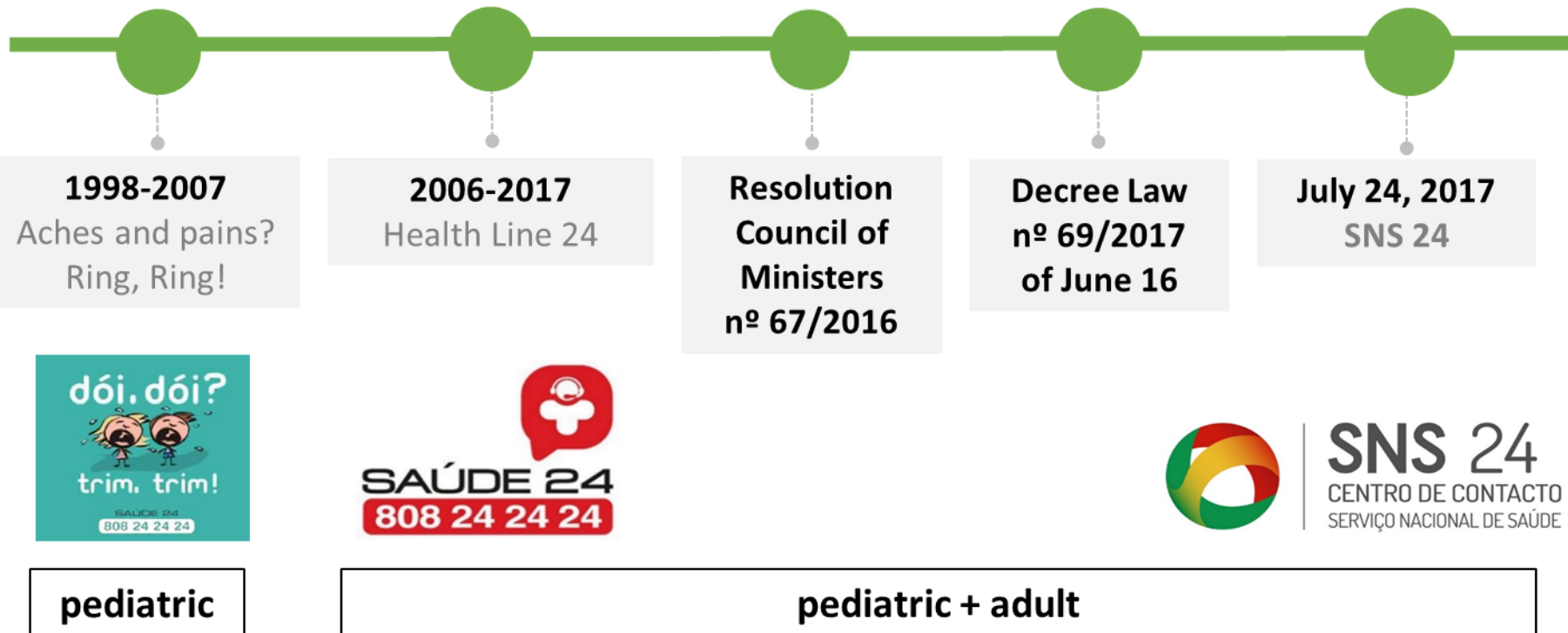
StatLink:

<https://www.sns.gov.pt/monitorizacao-do-sns/servicos-de-urgencia/>

Portugal – Source: Pereira et al. (2001)

An ED visit is considered appropriate if it results in patient hospitalisation; if death occurs in the ED; if the patient is transferred to another hospital; or according to explicit criteria based on specific diagnostic tests or treatment performed. Also if the visit requires imaging studies such as magnetic resonance imaging (MRI), ultra-sonographic studies, a computed tomography (CT) scan, and if treatment requires intravenous fluids, oxygen, prescription medications administered in the ED, transfusion of blood products, orthopaedic treatments, wound management (other than cleaning or bandaging minor abrasions), and removal of foreign bodies (in eyes, and digestive or respiratory tract). Visits are considered inappropriate for all other situations.

Call SNS 24 line for non-emergencies (screening, counseling and referral)

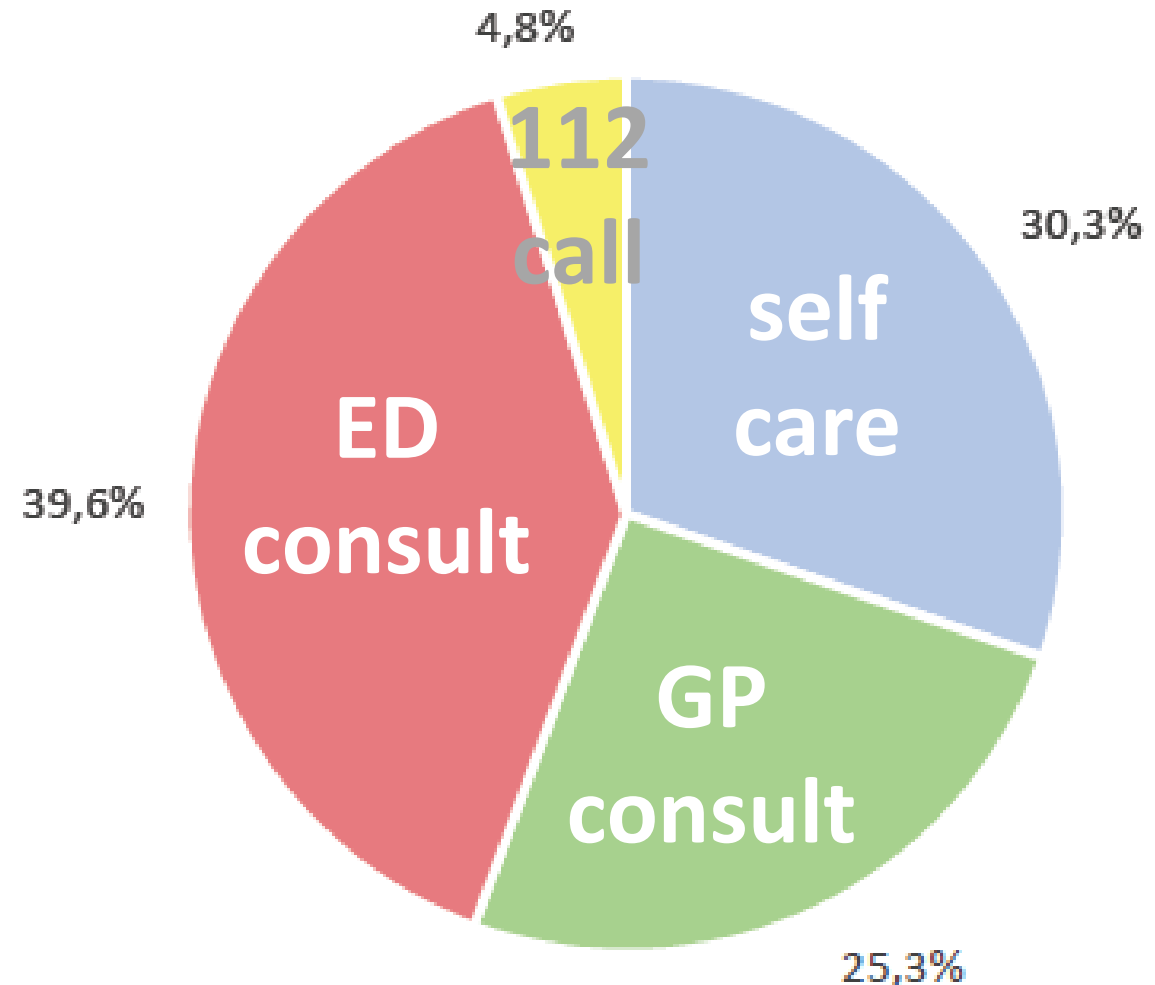
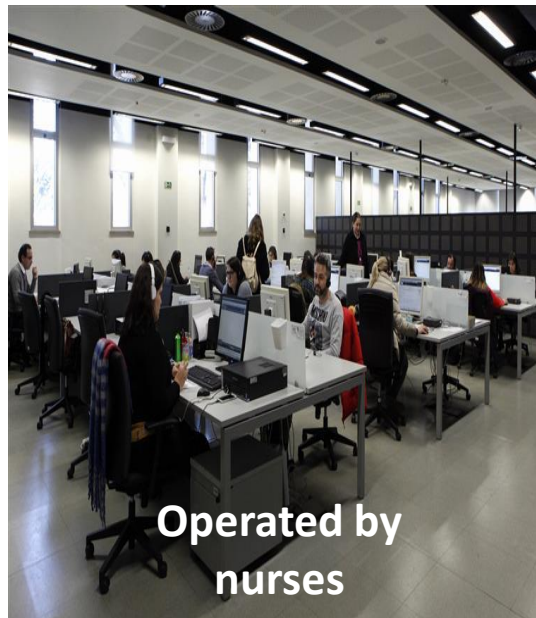


Call SNS 24 line for non-emergencies (screening, counseling and referral)



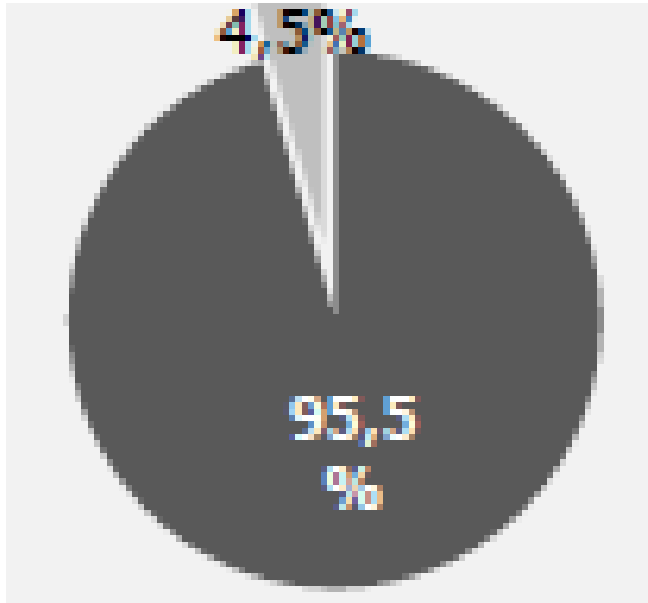
Nurses use binary tree-algorithms elaborated by the national public health department *Direção-Geral de Saúde*

Call SNS 24 line for non-emergencies (screening, counseling and referral)



Proposed referral in a sample of 127,339 consecutive calls in April/May 2018

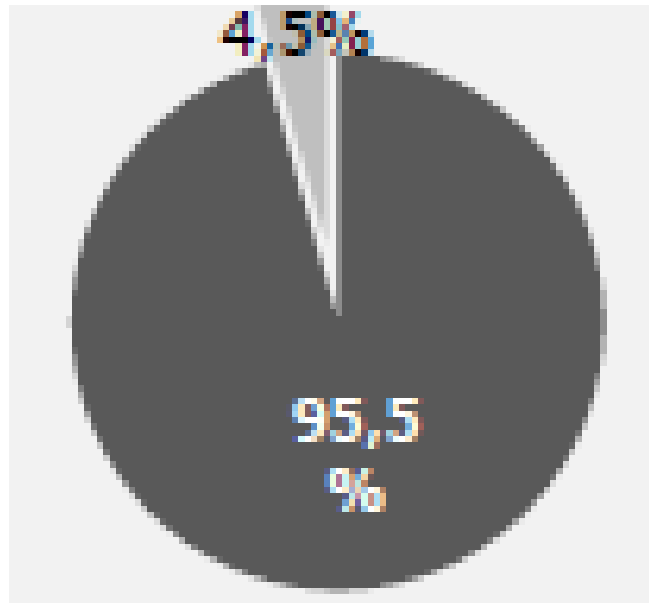
Call SNS 24 line for non-emergencies (screening, counseling and referral)



SPMS - data in file

95% claim to follow the
line advice in randomized
quality questionnaires

Call SNS 24 line for non-emergencies (screening, counseling and referral)



SPMS - data in file

95% claim to follow the line advice in randomized quality questionnaires

Adherence



Self care	69.9%	77.5%
ED consult	55.1%	68.6%
GP consult	38.9%	64.6%

SPMS - data in file

Tran et al. BMC Health Services Research 2017 (17) 512

Real life adherence to line advice (obtained by the health ID tracking) is much lower

Innovative solutions?

**(beyond increasing GP same-day access and
increasing financial incentives to avoid the ED)**

Increase the number of patients triaged by SNS 24

- There is evidence that telephone triage does a better triage than lay-people self evaluation (i. e. self referrals)

Health Serv Res. 2018 Apr;53(2):1137-1162. doi: 10.1111/1475-6773.12692. Epub 2017 Mar 29.

Emergency Department Attendance after Telephone Triage: A Population-Based Data Linkage Study.

Gibson A¹, Randall D¹, Tran DT¹, Byrne M², Lawler A³, Havard A¹, Robinson M⁴, Jorm LR¹.

BMJ Open. 2017 Oct 15;7(10):e016845. doi: 10.1136/bmjopen-2017-016845.

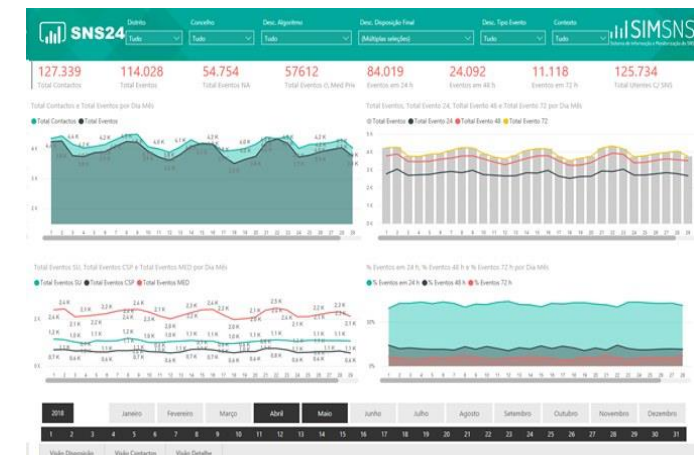
Appropriateness of cases presenting in the emergency department following ambulance service secondary telephone triage: a retrospective cohort study.

Eastwood K^{1,2}, Smith K^{1,2}, Morgans A³, Stoelwinder J^{1,3}.

- Currently in Portugal, only a minority of patients presenting to an ED have called the SNS 24 in the prior 3 days

SNS 24 line algorithm optimization guided by outcome data

- Data on an individual-level is currently trackable regarding prognosis and ED visit appropriateness (e. g. admission rate, specific tests performed, discharge diagnosis)



SNS 24 line algorithm optimization guided by outcome data

- Greater patient adherence on self care advice suggests that this is what patients look for on health phone lines
- If data allows for less conservative algorithms, patient adherence is likely to increase
- Manual or AI repeated algorithm adjustment at specific nodes is desirable considering the current possibility of virtually real-time outcomes assessment

SNS 24 line algorithm optimization guided by artificial intelligence

- Natural language processing (NLP) of the chief complaint is ongoing and may help in choosing faster and better the more appropriate algorithm
- NLP and AI open the door for chatbots saving the nurse call time

SNS 24 PathScout.AI



- ✔ Assist the nurse to select the clinical algorithm that best suits the patient's situation, by taking advantage of all the contacts and the nurses' collective experience
- ✔ Help the nurse to find the most suitable referral/route for the patient's clinical situation

BENEFITS

- ✔ Increase of the celerity of the call-center service and patient referral
- ✔ Improvement of the service quality, through a better use of algorithms



SNS 24 line algorithm optimization guided by video or remote vital signs

- There is evidence that even in face-to-face triage, vital signs have a clear impact

[Ann Emerg Med.](#) 2002 Mar;39(3):223-32.

Effect of vital signs on triage decisions.

[Cooper RJ](#)¹, [Schriger DL](#), [Flaherty HL](#), [Lin EJ](#), [Hubbell KA](#).

[Scand J Trauma Resusc Emerg Med.](#) 2012 Apr 10;20:28. doi: 10.1186/1757-7241-20-28.

Abnormal vital signs are strong predictors for intensive care unit admission and in-hospital mortality in adults triaged in the emergency department - a prospective cohort study.

[Barfod C](#)¹, [Lauritzen MM](#), [Danker JK](#), [Sölétormos G](#), [Forberg JL](#), [Berlac PA](#), [Lippert F](#), [Lundström LH](#), [Antonsen K](#), [Lange KH](#).

- Incorporating imaging (via RSE-live) or remote vital signs may improve the current SNS 24 algorithms

SNS 24 teleconsult

- There is evidence that GP teleconsults have a high probability of clinical resolution

Br J Gen Pract. 2016 Sep;66(650):e667-73. doi: 10.3399/bjgp16X686545. Epub 2016 Jul 18.

Telephone triage by GPs in out-of-hours primary care in Denmark: a prospective observational study of efficiency and relevance.

Huibers L, Moth G, Carlsen AH, Christensen MB, Vedsted P.

- Specific situations may be effectively treated by a teleconsult with eventual electronic prescription (e. g. UTI)

SNS 24 symptom checker

- In January 2019 the in-house developed flu symptom checker marked the start of symptom-checkers use in SNS 24

SNS 24 CENTRO DE CONTACTO
SERVIÇO NACIONAL DE SAÚDE

Temas da Saúde | Serviços Online | Guias da Saúde | Alertas | Avaliar Sintomas | O que é o SNS 24 | Contacte-nos

Avaliar Sintomas
Fluxo Seleccionado: Gripe

DADOS PESSOAIS | SINTOMAS | RECOMENDAÇÕES

É o cuidador ou o doente?

☐ Cuidador
☒ Doente

Indique a idade do doente

38 ☒ Anos ☐ Meses

Indique o sexo do doente*

☒ Masculino
☐ Feminino

***Importante**
Existem diversas identidades de género, porém o sexo de nascença é o elemento que tem mais impacto na avaliação clínica

SNS 24 CENTRO DE CONTACTO
SERVIÇO NACIONAL DE SAÚDE

Temas da Saúde | Serviços Online | Guias da Saúde | Alertas | Avaliar Sintomas | O que é o SNS 24 | Contacte-nos

Fluxo Seleccionado: Gripe

DADOS PESSOAIS | SINTOMAS | **RECOMENDAÇÕES**

Recomendações

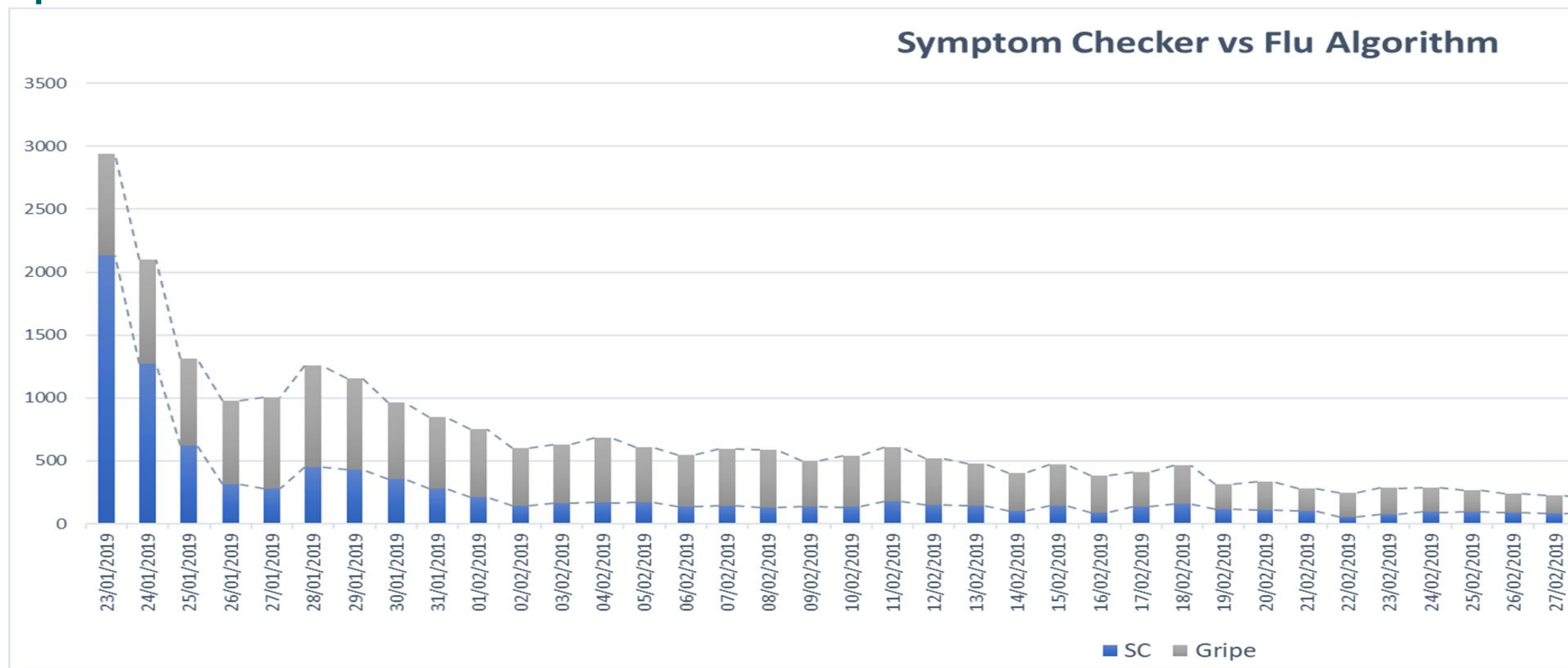
Ligue SNS 24 - 808 24 24 24

DICAS PARA O INVERNO:

- Vaccine-se contra a gripe no seu centro de saúde
- Evite longos períodos na rua/exterior
- Use várias camadas de roupa, mantendo as extremidades quentes
- Mantenha a sua habitação aquecida, com momentos de ventilação
- Mantenha-se hidratado, optando por bebidas quentes e sem açúcar adicionado
- Consuma alimentos ricos em vitamina C, como laranjas, tangerinas, limão, entre outros

SNS 24 symptom checker

- The number of online accesses to the flu symptom checker parallels the calls for the SNS 24 line



SNS 24 symptom checker

- The number of online accesses to the flu symptom checker parallels the calls for the SNS 24 line
- In the future, the information provided in the symptom checker may be available for the SNS 24 nurse if such a call is appropriate
- Symptom checkers provide health literacy, patient centered care, satisfy the needs of the digital generation and are scalable without an increase in costs

**everything
is possible
in eHealth**



Portugal eHealth summit



24th ISTeH
International
Conference



**ON BEHALF OF THE TEAM,
THANK YOU FOR YOUR
ATTENTION**

miguel.a.santos.ext@spms.min-saude.pt

Centro Nacional de TeleSaúde, SPMS

