LAMPIRAN 1

Izin Melaksanakan Penelitian dan Selesai Penelitian

HEALTH RESEARCH ETHICAL COMMITTEE
Of North Sumatera
c/o MEDICAL SCHOOL, UNIVERSITAS SUMATERA UTARA
Jl. Dr. Mansyur No. 5 Medan, 20155 – INDONESIA
tel: +62-61-8211045; 8210555 fax: +62-61-8216264, e-mail: komet_fkus@yahoo.com

PERSETUJUAN KOMISI ETIK TENTANG
PELAKSANAAN PENELITIAN BIDANG KESEHATAN
Nomor: 05 /KOMET/FK USU/2013

Yang bertanda tangan di bawah ini, Ketua Komisi Etik Penelitian Bidang Kesehatan Fakultas
Kedokteran Universitas Sumatera Utara, setelah dilakukan pembahasan dan penilaian
usulan penelitian yang berjudul:

“Peran Sekretori Imunoglobulin A dan Neutrofil pada Kejadian Early Onset-Ventillator
Acquired Pneumonia Berdasarkan Analisis dari Spesimen yang diambil dengan
Kurasan Bronkoalveolar”

Yang menggunakan manusia dan hewan sebagai subjek penelitian dengan ketua
Pelaksana/peneliti Utama: Fajrinur Syarani
Dari Institusi: Program Studi Doktor S3 Ilmu Kedokteran FK USU

Dapat disetujui pelaksanaannya selama tidak bertentangan dengan nilai-nilai kemanusiaan
dan kode etik penelitian biomedik.

Medan, 22 Januari 2013
Komisi Etik Penelitian Bidang Kesehatan
Fakultas Kedokteran Universitas Sumatera Utara

Ketua,

Prof. Dr. Sutomo Kasiman, SpPD., SpJP(K)
KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN
UNIVERSITAS SUMATERA UTARA
FAKULTAS KEDOKTERAN
Jln. Dr. Mansur No.5 Kampus USU Medan 20155
Telp. (061) 8211045, 8210555 Fax. 061 8216264, e-mail: dean.med@usu.ac.id

Nomor: 75 /UN 5.2.1.1/SDM/PS/2013
Lamp : -
Perihal: Mohon Izin Penelitian

Medan, 26 Februari 2013

Kepada Yth,
Direktur
RSUP. H. Adam Malik
di
Medan

Dengan hormat,

Sehubungan dengan rencana penelitian disertasi mahasiswa Program Studi Doktor (S-3) Ilmu Kedokteran,
Fakultas Kedokteran Universitas Sumatera Utara, atas nama:

Nama: Fajrinur Syarani
NIM: 078102064
Program: Doktor (S-3) Ilmu Kedokteran
Judul Penelitian: Peran sekretori imunoglobulin A dan neutrofil pada kejadian early onset-ventilator acquired pneumonia, berdasarkan analisis dari apstenmen yang diambil dengan kurusan bronkoal veolar

Maka, untuk maksud tersebut diatas kami mohon izin untuk melaksanakan penelitian di:
Instalasi Perawatan Intensif (IPI), pengambilan sampel dilakukan terhadap pasien Bedah, Paru, Penyakit Dalam, Bedah Saraf dan Neurologi yang dirawat di ruang IPI dengan menggunakan Ventilator.

Segala biaya yang diperlukan tersebut ditanggung oleh yang bersangkutan.

Demikian kami sampaikan, atas perhatian Saudara diucapkan terima kasih.

[Signature]
Prof. Dr. H. A. Siregar, Sp.PD-KGEH

Tembusan
1. Ketua Program Doktor (S-3) Ilmu Kedokteran
2. Arsip
KEMENTERIAN KESEHATAN RI
DIREKTORAT JENDERAL BINA UPAYA KESEHATAN
RUMAH SAKIT UMUM PUSAT
H ADAM MALIK

Jl. Bunga Lau No. 17
Medan 20136

Nomor : LB.02.03.11.4.015
Lampiran : 1 (satu)
Perihal : Ijin Penelitian

Medan, 28 Februari 2013

Kepada Yth :

..........................................................
Medan

Sehubungan surat saudaraNomor : 75/UN5.2.1.1/SDMPS/2013 Tanggal 26 Feb 2013
Perihal : Izin Penelitian atas nama ( Fa'irur Syarini Nm.078102004 ) Program Doktor (S3)
Ilmu Kedokteran dengan judul Penelitian : Peran sekretori Imunogloblin A dan neutrofi pada
kejadian early onset -ventilator acquired pneumonia, berdasarkan analisis dari apesimen
yang diambil dengan kurusan bronkoal veolar.

Perihal pada pokok surat diatas, maka dengan ini kami informasikan :

1. Membawa proposal penelitian
2. Menghubungi Kepala Instalasi ltbang untuk konfirmasi ulang,sebelum jadwal penelitian
dilaksanakan.
3. Hasil penelitian tidak boleh dipublikasikan tanpa sejolin pihak RSUP H. Adam Malik
Medan.
4. Surat ini adalah sebagai surat izin melaksanakan penelitian,surat pemberitahuan selesai
melaksanakan penelitian akan kami terbitkan apabila yang bersangkutan telah selesai
melaksanakan kegiatan tersebut di RSUP H Adam Malik Medan.

Informasi lebih lanjut dapat menghubungi Instalasi penelitian dan pengembangan RSUP
H. Adam Malik Medan, Gedung Administerasi Lt.2,

Demikian disampaikan, atas perhatiannya diucapkan terima kasih.

Direktur Utama,

[Signature]
Dr. Lukmantul Hakim Nasution, Sp.KK
NIP. 19641120 198403 1004

Tembusan :
1. Pertinggal
KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN
UNIVERSITAS SUMATERA UTARA
FAKULTAS KEDOKTERAN
DEPARTEMEN ANESTESIOLOGI DAN TERAPI INTENSIF
Jalan Bunga Lau No. 17 Medan 20136
Telp. (061) 8362080 Fax. (061) 8363776

No. : 21/ IV/ UN.5.2.1.1.18/ 2015
Lamp : ----
Hal : Selesai melaksanakan penelitian di IPI

18 Mei 2015

Yth :
Ketua Pasca Sarjana
Fakultas Kedokteran
Universitas Sumatera Utara
Di
Medan

Dengan hormat, berdasarkan surat no. 75 / UN. 5. 2.1.1 / SDM / PS/ 2013 tanggal 26 Februari 2013, perihal : mohon izin penelitian disertasi mahasiswa Program Studi Doktor ( S-3 ) Ilmu Kedokteran Fakultas Kedokteran Universitas Sumatera Utara, atas nama
Nama : Fajrinur Syarani
NIM : 078102004
Program : Doktor ( S-3 ) Ilmu Kedokteran
Judul Penelitian : Peran sekretori imunoglobulin A dan neutrophil pada kejadian early onset – ventilator acquired pneumonia, berdasarkan analisis dari apesimen yang diambit dengan karasan bronco alveolar

maka dengan ini kami menyatakan bahwa nama yang tertera diatas telah selesai melaksanakan penelitian di Instalasi Perawatan Intensif ( IPI ) RSUP. H. Adam Malik Medan pada bulan April 2014.

Demikian disampaikan, atas kepercayaan dan kerjasama yang baik kami ucapkan terima kasih.

Ketua,

Prof. dr. Achmaduddin Fauzi, Sp An. KIC. KAO
NIP /19520826 198102 1001

cc. arsip
SURAT KETERANGAN
No. LB.02.03.II.4.9532

Yang bertanda tangan dibawah ini:

Nama : Dr. Lukmanul Hakim Nasution, SpKK
NIP : 195411201984 03 1004
Jabatan : Direktur Utama RSUP H. Adam Malik

Dengan ini menerangkan bahwa Mahasiswa / Peneliti:

Nama : Fajrin Syarani
NIM : 078102004
Institusi : DOKTOR (S-3) ILMU KEDOKTERAN - USU
Judul : "Peran Sekretori Immunoglobulin A dan Neutrofil Pada Kejadian Early Onset-Ventilator Acquired Pneumonia, Berdasarkan Analisis Dari Apesimen Yang Diambil Dengan Kurasan Brokoal Veolar"

Benar telah selesai melaksanakan penelitian di lingkungan RSUP. H. Adam Malik Medan sesuai prosedur dan ketentuan penelitian yang berlaku di RSUP H. Adam Malik Medan.

Demikian surat keterangan ini dibuat sesuai dengan sebenarnya, untuk dapat dipergunakan sepeilunya.

Medan, 5 April 2014
Direktur Utama

[Signature]

Dr. Lukmanul Hakim Nasution, SpKK
NIP : 195411201984 03 1004
Kepada Yth,

Dr. Fajrinur Syahraani, SpP(K)
Program Study 53
Fakultas Kedokteran USU
Di Tempat

Dengan hormat,

Bersama ini kami ucapkan terima kasih yang sebesar-besarnya kepada Dr. Fajrinur Syahraani, SpP(K) atas kepercayaannya kepada kami Laboratorium Klinik Prodia untuk membantu dalam pengerjaan pemeriksaan tes khusus untuk penelitian (For Research Use Only kit) yang menunjang penelitian paicara jara program doktor alma.

Pemeriksaan sasi pada sampel cairan BAL manusia yang merupakan tes khusus untuk penelitian telah selesai dijalankan di Laboratorium Research & Esoteric Test Prodia pada tanggal 30 Juli 2013 dan 6 September 2013.

Kami berharap dengan jaminan mutu terbaik dan sumber daya yang berkompeten dibidangnya, kiranya apa yang dihasilkan dari penelitian ini dapat bermanfaat bagi pengembangan ilmu laboratorium khususnya dan ilmu kedokteran di Indonesia pada umumnya.

Demikian yang dapat kami sampaikan, atas perhatian dan kepercayaannya kami ucapkan terima kasih.

Salam,

[Signature]

Dra. Amel Retnowadani, M. Si
Marketing Manager
PT. PRODIA WIDYAHUSADA
LAMPIRAN 2

PUBLIKASI INTERNASIONAL

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Certificate of Appreciation

This is presented to

dr. Fajrinur Syarani, M.Ked(Paru), Sp.P(K)

in appreciation of your invaluable presentation
on the occasion of the

19th Congress of the
Asian Pacific Society of Respirology

on
13 – 16 November 2014, Bali, Indonesia

Dr. Arth Nana
President
Asian Pacific Society of Respirology

Prof. Faisal Yunus
Congress President
19th Congress of the
Asian Pacific Society of Respirology

Prof. Kwun Fong
Chairperson, Clinical Congress Committee
Asian Pacific Society of Respirology

In partnership with

APSR 2014
THE ROLE OF SECRETORY IMMUNOGLOBULIN A AND NEUTROPHILS EVENTS ON EARLY ONSET-VENTILATOR ACQUIRED PNEUMONIA BASED ON ANALYSIS OF SPECIMENS BRONCHOALVEOLAR LAVAGE

SYARRANI F, HASMIN M, ZAIN-HAMID R, HANAFIE A
1RSU Adam Malik, Medan, Indonesia, 2Departemen Pneumonologi & Imunologi Kedokteran Respirologi, Fakultas Kedokteran, Universitas Indonesia, Jakarta, Indonesia, 3Departemen Farmakologi dan Terapi Phuket, Fakultas Kedokteran, Universitas Sumatera Utara, Medan, Indonesia, 4Departemen Anestesiologi dan Terapi Intensif, Fakultas Kedokteran, Universitas Sumatera Utara, Medan, Indonesia

Background: The VAP is linked to the local immune system in the respiratory system. Secretory immunoglobulin A (s-IgA), a component of humoral immunity, along with innate immunity neutrophils protects from infection. Neutrophils is two distinct functions, is as the defense component and on the contrary, excessive inflammation, damage of lung tissue and this may lead to ARDS. The aims of study to prove the role of s-IgA and neutrophils in patients on mechanical ventilators, towards the incidence of early-onset VAP, ARDS and s-IgA capability to suppress overreaction from elevated neutrophils counts.

Method: The study was a prospective analytic observation cohort on s-IgA and neutrophils from BAL, the VAP(-+) with a score of CPIS > 6 is VAP(+). Bronchoscopy techniques and BAL: FOB was inserted through the endotracheal tubes via sterile connector to maintain ventilation during procedure. BAL commonly performed on left subsegment lingula or right middle lobe, selected based on chest radiograph or according to the presence of direct inflammatory signs, with protected BAL Balloon Catheter. Finally fluid from BAL was immediately delivered to microbiology laboratory, cytological, and serological analysis.

Results: Subjects observed were 61 people, with initial diagnosis no pneumonia. On the third day group VAP(-) with CPIS scores ≤8 (2.82), 28 subjects, and group VAP(+)) with CPIS scores >6 (7.94), 33 subjects. The first day and on the third day of s-IgA is different significantly (p < 0.05), but Mann-Whitney test s-IgA for two groups did not differ significantly (p > 0.08). Neutrophils on first day and on third day is significantly (p < 0.05). T-test results of neutrophils from both groups also differ significantly (p < 0.05), with the correlation coefficient r = 0,44, which mean any increase in s-IgA will be accompanied by decreased in neutrophils overreaction. Analysis of the correlation between neutrophils and CPIS scores shows strongly related correlation (0.599). By Spearman correlation, a strong correlation between neutrophils and the incidence of ARDS was found. S-IgA in the VAP(-) and VAP(+) with ARDS is different significantly (p < 0.05).

Conclusion: S-IgA is able to suppress neutrophils overreaction. Neutrophils was contribute to the incidence of VAP and strong correlation the incidence of ARDS. In ARDS, the increased neutrophils causing damage to the alveoli environment, then the s-IgA declined, not able to maintain a good environment back in the alveoli.
Certificate of Appreciation

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dr. Fajrinur Syarani, M.Ked(Paru), Sp.P(K)
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Dr. Arth Nana
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Prof. Faisal Yunus
Congress President
19th Congress of the
Asian Pacific Society of Respirology

Prof. Kwun Fong
Chairpersons, General Congress Committee
Asian Pacific Society of Respirology

In partnership with

APSR
THE SECRETORY IMMUNOGLOBULIN A IN THE EARLY ONSET-VENTILATOR ACQUIRED PNEUMONIA AND ARDS BASED ON ANALYSIS OF SPECIMENS FROM THE BRONCHOALVEOLAR LAVAGE

SYARANI F, RASMIN MF, ZAIN-HAMID R, HANAFIE A
1Department of Emergency, Adam Malik Hospital Medan, Indonesia, 2Department of Pulmonary & Respiratory Medicine Faculty of Medicine, Universitas Indonesia, Indonesia, 3Department of Pulmonary & Therapeutic Faculty of Medicine, Universitas Sumatera Utara, Indonesia, 4Department of Anaesthesia & Intensive Therapeutic Faculty of Medicine, Universitas Sumatera Utara, Indonesia

Background: Secretory immunoglobulin A (s-IgA) is the major humoral immunoglobulin of the respiratory system, the most important for lung defense, consisting 65–80% of total. Along with innate immunity system, s-IgA protects the lung from infection. In ARDS, s-IgA will be destructed, due to the damage of the environment surrounding the alveoli. The aim of this study is to prove that s-IgA in the lung maintain immunity in patients on mechanical ventilators, early-onset VAP, and s-IgA in ARDS.

Method: The study was a prospective analytic observation cohort on s-IgA from BAL, the VAP(+) with a score of CPIS > 6 in VAP(-). Basic subjects’ data are collected on the first day, and will later be used as an internal comparison with samples taken on the third day. Bronchoscopy techniques and BAL; FOB using a large channel bronchoscope was inserted through the endotracheal or tracheotomy tubes via sterile connector to maintain ventilation during procedure. BAL commonly performed on left subsegment lingula or right middle lobe, selected based on chest radiograph or according to the presence of direct inflammatory signs (purulent secretions, mucosal edema, and hyperemia) with protected BAL Balloon Catheter. Finally fluid from BAL was immediately delivered to microbiology laboratory for quantitative bacterial culture, cytological, and serological analysis.

Results: Subjects observed were 51 people, with initial diagnosis consists of 37 head trauma, 10 stroke, 8 post operative, 6 anoxic encephalopathies, and no pneumonia. On the third day of the study, subjects are divided into two groups, group VAP(-) with CPIS score ≤6 (n=28), 28 subjects, and group VAP(+) with CPIS score >6 (n=23), 33 subjects. On the first day of bronchoscopy BAL s-IgA was ±549.031.562, whereas on the third day, s-IgA BAL in VAP(-) were ±78144.069 and ±96776.818, significant (p<0.05). By Mann-Whitney test, s-IgA VAP(+) did not differ significantly (p>0.05), because s-IgA in VAP(+) has a larger SD. S-IgA in the VAP(-) and VAP(+) with ARDS is different significantly (p<0.05). Average s-IgA in VAP(+) is ±140181.884, higher than the s-IgA in VAP(-) with ARDS which is ±37874.657.

Conclusion: S-IgA of BAL has a role in maintaining local immunity in the lung, but in VAP(+) with ARDS, when the alveoli environmental destructed, the s-IgA was also destroyed.
Certificate of Appreciation

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dr. Fajrinur Syarani, M.Ked(Paru), Sp.P(K)

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Prof. Faisal Yunus
Congress President 19th Congress of the Asian Pacific Society of Respirology

Prof. Kwun Fong
Chairperson, Scientific Congress Committee Asian Pacific Society of Respirology
THE ROLE OF NEUTROPHILS IN EARLY ONSET-VENTILATOR ACQUIRED PNEUMONIA AND ARDS BASED ON ANALYSIS OF SPECIMENS FROM BRONCHOALVEOLAR LAVAGE

SYARANI F1, RASMIN M2, ZAIN-HAMID R3, HANAFIE A4

1Department of Emergency, Adam Malik Hospital Medan, Indonesia
2Department of Pulmonary & Respiratory Medicine Fac.of.Medicine, Universitas Indonesia, Indonesia
3Department of Pulmonary & Respiratory Medicine Fac.of.Medicine, Universitas Sumatera Utara, Indonesia
4Department of Anaesthesiology & Intensive Therapeutic Faculty of Medicine, Universitas Sumatera Utara, Indonesia

Background: Neutrophils are part of the innate immunity that protects lung from infective pathogens, transmigration circulation plays an important role in the immune system. Neutrophils in patients using mechanical ventilator is ±60%, with two distinct functions, one of which is as a defense component. On the contrary, excessive inflammation, damage of lung tissue, and worsening of pulmonary function take place when neutrophil amounts increased. This may lead to acute respiratory distress syndrome (ARDS). The aim of the study is to seek for evidence that neutrophils in the lung maintain immunity in patients using mechanical ventilators.

Method: The study was a prospective cohort and analytic observation of neutrophils from BAL, VAP(-/+ with a CPIS scores ±6 considered as VAP(±). Basic subjects’ data are collected on the first day, and will later be used as an internal comparison with samples taken on the third day. Bronchoscopy techniques and BAL: FOB using a large channel bronchoscope was inserted through the endotracheal or tracheotomy tubes via steric connector. BAL commonly performed on left subsegment lingula or right middle lobe, selected based on chest radiograph or according to the presence of direct inflammatory signs (purulent secretions, mucosal oedema, and hyperemia) with protected BAL Balloon Catheter. Finally fluid from the BAL was immediately delivered to microbiology laboratory for quantitative bacterial culture, cytological, and serological analysis.

Results: Subjects observed were 61 people, with initial diagnosis consists of 37 head trauma, 10 strokes, 8 post operative, 6 encephalopathies, and no pneumonia. On the third day of the study, subjects are divided into two groups, group VAP(-) with CPIS scores ≤6 (±2.86), 28 subjects, and group VAP(+) with CPIS scores >6 (±7.94), 33 subjects. Neutrophils on the first day are ±63.5361%. On third day, neutrophils in VAP(-) is ±66.5650%, which is not significant (p > 0.05), while in VAP(+) is ±85.4000% (significantly p < 0.05). Neutrophils on both groups also differ significantly (p < 0.05). Analysis of the correlation between neutrophils and CPIS scores strongly correlate (0.595). By Spearman correlation, a strong correlation between neutrophils and the incidence of ARDS was found.

Conclusion: Neutrophils of BAL was significantly correlated with CPIS scores, contributed to the incidence of early onset-VAP, and a strong correlation between neutrophils and the incidence of ARDS was found.
Naskah komputerisasi (Kalkulator) Skor CPIS

Clinical Pulmonary Infection Score (CPIS) Calculator

This calculator may be used to calculate the Clinical Pulmonary Infection Score (CPIS). The CPIS is used to assist in the clinical diagnosis of ventilator-associated pneumonia (VAP) by predicting which patients will benefit from obtaining pulmonary cultures. Use of the CPIS results in fewer missed VAP episodes and can also prevent unnecessary antibiotic administration due to treatment of colonized patients.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Score (check all that apply)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature (Celsius)</td>
<td>○ ≥36.5 and ≤38.4</td>
</tr>
<tr>
<td></td>
<td>○ ≥38.5 and ≤38.9</td>
</tr>
<tr>
<td></td>
<td>○ ≥39.0 or ≤36.5</td>
</tr>
<tr>
<td>White Blood Cell Count</td>
<td>○ ≥4,000 and ≤11,000</td>
</tr>
<tr>
<td></td>
<td>○ &lt;4,000 or &gt;11,000</td>
</tr>
<tr>
<td></td>
<td>○ &lt;4,000 or &gt;11,000 AND band forms ≥50%</td>
</tr>
<tr>
<td>Tracheal Secretions</td>
<td>○ None or scant</td>
</tr>
<tr>
<td></td>
<td>○ Non-purulent</td>
</tr>
<tr>
<td></td>
<td>○ Purulent</td>
</tr>
<tr>
<td>$\text{PaO}_2/\text{FiO}_2$ ($^*$ARDS is defined as a $\text{PaO}_2/\text{FiO}_2$ \leq 200, PAOP \leq 16$ mmHg, and acute bilateral infiltrates)</td>
<td>○ &gt;240, ARDS* or pulmonary contusion</td>
</tr>
<tr>
<td></td>
<td>○ ≤240 and no ARDS*</td>
</tr>
<tr>
<td>Chest Radiograph</td>
<td>○ No infiltrate</td>
</tr>
<tr>
<td></td>
<td>○ Diffuse (or patchy) infiltrate</td>
</tr>
<tr>
<td></td>
<td>○ Localized infiltrate</td>
</tr>
</tbody>
</table>

Calculate CPIS score

For further details on the diagnosis of Ventilator-Associated Pneumonia (VAP) and its treatment, review the evidence-based medicine guideline Diagnosis of Ventilator-Associated Pneumonia.
Simplified Acute Physiology Score (SAPS II) Calculator

Note: Use the worst value for each physiological variable within the past 24 hours.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>years</td>
</tr>
<tr>
<td>Heart rate</td>
<td>bpm</td>
</tr>
<tr>
<td>Systolic BP</td>
<td>mmHg</td>
</tr>
<tr>
<td>Temp</td>
<td>C or F</td>
</tr>
<tr>
<td>Mechanical ventilation or CPAP</td>
<td></td>
</tr>
<tr>
<td>PaO_2</td>
<td>mmHg</td>
</tr>
<tr>
<td>FiO_2</td>
<td>%</td>
</tr>
<tr>
<td>Urine output</td>
<td>mL per hour</td>
</tr>
<tr>
<td>BUN</td>
<td>mg/dL</td>
</tr>
<tr>
<td>WBC</td>
<td>x 10^9/L</td>
</tr>
<tr>
<td>Potassium</td>
<td>mEq/L</td>
</tr>
<tr>
<td>Sodium</td>
<td>mEq/L</td>
</tr>
<tr>
<td>Bicarbonate</td>
<td>mEq/L</td>
</tr>
<tr>
<td>Bilirubin</td>
<td>mg/dL</td>
</tr>
<tr>
<td>Glasgow coma score</td>
<td></td>
</tr>
<tr>
<td>Chronic diseases</td>
<td>□ Metastatic cancer</td>
</tr>
<tr>
<td></td>
<td>□ Hematologic malignancy</td>
</tr>
<tr>
<td></td>
<td>□ AIDS</td>
</tr>
<tr>
<td>Type of admission</td>
<td>Scheduled surgical</td>
</tr>
</tbody>
</table>

Press 'Calculate' to see the calculated score.
Load an Example

Correlation of Total Score and Hospital Mortality

Hospital mortality may be calculated using the following equation:

\[ \text{Mortality} = \frac{\text{Total Score}}{28} \times 100\% \]

Note that there is a sigmoidal relationship between mortality and the total SAPS II score, as demonstrated by the graph below:

<table>
<thead>
<tr>
<th>Mortality</th>
<th>SAPS II Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>10%</td>
<td>29 pts</td>
</tr>
<tr>
<td>25%</td>
<td>40 pts</td>
</tr>
<tr>
<td>50%</td>
<td>52 pts</td>
</tr>
<tr>
<td>75%</td>
<td>64 pts</td>
</tr>
<tr>
<td>90%</td>
<td>77 pts</td>
</tr>
</tbody>
</table>