



RESHAOC

Réseau des Hôpitaux d'Afrique, de l'Océan Indien et des Caraïbes

13^{èmes} Rencontres hospitalières du RESHAOC

Libreville, Gabon - 24 - 26 juin 2026



GNU Health dans la Santé Publique, la Gestion Hospitalière et la Médecine Sociale

Luis Falcón, MD, MSc



À propos



falcon@gnuhealth.org

Mastodon:

[@meanmicio@todon.eu](https://mastodon.social/@meanmicio)

Parcours universitaire et professionnel

- Informaticien
- Médecin
- Génomique et génétique médicale

Médecine Sociale

- Fondateur de GNU Solidario
- Auteur de GNU Health



GNU Solidario

- Organisation à but non lucratif
- Spécialisée en médecine sociale
- Promouvoir la **science ouverte**
- **Logiciels libres dans le domaine de la santé**
- L'ONG à l'origine de **GNU Health**
- Lutte pour la dignité des animaux, quelle que soit leur espèce.

GNU Health déclaré « bien public numérique »



Digital
Public
Goods
Alliance



Notre collaboration avec l'Organisation mondiale de la Santé



Paludisme, tuberculose & HIV/ SIDA modules

Liste des médicaments essentiels

Maladies tropicales

Standards: ICD-10 / ICD-11 / ICPM / ICF

Courbes de croissance pédiatriques

Calendriers de vaccination



Training session to WHO officials from western Africa



GNU Health implementation with WHO at Bafia general hospital

Academia



United Nations University, Kuala Lumpur, Malasia



Univ. Palermo, Italia



Universidad de Entre Rios, Argentina

HST.936: Global Health Informatics to Improve Quality of Care

The 2015 iteration of our course will focus on **Public Health Emergencies and Humanitarian Crises**.

Classes begin: February 6, 2015
Fridays 8am - 11am ET (GMT -5)
Room: 09-057



Harvard / MIT, Boston, United States



Nations Unies – Institut pour la santé mondiale



Laos – Ministère de la Santé

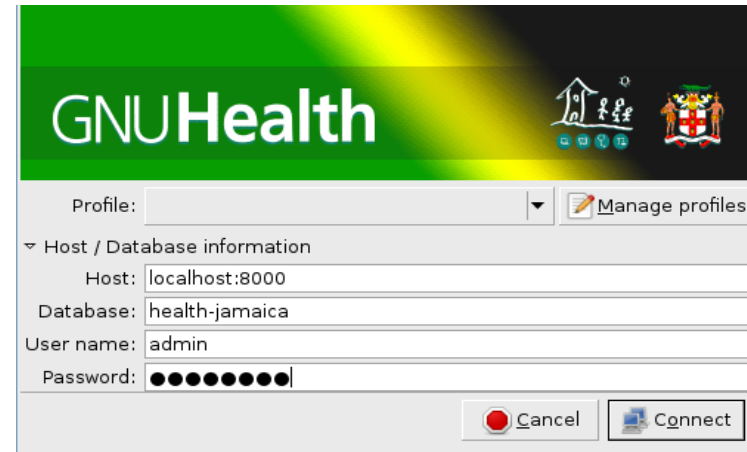


Jamaica

Projet conjoint entre le ministère de la Santé du gouvernement jamaïcain et GNU Solidario

Équipe locale

Durabilité et indépendance



GNUHealth

Profile:

Host / Database information

Host:

Database:

User name:

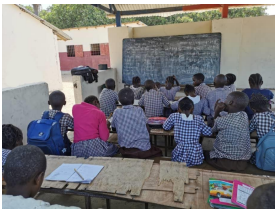
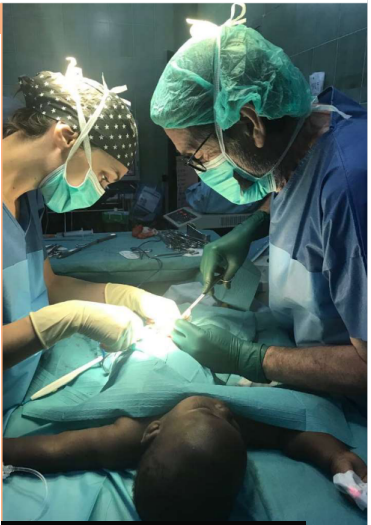
Password:

GNU Health au cœur de l'Afrique



<http://health.gnu.org>

GNU Health au cœur de l'Afrique



Social Medicine at the heart of Africa



Insolàfrica



<http://health.gnu.org>



ITARA



GNU Health au cœur de l'Afrique



Suriname



India – AIIMS (le plus grand hôpital d'Asie)



Croix-Rouge



Cruz Roja Mexicana uses GNU Health, **Over 300,000 evaluations / year**



Projet officiel de GNU

Projet officiel de GNU

Documentation libre

Basé sur les technologies libre

Communauté internationale



PostgreSQL



GNU Health
Santé Publique, Gestion Hospitalière et Médecine Sociale



Localisation

| Language | Translated | Unfinished | Unfinished words | Unfinished characters | Checks | Suggestions | Comments |
|---------------------------------|------------|------------|------------------|-----------------------|--------|-------------|----------|
| English | 100% | | | | 572 | | 3 |
| Chinese (Simplified Han script) | 100% | | | | 5 | | |
| Spanish | 94% | 158 | 521 | 3,443 | 57 | | |
| Arabic | 94% | 159 | 522 | 3,449 | 5 | 1 | |
| Vietnamese | 92% | 213 | 598 | 4,000 | 15 | | |
| German | 88% | 355 | 640 | 4,440 | 141 | 1 | |
| Portuguese (Brazil) | 77% | 673 | 2,236 | 14,812 | 110 | 13 | |
| French | 75% | 729 | 2,236 | 14,908 | 157 | | |
| Japanese | 73% | 775 | 2,469 | 16,292 | 28 | | |
| Italian | 71% | 846 | 2,754 | 18,056 | 66 | | |
| Greek | 70% | 868 | 2,580 | 17,141 | 41 | | |
| Lao | 68% | 919 | 2,776 | 18,249 | 64 | | |
| Georgian | 51% | 1,446 | 3,680 | 24,924 | 28 | | |

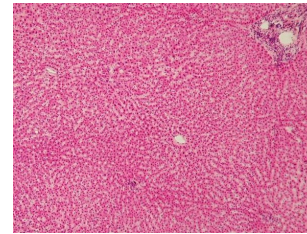
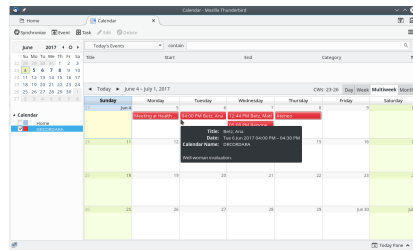
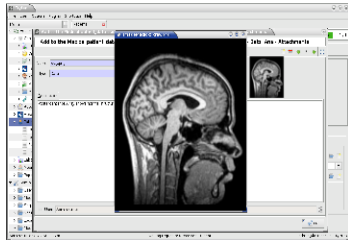
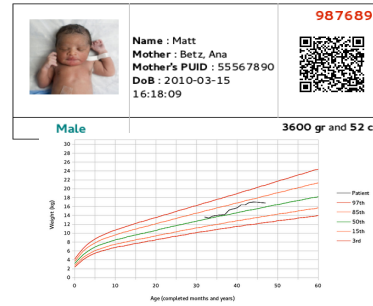
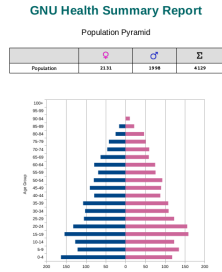
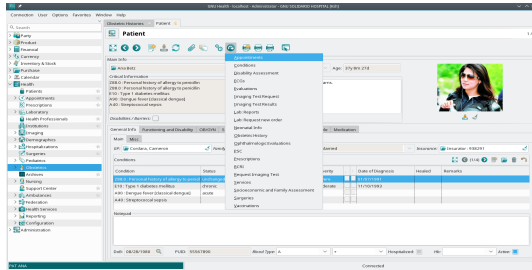




Composants de l'écosystème GNU Health



GNU Health HMIS



- MoH / Analytics
- Hospital Management ERP
- Electronic Health Record
- Demographics / Social Medicine

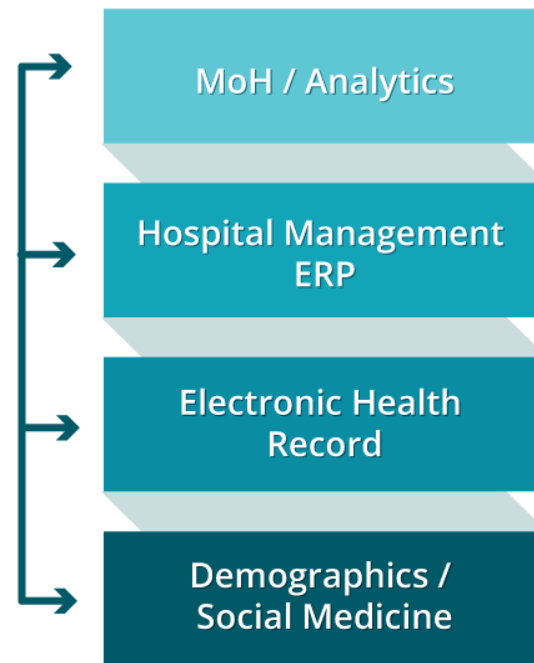


GNU Health HMIS

Modular and extendable – Example GNU Health



...and many more



GNUHealth





Version bureau et Web

Health / Medical Imaging / Imaging Test Result - GNU Health - Mozilla Firefox

Health / Medical Imaging x +

https://federation.gnuhealth.org:8900/#health42/model/gnuhealth.imaging.test.result/6;name="Health %2F Medical Imaging %2F Imaging Test Result"&view

Most Visited Getting Started

GNU Health Action Health / Medical ... x Administrator [EUR]

Health / Medical Imaging / Imaging Test Result-

1/2

Patient: Ana Isabel Betz Age: 42y 4m 18d

Number: TEST006 Date: 01/15/2023 20:01:18

Study: Chest X-ray x Requested Date: 01/15/2023 19:58:54

Evaluated by: Cordara, Cameron x Order: 006

Request Info: **Urgent** (Cordara, Cameron) // CONTEXT: J18 : Pneumonia, organism unspecified

Studies Images


Images 2/2

| Name | Summary | Last User | Last Modification Time | Type | Data | Lin |
|--|---------------------|---------------|------------------------|------|----------|-----|
| <input type="checkbox"/> atypical-pneumonia-mycoplasma.jpg | Frontal Chest x-ray | Administrator | 01/15/2023 20:22:24 | Data | 442.5 KB | |
| <input checked="" type="checkbox"/> atypical-pneumonia-mycoplasma-lateral. | Lateral chest X-ray | Administrator | 01/15/2023 20:22:24 | Data | 427.7 KB | |

Interpretation / Report

Pulmonary aeration is significantly increased bilaterally. There is marked bronchial wall thickening on the right and left in the perihilar zone extending to the lung base in keeping with airways disease. There are non-segmental patchy lung opacities in the lower lobes bilaterally (right lower lobe posterior basal segment; left lower lobe anterior basal segment; right segment). There are also increased interstitial markings with lower zone predominance.

** Case courtesy of Alborz Jahangiri, Radiopaedia.org, rID: 45781 **



atypical-pneumonia-mycoplasma-lateral.jpg



File Settings Help

GNU Health Command

- Party
- Product
- Financial
- Currency
- Inventory & Stock
- Calendar
- Health**
 - Patients
 - Books of Life
 - Genetics
 - Person genetic informa
 - Appointments
 - Prescriptions
 - Laboratory
 - Health Professionals
 - Institutions
 - Medical Imaging**
 - Orthanc
 - Request Imaging Test
 - Imaging Test Request
 - Imaging Test Result**
 - Demographics
 - Hospitalizations
 - Surgeries
 - Pediatrics
 - Obstetrics
 - Archives
 - Contact Tracing
 - Nursing
 - Support Center
 - Ambulances
 - Federation

Health / Medical ...

Health / Medical Imaging / Imaging Test Result
1 / 2

Patient:

Number:

Study:

Evaluated by:

Request Info:

Age: 42y 4m 18d

Date: 20:01:18

Requested Date: 19:58:54

Order: 006

Studies

Images

| Name | Summary | Last User | Last Modific | Last Modific | Type | D |
|----------------|---------------|---------------|--------------|--------------|------|--------|
| atypical-pneur | Frontal Chest | Administrator | 01/15/2023 | 20:22:24 | Data | 442.5K |
| atypical-pneur | Lateral chest | Administrator | 01/15/2023 | 20:22:24 | Data | 427.7K |

Images (2/2)

Interpretation / Report

Pulmonary aeration is significantly increased bilaterally. There is marked bronchial wall thickening on the right and left in the perihilar zone extending to the lung base in keeping with inflammatory lower airways disease. There are non-segmental patchy lung opacities in the lower lobes bilaterally (right lower lobe posterior basal segment; left lower lobe anterior basal segment; right middle lobe medial segment). There are also increased interstitial markings with lower zone predominance.

** Case courtesy of Alborz Jahangiri, Radiopaedia.org, rID: 45781 **

atypical-pneumonia-mycoplasma-lateral.jpg

GNU Health
Santé Publique, Gestion Hospitalière et Médecine Sociale

RESHAOC 2026
24 juin, Libreville - Gabon

Rapports

GNU Health Hospital Management

File Settings Help

GNU Health Command Action

Health / Imaging ...

Health / Imaging / Imaging Test Result

Patient: Ana Isabel Betz Age: 42y 4m 18d

Number: TEST006 Date: 01/15/2023 20:01:18

Test: Chest X-ray Requested Date: 01/15/2023 19:58:54

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| Name | Summary | Last User | Last Modifici | Last Modifici | Type | |
|----------------|---------------|---------------|---------------|---------------|------|-----|
| atypical-pneur | Frontal Chest | Administrator | 01/15/2023 | 20:22:24 | Data | 442 |
| atypical-pneur | Lateral chest | Administrator | 01/15/2023 | 20:22:24 | Data | 427 |

Interpretation / Report

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** Case courtesy of Alborz Jahangiri, Radiopaedia.org, rID: 45781 **

Resources:

Frontal Chest x-ray
In GNU Health you can add multiple images to the same study.
Case courtesy of Alborz Jahangiri, Radiopaedia.org, rID: 45781

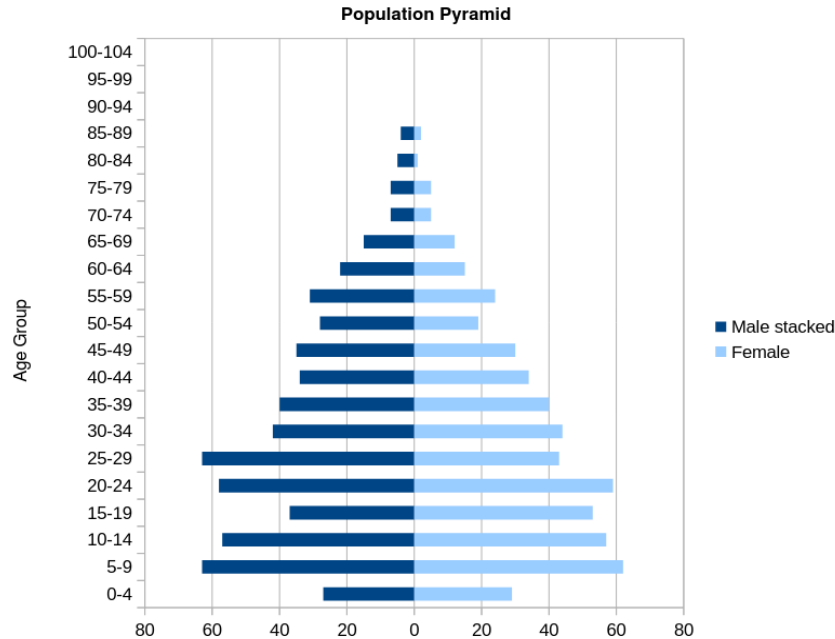
Lateral chest X-ray
In GNU Health you can add multiple images to the same study.
** Case courtesy of Alborz Jahangiri, Radiopaedia.org, rID: 45781 **

atypical-pneumonia-mycoplasma.jpg

Rapports

| | No DoB | ♀ | ♂ | Σ |
|--------------------------|--------|-----|-----|------|
| Living Population | 8 | 538 | 578 | 1116 |

| In this period | Registrations | In health system | Birth certs | Death certs |
|-------------------------|---------------|------------------|-------------|-------------|
| 06/13/2020 - 06/13/2025 | 1117 | 1114 | 0 | 0 |



- Medical Imaging Requests ★
- Medical Imaging Results ★
- > Orthanc
- > Demographics ★
- > Hospitalizations ★
- > Surgeries ★
- > Dentistry ★
- > Pediatrics ★
- > Obstetrics ★
- Archives ★
- Contact Tracing ★
- Support Center ★
- > Nursing ★
- > Ambulances ★
- > Federation ★
- > Health Services ★
- ▼ Reporting
 - Specialties by institution ★
 - Operational sectors by institution ★
 - Summary Report ★
 - Epidemiological Surveillance ★
 - Patient Evaluations [readonly] ★
 - Top Diseases ★
 - Injury Surveillance System Registration ★
 - Ophthalmologic evaluations ★
 - Socioeconomic Assessments ★
 - Amputations ★
 - Protheses ★
 - Specialties by health professionals ★
 - Appointments Report ★
 - Evaluations Report ★
- > Configuration
- Help and Documentation ★
- Online Documentation ★

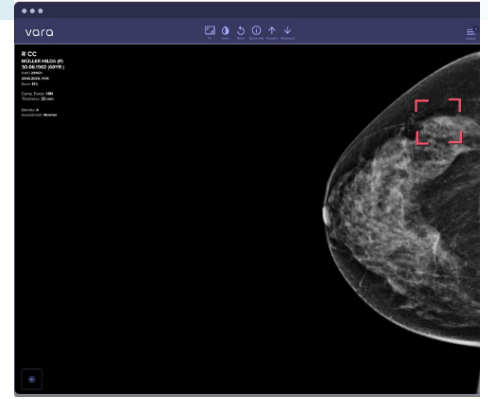
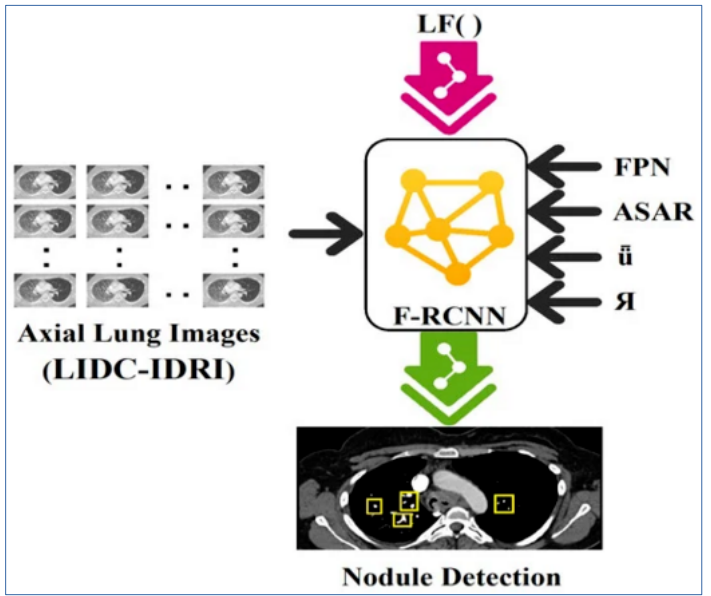
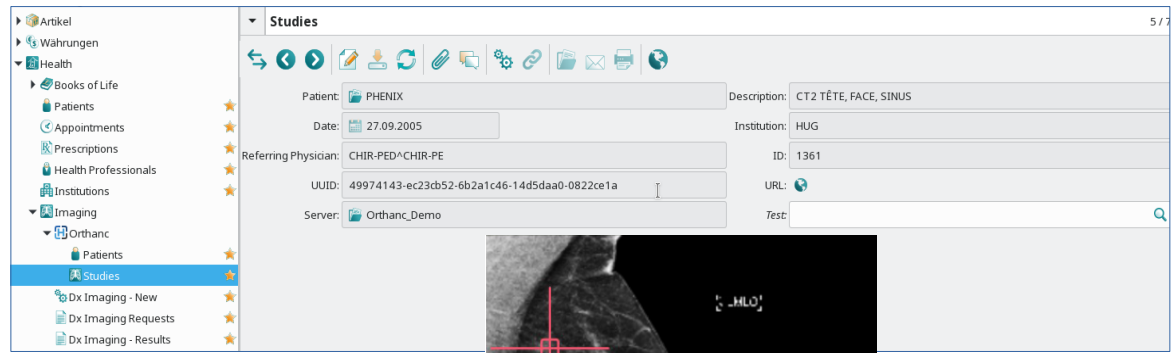
GNU Health embedded



El proyecto GNU Health embedded nos permite incorporar GNU Health en dispositivos de una sólo placa. Desde gestión de Unidades Domiciliarias, centros de salud, Laboratorios o centros de investigación

Dépistage / détection précoce du cancer

Exemples d'utilisation de GNU Health dans le dépistage précoce du cancer du sein et du poumon

Articles

Währungen

Health

Books of Life

Patients

Appointments

Prescriptions

Health Professionals

Institutions

Imaging

Orthenc

Patients

Studies

Dx Imaging - New

Dx Imaging Requests

Dx Imaging - Results

Studies 5/7

Patient: PHENIX Description: CT2 TÊTE, FACE, SINUS

Date: 27.09.2005 Institution: HUG

Referring Physician: CHIR-PED^CHIR-PE ID: 1361

UUID: 49974143-ec23cb52-6b2a1c46-14d5daa0-0822ce1a URL:

Server: Orthenc_Demo Test:

PHENIX



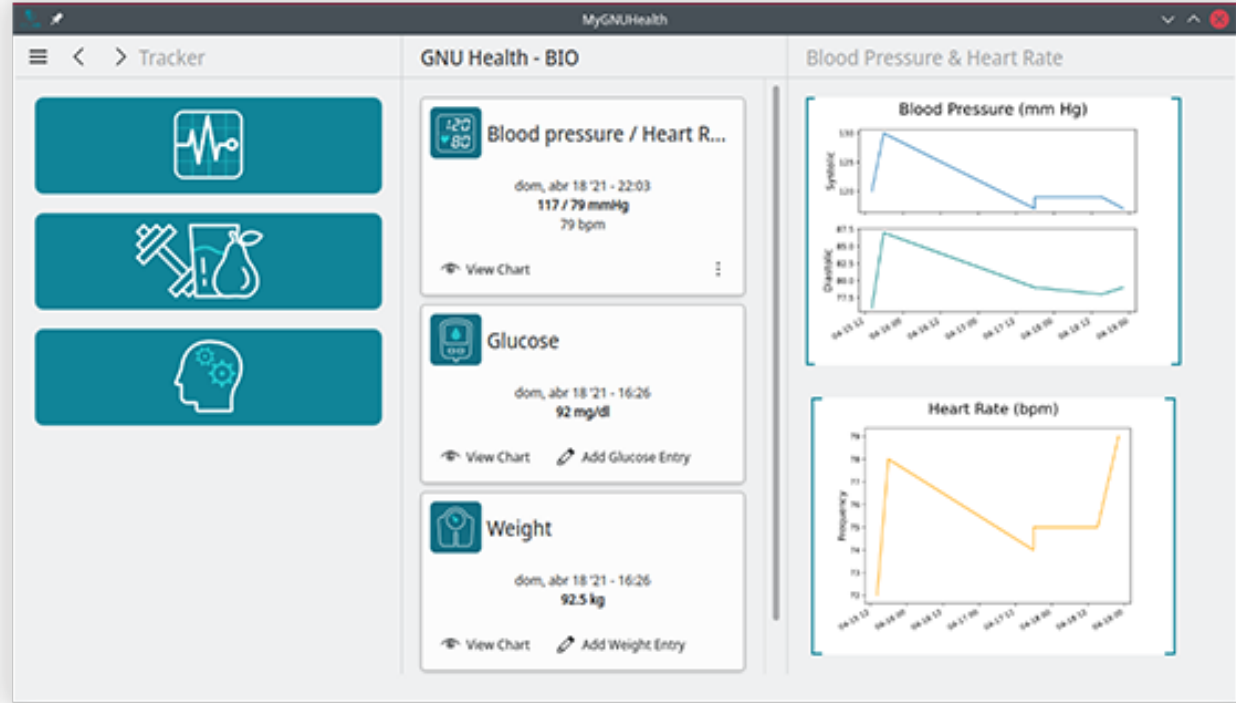
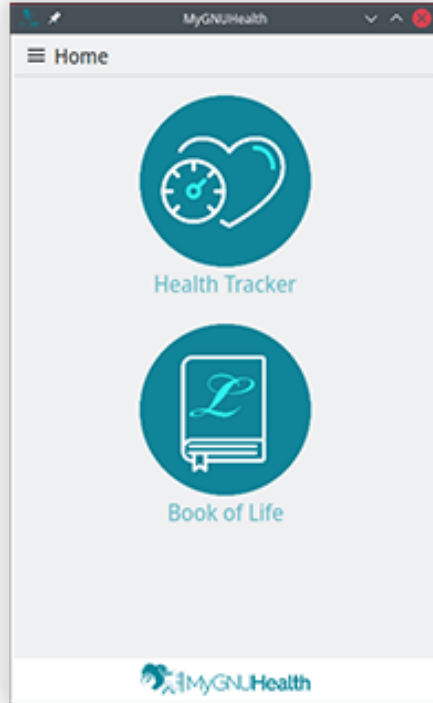
GNU Health used in "Early Detection of Lung Nodules Using a Revolutionized Deep Learning Model"



MyGNUHealth: Libre Dossier médical personnel



MyGNUHealth



GNU Health Federation



Nœuds

Serveur de messages

Système d'information

Observatoire épidémiologique en temps réel



Proposition adressée à nos gouvernements

Identifiant unique

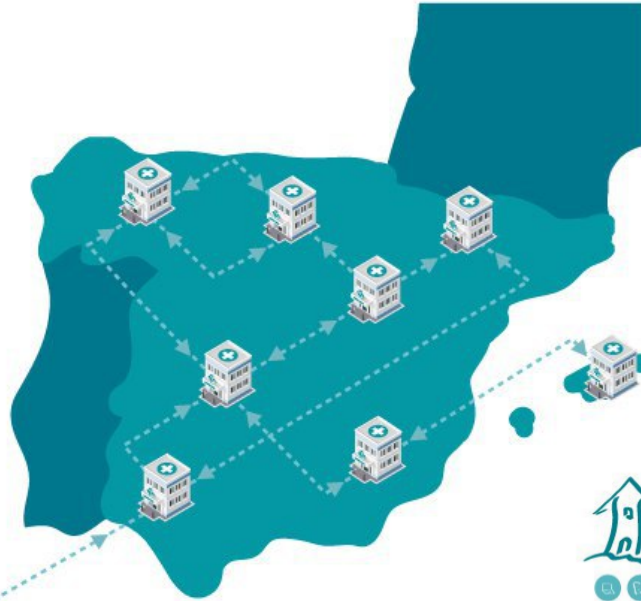
À utiliser dans l'ensemble du système de santé national, voire à l'échelle mondiale

Modèle fédéré

Mise à jour démographique et médicale en temps réel, disponible dans tous les établissements du pays

Donner les moyens d'agir à la communauté

L'individu en tant qu'acteur du système de santé



L'argent public, un code public !

Logiciels libres : il ne doit y avoir ni code caché ni « boîtes noires » dans le domaine de la santé publique

L'informatique médicale sera un **bien public**

Une économie de plusieurs millions d'euros sur les licences, qui pourra être consacrée au renforcement du système de santé public

GNU Health - admin@localhost/genetics - Administrator - GNU SOLIDARIO HTAL [Euro]

Window Help

Variant Phenotypes 17 / 40

Variant Phenotypes

BRCA1

| Gene & Protein | Variant | Phenotype |
|---|---------------------------|---|
| BRCA1 (P38398) :breast cancer 1, early onset | VAR_007778 : p.Thr1025Ile | DI-02602:Breast cancer |
| BRCA1 (P38398) :breast cancer 1, early onset | VAR_007781 : p.Val1047Ala | DI-02602:Breast cancer |
| BRCA1 (P38398) :breast cancer 1, early onset | VAR_007782 : p.Pro1150Ser | DI-02602:Breast cancer |
| BRCA1 (P38398) :breast cancer 1, early onset | VAR_007796 : p.Ala1708Glu | DI-02602:Breast cancer |
| BRCA1 (P38398) :breast cancer 1, early onset | VAR_007799 : p.Met1775Arg | DI-02602:Breast cancer |
| BRCA1 (P38398) :breast cancer 1, early onset | VAR_020679 : p.Glu10Lys | DI-02602:Breast cancer |
| BRCA1 (P38398) :breast cancer 1, early onset | VAR_020680 : p.Glu23Lys | DI-02602:Breast cancer |
| BRCA1 (P38398) :breast cancer 1, early onset | VAR_020683 : p.Asp749Iyr | DI-02602:Breast cancer |
| BRCA1 (P38398) :breast cancer 1, early onset | VAR_020690 : p.Ser1187Ile | DI-02602:Breast cancer |
| BRCA1 (P38398) :breast cancer 1, early onset | VAR_020691 : p.Gln1200His | DI-02602:Breast cancer |
| BRCA1 (P38398) :breast cancer 1, early onset | VAR_020692 : p.Arg1204Ile | DI-02602:Breast cancer |
| BRCA1 (P38398) :breast cancer 1, early onset | VAR_020693 : p.Lys1207Asn | DI-02602:Breast cancer |
| BRCA1 (P38398) :breast cancer 1, early onset | VAR_020695 : p.Ser1217Tyr | DI-02602:Breast cancer |
| BRCA1 (P38398) :breast cancer 1, early onset | VAR_063212 : p.Met1775Lys | DI-02602:Breast cancer |
| BRCA1 (P38398) :breast cancer 1, early onset | VAR_075666 : p.Arg1699Trp | DI-02602:Breast cancer |
| BRIP1 (Q98X63) :BRCA1 interacting protein C-t | VAR_020896 : p.Pro47Ala | DI-02602:Breast cancer |
| BRIP1 (Q98X63) :BRCA1 interacting protein C-t | VAR_020900 : p.Met299Ile | DI-02602:Breast cancer |
| BRCA1 (P38398) :breast cancer 1, early onset | VAR_007757 : p.Cys61Gly | DI-01655:Ovarian cancer |
| BRCA1 (P38398) :breast cancer 1, early onset | VAR_020702 : p.Cys1697Arg | DI-01655:Ovarian cancer |
| BRCA1 (P38398) :breast cancer 1, early onset | VAR_075666 : p.Arg1699Trp | DI-01655:Ovarian cancer |
| BRCA1 (P38398) :breast cancer 1, early onset | VAR_020679 : p.Glu10Lys | DI-01559:Breast-ovarian cancer, familial, 1 |
| BRCA1 (P38398) :breast cancer 1, early onset | VAR_020680 : p.Glu23Lys | DI-01559:Breast-ovarian cancer, familial, 1 |
| BRCA1 (P38398) :breast cancer 1, early onset | VAR_020690 : p.Ser1187Ile | DI-01559:Breast-ovarian cancer, familial, 1 |
| BRCA1 (P38398) :breast cancer 1, early onset | VAR_020691 : p.Gln1200His | DI-01559:Breast-ovarian cancer, familial, 1 |
| BRCA1 (P38398) :breast cancer 1, early onset | VAR_020695 : p.Ser1217Tyr | DI-01559:Breast-ovarian cancer, familial, 1 |
| BRCA1 (P38398) :breast cancer 1, early onset | VAR_020696 : p.Phe1226Leu | DI-01559:Breast-ovarian cancer, familial, 1 |
| BRCA1 (P38398) :breast cancer 1, early onset | VAR_020697 : p.Arg1243Gly | DI-01559:Breast-ovarian cancer, familial, 1 |
| BRIP1 (Q98X63) :BRCA1 interacting protein C-t | VAR_023700 : p.Gln255His | DI-01603:Fanconi anemia complementation gr |
| BRIP1 (Q98X63) :BRCA1 interacting protein C-t | VAR_023702 : p.Ala349Pro | DI-01603:Fanconi anemia complementation gr |
| BRIP1 (Q98X63) :BRCA1 interacting protein C-t | VAR_023703 : p.Trp647Cys | DI-01603:Fanconi anemia complementation gr |
| BRIP1 (Q98X63) :BRCA1 interacting protein C-t | VAR_023704 : p.Arg707Cys | DI-01603:Fanconi anemia complementation gr |

Connected

VMD 1.9.4a12 OpenGL Display

lrm : vmd - Konsole <2>

```

File Edit View Bookmarks Settings Help
[Info] Angles: 0 Dihedrals: 0 Impropers: 0 Cross-terms: 0
[Info] Bondtypes: 0 Angletypes: 0 Dihedraltypes: 0 Improper types: 0
[Info] Residues: 224
[Info] Waters: 3
[Info] Segments: 1
[Info] Fragments: 5 Protein: 2 Nucleic: 0
  
```



La Fédération GH dans la recherche sur les maladies neurodégénératives et le cancer

Federation Account : ESPGNU777ORG

Gene : BRCA1 (breast cancer 1, early onset)

Locus : 17q21

Protein code : P38398 . **URI** : <https://www.uniprot.org/uniprot/P38398>

Natural variant : VAR_007757 // **p.Cys61Gly**

Phenotypes: DI-02602: **Breast Cancer** . MIM Code : 114480

DI-01655: **Ovarian Cancer** . MIM Code: 167000

Onset age : -

Family history: **Mother** : C50.1 Malignant neoplasm central portion of the breast

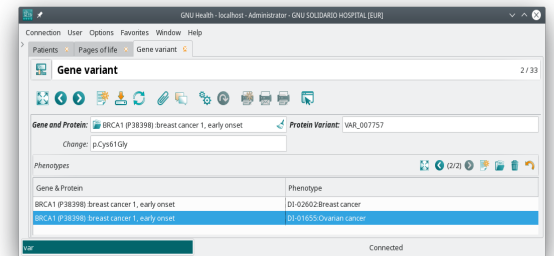
Grandfather (maternal): Q87.4Marfan Syndrome

Medical History: Type 1 Diabetes (7y) / allergic to β -lactams // appendectomy (13y)

Lifestyle: Ex-smoker //...



The GNU Health Federation can help finding the answer to many **genetic natural variants of unknown clinical significance**



Focus on

Allergic:
 Cardiovascular:
 HBP:
 DBT:
 Mental:
 Nutrition:
 Cancer:
 Immunity:
 Cognitive:
 Social:

▼ Socioeconomic and Family Assessment (Ana Isabel Betz) 1/13

Patient: Ana Isabel Betz Age: 44y 9m 16d Female Health Prof: Cordara, Cameror Date: 06/13/2025 13:42:55

Socioeconomics

Socioeconomics: Middle Income: Medium
 Education Level: University Occupation: Teacher
 Homeless: DU: Valse-LeonyCastillo1
 Housing conditions: Comfortable and good sanitary conditions

Family Functionality

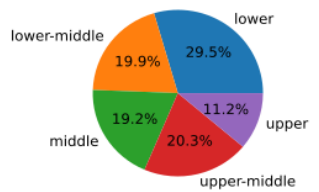
Help from family: Moderately Problems discussion: Moderately Decision making: Very much
 Time sharing: Moderately Family affection: Moderately Score: 6

Notes

State: In progress

Distribution by Socioeconomic Status

Cases by Socioeconomic groups: U07.1 : COVID-19, virus identified



Focus on Social Diseases

- Check uninsured population
- Enhanced data entry for socioeconomic status and family functionality
- Add homeless status
- Linked with ICF
- Epidemiological report takes into account the socioeconomic status of the population

Argentina - Gestion des épidémies / pandémies



Epidemiological Report
GNU Health

Epidemiological Surveillance

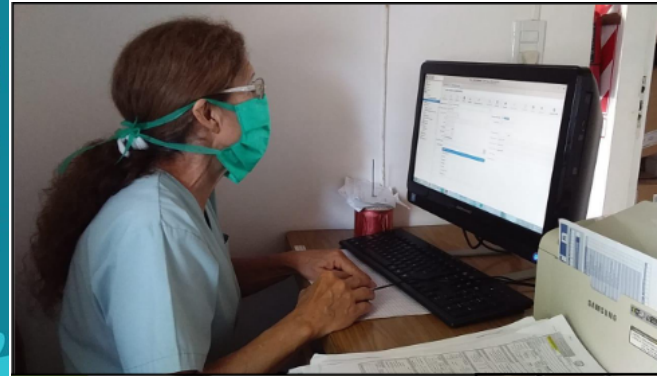
Main
Condition: U07.1 : COVID-19: virus identified
Start: 02/01/2020
Sections: Demographics

Dx Imaging - Results

Switch View: Previous, Next, New, Save, RebuildLindo, Attachments, Notes, Actions, Rotate, Report, E-Mail, Print, Copy URL

Patient: Ana Isabel Betzi
Date: 03/29/2020 13:53:54
Requested Date: 03/29/2020 13:53:19
Request: 6
Test: Chest XRAY - Anteroposterior and Lateral
Doctor: Conda, Cameron

| Requesting Test Request | Name | Summary | Last User | Last Modification | Last Modification Time | Type | Dr |
|-------------------------|-----------------------------------|--|---------------|-------------------|------------------------|------|---------|
| Imaging Test Request | Anteroposterior and lateral chest | Streaky opacities compatible with atypical pneumonia | Administrator | 03/29/2020 | 14:15:20 | Data | 440,598 |



GNU Health est un projet social, avec une touche de technologie



Santiago del Estero, Argentina, 2006

GNU Health est un projet social, avec une touche de technologie



“La médecine est une science sociale, et la politique n'est rien d'autre que de la médecine à plus grande échelle.”

Rudolf Virchow

Rendez-vous à la GNU Health Con 2026, à Grande Canarie



www.gnuhealth.org



[@gnuhealth@mastodon.social](https://mstdn.social/@gnuhealth)



info@gnuhealth.org