Health Decisions Made Easy

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KFSH&RC is a multi-facility, multi-entity tertiary care hospital and one of the leading healthcare institutions in the Kingdom of Saudi Arabia.

The mission is to provide medical services of highly specialized nature and promote medical research and education programs, including postgraduate education training, as well as to contribute towards the prevention of various diseases.
Uses of Research Data

- **Spin-off studies**
- **Resource allocation**
- **Health planning**
- Evaluation of clinical and public health programs
- Cluster investigation

Health decisions are becoming increasingly evidence based
City Level Distribution of Publications from KSA
Infectious Diseases in the Kingdom of Saudi Arabia

Data obtained from KSA Health Statistical Year Book for the year 2006
Regional Distribution for Various Communicable Diseases

Data obtained from KSA Health Statistical Year Book for the year 2006
Web-Based National Registries

- National Cancer Registry
- National Diabetes Registry
- National Congenital Heart Defects Registry
- National Epilepsy Registry
- National Neural Tube Defects Registry
- National Family Safety Registry
- Pan Arab Liver Transplantation Registry

Web-Based Hospital Registries

- Cleft Lip/Palate and Craniofacial Anomalies
- Thromboembolic Disorders
- Neuromuscular Diseases
- Primary Immunodeficiency
- Venous Thrombosis and Thrombophelia Disorders
Presentation of Breast Cancer Registry Data

Breast Cancer Age Distribution

Legend:
- Age_15_29
- Age_30_44
- Age_45_59
- Age_60_74
- Age_75_Above

Female Population:
- 111516 - 388000
- 388001 - 665000
- 665001 - 942000
- 942001 - 1219000
- 1219001 - 1496000
- 1496001 - 1773302

Provinces:
- Northern Province: 69
- Tabuk: 187
- Ha'il: 153
- Al-Qassim: 358
- Al-Madinah: 400
- Al-Diriyah: 2225
- Eastern Province: 1736

Geographical Areas:
- Al-Prov
- Al-Makran
- Al-Maharah
- Al-Baha
- Najran
- Asir
- Ha'il
- Tabuk
- Al-Qassim
- Al-Madinah
- Al-Diriyah
- Eastern Province
Phase I: Riyadh region with 27 participating hospitals
List of all patients in Al Kharaj city

Single patient information
Merging related information in the form of databases can provide improved health care operations through instant access to data, ease of managing complex data structures, and creation of reports to be used by healthcare planners and hospital administrators.

The objectives of the diabetes registry are wide and very important for the Ministry of Health of any country. It is the only system by which the country can recognize the disease problems and plan the management of the disease control.

The registry is designed with the goal in mind to provide information on the extent and nature of specific types of diabetes, diabetes complications, and treatment of diabetes in the Kingdom.

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The following maps require ArcReader (free download) [Click here to download]

- Population w.r.t Diabetic Patients
- Age Distribution
- Type of Diabetes
- Diabetes Complications
- Diabetes Associated Diseases
- Diabetes Treatment
- Regional Diabetic Population

* Click on a title from the list to display the map *

<table>
<thead>
<tr>
<th>Complication</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vasculopathy</td>
<td>Diet</td>
</tr>
<tr>
<td>Nephropathy</td>
<td></td>
</tr>
<tr>
<td>Neuropathy</td>
<td>Regular Insulin</td>
</tr>
<tr>
<td>Retinopathy</td>
<td>NPH Insulin</td>
</tr>
<tr>
<td>HBP</td>
<td>Mixed Insulin</td>
</tr>
</tbody>
</table>

Age Distribution

<table>
<thead>
<tr>
<th>With medication</th>
<th>Between 19-39</th>
<th>Between 40-69</th>
<th>Between 60-79</th>
<th>Age 80 and above</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without medication</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Misc. Maps

<table>
<thead>
<tr>
<th>Type of Diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial</td>
</tr>
<tr>
<td>Type I</td>
</tr>
<tr>
<td>Type II</td>
</tr>
<tr>
<td>GDM</td>
</tr>
</tbody>
</table>

- Map Query Tool
- vsa Family History
- Distribution of Females
RESULTS: Found 2 records that match your criteria.

<table>
<thead>
<tr>
<th>National ID Number</th>
<th>MRN</th>
<th>Serial #</th>
<th>Patient Name</th>
<th>Gender</th>
<th>DOB</th>
<th>Age</th>
<th>Age (Onset)</th>
<th>Initial Diabetes Type</th>
<th>Postal Code</th>
<th>Tel</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1004393</td>
<td></td>
<td></td>
<td>Female</td>
<td>7/2/1924</td>
<td>83</td>
<td>61</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1004357</td>
<td></td>
<td></td>
<td>Female</td>
<td>21/11/1930</td>
<td>77</td>
<td>60</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Our imagination is the only limit to what we can hope to have in the future.

~ Charles F. Kettering

Ability is of little account without opportunity

~ Napoleon
The National Center for Health Statistics (NCHS) supports research in the medical and health sciences by providing a dynamic platform for health researchers and administrators fulfilling all analysis requirements, thereby assisting in health decision making.
Center for Health Statistics Projects

- Saudi National Diabetes Registry
- Epilepsy Registry
- Congenital Heart Defects Registry
- Breast Cancer Registry
SuperWEB – for Researchers

Web 2.0 technologies including ESRI RESTful Web Services technology
ESRI Technology Integration

ArcGIS Server 9.3.1
  • Store the regional boundaries
  • Produce the thematic maps dynamically based on data selection; using an equal interval calculation
  • Overlay the thematic map

ESRI Web Services technology
  • Mash-up the thematic map with a Google base map
  • RESTful web services
  • ArcGISOnline
Conclusion

GIS in Health Care Helps in

✓ Determining where and when to intervene.
✓ Improving the quality of care.
✓ Increasing accessibility of service.
✓ Finding more cost-effective delivery modes.
✓ Preserving patient confidentiality while satisfying the needs of the research community for data accessibility.
Thank you