
Proportional health care will be the same for all groups in the population, and, as far as possible, equally good health, to be pursued through preventive or curative treatment. Equity cannot simply be identified with equality in general, because of differences in needs, but it can be judged by considering comparability of the health care available. The idea may be "to provide 100% of the population with access to health care". But the crucial action is that whatever the set of results of the implementation of health care services, for whatever reason that seems to have contributed to better health, whatever the reasons that prevent some people but not others from getting medical assistance (2). Since illness and accident are randomly and non-uniformly distributed, it cannot be expected that everyone will see a doctor equally often, that those spending more than the average on health care will be the same for all groups in the population, and that, even if the health-care system is equitable, certain probabilities will be equal across population groups for a given set of health problems.

D’après le Plan d’action de l’Organisation panaméricaine de la Santé (2), l’équité est l’une des trois qualités essentielles d’un système de services de santé. Outre l’efficacité et l’efficacité, aucune de ces concepts n’est facile à définir ou à mesurer et n’est donc pas surprisant que l’on ne sache pas encore comment l’équité dans ces domaines. Toutefois, plusieurs indicateurs simples peuvent être utilisés pour donner une idée de l’équité, même s’il n’existe pas d’indicateur unique. Le présent article examine la logique de plusieurs de ces indicateurs, en se fondant sur des données récentes de l’OMS pour appuyer une illustration empirique. L’équité en tant qu’équité de traitement.

L’idée fondamentale de l’équité est celle d’une égalité de traitement pour l’ensemble de la population. Il s’agit d’assurer une bonne santé à tous et, en même temps, d’un niveau de dépenses par personne pour les soins de santé qui est le même pour tout le monde. L’inégalité découlant de diverses différences dans la capacité d’obtenir des soins de santé, pour quelque raison que ce soit, fait que certaines peuvent ne pas obtenir une aide médicale alors que d’autres y parviennent. La maladie et les accidents surviennent au hasard de façon non uniforme, on ne peut s’attendre que chacun soit reçu le même nombre de fois chez le médecin ou que tous les groupes de la population encouragent le même niveau de dépenses par personne pour les soins de santé. Le traitement et les ressources doivent aller à ceux qui en ont le plus besoin. Il est récemment probable que si le système de soins de santé est égal, certaines probabilités seront égales quelles que soient les groupes de la population, pour un ensemble de problèmes de santé donnés.

Probabilités de maladie, traitement et rétablissement.

Cette idée est présentée schématiquement à la figure 1. Si on exclut de l’examen la possibilité qu’un individu ne soit pas suivi ou traité ou décédé, on peut alors représenter la probabilité d’un événement par le nombre de fois où l’événement a eu lieu dans un intervalle de temps. Si on exclut cette possibilité, on peut représenter la probabilité d’un événement par le nombre de fois où l’événement a eu lieu dans un intervalle de temps. Si on exclut cette possibilité, on peut représenter la probabilité d’un événement par le nombre de fois où l’événement a eu lieu dans un intervalle de temps. Si on exclut cette possibilité, on peut représenter la probabilité d’un événement par le nombre de fois où l’événement a eu lieu dans un intervalle de temps. Si on exclut cette possibilité, on peut représenter la probabilité d’un événement par le nombre de fois où l’événement a eu lieu dans un intervalle de temps. Si on exclut cette possibilité, on peut représenter la probabilité d’un événement par le nombre de fois où l’événement a eu lieu dans un intervalle de temps. Si on exclut cette possibilité, on peut représenter la probabilité d’un événement par le nombre de fois où l’événement a eu lieu dans un intervalle de temps.
different dimensions of equity

The scheme simplifies a great deal, but it serves to emphasize several issues to consider in attempting to judge the equity of a health service system. Among these are:

Which stage of the sequence is analysed. The system might, for example, provide roughly the same chance of being cured to all patients who receive treatment, but be inequitable in reaching some people for treatment much more readily than others.

Different preventive actions, which acts on PS, and curative treatment, which involves PT (S) and P(C)/T. Some differences in the likelihood of getting sick or death should not be considered inequitable, since they are associated with age or other risk factors largely outside the control of the health care system. Other differences (in PS)—for example, in the chance of getting diarrhoea or pneumonia—may be inequitable if prevention is within the power of the system and can be applied equally to virtually the entire population.

The particular condition, illness or need studied. A health care system may provide everyone with the same chance of emergency care after a motor-vehicle accident, but maintain marked inequalities in the treatment of cancer in different ages.

The level or quality of treatment. Does equity require the same types of care for everyone who is treated for a particular condition? Or should the system be regarded as equitable if every patient gets at least a minimal adequate level of care, even though some receive more elaborate, prolonged or expensive treatments?

A similar issue arises in analysing the distribution of income: does equity require equality of income, or is what matters a decent minimum income for everyone? This issue becomes particularly important when analysing expenditure on medical care.

The interaction of supply (physical availability of services and demand) and individual perception of need in determining who does and who does not get treatment. For example, is it fair to describe a system as inequitable if it provides relatively little care to a cultural group which is marginally more stoic than average, or more likely to rely on home remedies or traditional healers? How much responsibility falls to the system for changing these patterns so as to relate medical need and individual demand in the same way for the whole population?

All these questions show clearly why there cannot be a single measure of how equitable a health care system is.

The particular condition, illness or need studied. A health care system may provide everyone with the same chance of emergency care after a motor-vehicle accident, but maintain marked inequalities in the treatment of cancer in different ages.

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mvaissé santé finales P (H) et P (H'), ne constituent qu'une combinaison de ces quatre paramètres fondamentaux (3). Les différentes dimensions de l'équité

Il s'agit d'un schéma très simplificateur, mais qui permet néanmoins de mettre l'accent sur plusieurs questions à examiner lorsqu'on cherche à déterminer l'équité d'un système de soins de santé. Parmi ces questions, on peut mentionner les suivantes:

La phase de la séquence qui est analysée. Le système peut, par exemple, donner à tous les malades qui reçoivent un traitement à peu près les mêmes chances de guérison tout en étant inégal en ce qui concerne l'état de santé que peut atteindre beaucoup plus facilement certaines personnes que d'autres.

La différence entre la prévention qui agit sur P (S), et le traitement qui fait intervenir P (T) et P (C)/T. Certains facteurs de risque qui échappent au contrôle du service de santé peuvent être attribuables à l'état initial - SYR:ptom, sickness, et de la demande individuelle pour l'ensemble de la population?

appartient-il au gouvernement de modifier ces schémas culturels afin qu'il y ait le même lien entre besoins médicaux et demande individuelle pour l'ensemble de la population?

Enfin, il est une question importante qui n'apparaît pas clairement à la Fig. 1. En ordre à examiner et comparer les probabilités, la population doit être divisée en groupes sur une base très large et diversifiée qui inclurait le facteur déterminant de l'inégalité apparente. De même que les revenus sont en général plus répartis inégalement selon le niveau d'éducation que selon les zones géographiques, de même le système de soins de santé risque de paraitre plus équitable selon un point de vue que d'un autre. Une évaluation adéquate exigera probablement que la population soit répartie de manière différente, par exemple, selon des critères aussi bien socio-économiques que géographiques.

Plusieurs des cas possibles peuvent être illustrés au moyen de données récentes mais peu récentes au Pérou. Il s'agit à la fois de données administratives courantes réunies par le Ministère de la santé et analysées par la Banque centrale nationale, de données obtenues au niveau des ménages par l'enquête nationale de 1984 sur la santé et la nutrition.
final good health and its health, P(H) and P(H*), is just some combination of these four basic probabilities (3). Different dimensions of equity

This scheme simplifies a great deal, but it serves to emphasize several issues to consider in attempting to judge the equity of a health service system. Among these are:

Which stage of the sequence is analysed. The system might, for example, provide roughly the same chance of getting sick or hurt but should not be considered inequitable, since they are associated with age or other risk factors largely outside the

control of the health system. Other differences in PSJ—for example, in the chance of getting diabetes or perinatal mortality because of preventive services that are not within the power of the system and can be applied equally to virtually the entire population.

The particular condition, illness or need studied. A health care system may provide everyone with the same chance of emergency care after a motor-vehicle accident, but maintain marked inequalities in the treatment of cancer.

The level or quality of treatment. Does equity require the same type of care for everyone to be treated for a particular condition? Or should the system be regarded as equitable if every patient gets at least a minimal adequate level of care, even though some receive more elaborate, prolonged or expensive treatment (3)? A similar issue arises in analysing the distribution of income: does equity require equality of income, or is what matters a decent minimum of income for all? This issue becomes particularly important when analysing expenditure on medical care.

The interaction of supply (physical availability of services) and demand (individual perception of need) in determining who does and who does not get treatment. For example, it is fair to describe a system as equitable if it provides relatively little care to a cultural group which is widely considered to be on a lower level of education, income, or perinatal mortality because of preventive services that are not within the power of the system and can be applied equally to virtually the entire population.

All these questions show clearly why it cannot be a single measure of how equitable a health care system is: the same system may be quite fair by some indicators, and grossly inequitable according to others. It is no more possible to judge health services as to equity by just one number than it is to summarize the population’s health status in one indicator.

Finally, there is one important issue which is not clear from Fig. 1. In order to examine and compare the probabilitics, the population must be divided into groups on some basis. How this is done might greatly affect the apparent inequity. Just as income typically is distributed more unequally among educational classes than among geographical regions, the health system may look much more equitable in one dimension than in another. An adequate evaluation will require that the population be divided into more than one way, for example, by socio-economic criteria as well as by geographical location.

Several of the issues discussed above can be illustrated by recent data from Peru. These include the usual administrative data-collected by the Ministry of Health and analysed by the National Central Reserve Bank. Household income information obtained in the 1984 National Health and Nutrition Survey, and analyses conducted as part of the

the system of aMEASURES RELATED TO EQUITY IN HEALTH CARE, PERU, 1982 HEALTH CARE RESOURCES AND SANITATION SERVICES

| TABLE 1. MEASURES RELATED TO EQUITY IN HEALTH CARE, PERU, 1982 HEALTH CARE RESOURCES AND SANITATION SERVICES

<table>
<thead>
<tr>
<th>Department</th>
<th>Population</th>
<th>Wealth Resources</th>
<th>Resources - Resources</th>
<th>Resources - Resources</th>
<th>Diseases - Loggers</th>
<th>Water use / population on average</th>
<th>Water use / population on average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department</td>
<td>Population</td>
<td>Wealth Resources</td>
<td>Resources - Resources</td>
<td>Resources - Resources</td>
<td>Diseases - Loggers</td>
<td>Water use / population on average</td>
<td>Water use / population on average</td>
</tr>
<tr>
<td>Agriculture</td>
<td>100.0</td>
<td>0.1</td>
<td>0.2</td>
<td>0.3</td>
<td>2.5</td>
<td>4.6</td>
<td>6.7</td>
</tr>
<tr>
<td>Industry</td>
<td>20.0</td>
<td>0.3</td>
<td>0.5</td>
<td>0.7</td>
<td>3.2</td>
<td>5.4</td>
<td>7.6</td>
</tr>
<tr>
<td>Commerce</td>
<td>30.0</td>
<td>0.5</td>
<td>0.7</td>
<td>0.9</td>
<td>4.2</td>
<td>6.3</td>
<td>8.5</td>
</tr>
<tr>
<td>Education</td>
<td>40.0</td>
<td>0.7</td>
<td>0.9</td>
<td>1.1</td>
<td>5.2</td>
<td>7.4</td>
<td>9.6</td>
</tr>
<tr>
<td>Health</td>
<td>50.0</td>
<td>0.9</td>
<td>1.1</td>
<td>1.3</td>
<td>6.2</td>
<td>8.3</td>
<td>10.5</td>
</tr>
<tr>
<td>Social Services</td>
<td>60.0</td>
<td>1.1</td>
<td>1.3</td>
<td>1.5</td>
<td>7.2</td>
<td>9.3</td>
<td>11.5</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>2.0</td>
<td>2.4</td>
<td>2.6</td>
<td>10.0</td>
<td>15.0</td>
<td>20.0</td>
</tr>
</tbody>
</table>

Source: [Health map of Peru]. Lima, Central Reserve Bank of Peru, 1984 (in Spanish).
TABLE 2. MEASURES RELATED TO EQUITY IN HEALTH CARE IN PERU, 1984

<table>
<thead>
<tr>
<th>Area</th>
<th>Inequity (%)</th>
<th>Respiratory Illnesses (%)</th>
<th>With symptoms (%)</th>
<th>Population (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lima</td>
<td>21.2</td>
<td>20.5</td>
<td>19.8</td>
<td>18.5</td>
</tr>
<tr>
<td>Rural areas</td>
<td>17.8</td>
<td>17.1</td>
<td>16.3</td>
<td>15.1</td>
</tr>
</tbody>
</table>

Notes:
- Table 2 shows the percentage of the population that receives medical care as compared to the percentage that does not, for different age groups and regions.

TABLE 2. MEASURES RELATED TO EQUITY IN HEALTH CARE IN PERU, 1984

<table>
<thead>
<tr>
<th>Area</th>
<th>Zone characteristics</th>
<th>All ages</th>
<th>1 to 4 years</th>
<th>5 to 9 years</th>
<th>10+ years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastal zones</td>
<td></td>
<td>34.89</td>
<td>16.17</td>
<td>0.21</td>
<td>12.67</td>
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<tr>
<td>Rural zones</td>
<td></td>
<td>36.57</td>
<td>17.68</td>
<td>0.15</td>
<td>14.88</td>
</tr>
<tr>
<td>Mountain areas</td>
<td></td>
<td>35.09</td>
<td>14.38</td>
<td>0.28</td>
<td>7.50</td>
</tr>
<tr>
<td>Slums</td>
<td></td>
<td>30.06</td>
<td>11.95</td>
<td>0.16</td>
<td>5.53</td>
</tr>
<tr>
<td>Rural - zones</td>
<td></td>
<td>33.75</td>
<td>12.84</td>
<td>0.18</td>
<td>4.73</td>
</tr>
<tr>
<td>Coastal slums</td>
<td></td>
<td>36.03</td>
<td>12.06</td>
<td>1.78</td>
<td>7.85</td>
</tr>
<tr>
<td>Rural - zones</td>
<td></td>
<td>33.75</td>
<td>11.74</td>
<td>1.37</td>
<td>5.56</td>
</tr>
<tr>
<td>National total</td>
<td></td>
<td>33.31</td>
<td>14.20</td>
<td>0.36</td>
<td>9.69</td>
</tr>
</tbody>
</table>


**Probabilities of need and of treatment**

A principal weakness of the resource vs. population comparisons in Table 1 can be overcome by widening the scope to morbidity and utilization data obtained from a large sample of the Peruvian population in the 1984 survey, and giving them a geographical perspective among the diverse sections of the urban population of the country’s mountainous central region. In Table 2, the probability of presenting with a specific illness or symptom was fairly uniform, at about one-third, during the two-week reference period. The unconditional probability of seeking medical care (including a visit to a pharmacy, but excluding hospital care), however, ranged from almost 15% in Lima down to less than 5% in rural mountainous areas.

Several other features of these estimates merit consideration. For one thing, the "geographical dimension" has several possibilities besides large variations for specific causes over different regions. For Peru as a whole, PIT (T) is more than twice as high in urban areas as it is in rural areas. The results could instead be shown according to the "health regions" of the Ministry of Health, which are used for administrative purposes. Table 3, therefore, presents a more detailed geographical perspective by the health regions, which correspond approximately to departments or combinations of them.

**Differences by illness and by age**

The relative unimportance of differences in Table 1 is consistent with the interpretation that the probability of presenting with a specific illness or symptom was fairly uniform, at about one-third, during the two-week reference period. The unconditional probability of seeking medical care (including a visit to a pharmacy, but excluding hospital care), however, ranged from almost 15% in Lima down to less than 5% in rural mountainous areas. The results could instead be shown according to the "health regions" of the Ministry of Health, which are used for administrative purposes. Table 3, therefore, presents a more detailed geographical perspective by the health regions, which correspond approximately to departments or combinations of them.

**Probabilities of the benefits and of the treatment**

A selection of the tables in the 21st volume of our series on "Health and Nutrition in Developing Countries," which is to be published in the near future, may provide some additional comments on these results. The tables in the 21st volume of our series on "Health and Nutrition in Developing Countries," which is to be published in the near future, may provide some additional comments on these results.

urban/rural differential in the probability of care is greater for infants than for other age groups. Thus higher overall coverage or utilization of services need not imply greater equity or less inequity.

Equity in vaccination coverage. As the comparison of indicators such as differences in health status, illnesses and symptoms differ in danger or severity, and this may account for much of the variation in the likelihood of obtaining medical care. Not all such differences can be interpreted as indications of inequity. In order to control for this source of variation, it may be advisable to study equity with respect to a single well-defined need or condition. For example, vaccination and close to 4:1 for protection against poliomyelitis, as well as by educational level.

Clear evidence that as the total coverage drops, the inequality of care is greater, and then according to the schooling of the child's mother. This is done in health regions.

In order to control for this source of variation, it may be useful to study equity with respect to a single defined need or condition. For example, vaccination and close to 4:1 for protection against poliomyelitis, as well as by educational level.

Table 2 shows that they are not a particularly equitable situation than another (3). All such measures of inequity, the coefficient of Gini is a particularly useful measure of the distribution of resources or utilization be studied, ranking the groups from lowest to highest values of resources per capita. The Loren curve corresponding to the departmental distribution of health regions, ranking the groups from the least inequity to the greatest.

Comparison across the four types of vaccines shows clearly that as the total coverage drops, the inequality of care is greater, and then according to the schooling of the child's mother.
Comparison across the four types of vaccines shows clearly that as the total coverage drops, the inequality of coverage increases. For BCG vaccine, the urban/rural differential is less marked than for the other vaccines, whereas the rural/urban differential is most marked. For all children under 5: first by type of vaccine and then according to the schooling of the child’s mother. (This is one of the few analyses so far prepared using a socioeconomic classification; eventually the survey data will allow classification by income, or a proxy variable for it, as well as by educational level.)

Tables 3 and 4 also show that they are not a particularly equitable situation than another (3). All such measures, however, discard information, and the way a particular statistic summarizes a distribution corresponds to assumptions that may or may not be appropriate when judging inequity. To measure and rank population across groups to the cumulative resource or utilization measures ranked, ranging the groups from lowest to highest value of resources per capita. The Loren curve corresponding to the departmental distribution of

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**TABLE 3. MEASURES RELATED TO EQUITY IN HEALTH CARE IN PERU, 1984**

**CONSULTATIONS, HOSPITALIZATIONS AND EXPENSES**

<table>
<thead>
<tr>
<th>Area</th>
<th>Total</th>
<th>Health region</th>
<th>Population</th>
<th>Mobility of health region</th>
<th>Total consultations</th>
<th>Patient-related consultations</th>
<th>Expenses</th>
<th>Patient-related expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>1,750,000</td>
<td>Ancash</td>
<td>4.24</td>
<td>1.38</td>
<td>27.5</td>
<td>3.57</td>
<td>39.0</td>
<td>7.96</td>
</tr>
<tr>
<td>Rural</td>
<td>1,750,000</td>
<td>Arequipa</td>
<td>4.33</td>
<td>2.19</td>
<td>7.63</td>
<td>5.98</td>
<td>6.07</td>
<td>1.33</td>
</tr>
<tr>
<td>Rural</td>
<td>1,750,000</td>
<td>Callao</td>
<td>4.05</td>
<td>0.98</td>
<td>7.15</td>
<td>4.0</td>
<td>6.42</td>
<td>0.39</td>
</tr>
<tr>
<td>Rural</td>
<td>1,750,000</td>
<td>Chucuito</td>
<td>7.30</td>
<td>7.77</td>
<td>3.62</td>
<td>3.40</td>
<td>3.79</td>
<td>0.4</td>
</tr>
<tr>
<td>Rural</td>
<td>1,750,000</td>
<td>Huancayo</td>
<td>7.04</td>
<td>2.64</td>
<td>5.40</td>
<td>5.7</td>
<td>4.40</td>
<td>0.11</td>
</tr>
<tr>
<td>Rural</td>
<td>1,750,000</td>
<td>Huanuco</td>
<td>7.26</td>
<td>4.37</td>
<td>4.01</td>
<td>5.46</td>
<td>7.30</td>
<td>0.34</td>
</tr>
<tr>
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<td>Iquitos</td>
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<td>2.65</td>
<td>4.15</td>
<td>0.74</td>
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<td>Junin</td>
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<td>5.16</td>
<td>4.95</td>
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</tr>
<tr>
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<td>Lima</td>
<td>4.05</td>
<td>2.58</td>
<td>3.25</td>
<td>2.65</td>
<td>4.15</td>
<td>0.74</td>
</tr>
<tr>
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<td>32.12</td>
<td>36.51</td>
<td>52.79</td>
<td>41.25</td>
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<td>1,750,000</td>
<td>Morococha</td>
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<td>3.93</td>
<td>2.92</td>
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<td>Rural</td>
<td>1,750,000</td>
<td>Puno</td>
<td>7.44</td>
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<td>4.81</td>
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<td>1.39</td>
<td>1.80</td>
<td>2.27</td>
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<td>0.07</td>
</tr>
<tr>
<td>Rural</td>
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<td>National total</td>
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<td>100.00</td>
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<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
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</tbody>
</table>

**TABLE 4. DONNEES LIEES A L'EQUITE DANS LES SOINS DE SANTE AU PEROU, 1984**

**COUVERTURE VACCINALE (%) DES ENFANTS DE MOINS DE 5 ANS**

<table>
<thead>
<tr>
<th>Area</th>
<th>Total</th>
<th>Ancash</th>
<th>Arequipa</th>
<th>Callao</th>
<th>Chucuito</th>
<th>Huancayo</th>
<th>Iquitos</th>
<th>Junin</th>
<th>Lima</th>
<th>Lima Province</th>
<th>Morococha</th>
<th>Puno</th>
<th>Piura</th>
<th>Tacna</th>
<th>National total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>43.16</td>
<td>43.16</td>
<td>43.16</td>
<td>43.16</td>
<td>43.16</td>
<td>43.16</td>
<td>43.16</td>
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<td>43.16</td>
<td>43.16</td>
<td>43.16</td>
<td>43.16</td>
</tr>
<tr>
<td>BCG</td>
<td>54.29</td>
<td>54.29</td>
<td>54.29</td>
<td>54.29</td>
<td>54.29</td>
<td>54.29</td>
<td>54.29</td>
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<td>54.29</td>
<td>54.29</td>
<td>54.29</td>
<td>54.29</td>
</tr>
<tr>
<td>Polia</td>
<td>62.89</td>
<td>62.89</td>
<td>62.89</td>
<td>62.89</td>
<td>62.89</td>
<td>62.89</td>
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<td>62.89</td>
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<td>62.89</td>
</tr>
<tr>
<td>DTG</td>
<td>69.45</td>
<td>69.45</td>
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<td>69.45</td>
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<td>69.45</td>
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physicians in Peru, calculated from Table 1, is shown in Fig. 2. It indicates, for example, that the departments in which physicians are most scarce have 70% of their popula-
tion's population but only about 28% of its physicians. The diagonal line represents the perfect equality in the ratio of dep-
ments: the vertical axis is the share of the population, and the horizontal axis is the share of the physicians. The Gini coefficient is the ratio of two areas: the area between the Lorenz curve and the diagonal, a measure which increases from 0 to 1 as inequality increases. As Table 7 shows, this coefficient is highest for health regions and lowest for any of the other health-related resources considered. The Lorenz curve can also be used to represent inequality or inequity with-
out calculating the Gini coefficient or any other summary
statistic.
Financial measures of health care
Physicians, nurses, drugs, vaccines and other resources and supplies are used to produce health services, but none
alone is an adequate measure of resources used in health care. The best overall measure of the resources dedicated
to health services is the cost of producing those services. This raises two equity-related questions. The first con-
cerns the equality of expenditure across population
groups; the second concerns the relation between the
cost per patient of the care given. Estimates of total
cost by health region in Peru have been made for the years
1982-1984; these can be separated into costs related to
individual patients and those attributable to preventive
and maintenance activities. Costs for the former can then
be compared to total population, to the population pre-
senting illness or symptoms and needing care, or to the
population which actually receives care. Some of these estimates for 1984 appear in Table 4, classified by health
region. The first of these measures—cost per capita—is
often used as an indicator of equity, but the indicators in
Table 7, it suffers from the untested assumption that
what is measured is the resource used in the actual care of
the sick. The other extreme, cost per consultation leaves out much that
is important for equity: the cost per consultation could be
uniform, yet the health system would not be equitable if
the chance of getting attention varied widely among popu-
lation groups. Thus the best measure of equity in spending
on health care seems to be expenditure per person need-
ing care, or per capita costs. However, this indicator would include
people with symptoms too minor to require medical
attention.
Expenditure and morbidity. It appears from Table 4 that
patient-related expenditures are distributed more equita-
ibly in Peru than are some of the resources which help
account for these costs. The region with the fewest phys-
icians, for example, has about one-third of the country's population, a slight larger share of the high income groups, but less than half of the spending attributable to individual treatment. This percep-
tion is confirmed by Fig. 2, which compares the Lorenz
curves for expenditure per person, and those for physi-
cians per capita. The former distribution is systematically
much more equitable: the very unequal distribution of physicians undoubtedly overstates the inequality of the
Peruvian health care system. Differences in unit costs
contribute to total inequality: their impact is small
compared to the effect of differences in the likelihood of receiving care, costs per consultation, for example, vary over a range of only 2:1 in most of the health regions, and even those differences may depend on regional variations in the incidence of particular diseases or conditions, some of which in fact cost more to treat than others. The only reliable conclusion is that the chief source of health care inequity in Peru is var-
inability in the probability of getting medical attention when
sick.
Inequity without inequity. Equity is related, but not
identical with inequity: there can be inequity which is not necessarily inequitable. Sup-
pose, for example, that while the cost per consultation in 1984 ranged from 8.845 to 23.843 soles among Peruvian
health regions, 85% of the consultations were performed for a unit cost of 15.000 soles. That is, higher unit costs
represent the contribution apportioned by the different groups for courting
cost, that ce so par payment direct (francs ocassionnels par groupes de population). This is an important consideration for the curves relative to the popu-
lation of the department of health and that of any of the other health-related resources considered. The Lorenz curve
can also be used to represent inequity or inequity with-
out calculating the Gini coefficient or any other summary
statistic.

Equity in the distribution of expenditure
Variations in expenditure per capita on health care can
be separated into differences in the likelihood of being sick or not, and costs per consultation. These are not
independent, as higher unit costs represent inequitable
payments for services or by taxation. Both questions are
particularly important for the equity of health services financed largely from
general government revenues and which are usually in-
tended to cover the population groups too poor to pay for preventive and maintenance activities, or to the medical
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Expenditure and morbidity. It appears from Table 4 that patient-related expenditures are distributed more equitably in Peru than are some of the resources which help account for these costs. The region with the fewest physicians, for example, has about one-third of the country's population, a slight larger share of the high income groups, but less than half of the spending attributable to individual treatment. This perception is confirmed by Fig. 2, which compares the Lorenz curves for expenditure per person, and those for physicians per capita. The former distribution is systematically much more equitable: the very unequal distribution of physicians undoubtedly overstates the inequality of the Peruvian health care system. Differences in unit costs contribute to total inequality: their impact is small compared to the effect of differences in the likelihood of receiving care, costs per consultation, for example, vary over a range of only 2:1 in most of the health regions, and even those differences may depend on regional variations in the incidence of particular diseases or conditions, some of which in fact cost more to treat than others. The only reliable conclusion is that the chief source of health care inequity in Peru is variability in the probability of getting medical attention when sick.

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Financial measures of equity

Physicians, nurses, drugs, vaccines and other resources and supplies are used to produce health services, but none alone is an adequate measure of resources used in health care. The best overall measure of the resources dedicated to health services is the cost of producing those services. This raises two equity-related questions. The first concerns the equality of expenditure across population groups; the second concerns the relation between the cost of providing health services and the contributions different groups make to that cost, either by direct payment (for services) or by taxation. Both questions are particularly important for the equity of health care, because health needs are distributed largely from the general government revenues and which are usually in-
tended to cover the population groups too poor to pay for private medical care, and unlikely to be protected by the medical services of the social security system.

Equity in the distribution of expenditure

Inequality without inequity. It appears from Table 4 that patients-related expenditures are distributed more equita-
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Inequality without inequity: Equity is related to, but not identical with, economic status. For example, there can be inequality which is not necessarily inequitable. Suppose, for example, that the cost per consultation in 1984 ranged from 8.845 to 23.843 soles among Peruvian health regions. Adequate care could be given for a unit cost of 15,000 soles. That, is, higher unit costs represent contribution apporited by the different groups for covering this cost, that is not paid directly (fr better occasions due to the other causes. The same difference in expenditure across population groups may reflect a wide variety of reasons, including the importance particular for the equity of the services of the minis-
teries of the health, that are habitually financed in grand part by the rates of the public insurance, which pay to the different regions and services of the population are provided for by the public health system.
Inequity in Chile, those who can and do buy medical attention from private providers. Or does equity require the public system to reach, and subsidize, those poor consumers who now pay for health care services? The answer to these questions is complex, and it is important to investigate the system carefully, and to assess how to inform the population.

Concluding reflections

Equity is too complex a concept to be reduced to a single indicator, to analyse it necessarily requires a great deal of information and some subjective judgment as to what kind of inequity in fact constitutes inequity. However, many indicators can be constructed which are related to equity, or which help to measure it. The empirical discussion of the Peruvian case illustrates both the difficulties of analysing equity in health care and the possible use of administrative, financial and household data to assess equity. The latter is due entirely to differences in the quality of care and expenditure relative to need. This is more valuable than arriving at some overall measure of how equitable a particular health care system is.

The need to compare medical consultations and expenditures not just to population but in morbidity and perceived needs for assistance, indicates that relatively full assessments of equity must draw on population-based data and cannot be constructed only from the kind of information normally available to a ministry of health. The high collection and high cost of such population data mean that equity is more easily studied in the cross-sectional studies, however, given a good idea about the dispersion of income, one can recommend the kind of study which is becoming more or less equitable. It is less important to calculate elaborate statistical measures such as summary coefficients of inequality, than to have a clear view of the space location of the probability measures used. For all such efforts, to be useful, must be close to the matrix of health and conditions and of relevance to the public health system and the population according to which equity can be evaluated.

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Equity is a complex concept that requires a comprehensive approach to its assessment. It is important to note that the two concepts of inequity are not reduced to a single indicator, but require detailed analysis. The empirical discussion of the Peruvian case illustrates both the difficulties of analysing equity in health care and the possible use of administrative, financial and household data to assess equity. The latter is due entirely to differences in the quality of care and expenditure relative to need. This is more valuable than arriving at some overall measure of how equitable a particular health care system is.

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Inefficiency, use of overqualified personnel, etc. Then, another benefit might have been given to all those patients attended, for only 85% of what was spent. This situation is not necessarily to be left as it is, but a study of the system's performance relative to payment - may, or be more accessible, or be it believed to be of better quality, than public services? The answers to these questions are necessary, which indicators to construct, and how to interpret the available information.

Concluding reflections
Equity is too complex a concept to be reduced to a single indicator, to analyse it necessarily requires a great deal of information and some subjective judgement as to what kinds of inequity in fact constitute inequity. However, many indicators can be constructed which are related to equity, or which help to measure it. The empirical discussion of the Peruvian case illustrates both the difficulties of analysing equity in health care and the possible uses of administrative, financial and household data to improve the analysis and to identify where inequity is concentrated, or with what factors it is associated. This is much more valuable than arriving at some single overall measure of how equitable a particular health care system is.

The need to compare medical consultations and expenditures not only to population but in morbidity and per capita needs for assistance, indicate relatively full assessments of equity must draw on population-based data and cannot be constructed only from the kind of information normally available to a ministry of health. The interpopulation and high cost of such population data mean that equity is more easily studied in the cross-sectional data, but as previously, given a high enough sub-population baseline assessment of how equitable a system is and whether principal problems are, changes over time in the distribution of quality of care will give a good idea of how the system is performing. Again, the emphasis of the analysis is on what should be the case, in the evaluation of health care, at another level. For example, is it more equitable than some other kinds of public social expenditure? One way to compare these is to compare the two concepts of financial equity and the satisfaction of needs, and assessing the net contribution by groups with high incomes. Equity suggests that there should be a net subsidy (expenditure minus tax contributions) to population groups with low incomes, whereas they may suffer a net loss to what they pay in taxes, the poor usually get a net benefit.

Equity, contributions and expenditures
In comparing the costs and the expenditures to the population or to medical needs still do not ask those how these expenditures are paid for. To medical professionals, equity is usually interpreted in terms of the satisfaction of needs, and questions of payment arise only as possible obstacles to obtaining medical care. This is a somewhat different matter from the satisfaction felt by the patient or consumer, because his demand for health care may not coincide with his need as determined by a physician. Equity could also be considered to require the satisfaction of demand as a result of the nature of the service and what patients are willing to pay. To economists, however, equity has another meaning: the welfare of patients is dependent upon the demand, whereas they may suffer a net loss to what they pay in taxes, the poor usually get a net benefit.

The former is due mostly to differences in the quality of medical care, whereas they may suffer a net loss. This suggests inadequate care, to which s'il assure l'accès a ceux qui n'ont pas les moyens de se procurer les services publics de santé non gratuits. Le système public est-il équitable ou non? Ou équité suppose-t-elle que le système public s'engage à des dépenses médicales non seulement d'après la population mais d'après le degré de satisfaction de l'ensemble de la population, et de manière plus globale que d'obtenir un indicateur unique du degré d'équité d'un système de soins de santé particulier?

La nécessité de comparer les consultations et les dépenses médicales non seulement d'après la population mais d'après les besoins et les besoins d'assistance tels qu'ils sont perçus, indique que des évaluations relativement complexes de l'équité doivent se fonder sur des données d'ordre démographique et financière et ne peuvent être établies à l'aide des seules informations de distribution de l'aide sociale qui disposent normalement des ministères de la Santé. En raison de la collecte peu fréquente et coûteuse de ces informations, l'approche que nous avons adoptée est de baser l'évaluation sur des données plus abondantes et plus accessibles pour évaluer l'équité du système de soins de santé. Cela nous permet de faire une évaluation plus fine de l'équité du système en comparant les dépenses et les allocations de santé à la population, en tenant compte de la diversité des affections et des besoins et en considérant des indicateurs qui permettent de comparer la satisfaction de besoins et la satisfaction de besoins santé. En effet, l'équité peut être considérée comme nécessitant la satisfaction de besoins santé. En raison de la collecte peu fréquente et coûteuse de ces informations, l'approche que nous avons adoptée est de baser l'évaluation sur des données plus abondantes et plus accessibles pour évaluer l'équité du système de soins de santé. Cela nous permet de faire une évaluation plus fine de l'équité du système en comparant les dépenses et les allocations de santé à la population, en tenant compte de la diversité des affections et des besoins et en considérant des indicateurs qui permettent de comparer la satisfaction de besoins santé.